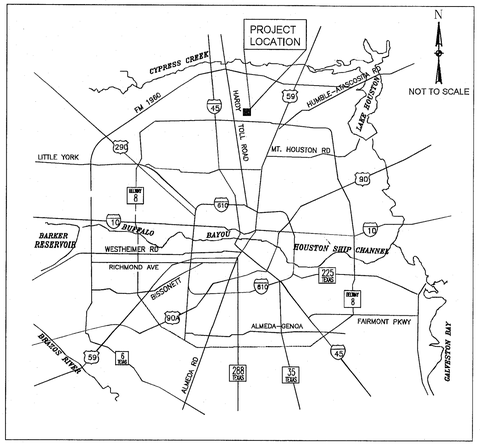
CITY OF HOUSTON

HOUSTON PUBLIC WORKS

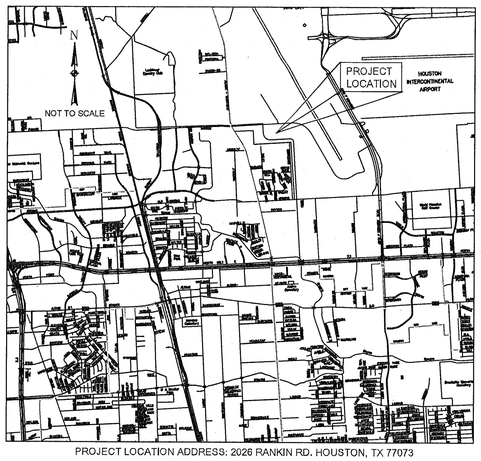
CAPITAL PROJECTS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

WBS NO. R-000265-0117-4



LOCATION MAP



PROJECT LOCATION ADDRESS: 2026 RANKIN RD. HOUSTON, TX 77073

VICINITY MAP
KEY MAP NO 373H & 373M
GIMS MAP NO 5466c

TDLR EABPR N/A (TABS EXEMPT)

CITY OF HOUSTON TEXAS

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
LETITIA PLUMMER, POSITION 4
SALLIE ALCORN, POSITION 5

NO.	DATE	REVISION	APP.

Stantec
Engineered by Stantec Consulting Services, Inc
Texas Registered Engineering Firm F-6324
910 Lousiana Street Suite 2600
Houston, Texas 77002

SURVEYED BY: KUO & ASSOCIATES INC.
TBPELS NO. 10075600

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
12/12/2024

Signed by: Sera Polovtsev
B7A520B1E6554D1...
PARKS-FORESTRY DEPT.

N/A
METRO

DS MP — DocuSigned by: Farid Sadeghian
30AD488EC06A406...
HOUSTON WATER

N/A
TRANSPORTATION & DRAINAGE OPERATIONS

DS SSS — Signed by: Markos E. Mengesha
00A211EA90B54A8...
CAPITAL PROJECTS

DocuSigned by: Jeremy Ellison
A7C85C2260C9413...
SURVEY

DS — DocuSigned by: Johana Clark 7/16/2025
808098A38F5E457...
CITY ENGINEER DATE

Signed by: Oluwole A. McFoy 7/17/2025
18EBB22072F84DC...
DIRECTOR OF HOUSTON PUBLIC WORKS DATE

SHEET NO 1 OF 255

FOR CITY OF HOUSTON USE ONLY

ACCEPTED AND FILED
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

DRAWING INDEX

SR NO	SHEET NO.	DESCRIPTION
	GENERAL	
1	G-001	COVER
2	G-002	INDEX SHEET
3	G-003	GENERAL NOTES AND COMMON SYMBOLS
4	G-004	COMMON ABBREVIATIONS
5	G-005	PIPE SCHEDULE - FLUID ABBREVIATIONS
6	G-006	PIPE SCHEDULE - PIPE MATERIALS
7	G-007	HCFCD EXPRESS REVIEW SHEET
	SURVEY	
8	V-001	SURVEY CONTROL MAP (SHEET 1 OF 2)
9	V-002	SURVEY CONTROL MAP (SHEET 2 OF 2)
	CIVIL	
10	C-001	CIVIL STANDARD DETAILS - I
11	C-002	CIVIL STANDARD DETAILS - II
12	C-003	CIVIL STANDARD DETAILS - III
13	C-004	CIVIL STANDARD DETAILS - IV
14	C-005	CIVIL STANDARD DETAILS - V
15	C-006	CIVIL STANDARD DETAILS - VI
16	C-007	CIVIL STANDARD DETAILS - VII
17	C-008	CIVIL STANDARD DETAILS - VIII
18	C-009	CIVIL STANDARD DETAILS - IX
19	C-010	CIVIL STANDARD DETAILS - X
20	C-011	CIVIL STANDARD DETAILS - XI
21	C-012	CIVIL STANDARD DETAILS - XII
22	C-013	CIVIL STANDARD DETAILS - XIII
23	C-014	CIVIL STANDARD DETAILS - XIV
24	C-015	CIVIL STANDARD DETAILS - XV
25	C-016	CIVIL STANDARD DETAILS - XVI
26	C-017	CIVIL STANDARD DETAILS - XVII
27	C-018	CIVIL STANDARD DETAILS - XVIII
28	C-019	CIVIL STANDARD DETAILS - XIX
29	C-020	CIVIL STANDARD DETAILS - XX
30	C-021	CIVIL STANDARD DETAILS - XXI
31	CD-101	OVERALL - DEMOLITION SITE PLAN
32	CG-101	OVERALL - PAVING, GRADING AND DRAINAGE MAP
33	CG-102	ADMINISTRATION - PAVING, GRADING AND DRAINAGE PLAN
34	CG-103	DEWATERING - PAVING, GRADING AND DRAINAGE PLAN
35	CS-101	OVERALL - EXISTING SITE PLAN
36	CS-102	OVERALL - PROPOSED SITE PLAN AND HORIZONTAL CONTROL PLAN
37	CU-101	ADMINISTRATION - DETAILED SITE PLAN AND YARD PIPING
38	CU-102	DEWATERING - DETAILED SITE PLAN AND YARD PIPING
39	EC-100	SWPPP AND EROSION AND SEDIMENTATION CONTROL PLAN
40	EC-101	SW POLLUTION PREVENTION PLAN DETAILS
	LANDSCAPE ARCHITECTURAL	
41	IR-001	IRRIGATION NOTES AND DETAILS
42	IR-101	OVERALL IRRIGATION PLAN
43	L-001	ADMINISTRATION - LANDSCAPE NOTES AND SCHEDULE
44	L-100	ADMINISTRATION - OVERALL PLANTING PLAN
45	L-501	ADMINISTRATION - LANDSCAPE DETAILS
	STRUCTURAL	
46	1S-001	ADMINISTRATION - GENERAL NOTES - I
47	1S-002	ADMINISTRATION - GENERAL NOTES - II
48	1S-003	ADMINISTRATION - GENERAL NOTES - III
49	1S-101	ADMINISTRATION - FIRST LEVEL FLOOR PLAN
50	1S-102	ADMINISTRATION - ROOF PLAN
51	1S-501	ADMINISTRATION - TYPICAL FOUNDATION DETAILS - I
52	1S-502	ADMINISTRATION - TYPICAL FOUNDATION DETAILS - II
53	1S-503	ADMINISTRATION - TYPICAL FOUNDATION DETAILS - III
54	1S-504	ADMINISTRATION - TYPICAL MASONRY DETAILS - I
55	1S-505	ADMINISTRATION - TYPICAL MASONRY DETAILS - II
56	1S-506	ADMINISTRATION - TYPICAL STEEL DETAILS - I
57	1S-601	ADMINISTRATION - LOAD DIAGRAMS
58	2S-001	DEWATERING - GENERAL NOTES - I
59	2S-002	DEWATERING - GENERAL NOTES - II
60	2S-003	DEWATERING - GENERAL NOTES - III
61	2S-101	DEWATERING - FOUNDATION FRAMING PLAN
62	2S-502	DEWATERING - TYPICAL CONCRETE DETAILS
63	2S-503	DEWATERING - TYPICAL FOUNDATION DETAILS - I
64	2S-504	DEWATERING - TYPICAL FOUNDATION DETAILS - II
65	2S-505	DEWATERING - TYPICAL FOUNDATION DETAILS - III
	ARCHITECTURAL	
66	1A-001	ADMINISTRATION - ABBREVIATIONS
67	1A-002	ADMINISTRATION - MATERIAL LEGEND, AND SYMBOLS ADMINISTRATION - TYPICAL MOUNTING HEIGHTS
68	1A-003	ADMINISTRATION - TYPICAL MOUNTING HEIGHTS
69	1A-004	ADMINISTRATION - TYPICAL TOILET LAYOUT
	1A-005	NOT USED
70	1A-006	ADMINISTRATION - TYPICAL WALL DETAILS - EXTERIOR CMU
71	1A-007	ADMINISTRATION - WALL TO DECK DETAILS CMU
72	1A-008	ADMINISTRATION - WALL TO DECK DETAILS CFMF
73	1A-009	ADMINISTRATION - WALL TO DECK DETAILS
74	1A-010	ADMINISTRATION - WALL AND BUILDING SYSTEM TYPES
75	1A-011	ADMINISTRATION - INTERIOR PARTITION TYPES
76	1A-101	ADMINISTRATION - CODE REVIEW
77	1A-102	ADMINISTRATION - EGRESS PLAN
78	1A-103	ADMINISTRATION - ARCHITECTURAL SITE PLAN ADMINISTRATION - SITE PLAN DETAILS - I
79	1A-104	ADMINISTRATION - SITE PLAN DETAILS - I
80	1A-105	ADMINISTRATION - SITE PLAN DETAILS - II DETAILS - III
81	1A-106	ADMINISTRATION - SITE PLAN
82	1A-107	ADMINISTRATION - FLOOR PLAN
83	1A-108	ADMINISTRATION - CLERESTORY PLAN
84	1A-109	ADMINISTRATION - REFLECTED CEILING PLAN
85	1A-110	ADMINISTRATION - ROOF PLAN
86	1A-111	ADMINISTRATION - ROOF DETAILS
87	1A-112	ADMINISTRATION - PLAN DETAILS - I
88	1A-113	ADMINISTRATION - PLAN DETAILS II
89	1A-114	ADMINISTRATION - PLAN DETAILS III
90	1A-201	ADMINISTRATION - BUILDING ELEVATIONS
91	1A-301	ADMINISTRATION - BUILDING SECTIONS
92	1A-302	ADMINISTRATION - EXTERIOR WALL SECTION AND DETAILS - I
93	1A-303	ADMINISTRATION - EXTERIOR WALL SECTION AND DETAILS - II
94	1A-304	ADMINISTRATION - EXTERIOR WALL SECTION AND DETAILS - III
95	1A-305	ADMINISTRATION - EXTERIOR WALL SECTIONS & DETAILS IV
96	1A-306	ADMINISTRATION - EXTERIOR WALL SECTIONS & DETAILS V
97	1A-307	ADMINISTRATION - EXTERIOR WALL SECTIONS & DETAILS VI
98	1A-308	ADMINISTRATION - EXTERIOR WALL SECTIONS & DETAILS VII
	1A-309	NOT USED
99	1A-401	ADMINISTRATION - ENLARGED TOILET & LOCKER ROOM PLANS
100	1A-402	ADMINISTRATION - ENLARGED TOILER & LOCKER ROOM DETAILS
	1A-403	NOT USED
101	1A-501	ADMINISTRATION - DOOR SCHEDULE, INFO, AND FRAME TYPES
102	1A-502	ADMINISTRATION - FRAME TYPES - I
103	1A-503	ADMINISTRATION - FRAME TYPES - II
104	1A-504	ADMINISTRATION - HEAD, JAMB, SILL DETAILS - I
105	1A-505	ADMINISTRATION - HEAD, JAMB, SILL DETAILS - II
106	1A-506	ADMINISTRATION - HEAD, JAMB, SILL DETAILS - III
107	1A-507	ADMINISTRATION - HEAD, JAMB, SILL DETAILS - V
108	1A-508	ADMINISTRATION - HEAD, JAMB, SILL DETAILS - IV
109	1A-601	ADMINISTRATION - FINISH SCHEDULES
110	1A-602	ADMINISTRATION - ROOM FINISH SCHEDULES
111	1A-701	ADMINISTRATION - FURNISHING, FIXTURES & EQUIPMENT PLAN
112	1A-702	ADMINISTRATION - FLOOR FINISHES
113	1A-703	ADMINISTRATION - INTERIOR ELEVATIONS
114	1A-704	ADMINISTRATION - CASEWORK ELEVATIONS
115	1AD-101	ADMINISTRATION DEMO ARCHITECTURAL SITE PLAN
116	2A-001	DEWATERING - GENERAL NOTES, SYMBOLS & SCHEDULES
117	2A-101	DEWATERING - BUILDING CODE SUMMARY AND LIFE SAFETY PLAN
118	2A-102	DEWATERING - FLOOR PLAN
119	2A-103	DEWATERING - ROOF PLAN
120	2A-201	DEWATERING - EXTERIOR ELEVATIONS
121	2A-301	DEWATERING - BUILDING SECTIONS
122	2A-501	DEWATERING - STANDARD DETAILS - I
123	2A-502	DEWATERING - STANDARD DETAILS - II
	INSTRUMENTATION AND CONTROLS	
124	I-001	OVERALL - SYMBOLS AND ABBREVIATIONS - I
125	I-002	OVERALL - SYMBOLS AND ABBREVIATIONS - II
126	I-003	OVERALL - EXISTING SCADA NETWORK DIAGRAM
127	I-004	OVERALL - PROPOSED SCADA NETWORK DIAGRAM
128	I-005	INSTRUMENTATION DETAIL - I
129	I-006	INSTRUMENTATION DETAIL - II
130	I-007	INSTRUMENTATION DETAIL - III
131	2I-601	DEWATERING - SLUDGE FEED PUMPS P&ID
132	2I-602	DEWATERING - CENTRIFUGE NO 1 P&ID
133	2I-603	DEWATERING - CENTRIFUGE NO 2 P&ID
134	2I-604	DEWATERING - CENTRIFUGE NO 3 P&ID
135	2I-605	DEWATERING - CENTRIFUGE NO 4 P&ID (FUTURE)
136	2I-606	DEWATERING - TRUCK LOADING BAY
137	2I-607	DEWATERING - POLYMER SYSTEM NO 1 P&ID
138	2I-608	DEWATERING - POLYMER SYSTEM NO 2 P&ID
139	2I-609	DEWATERING - POLYMER SYSTEM NO 3 P&ID
140	2I-610	DEWATERING - (FUTURE) POLYMER SYSTEM NO 4 P&ID
	PROCESS MECHANICAL	
141	2D-001	DEWATERING - MECHANICAL STANDARD DETAILS - I
142	2D-101	DEWATERING - CENTRIFUGE FACILITY OVERALL PLAN
143	2D-102	DEWATERING - CENTRIFUGE FACILITY ENLARGED PLAN
144	2D-103	DEWATERING - CENTRIFUGE ENLARGED PLAN
145	2D-201	DEWATERING - CENTRIFUGE ELEVATIONS
146	2D-301	DEWATERING - SECTIONS - I
147	2D-302	DEWATERING - SECTIONS - II
148	2D-303	DEWATERING - SECTIONS - III
149	2D-501	DEWATERING - DETAILS
150	2D-901	DEWATERING - BUILDING ISOMETRIC
	HVAC	
151	1M-001	ADMINISTRATION - GENERAL INFORMATION
152	1M-101	ADMINISTRATION - FLOOR PLAN
153	1M-102	ADMINISTRATION - ROOF PLAN
154	1M-401	ADMINISTRATION - ENLARGED PLANS
155	1M-501	ADMINISTRATION - DETAILS - I
156	1M-502	ADMINISTRATION - DETAILS - II
157	1M-503	ADMINISTRATION - DETAILS - III
158	1M-601	ADMINISTRATION - SCHEDULES - I
159	1M-602	ADMINISTRATION - SCHEDULES - II
160	1M-603	ADMINISTRATION - SCHEDULES - III
161	1M-801	ADMINISTRATION - CONTROLS - I
162	1M-802	ADMINISTRATION - CONTROLS - II
163	1M-803	ADMINISTRATION - CONTROLS - III
164	2M-001	DEWATERING - HVAC NOTES SYMBOLS AND ABREVIATIONS
165	2M-002	DEWATERING - HVAC STANDARD DETAILS - I
166	2M-003	DEWATERING - HVAC STANDARD DETAILS - II
167	2M-101	DEWATERING - HVAC FLOOR PLAN
168	2M-301	DEWATERING - HVAC SECTIONS - I
169	2M-302	DEWATERING - HVAC SECTIONS - II
170	2M-601	DEWATERING - HVAC EQUIPMENT SCHEDULES
171	2M-602	DEWATERING - HVAC SEQUENCE OF OPERATION - I
172	2M-603	DEWATERING - HVAC SEQUENCE OF OPERATION - II
	PLUMBING	
173	1P-001	ADMINISTRATION - GENERAL INFORMATION
174	1P-002	ADMINISTRATION - PLUMBING SITE PLAN
175	1P-101	ADMINISTRATION - UNDER FLOOR PLAN
176	1P-102	ADMINISTRATION - FLOOR PLAN
177	1P-103	ADMINISTRATION - ROOF PLAN
178	1P-401	ADMINISTRATION - ENLARGED PLANS
179	1P-501	ADMINISTRATION - DETAILS - I
180	1P-502	ADMINISTRATION - DETAILS - II
181	1P-503	ADMINISTRATION - DETAILS - III
182	1P-504	ADMINISTRATION - DETAILS - IV
183	1P-601	ADMINISTRATION - SCHEDULES
184	1P-701	ADMINISTRATION - PLUMBING RISERS - I
185	1P-702	ADMINISTRATION - PLUMBING RISERS - II
186	2P-001	DEWATERING - NOTES SYMBOLS AND ABBREVIATIONS
187	2P-002	DEWATERING - STANDARD DETAILS - I
188	2P-003	DEWATERING - STANDARD DETAILS - II
189	2P-101	DEWATERING - BELOW SLAB PLUMBING
190	2P-102	DEWATERING - TRUCK LOADING AREA BELOW SLAB PLUMBING
191	2P-103	DEWATERING - ABOVE SLAB PLUMBING
192	2P-104	DEWATERING - TRUCK LOADING AREA ABOVE SLAB PLUMBING
193	2P-105	DEWATERING - RESTROOM PLANS AND ISOMETRICS
194	2P-301	DEWATERING - PLUMBING SECTIONS
	FIRE PROTECTION	
195	1F-001	ADMINISTRATION - GENERAL INFORMATION AND RISER
196	1F-101	ADMINISTRATION - FIRE ALARM FLOOR PLAN
197	1FP-101	ADMINISTRATION - FIRE PROTECTION FLOOR PLAN
198	1FP-401	ADMINISTRATION - FIRE PROTECTION ENLARGED PLAN
199	1FP-501	ADMINISTRATION - DETAIL - I
200	1FP-502	ADMINISTRATION - DETAIL - II
201	1FP-601	ADMINISTRATION - SCHEDULES
202	1FP-701	ADMINISTRATION - FIRE PROTECTION RISER - III
203	1FP-702	ADMINISTRATION - FIRE PROTECTION RISER - IV
	ELECTRICAL	
204	E-001	OVERALL - SYMBOLS AND ABBREVATIONS
205	E-002	OVERALL - DETAILS SHEET - I
206	E-003	OVERALL - DETAILS SHEET - II
207	E-004	OVERALL - DETAILS SHEET - III
208	E-005	OVERALL - DETAILS SHEET - IV
209	E-006	OVERALL - DETAILS SHEET - V
210	E-101	OVERALL - EXISTING SITE PLAN
211	E-102	OVERALL - PROPOSED SITE PLAN
212	E-103	OVERALL - EXISTING CONTROL BUILDING PLAN
213	E-601	OVERALL - EXISTING SIMPLIFIED ONE LINE DIAGRAM
214	E-602	OVERALL - PROPOSED SIMPLIFIED ONE LINE DIAGRAM
215	E-603	OVERALL - MODIFIED MVS-1 ONE LINE DIAGRAM
216	E-604	OVERALL - CONDUIT AND CONDUCTOR SCHEDULE SHEET 1
217	E-605	OVERALL - CONDUIT AND CONDUCTOR SCHEDULE SHEET 2
218	E-701	OVERALL - FIXTURE SCHEDULE AND CONTROL DIAGRAM
219	1E-101	ADMINISTRATION - AREA SITE PLAN
220	1E-102	ADMINISTRATION - UNDERGROUND PLAN
221	1E-103	ADMINISTRATION - POWER PLAN
222	1E-104	ADMINISTRATION - LIGHTING PLAN
223	1E-105	ADMINISTRATION - ENLARGED EQUIPMENT PLANS
224	1E-601	ADMINISTRATION - PANELBOARD SCHEDULES
225	2E-101	DEWATERING - AREA SITE PLAN
226	2E-102	DEWATERING - UNDERGROUND PLAN
227	2E-103	DEWATERING - POWER PLAN
228	2E-104	DEWATERING - LIGHTING PLAN
229	2E-301	DEWATERING - BUILDING SECTION - I
230	2E-601	DEWATERING - MCC DW ONE LINE DIAGRAM
231	2E-602	DEWATERING - PANELBOARD SCHEDULES
232	2E-603	DEWATERING - CENTRIFUGE SYSTEM BLOCK DIAGRAM
	DATA AUDIO VISUAL	
233	1IA-001	ADMINISTRATION - AUDIOVISUAL INFRASTRUCTURE LEGEND AND NOTES
234	1IA-002	ADMINISTRATION - AUDIOVISUAL INFRASTRUCTURE RISER DIAGRAM
235	1IA-101	ADMINISTRATION - AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR PLAN
236	1IA-102	ADMINISTRATION - AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR REFLECTED CEILING PLAN
237	1IA-501	ADMINISTRATION - AUDIOVISUAL INFRASTRUCTURE GENERAL DETAILS
238	1IA-601	ADMINISTRATION - AUDIOVISUAL SYSTEMS SIGNAL FLOW DIAGRAM
239	1IA-602	ADMINISTRATION - AUDIOVISUAL SYSTEMS SIGNAL FLOW DIAGRAM
	DATA COMMUNICATIONS	
240	1IC-001	ADMINISTRATION - COMMUNICATIONS LEGEND AND NOTES
241	1IC-002	ADMINISTRATION - COMMUNICATIONS RISER DIAGRAM
242	1IC-101	ADMINISTRATION - COMMUNICATIONS SITE PLAN
243	1IC-102	ADMINISTRATION - COMMUNICATIONS FIRST FLOOR PLAN
244	1IC-501	ADMINISTRATION - COMMUNICATIONS TELECOM ROOM DETAILS
245	1IC-502	ADMINISTRATION - COMMUNICATIONS TELECOM ROOM DETAILS
246	1IC-503	ADMINISTRATION - COMMUNICATIONS GENERAL DETAILS
	DATA SECURITY	
247	1IS-001	ADMINISTRATION - SECURITY LEGEND AND NOTES
248	1IS-002	ADMINISTRATION - SECURITY RISER DIAGRAM
249	1IS-101	ADMINISTRATION - SECURITY SITE PLAN
250	1IS-102	ADMINISTRATION - SECURITY FIRST FLOOR PLAN
251	1IS-201	ADMINISTRATION - SECURITY DOOR ELEVATION DETAILS
252	1IS-501	ADMINISTRATION - SECURITY GENERAL DETAILS I
253	1IS-502	ADMINISTRATION - SECURITY GENERAL DETAILS II
254	1IS-503	ADMINISTRATION - SECURITY GENERAL DETAILS III
255	1IS-504	ADMINISTRATION - SECURITY GENERAL DETAILS IV

NO.	DATE	REVISION	APP.

Stantec

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED
PROFESSIONAL ENGINEER
05/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

INDEX SHEET

G-002

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
-	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 2 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS NOTED
80341
CITY ENGINEER
HOUSTON, TEXAS

PLOTTED: 5/7/2025 9:52 AM
PLOT STYLE: COH.ctb
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INSIDE CITY LIMITS

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS. WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY HOUSTON PUBLIC WORKS.
2. 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 GEOTEST ENGINEERING, INC. REPORT NO. 1140253001, DATED DECEMBER 18, 2020 AND ADDENDUM NO. 1 DATED SEPTEMBER 29, 2022.
3. 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.
4. 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 HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COST.
5. 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.
6. 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.
7. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.
8. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
9. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP 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.

WATER CONSTRUCTION NOTES

1. WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL, STANDARD SPECIFICATION, AND CONSTRUCTION DETAILS.
2. ALL 4" THROUGH 12" WATER LINE TO BE AWWA C-900 PVC DR-18 BLUE PRESSURE RATED WATER MAIN WITH 2" AND SMALLER WATER SERVICE LINE TO BE CONTINUOUS TYPE K COPPER TUBING PER COH STANDARD SPECIFICATION SECTION 02503. ALL 4" THRU 54" DI PIPE WATER LINES SHALL BE AWWA C151 WITH INSIDE LINING WITH AWWA C104 AND DOUBLE WRAPPED WITH 8-MIL POLYETHYLENE SHEETS.
3. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT. USE RESTRAINED JOINTS WHERE PREVENTING MOVEMENT OF 16" OR GREATER PIPE IS NECESSARY DUE TO THRUST.
4. ALL WATER LINES UNDER PROPOSED OR FUTURE PAVING AND TO A POINT OF ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE ENCASED IN BANK SAND TO 12" OVER PIPE AND BACKFILLED WITH CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE.
5. ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ REGULATIONS.
6. ALL WATER VALVES SHALL BE SUPPLIED AND INS TALLED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND SHALL BE OF THE RESILIENT SEAT TYPE.
7. ALL WATER LINES TO BE DISINFECTED IN CONFORMANCE WITH AWWA C-651 AND THE TEXAS STATE DEPARTMENT OF HEALTH. AT LEAST ONE BACTERIOLOGICAL SAMPLE SHALL BE COLLECTED FOR EVERY 1,000 LINEAR FEET OF WATER LINE AND SHALL BE REPEATED IF CONTMINATION PERSISTS.
8. ALL BELOW GRADE VALVES SHALL BE GASKETED, HUB-END GATE VALVES WITH A CAST IRON BOX, EXCEPT WHERE FLANGES ARE CALLED OUT ON THE PLANS.
9. 4" THRU 12" FIT TINGS SHALL BE CEMENT MORTAR LINED COMPACT DUCTILE IRON PRESSURE FITTINGS PER ANSI A21.53, OR PUSH ON FITTINGS PER ANSI A21.10 PRESSURE RATED AT 250 PSIG.
10. HYDROSTATIC TESTING: ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS. TESTS ARE TO BE PERFORMED ON THE ENTIRE FOOTAGE OF WATER PIPE LINE INCLUDED IN THE PROJECT.
11. ALL WATER LINES TO HAVE 4' MINIMUM COVER TO FINISHED GRADE AND MINIMUM 12" CLEARANCE TO OTHER UTILITIES AT CROSSING UNLESS OTHERWISE NOTED ON PLANS. ALL WATER LINE INSTALLED OVER 8' DEEP SHALL UTILIZE RESTRAINED JOINT FITTINGS.
12. CONTRACTOR SHALL KEEP WATER PIPE CLEAN AND CAPPED (OR OTHERWISE EFFECTIVELY COVERED) OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.

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 CONSTRUCTION NOTES

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

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 OTHERWISE 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 18-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.

SANITARY SEWERS CONSTRUCTION NOTES

1. ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON "STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING, AND TRAFFIC" AND ALL CURRENT AMENDMENTS THERETO AND 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 CURRENT 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 SANITARY SEWERS CROSSING WATER LINES WITH A CLEARANCE BETWEEN 12 INCHES AND 9 FEET SHALL HAVE A MINIMUM OF ONE 18' JOINT OF 150 PSI 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.
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 02317-01.
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.

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 ROOSEVELT LEE JR. AT (713)O67-4552 OR EMAIL HIM AT RL7259@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

CITY OF HOUSTON STANDARD DETAILS :

1. CITY OF HOUSTON STANDARD DETAILS HAVE BEEN COPIED FROM THE CITY'S PERMITTING CENTER WEBSITE WITHOUT MODIFICATION. CONTRACTOR SHOULD ACCESS DETAILS ONLINE IF DETAILS ARE BLURRY.

GENERAL SYMBOLOGY

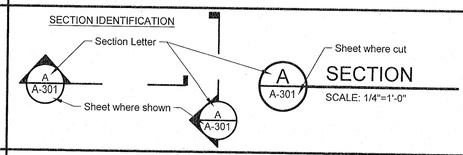
- NEW CONSTRUCTION
- EXISTING (SCREENED)
- FUTURE (PHANTOM)
- EXISTING TO BE REMOVED OR DEMOLISHED

MATERIAL SYMBOLOGY

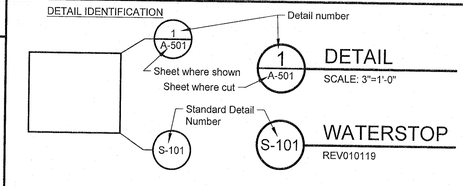
- CONCRETE (PLAN AND SECTION)
- GROUT OR SAND (PLAN AND SECTION)
- BRICK (PLAN AND SECTION)
- CMU (PLAN AND SECTION)
- STEEL/METAL/FRP (SMALL SCALE SECTION)
- CHECKER PLATE OR SOLID FRP GRATING (PLAN)
- CHECKER PLATE (SECTION)
- GRATING (PLAN)
- GRATING OR SOLID FRP GRATING (SECTION)
- SAFETY GRATING (PLAN)
- SAFETY GRATING (SECTION)
- RAILING (PLAN)
- WOOD (PLAN OR ELEVATION)
- LUMBER/FRAMING-NOMINAL
- LUMBER - TRIMMED (BLOCKING OR SHIMS)
- OR GLULAM (SECTION)
- GLULAM (ELEVATION)
- OR PLYWOOD (SMALL SCALE)
- FINISHED GRADE
- GRAVEL/DRAINROCK/ AGGREGATE BASE

REFERENCE SYMBOLS

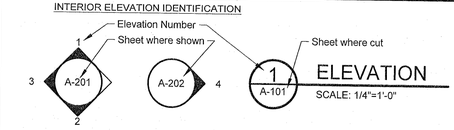
SECTION IDENTIFICATION



DETAIL IDENTIFICATION



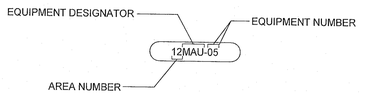
INTERIOR ELEVATION IDENTIFICATION



EXTERIOR ELEVATION IDENTIFICATION

EQUIPMENT IDENTIFICATION

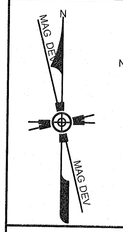
SEE EQUIPMENT SCHEDULE/SPECIFICATIONS



PLEASE NOTE:

DISCIPLINE SPECIFIC SYMBOLS ARE SHOWN ON THE DISCIPLINE GENERAL DRAWINGS.

FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS.



NORTH ARROW SYMBOLS

MISCELLANEOUS

- SHEET KEY SYMBOL
- REVISION TRIANGLE SYMBOL
- BREAK SYMBOL
- ANGLE SYMBOL
- CENTERLINE SYMBOL

MATCHLINE - SEE XX/X-XXX FOR CONTINUATION

SHEET KEY SYMBOL

ARCHITECTURAL UNIT SCALE BAR

0 8" 16" 32"

CIVIL UNIT SCALE BAR

0 20 40

CIVIL SCALE BAR WHERE THERE ARE HORIZONTAL AND VERTICAL SCALES

HORZ 0 20 40

VERT 0 5 10

SCALE IN FEET

CAUTION: UNDERGROUND GAS FACILITIES

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.

1. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713-945-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
2. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
3. WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
4. FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-3552 OR (713) 207-4200.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES

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:

1. ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX(6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
2. OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

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

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

NO.	DATE	REVISION	APP.

NOTICE:

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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STATE OF TEXAS
SEAN P. KIRBY
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LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

GENERAL NOTES AND COMMON SYMBOLS G-003

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	Se SHAHIDUR RAHMAN, P.E.
SHEET NO.	3 OF

A

A	AIR/ AMPERE
A/C	AIR CONDITIONING
A/R	AIR RELEASE
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AB	ANCHOR BOLT
ABAN	ABANDON
ABND	ABANDONED
ABBR	ABBREVIATION
ABS	ABSOLUTE TEMPERATURE
AC	ACTIVATED CARBON/ ASPHALTIC CONC/ ALTERNATING CURRENT
ACI	AMERICAN CONCRETE INTERNATIONAL
ACOUS	ACOUSTIC/ ACOUSTICAL
ACP	ASBESTOS CEMENT PIPE/ ASPHALTIC CONCRETE PAVEMENT
ADD	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONST
ALT	ALTERNATE
ALUM	ALUMINUM/ ALUM
AMB	AMBIENT
ANSI	AMERICAN NATIONAL STANDARDS INST
API	AMERICAN PETROLEUM INSTITUTE
APPD	APPROVED
APPROX	APPROXIMATE
APPURTS	APPURTENANCES
ARCH	ARCHITECTURE
ASME	AMERICAN SOCIETY OF MECHANICAL ENG
ASPH	ASPHALT
ASTM	AMERICAN SOCIETY FOR TEST & MATERIALS
AT	ACOUSTICAL TILE
ATM	ATMOSPHERE
AV/AR	AIR VACUUM AND AIR RELEASE VALVE
AVE	AVENUE
AWPA	AMERICAN WOOD PRESERVERS ASSOC
AWS	AMERICAN WELDING SOCIETY
AWWA	AMERICAN WATER WORKS ASSOCIATION

B

B&S	BELL AND SPIGOT
B/W	BACK OF WALL/ BACK OF WALK
BC	BEGIN CURVE/ BOLT CIRCLE/ BETWEEN CENTERS/ BACK OF CURVE
BCR	BEGIN CURB RETURN
BD	BOARD
BDRY	BOUNDARY
BF	BLIND FLANGE/ BOTTOM OF FOOTING
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BLK	BLACK/ BLOCK
BLKG	BLOCKING
BLVD	BOULEVARD
BM	BEAM/ BENCH MARK
BO	BLOW-OFF ASSEMBLY
BOD	BIOCHEMICAL OXYGEN DEMAND
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BPV	BACK PRESSURE VALVE
BRK	BRICK/ BREAK
BSMT	BASEMENT
BT	BOLT
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BVC	BEGIN VERTICAL CURVE
BWV	BACK WATER VALVE

C

C	CENTIGRADE/ CHANNEL/ CEMENT
C&G	CURB AND GUTTER
CAB	CABINET/ CRUSHED AGGREGATE BASE
CAP	CAPACITY
CATS	CASING TEST STATION
CATV	CABLE TELEVISION
CB	CATCH BASIN/ CHALKBOARD/ CURB
CC	CLOSED CIRCUIT TV/ CENTER TO CENTER
CD	CEILING DIFFUSER
CEM	CEMENT
CF	CURB FACE/ CUBIC FOOT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CHG	CHANGE
CHKD	CHECKERED
CI	CAST IRON
CIP	CAST IRON PIPE/ CAST IN PLACE
CIPP	CAST IN PLACE PIPE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CL2	CHLORINE
CLF	CHAIN LINK FENCE
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR/ CLEARANCE
CMB	CRUSHED MISCELLANEOUS BASE
CMC	CEMENT MORTAR-COATED
CML	CEMENT MORTAR-LINED
CML&C	CEMENT MORTAR-LINED AND COATED
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMM	COMMUNICATIONS CABLE
COMP	COMPRESSOR
CONC	CONCRETE/ CONCENTRIC
COND	CONDENSER/ CONDENSATE
CONN	CONNECTION
CONST	CONSTRUCT/ CONSTRUCTION
CONT	CONTINUED/ CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
COR	CORNER
COTG	CLEANOUT TO GRADE
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CAST STEEL
CSP	CORRUGATED STEEL PIPE
CSTS	CURRENT SPAN TEST STATION
CT	CERAMIC TILE
CTR	CENTER
CTS	CORROSION TEST STATION
CTSK	COUNTERSUNK
CU	COPPER/ CUBIC
CULV	CULVERT
CV	CHECK VALVE
CY	CUBIC YARD
CYL	CYLINDER

D

d	PENNY
DAD	DOUBLE ACTING DOOR
DAFT	DISSOLVED AIR FLOTATION THICKENER
DB	DIRECT BURY
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DET	DETAIL
DF	DRINKING FOUNTAIN/ DOUGLAS FIR
DG	DOOR GRILL
DH	DOUBLE HUNG
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIFF	DIFFUSER/ DIFFERENTIAL
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DISCH	DISCHARGE
DISP	DISPENSER
DL	DEAD LOAD
DMH	DROP MANHOLE
DN	DOWN
DO	DISSOLVED OXYGEN/ DITTO
DR	DOOR/ DRAIN
DS	DRENCH SHOWER AND EYE WASH
DT	DRAIN TILE
DWG	DRAWING
DWLS	DOWELS
DWY	DRIVEWAY

E

E	EAST
E/O	EAST OF
EA	EACH
EB	EXPANSION BOLT OR ANCHOR
EC	END CURVE
ECC	ECCENTRIC
ECR	END CURB RETURN
EF	EACH FACE/ EXHAUST FAN
EFF	EFFLUENT
EG	EXIST GRADE/ EDGE OF GUTTER/ EXHAUST GRILLE
EGL	ENERGY GRADE LINE
EL	ELEVATION
ELEC	ELECTRICAL/ ELECTRONIC
EN	EDGE NAILING
ENCL	ENCLOSURE
ENG	ENGINE
ENGR	ENGINEER
ENT	ENTRANCE
EP	EDGE OF PAVEMENT
EPT	ETHYLENE PROPYLENE
EQ	EQUAL
EQUIP	EQUIPMENT
ESMT	EASEMENT
ETB	EMULSION TREATED BASE
ETC	ET CETERA
EVAP	EVAPORATOR
EVC	END VERTICAL CURVE
EW	EACH WAY/ EYE WASH
EX	EXISTING
EXC	EXCAVATION
EXH	EXHAUST
EX-HY	EXTRA HEAVY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR/ EXTENSION
EXTR	EXTRUDED

F

F	FAHRENHEIT/ FINISH
F TO F	FACE TO FACE
F&C	FRAME AND COVER
F&I	FURNISH AND INSTALL
FAB	FABRICATE/ FABRICATION/ FABRICATED
FAI	FRESH AIR INTAKE
FB	FLAT BAR/ FLOOR BEAM/ FIELD BOOK
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDR	FEEDER
FE	FIRE EXTINGUISHER/ FINAL EFFLUENT
FEM	FEMALE (PIPE THREAD)
FF	FLAT FACE/ FAR FACE/ FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT/ FLAT HEAD
FIG	FIGURE
FIN	FINISHED
FIX	FIXTURE
FL	FLOWLINE/ FLOOR
FLEX	FLEXIBLE
FLG	FLANGE/ FLOORING
FLGD	FLANGED
FLOCC	FLOCCULATOR/ FLOCCULATION
FLR	FLOOR
FLSG	FLASHING
FM	FACTORY MUTUAL (LAB APPRVD)/ FORCE MAIN
FMH	FLEXIBLE METAL HOSE
FN	FIELD NAILING
FND	FOUNDATION
FOC	FACE OF CONCRETE/ FIBER OPTIC CABLE
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOW	FACE OF WALL
FPC	FLEXIBLE PIPE COUPLING
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FPTS	FOREIGN PIPE TEST STATION
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FINISHED SURFACE/ FAR SIDE/ FLOOR SINK / FORGED STEEL
FT	FEET/ FOOT
FTG	FOOTING
FUR	FURRING
FUT	FUTURE
FV	FIELD VERIFY
FWD	FORWARD

G

G	GAS
GA	GAGE / GAUGE
GAL	GALLON
GALV	GALVANIZED
GANC	GUY ANCHOR
GB	GRADE BREAK
GEN	GENERAL / GENERATOR
GFA	GROOVED FLANGE ADAPTER
GI	GALVANIZED IRON
GIP	GALVANIZED IRON PIPE
GL	GLASS / GROUND LINE / GRADE LINE
GLB	GLUE LAMINATED BEAM / GLULAM
GLV	GLOBE VALVE
GM	GAS METER
GP	GUY POLE
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE
GRD	GRADE / GROUND
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GYP	GYPSUM

H

H	HIGH / HEIGHT
H&V	HEATING AND VENTILATING
H/B	HOSE BIBB
HC	HOUSE CONNECTION
HDR	HEADER
HDW	HARDWARE
HDWL	HEADWALL
HEX	HEXAGONAL
Hg	MERCURY
HGL	HYDRAULIC GRADE LINE
HGR	HANGER
HM	HOLLOW METAL
HORZ	HORIZONTAL
HP	HIGH POINT / HORSE POWER / HIGH PRESSURE
HPG	HIGH PRESSURE GAS
HR	HEAT RETURN / HOUR
HSL	HORIZONTALLY SLOTTED
HSS	HOLLOW STRUCTURAL SECTION
HTG	HEATING
HTR	HEATER
HV	HORIZONTAL AND VERTICAL CONTROL POINT
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HW	HOT WATER / HEADWORK
HWD	HARDWOOD
HWL	HIGH WATER LEVEL
HWO	HANDWHEEL OPERATED
HYD	HYDRAULIC / HYDRANT

I

I/O	INPUT/OUTPUT
I&O	INSIDE AND OUTSIDE
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IF	INSIDE FACE
IJTS	INSULATING JOINT TEST STATION
IN	INCH
INCL	INCLUDE / INCLUDING
INFL	INFLUENT
INSL	INSULATION / INSULATING / INSULATED
INSP	INSPECTION
INST	INSTRUMENT
INT	INTERIOR
INV	INVERT
IP	IRON PIPE
IPS	IRON PIPE SIZE
IRRG	IRRIGATION

J

JAN	JANITOR
JC	JUNCTION CHAMBER
JCT	JUNCTION
JS	JUNCTION STRUCTURE
JSTS	JOISTS
JT	JOINT

K

k	KILO
K	KELVIN/ KARAT
kg	KILOGRAM
km	KILOMETER
kV	KILOVOLT
KVA	KILOVOLT AMPERE
kW	KILOWATT
kWh	KILOWATT HOUR

L

L	LITER/ LENGTH/ ANGLE
LAB	LABORATORY
LAM	LAMINATED
LAT	LATERAL
LAV	LAVATORY
LB	POUND
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LD	LOCAL DEPRESSION
LDG	LANDING
LEV	LEVEL
LF	LINEAR FOOT
LG	LENGTH/ LONG
LH	LAMP HOLE/ LEFT HAND
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LOL	LAYOUT LINE
LONG	LONGITUDINAL
LP	LOW POINT/ LOW PRESSURE/ LAMP POST
LPG	LIQUID PETROLEUM GAS
LT	LEFT/ LIGHT
LTS	LIME TREATED SOIL
LW	LOW WATER
LWL	LOW WATER LEVEL
LWR	LOWER

M

m	METER
M	MALE (PIPE THREAD)
mA	MILLIAMPS
MACH	MACHINE
MAG	MAGNETIC
MAINT	MAINTENANCE
MAN	MANUAL
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MB	MAIL BOX/ MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MCR	MIDDLE OF CURB RETURN
MEAS	MEASURE
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBER
MFR	MANUFACTURER
MFRD	MANUFACTURED
MGD	MILLION GALLONS PER DAY
MH	MANHOLE/ MAINTENANCE HOLE
MHT	MEAN HIGH TIDE
MHW	MEAN HIGH WATER
MI	MALLEABLE IRON/ MILE
MICRON	1/1,000,000 METER
MIL	MILITARY/ 1/1,000TH INCH
MIN	MINIMUM/ MINUTE
MIR	MIRROR
MISC	MISCELLANEOUS
MK	MARK
MLW	MEAN LOW WATER
mm	MILLIMETER
MO	MOTOR OPERATED/ MASONRY OPENING
MOD	MODEL
MON	MONUMENT
MOR	MORTAR
MS	MOP SINK
MSL	MEAN SEA LEVEL
MTC	MECHANICAL-TYPE COUPLING
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MTR	MOTOR

N

N	NORTH
NaOCl	SODIUM HYPOCHLORITE
NaOH	SODIUM HYDROXIDE (CAUSTIC SODA)
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NEAR FACE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NG	NATURAL GRADE/ NATURAL GAS
NIC	NOT IN CONTRACT
NO	NUMBER/ NORMALLY OPEN
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NRCP	NON-REINFORCED CONCRETE PIPE
NRS	NON-RISING STEM
NS	NEAR SIDE
NTS	NOT TO SCALE

O

OBJ	OBJECT
OC	ON CENTER/ OVER-CROSSING
OD	OUTSIDE DIAMETER/ OVERALL DIMENSION
OE	OUTER EDGE
OF	OVERFLOW/ OUTSIDE FACE
OFD	OVERFLOW DRAIN
OFF	OFFICE
OH	OVER HEAD
OHW	OVERHEAD WIRES
OPER	OPERATOR/ OPERATING
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
OS&Y	OUTSIDE SCREW AND YOKE
OSA	OUTSIDE AIR
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OWG	OIL, WATER, GAS
OZ	OUNCE

P

P	POLE/ PAGE/ PIPE
P/S	POLE AND SHELF
PA	PLANTING AREA
PART	PARTITION
PAVMT	PAVEMENT
PB	POLYBUTYLENE/ PULL BOX
PC	POINT OF CURVATURE/ PRIMARY CLARIFIER/ PORTLAND CEMENT
PCC	PORTLAND CEMENT CONCRETE/ POINT OF COMPOUND CURVE
PCOTG	PRESSURE CLEANOUT TO GRADE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PE	PLANT EFFLUENT/ POLYETHYLENE/ POLYELECTROLYTE POLYMER
PG	PRESSURE GAGE
pH	RECIPROCAL LOG OF HYDROGEN ION CONCENTRATION
PI	PLANT INFLUENT/ POINT OF INTERSECTION
PK	PARKING
PL	PLATE/ PROPERTY LINE/ PLACE
PLAS	PLASTER/ PLASTIC
PLT	PLANT
PLWD	PLYWOOD
PM	PRESSED METAL

P CONT'D

PNEU	PNEUMATIC
PNL	PANEL
POB	POINT OF BEGINNING
POC	POINT OF CONNECTION
POT	POINT OF TANGENT
PP	POWER POLE/ POLYPROPYLENE
PPD	POUNDS PER DAY
PPH	POUNDS PER HOUR
PPM	POUNDS PER MINUTE
PR	PAIR
PRC	POINT OF REVERSE CURVE
PRCT	PRECAST
PREFAB	PREFABRICATED
PRESS	PRESSURE
PROF	PROFILE
PRV	PRESSURE REGULATING, RELIEF OR REDUCING VALVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PS	PRESSURE SWITCH
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT OF TANGENCY/ PAINT/ PRESSURE
PTFE	POLYTETRAFLUOROETHYLENE (TEFLON)
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVDF	POLYVINYLIDENE FLUORIDE (KYNAR)
PW	POTABLE WATER

Q

QT	QUARRY TILE
QTY	QUANTITY
QUAD	QUADRANGLE/ QUADRANT

R

R	RADIUS/ RISER / RATE OF SLOPE
R&O	ROCK AND OIL
R/W	RIGHT OF WAY
RAC	RECYCLED ASPHALT CONCRETE
RAG	RETURN AIR GRILLE
RAP	RECLAIMED ASPHALT PAVEMENT
RAS	RETURN ACTIVATED SLUDGE
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD/ ROOF DRAIN/ ROUND
RED	REDUCER/ REDUCING
REF	REFERENCE/ REFER/ REFRIGERATOR
REG	REGULATING
REINF	REINFORCE/ REINFORCED
REQD	REQUIRED
RESIL	RESILIENT
RET	RETAINING/ RETURN
REV	REVISION
REW	RECLAIMED WATER
RF	ROOF/ RAISED FOUNDATION/ ROUGH FACE
RFG	ROOFING
RGE	REGISTERED GEOTECHNICAL ENGINEER
RH	REDHEAD / RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RS	RISING STEM
RSL	RAW SLUDGE
RT	RIGHT
RTP	REINFORCED THERMOSETTING PLASTIC
RTU	REMOTE TERMINAL UNIT
RW	REDWOOD
RWL	RAINWATER LEADER

S

S	SOUTH/SCUM/SINK/SECOND/SLOPE
S/O	SOUTH OF
SAM	SAMPLE
SAN	SANITARY
SBR	STYRENE BUTADIENE (RUBBER)
SC	SECONDARY CLARIFIER
SCCP	STEEL CYLINDER CONCRETE PIPE
SCD	SCREWED
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	SANITARY DRAIN/ SMOKE DETECTOR
SDR	STANDARD THERMOPLASTIC PIPE DIMENSION RATIO/STORM DRAIN
SEC	SECONDARY/ SECTION
SER	SERIES
SETT	SETTING
SF	SQUARE FOOT
SH	SHOWER
SHELV	SHELVING
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SL	SLUDGE
SLDG	SLIDING
SLG	SLUICE GATE
SOG	SLAB ON GRADE
SOLN	SOLUTION
SP	STATIC PRESSURE/ SPARE CHEMICAL
SPEC	SPECIFICATION
SPK	SPIKE
SQ	SQUARE
SS	STAINLESS STEEL/ SANITARY SEWER/ SERVICE SINK
SSB	SELECT SUB-BASE
SSPWC	STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION
SSU	SECONDS SAYBOLT UNIVERSAL
ST	STREET/ STATE
STA	STATION
STC	SLEEVE-TYPE COUPLING
STD	STANDARD
STK	STAKE
STL	STEEL
STM	STEAM
STR	STRAIGHT/ STRUCTURAL
SU	STEAM LINE
SUCT	SUCTION
SV	SOLENOID VALVE
SW	SIDEWALK
SWD	SIDEWALK DRAIN
SWGR	SWITCHGEAR
SWR	SIDEWALK REGISTER
SY	SQUARE YARD
SYM	SYMMETRICAL/ SYMBOL
SYS	SYSTEM

T

T	THERMOSTAT/ TREAD OF STAIR/ TANGENT
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TAN	TANGENT
TB	TACK BOARD
TBE	THREAD BOTH ENDS
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TCV	TEMPERATURE CONTROL VALVE
TEL	TELEPHONE
TEMP	TEMPERATURE/ TEMPORARY
TF	TOP OF FOOTING
TH	TEST HOLE
THK	THICK/ THICKNESS
THR	THRESHOLD
THR'D	THREADED
TK	TANK/ TACK
TL	TRAVERSE LINE
TOC	TOP OF CONCRETE
TOE	THREAD ONE END
TOL	TOILET
TOM	TOP OF MASONRY
TOP	TOP OF PIPE
TOPO	TOPOGRAPHIC
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TELEPHONE POLE
TR	TRACT
TRANS	TRANSMITTER/ TRANSITION /TRANSMISSION
TS	TRAFFIC SIGNAL
TSB	TOP SET BASE
TSC	TRAFFIC SIGNAL CONDUIT
TV	THERMOSTATIC VALVE/ TELEVISION
TW	THERMOMETER WELL /TRAVELED WAY
TYP	TYPICAL

U

UB	UNION BONNET
UBC	UNIFORM BUILDING CODE
UC	UNDER-CROSSING
UG	UNDERGROUND
UGC	UNDERGROUND CONDUIT
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNID	UNIDENTIFIED
UNO	UNLESS NOTED OTHERWISE
UOI	UNLESS OTHERWISE INDICATED
UPS	UNINTERRUPTABLE POWER SUPPLY
UR	URINAL
USA	UNDERGROUND SERVICE ALERT
USGS	UNITED STATES GEOLOGICAL SURVEY
UV	ULTRAVIOLET
UW	UTILITY WATER

V

V	VALVE/ VERTICAL/ VENT/ VOLT/ VOLUME
VAC	VACUUM
VAR	VARIES/ VARIABLE
VB	VALVE BOX
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VOL	VOLUME
VPI	VERTICAL POINT OF INTERSECTION
VSL	VERTICALLY SLOTTED
VTC	VENT TO CEILING
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
VWM	VERIFY WITH MANUFACTURE

W

W	WEST/ WASTE/ WIDTH/ WIDE FLANGE/ WATER
W/	WITH
W/O	WEST OF / WITHOUT
WC	WATER COLUMN / WATER CLOSET
WCO	WALL CLEANOUT
WD	WOOD
WDW	WINDOW
WH	WATER HEATER
WI	WROUGHT IRON
WM	WATER METER
WOG	WATER, OIL, OR GAS
WP	WATERPROOFING/ WORKING PRESSURE/ WORK POINT
WPJ	WEAKEN PLANE JOINT
WS	WATER SURFACE
WSTP	WATERSTOP
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWP	WATER WORKING PRESSURE

X

XCONN	CROSS CONNECTION
XS	EXTRA STRONG
XSEC	CROSS SECTION
XXS	DOUBLE EXTRA STRONG

Y

YD	YARD
YR	YEAR

Z

Z	ZERO/ ZONE
ZN	ZINC

#	POUND
&	AND
@	AT

FOR ADDITIONAL ABBREVIATIONS SEE:

CIVIL - GENERAL CIVIL SHEETS
PIPING - PIPING SCHEDULE
ELECTRICAL - GENERAL ELECTRICAL SHEETS
INSTRUMENTATION - GENERAL INSTRUMENTATION SHEETS

OTHER ABBREVIATIONS CONFORM TO ANSI STANDARD ABBREVIATIONS Z32.2.3

REV 010119

NO.	DATE	REVISION	APP.

Stantec

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139651
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

COMMON ABBREVIATIONS G-004

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 4 OF 255	

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FLUID ABBREVIATION	FUNCTION THIS LIST INCLUDES SOME LINES NOT USED IN THIS PROJECT (D)	PIPING MATERIALS (SEE GENERAL NOTES AT THE RIGHT AND PIPE MATERIAL SHEET) EXPOSED PIPING (K)		BURIED PIPING (J)		FIELD TEST REQUIREMENTS (B)(C) MINIMUM TEST PRESSURE (PSI)	TEST MEDIUM	LEAKAGE ALLOWANCE (A)
		4" DIA AND SMALLER	6" DIA AND LARGER	4" DIA AND SMALLER	6" DIA AND LARGER			
A	AERATION	CS01, PV01, FR01	CS05, DI01, PV01, FR01	CS01, PV01, FR01	CS05, DI01, PV01, FR01	25	AIR	(A)(D)
ALS	ALUMINUM SULFATE (LIQUID ALUM)	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
AMH	AMMONIUM HYDROXIDE (AQUEOUS AMMONIA)	CS06, SS01	CS06, SS01	CS06, SS01	CS06, SS01	125	WATER	(A)(D)
APS	ACID PHASE SLUDGE	DI03	DI03	DI03	DI03	50	WATER	(A)
ASR	AUTOMATIC SPRINKER RISER	CS01	CS01	CS01	CS01	125	WATER	(A)
B	BLEND	SS02	SS02	--	--	75	WATER	(A)
BFP	BALLASTED FLOCCULATION POLYMER	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
BFS	BALLASTED FLOCCULATION SOLIDS	CS08, DI02, SS02	CS08, DI02, SS02	CS08, DI02	CS08, DI02	50	WATER	(A)
BP	BLENDED PRODUCT	SS02	SS02, FR01	DI01	DI01	125	WATER	(A)
C	CONDENSATE	CS01*	CS01*	CS01*	CS01*	125	WATER	(A)
CAH	CALCIUM HYDROXIDE (HYDRATED LIME)	PE01, PV02	PE01, PV02	PE01, PV02	PE01, PV02	125	WATER	(A)
CAO	CALCIUM OXIDE (QUICK LIME)	PE01, PV02	PE01, PV02	PE01, PV02	PE01, PV02	125	WATER	(A)
CAW	CHANNEL AGITATION WATER	PV01	PV01	PV01	PV01	25	WATER	(A)
CCR	MEMBRANE CLEANING CONCENTRATE RETURN	PV02	PV02	--	--	125	WATER	(A)
CD	CHEMICAL DRAIN	CI02, PP01	CI02, PP01	CI02, PP01	CI02, PP01	(F)	--	--
CDR	CONDENSER WATER RETURN	CS01, CU01	CS01	CS01, CU01	CS01	125	WATER	(A)
CDS	CONDENSER WATER SUPPLY	CS01, CU01	CS01	CS01, CU01	CS01	125	WATER	(A)
CHR	CHILLED WATER RETURN	CS01*, CU01*	CS01*	CS01*, CU01*	CS01*	125	WATER	(A)
CHS	CHILLED WATER SUPPLY	CS01*, CU01*	CS01*	CS01*, CU01*	CS01*	125	WATER	(A)
CI	CORROSION INHIBITOR	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
CL	CHLORINE (GAS OR LIQUID)	CS10	--	CS10	--	300	DRY AIR	(A)(D)
CLS	CHLORINE SOLUTION	PV02	PV02	PV02	PV02	125	WATER	(A)
CLV	CHLORINE GAS UNDER VACUUM	PV02	PV02	PV02	PV02	15 IN Hg	VACUUM	(A)(E)
CN	CENTRATE	--	DI02	--	DI02	50	WATER	(A)
CND	CONDENSATE DRAIN	CU01	CU01	CU01	CU01	(E)	WATER	(A)
CP	CHEMICAL CONTAINMENT PIPE	PV01, PE01	PV01, PE01	PV01, PE01	PV01, PE01	50	WATER	(A)
CPR	MEMBRANE CLEANING PERMEATE RETURN	PV02	PV02	--	--	125	WATER	(A)
CSL	CIRCULATED SLUDGE	--	DI03	--	DI03	50	WATER	(A)
CTA	CITRIC ACID	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
CTH	CALCIUM THIOSULFATE	PE01, PV02	PE01, PV02	PE01, PV02	PE01, PV02	125	WATER	(A)
CV	CHLORINATOR VENT AND DETECTION LINE	PV01	PV01	PV01	PV01	(G)	--	--
CVT	CHEMICAL DRAIN VENT	CI02, PP01	CI02, PP01	CI02, PP01	CI02, PP01	(F)	--	--
CW	COAGULATED WATER	--	CS08, DI02	--	CS08, DI02	50	WATER	(A)
CWR	COOLING WATER RETURN	CS01, CU01	CS01	CS01, CU01	CS01, CU01	125	WATER	(A)
CWS	COOLING WATER SUPPLY	CS01, CU01	CS01	CS01, CU01	CS01, CU01	125	WATER	(A)
DC	DEFOAMING CHEMICAL	PV01	PV01	PV01	PV01	125	WATER	(A)
DCW	DOMESTIC COLD WATER	CS01, CU01	CS01, DI01	CS01, CU01	CS01, DI01	125	WATER	(A)
DFO	DIESEL FUEL OIL	CS01	CS01	CS01	CS01	125	AIR	(A)(D)
DMW	DEMINERALIZED WATER	PV01, FR01	PV01, FR01	PV01, FR01	PV01, FR01	125	WATER	(A)
DN	DECANT	--	DI02	--	DI02	50	WATER	(A)
DR	DRAIN	CU01, PV01, DI02	CU01, PV01, DI02, CS08	CU01, PV01, DI02	CU01, PV01, DI02, CS08	50	WATER	(A)
DSL	DIGESTED SLUDGE	--	DI03	--	DI03	50	WATER	(A)
DWR	DOMESTIC HOT WATER RETURN	CS01*, CU01*	CS01*, DI01*	CS01*, CU01*	CS01*, DI01*	125	WATER	(A)
DWS	DOMESTIC HOT WATER SUPPLY	CS01*, CU01*	CS01*, DI01*	CS01*, CU01*	CS01*, DI01*	125	WATER	(A)
EE	ENGINE EXHAUST	SS01*	SS01*	SS01	SS01	(G)	--	--
EWR	ENGINE COOLING WATER RETURN	CS01*	CS01*	CS01	CS01	125	WATER	(A)
EWS	ENGINE COOLING WATER SUPPLY	CS01*	CS01*	CS01	CS01	125	WATER	(A)
FA	FOUL AIR	--	FR01	--	FR01	10	AIR	(A)(D)
FAW	FILTER AIR WASH	PV01	PV01	PV01	PV01	25	AIR	(A)(D)
FBW	FILTER BACKWASH	--	CS08	--	CS08	75	WATER	(A)
FE	FILTER EFFLUENT	--	CS08	--	CS08	50	WATER	(A)
FEC	FERRIC CHLORIDE	PE01, PV02	PE01, PV02	PE01, PV02	PE01, PV02	125	WATER	(A)
FES	FERRIC SULFATE	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
FI	FILTER INFLUENT	--	CS08	--	CS08	(E)	WATER	(A)
FLW	FILTERED WATER	CS02, PV01, CU01	CS02, CS08, PV01	PV01, CU01	CS08, RC05	25	WATER	(A)
FM	FORCE MAIN	--	CS08, DI02	--	CS08, DI02	125	WATER	(A)
FOG	FATS, OILS AND GREASES	DI03	DI03	DI03	DI03	50	WATER	(A)
FOR	FUEL OIL RETURN	CS09	CS09	CS09	CS09	125	AIR	(A)(D)
FOS	FUEL OIL SUPPLY	CS09	CS09	CS09	CS09	125	AIR	(A)(D)
FP	FIRE PROTECTION	(I)	(I)	(I)	(I)	(H)	WATER	--
FR	FROTH	DI03	DI03	DI03	DI03	50	WATER	(A)
FS	FROTH SPRAY	CS02	CS02	CS02	CS02	125	WATER	(A)
FSW	FILTER SURFACE WASHWATER	SS01, PV01, FR01	CS08, SS01, SS02, PV01, FR01	CS02, PV01, FR01	CS02, CS08, SS02, PV01, FR01	125	WATER	(A)
FTW	FILTER TO WASTE	--	CS08, DI01	--	CS08, DI01	75	WATER	(A)
FW	FINISHED WATER	--	CS08	--	CS08	50	WATER	(A)
FWW	FILTER WASTE WASHWATER	--	CS08, DI01	--	CS08, DI01, PV04	(E)	WATER	(A)
G	GRIT	--	DI02	--	DI02	50	WATER	(A)
GAC	GRANULAR ACTIVATED CARBON	SS01, PV01, PE01, PV02	SS01, PV01, PE01, PV02	SS01, PV01, PE01, PV02	SS01, PV01, PE01, PV02	125	WATER	(A)
GOX	GASEOUS OXYGEN	SS06, CU01	SS06	SS06, CU01	SS06	250	DRY N2	(A)
HCA	HYDROCHLORIC ACID	PE01, SS03	PE01, SS03	PE01, SS03	PE01, SS03	125	WATER	(A)
HDP	HYDROGEN PEROXIDE (30%-50%)	SS01, SS03	--	SS01, SS03	--	125	WATER	(A)
HFA	HYDROFLUROSILICIC ACID	PE01, PV02	PE01, PV02	PE01, PV02	PE01, PV02	125	WATER	(A)
HWR	HEATING WATER RETURN	CS01*, CU01*	CS01*, DI01*	CS01*, CU01*	CS01*, DI01*	125	WATER	(A)
HWS	HEATING WATER SUPPLY	CS01*, CU01*	CS01*, DI01*	CS01*, CU01*	CS01*, DI01*	125	WATER	(A)
IA	INSTRUMENT AIR	CU01	CS02	CU01	CS02	125	AIR	(A)(D)
IE	INTERMEDIATE EFFLUENT	--	CS08	--	CS08, RC05	50	WATER	(A)
LFG	LANDFILL GAS	SS01, SS02	SS01, SS02	SS01, SS02, PE02	SS01, SS02, PE02	125	AIR	--
LO	LUBE OIL	CS09	CS09	CS09	CS09	125	AIR	(A)(D)
LOX	LIQUID OXYGEN	SS06*, CU01*	SS06	SS06*, CU01*	SS06	250	DRY N2	(A)
LPG	LIQUEFIED PETROLEUM GAS	CS03	CS03	CS03	CS03	(F) OR 250	AIR	--
LS	LIME SLURRY	PE01, PV02 (L)	PE01, PV02 (L)	PE01, PV02 (L)	PE01, PV02 (L)	(G)	--	--
LSP	LANDSCAPING SPRINKLER SYSTEM	CS02, PV07	--	CS02, PV07	--	(F)	--	--
* MC	MEMBRANE CONCENTRATE	SS01, SS02	SS01, SS02	PE01	PE01	(N)	WATER	(A)
MCR	MEMBRANE CLEANING RETURN	PV02	PV02	--	--	125	WATER	(A)
MCS	MEMBRANE CLEANING SUPPLY	PV02	PV02	--	--	125	WATER	(A)
MCW	MEMBRANE CLEANING WASTE	PV02	PV02	PV02	PV02	125	WATER	(A)
MDP	MECHANICAL DEWATERING POLYMER	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
MF	MEMBRANE FEED	SS01	SS01	--	--	350	WATER	(A)
MG	METHANE GAS	SS01, SS02, SS06	SS01, SS02	SS01, SS02, SS06	SS01, SS02	125	AIR	--
ML	MIXED LIQUOR	CS02	CS02, CS08, DI02, RC05	CS02	CS02, CS08, DI02, RC05	50	WATER	(A)
MLR	MIXED LIQUOR RECYCLE	CS08	CS08	CS08	CS08	--	--	--
MP	MEMBRANE PERMEATE	SS02, PV02	SS02, PV02	--	--	125	WATER	(A)
NG	NATURAL GAS	CS09	CS09	CS09	CS09	(F)	AIR	--
NLG	NON-LEADED GASOLINE	CS03	CS03	CS03	CS03	--	AIR	--

FLUID ABBREVIATION	FUNCTION THIS LIST INCLUDES SOME LINES NOT USED IN THIS PROJECT (D)	PIPING MATERIALS (SEE GENERAL NOTES AT THE RIGHT AND PIPE MATERIAL SHEET) EXPOSED PIPING (K)		BURIED PIPING (J)		FIELD TEST REQUIREMENTS (B)(C) MINIMUM TEST PRESSURE (PSI)	TEST MEDIUM	LEAKAGE ALLOWANCE (A)
		4" DIA AND SMALLER	6" DIA AND LARGER	4" DIA AND SMALLER	6" DIA AND LARGER			
OF	OVERFLOW	--	CS08	--	CS08	25	WATER	(A)
OG	OFFGAS	FR01	FR01	FR01	FR01	15" WC	AIR	(A)
OTE	OXIDATION TOWER EFFLUENT	--	SS02	--	SS02	75	WATER	(A)
OZG	OZONE	SS02	SS02	SS02	SS02	50	DRY N2	(A)(D)
OZW	OZONATED WATER	--	CS08, DI01	--	CS08, DI01	25	WATER	(A)
PA	PLANT AIR	CS07, AL01	--	CS07, AL01	--	300 (AL01 150)	AIR	(A)(D)
PAC	POWDERED ACTIVATED CARBON	CS06	CS06	CS06	CS06	--	--	--
PCL	POLYALUMINUM CHLORIDE	PE01, PV02	PE01, PV02	PE01, PV02	PE01, PV02	125	WATER	(A)
PDR	PLANT DRAIN	CS02	CS08, CI01	CS02	CS08, CI01, RC01, RC05	(E)	WATER	CS02, CS08, RC05(A) CI01, RC01(C)
PE	PRIMARY EFFLUENT	--	CS08, DI02	--	CS08, DI02	25	WATER	(A)
PI	PLANT INFLUENT	--	CY02, DI02	--	CY02, DI02	(E)	WATER	(B)
PLE	PLANT EFFLUENT	--	CS08	--	CS08	50	WATER	(A)
PO	PLANT OVERFLOW	CS02	CS08	CS02	CS08, RC05	(E)	WATER	(A)
POA	ANIONIC POLYMER	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
POC	CATIONIC POLYMER	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
POF	FILTER AID POLYMER	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
PON	NONIONIC POLYMER	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
POT	THICKENER POLYMER	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
PRR	PRESSURIZED RECYCLE	DI02	DI02	DI02	DI02	50	WATER	(A)
PRS	PRESSATE	DI02, PV01	DI02, PV01	DI02, PV01	DI02, PV01	50	WATER	(A)
PTP	POTASSIUM PERMANGANATE	SS01, PE01, PV02	--	SS01, PE01, PV02	--	125	WATER	(A)
PW	POTABLE WATER	CS02, DI01, PV01, CU01	CS02, CS08, DI01, PV01	CS02, DI01, PV01, CU01	CS02, CS08, DI01, PV01, PV03, PV04	125	WATER	RC05, CS02, CS08, DI01, PV01, CU01(A) PV03, PV04(B)
RAS	RETURN ACTIVATED SLUDGE	CS08, DI02	CS08, DI02	CS08, DI02	CS08, DI02	50	WATER	(A)
REW	RECLAIMED WATER (M)	--	CS08, DI01, PV01	--	CS08, DI01, PV01	125	WATER	(A)
RFL	REFRIGERANT LIQUID	CU02*	--	CU02*	--	(Q)	DRY N2	(A)
RFS	REFRIGERANT SUCTION	CU02*	--	CU02*	--	(Q)	DRY N2	(A)
RSL	RAW SLUDGE	--	DI03	--	DI03	50	WATER	(A)
RSS	RETURN SECONDARY SLUDGE	CS08, DI02	CS08, DI02	CS08, DI02	CS08, DI02	50	WATER	(A)
RW	RAW WATER	CS02, DI01, PV01, CU01	CS08, DI01, PV01	CS02, DI01, PV01, CU01	CS08, DI01, PV01, PV03, PV04, RC05	125	WATER	RC05, CS02, CS08, DI01, PV01, CU01(A) PV03, PV04(B)
RWL	RAINWATER LEADER	CS04, CI01	CS04, CI01	CI01	CI01	(F)	--	--
RWO	RAINWATER LEADER OVERFLOW	CS02, CI01	CI01	CI01	CI01	(F)	--	--
S	SCUM	--	DI03	--	DI03	50	WATER	(A)
SAM	SAMPLE (SEE LIST AT RIGHT)	PV01, FR01, CU01	--	PV01, FR01, CU01	--	125	WATER	(A)
SBN	SUBNATANT	DI02	DI02	DI02	DI02	50	WATER	(A)
SBO	SUBNATANT OVERFLOW	DI02	DI02	DI02	DI02	50	WATER	(A)
SCV	SCAVENGER SYSTEM DISCHARGE	PV01, PV02	PV01, PV02	PV01, PV02	PV01, PV02	125	WATER	(A)
SDR	SANITARY DRAIN	CS04, CI01	CI01	CI01	CI01, CY02	(F)	--	--
SDB	SODIUM BISULFITE	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
SDH	SODIUM HYDROXIDE (CAUSTIC SODA)	CS06, SS01, PE01	CS06, SS01, PE01	CS06, SS01, PE01	CS06, SS01, PE01	125	WATER	(A)
SD	STORM DRAIN	--	CS08	--	RC01, RC05, PV05	(E)	WATER	CS08, RC05(A) RC01(C)
SDV	SANITARY DRAIN VENT	CS04, CI01	CI01	CI01	CI01	(F)	--	--
SE	SECONDARY EFFLUENT	--	CS08, DI02	--	CS08, DI02	50	WATER	(A)
SF	SLUDGE FILTRATE	--	DI02	--	DI02	50	WATER	(A)
SFA	SULFURIC ACID (93%-98%)	PE01, SS04	--	PE01, SS04	--	125	AIR	(A)(D)
SG	SLUDGE GAS	SS01, SS02	SS01, SS02	SS01, SS02	SS01, SS02	125	AIR	(A)(D)
SHC	SODIUM HYPOCHLORITE	PE01, PV02	PE01, PV02	PE01, PV02	PE01, PV02	125	WATER	(A)
SI	SCALE INHIBITOR	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
SL	SLUDGE	DI02, SS01	DI02, SS01	DI02, PV01	DI02, CI01, PV01	50	WATER	DI01,PV01, FR01(A) CI01(B)
SN	SUPERNATANT	--	DI02	--	DI02	50	WATER	(A)
SND	SAND SLURRY	SS02	SS02	SS02	SS02	125	WATER	(A)
SO	SULFUR DIOXIDE (GAS OR LIQUID)	CS10	--	CS10	--	300	DRY AIR	(A)(D)
SOS	SULFUR DIOXIDE SOLUTION	PV02	PV02	PV02	PV02	125	WATER	(A)
SOV	SULFUR DIOXIDE GAS UNDER VACUUM	PV02	PV02	PV02	PV02	15 IN Hg	VACUUM	(A)(E)
SP	SPARE CHEMICAL	PV02	PV02	PV02	PV02	125	WATER	(A)
SPD	SUMP PUMP DISCHARGE	CS02, PV01	PV01, DI02	CS02, PV01	PV01, DI02	50	WATER	(A)
SAN	SANITARY SEWER	--	CI01, RC01, DI02		CI01, RC01, PV05	(F)	--	--
SSF	SODIUM SILICOFLUORIDE	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	SS01, PE01, PV02	125	WATER	(A)
STM	STEAM (TO 10 PSI)	CS01*	CS01*	CS01*	CS01*	125	WATER	(A)
SU	STRUCTURE UNDERDRAIN	--	--	PV06, CY02	PV06, CY02	NO	TEST	REQ'D
SUC	STRUCTURE UNDERDRAIN COLLECTOR	--	--	PV06, CY02	PV06, CY02	(E)	WATER	(C)
SW	SETTLED WATER	--	CS08, DI01	--	CS08, DI01	75	WATER	(A)
SWR	SCRUBBER WATER RETURN	PV01, FR01	PV01, FR01	PV01, FR01	PV01, FR01	15	WATER	(A)
TFE	TRICKLING FILTER EFFLUENT	--	CS08, DI01	--	CS08, DI01	50	WATER	(A)
TFI	TRICKLING FILTER INFLUENT	--	CS08, DI01	--	CS08, DI01	50	WATER	(A)
TFR	TRICKLING FILTER RECYCLE	--	CS08, DI01	--	CS08, DI01	50	WATER	(A)
TSL	THICKENED SLUDGE	DI03, SS01	DI03, SS01	DI03	DI03	50	WATER	(A)
TW	TREATED WATER	CS08, DI01	CS08, DI01	CS08, DI01	CS08, DI01	50	--	--
UD	UNDERDRAIN	PV06	PV06	PV06	PV06	50	--	--
UW	UTILITY WATER (NON-POTABLE WATER)	CS02, DI01, SS01, SS02, PV01, CU01	CS02, CS08, DI01, SS01, SS02, PV01	CS02, DI01, SS01, SS02, PV01, CU01	CS02,CS08,DI01, PV03, PV04	125	WATER	CS02,DI01,CU01(A) PV03,PV04(B)
V	VACUUM	CU01	CS02	CU01	CS02	15 IN Hg	VACUUM	(A)(E)
VT	VENT	CS01	CS01	CS01	CS01	--	--	--
WAS	WASTE ACTIVATED SLUDGE	--	DI02	--	DI02	50	WATER	(A)
WLO	WASTE LUBE OIL	CS09	CS09	CS09	CS09	50	AIR	(A)(D)
WSS	WASTE SECONDARY SLUDGE	--	DI02	--	DI02	50	WATER	(A)

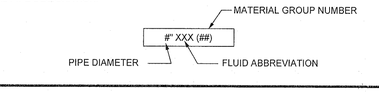
GENERAL SHEET NOTES

1. ALTHOUGH SEVERAL PIPE MATERIAL GROUPS MAY BE LISTED ON THIS SHEET FOR A GIVEN FLUID SERVICE, CONTRACTOR SHALL PROVIDE ONLY THE PIPE MATERIAL GROUP SHOWN ON THE DRAWINGS AND SPECIFIED FOR THAT FLUID SERVICE.
2. CHANGE IN PIPING MATERIAL GROUP NUMBER IS INDICATED THUS:
3. PROVIDE DOUBLE CONTAINMENT FOR ALL CHEMICAL PIPING PER CODE REQUIREMENTS.
4. FOR SHEET KEY NOTES, SEE THIS SHEET AND SHEET G-006.

LIST OF SAMPLE LINES

PIPE DESIGNATION	SAMPLE POINT

TYPICAL PIPE DESIGNATION:



SHEET KEYNOTES

A. LEAKAGE ALLOWANCE IS AS FOLLOWS:

(a) PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE.

(b) PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE FOR UNBURIED PIPE AND NOT MORE THAN 0.02 GALLON PER HOUR PER INCH DIAMETER PER 100 FEET OF BURIED PIPE.

(c) PIPES SO DESIGNATED SHALL NOT SHOW A LEAKAGE OF MORE THAN 0.15 GALLON PER HOUR PER INCH OF DIAMETER PER 100 FEET OF PIPE

(d) PIPES SO DESIGNATED SHALL NOT SHOW A LOSS OF PRESSURE OF MORE THAN 5 PERCENT

(e) PIPE SO DESIGNATED SHALL NOT SHOW A LOSS OF VACUUM OF MORE THAN 4 INCHES MERCURY COLUMN

B. FOR FIELD TEST PROCEDURES AND ADDITIONAL TEST REQUIREMENTS, SEE PIPING SECTION OF SPECIFICATIONS.

C. NO SUBSTITUTIONS UNLESS ACCEPTED BY THE ENGINEER PER THE SPECIFICATIONS.

D. PIPING GROUP NUMBER SHOWN THUS * SHALL BE INSULATED. SEE PIPING SECTION OF SPECIFICATIONS FOR INSULATING MATERIALS.

E. STATIC WATER TEST WITH SURFACE 5 FEET ABOVE HIGH POINT OF PIPE.

F. INSPECTION AND TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE PLUMBING CODE. NO APPARENT LEAKS UNDER NORMAL OPERATING CONDITIONS. INSPECTION AND TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS.

G. PIPING MATERIALS SHALL BE IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS.

H. FOR PIPE LINING AND COATING, SEE SPECIFICATIONS.

I. EXPOSED PIPING SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATIONS. COLORS TO BE SELECTED BY ENGINEER.

J. FOR SHORT PIPE RUNS, LIME SLURRY PIPING MATERIAL SHALL BE NON-ABRASIVE FLEXIBLE RUBBER HOSE AND QUICK CONNECT COUPLINGS WITH GROUP CS01 AT EQUIPMENT.

K. ALL RECLAIMED WATER PIPING SHALL BE COLOR CODED PURPLE OR AS REQUIRED BY LOCAL CODE.

L. FOR FIRST STAGE MEMBRANE CONCENTRATE TEST PRESSURE AT 250 PSI, FOR ALL OTHER LINES, 150 PSI.

M. AS SPECIFIED BY ANSI/ASHRAE 15 AND 34.

REV 010119

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

PIPE SCHEDULE FLUID ABBREVIATIONS G-005

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	5 OF 255

FOR CITY OF HOUSTON USE ONLY

ACCEPTED AS NOTED
PUBLIC WORKS AND ENGINEERING
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

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PIPING MATERIAL SCHEDULE (B)

GROUP NO	PIPE (D)	FITTINGS	VALVES, 6" AND SMALLER (A)(C)
AL01	RIGID ALUMINUM - PARKER HANNIFIN TRANSAIR BLUE PIPE.	PARKER HANNIFIN TRANSAIR PIPE CONNECTORS.	PARKER HANNIFIN TRANSAIR VALVES.
CI01	CAST IRON SOIL, ANSI/ASTM A74, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS. AT THE OPTION OF THE CONTRACTOR, DUCTILE IRON (GROUP DI01) MAY BE SUBSTITUTED.	CAST IRON SOIL, ANSI/ASTM A-74, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS. AT THE OPTION OF THE CONTRACTOR, DUCTILE IRON (GROUP DI01) MAY BE SUBSTITUTED.	AS INDICATED ON DRAWINGS.
CI02	CORROSION RESISTANT (HIGH SILICON CONTENT) CAST IRON, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS.	CORROSION RESISTANT (HIGH SILICON CONTENT) CAST IRON, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS.	-
CS01	STEEL, ASTM A53, SCH 40, WELDED, BLACK.	2 1/2" AND SMALLER, MALLEABLE IRON, ASME B16.3, THREADED, BANDED, BLACK, 150 PSI OR STEEL, ASME B16.9, BUTT-WELDED. 3" AND LARGER, CAST IRON, ASME B16.1, 125 PSI FLANGED OR MECHANICAL COUPLING.	BRONZE, THREADED, GATE: CRANE 428 UB OR STOCKHAM B-105. GLOBE: STOCKHAM B-37. CHECK: CRANE 37 OR STOCKHAM B-319Y. IRON PLUG VALVE: NORDSTROM FIG 142 OR 143. ECC PLUG: DEZURIK PEC, CAST IRON OR MILLIKEN 603E. BALL: JAMESBURY FIG 351 OR WATTS #B-6080. LUBRICATED PLUG VALVE (FOR CONDENSATE ONLY): NORDSTROM FIG 114 OR 115.
CS02	STEEL, ASTM A53, SCH 40, WELDED, GALVANIZED.	2 1/2" AND SMALLER, MALLEABLE IRON, ASME B16.3, THREADED, BANDED, GALVANIZED 150 PSI. 3" AND LARGER, CAST IRON, ASME B16.1, 125 PSI FLANGED OR MECHANICAL COUPLING.	2 1/2" AND SMALLER, ECCENTRIC PLUG, SYNTHETIC RUBBER FACED: DEZURIK PEC, CAST IRON, OR MILLIKEN 603E. BALL: JAMESBURY FIG 351 OR WATTS #B-6080. 3" AND LARGER, ECCENTRIC PLUG, SYNTHETIC RUBBER FACED: DEZURIK PEC, CAST IRON, OR MILLIKEN 601. GATE: AWWA C500. BUTTERFLY: AWWA, FLANGED.
CS03	STEEL, ASTM A106 OR A53, SCH 80, SEAMLESS, BLACK.	FORGED STEEL, ASME B16.11, SOCKET WELDED OR THREADED, BLACK, 2000 PSI, OR STEEL, ASME B16.9, BUTT-WELDED, SCH 80.	CAST IRON, LUBRICATED PLUG: NORDSTROM FIG 214 OR 305.
CS04	STEEL, ASTM A53, SCH 40, WELDED, BLACK. SAME AS GROUP CS01.	CAST IRON, ASME B16.12, THREADED, DRAINAGE PATTERN.	-
CS05	WELDED STEEL, AWWA C200, UNLINED.	WELDED STEEL, FABRICATED, AWWA C208, UNLINED.	AS INDICATED ON DRAWINGS.
CS06	STEEL, ASTM A106 OR A53, SCH 40, SEAMLESS, BLACK.	STEEL, ASME B16.9, BUTT-WELDED. CAST IRON, ASME B16.1, 125 PSI, FLANGED FORGED STEEL, SOCKET WELDED, ASME B16.11, 2000 PSI OR STEEL, ASME B16.5, 150 PSI FLANGED.	CAST IRON, FLANGED, LUBRICATED PLUG: NORDSTROM FIG 143.
CS07	STEEL, ASTM A53, SCH 40, WELDED, GALVANIZED.	MALLEABLE IRON, ASME B16.3, THREADED, BANDED, GALVANIZED, 300 PSI.	BRONZE THREADED, GLOBE: CRANE #212P OR STOCKHAM B-62 OR B-32T. BALL: JAMESBURY FIG 351 OR WATTS #B-6080. CHECK: CRANE #27TF OR STOCKHAM B-322T.
CS08	WELDED STEEL, AWWA C200, LINED.	WELDED STEEL, AWWA C208, LINED, FABRICATED.	AS INDICATED ON DRAWINGS.
CS09	STEEL, ASTM A53, SCH 40, WELDED, BLACK. SAME AS GROUP CS01.	2 1/2" AND SMALLER, MALLEABLE IRON, ASME B16.3, THREADED, BANDED, BLACK, 150 PSI. 3" AND LARGER, STEEL, ASME B16.9, BUTT-WELDED.	ECCENTRIC PLUG: DEZURIK PEC, CAST IRON, OR MILLIKEN 603E. CHECK: CRANE 336E OR MILWAUKEE #544. BALL: JAMESBURY FIG 351 OR WATTS #B-6080.
CS10	STEEL, ASTM A106 OR A53, SCH 80, SEAMLESS, BLACK. SAME AS GROUP CS03.	1-1/4" AND SMALLER, FORGED STEEL, ASME B16.11, THREADED OR SOCKET WELDED, BLACK, 3000 PSI, WITH FLANGED AMMONIA UNIONS. 1-1/2" AND LARGER, STEEL, ASME B16.9, BUTT-WELDED OR FLANGED, SCH 80.	SEMI-PLUG AND YOKE TYPE OR BALL FOR CHLORINE SERVICE, FORGED CARBON STEEL.
CS11	STEEL, ASTM A106 OR A53, SCH 40, SEAMLESS, BLACK, PVDF OR PTFE LINED.	STEEL, ASME B16.5, 150 PSI FLANGED, PVDF OR PTFE LINED.	CAST STEEL PLUG, DIAPHRAGM OR CHECK, 150 PSI FLANGED, PVDF OR PTFE LINED.
CU01	COPPER, ASTM B88, TYPE K, SOFT TEMPERED WHERE BURIED, HARD TEMPERED WHERE EXPOSED.	WROUGHT COPPER OR CAST BRONZE, ASME B16.22, SILVER SOLDER JOINT, 150 PSI, OR COMPRESSION FITTINGS.	BRONZE, SILVER SOLDER JOINT, GLOBE: CRANE #1310 OR STOCKHAM B-14T. CHECK: CRANE #1342 OR 36, OR STOCKHAM B-309Y OR B-345. GATE: CRANE #428 OR STOCKHAM B-104 OR B-105.
CU02	COPPER TUBING, ASTM B280, SOFT ANNEALED WHERE BENDING IS REQUIRED AND HARD DRAWN WHERE NO BENDING IS REQUIRED.	WROUGHT COPPER AND BRONZE SOLDER-JOINT PRESSURE FITTINGS CONFORMING TO ASME B16.22 AND ASTM B75. JOINTS AND FITTINGS FOR BRAZED JOINTS SHALL BE WROUGHT-COPPER OR FORGED-BRASS SWEAT FITTINGS.	VALVE BODIES SHALL BE OF BRASS, BRONZE, STEEL, OR DUCTILE IRON CONSTRUCTION AND SHALL CONFORM WITH ANSI/AHRI 760.
CY01	VITRIFIED CLAY, PERFORATED, ASTM C700, EXTRA STRENGTH, FLEXIBLE COMPRESSION JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECHANICAL COMPRESSION JOINTS.	VITRIFIED CLAY, ASTM C700, FLEXIBLE JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECH COMPRESSION JOINTS.	-
CY02	VITRIFIED CLAY, ASTM C700, EXTRA STRENGTH, FLEXIBLE COMPRESSION JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECHANICAL COMPRESSION JOINTS.	VITRIFIED CLAY, ASTM C700, FLEXIBLE JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECH COMPRESSION JOINTS.	-
DI01	DUCTILE IRON, ANSI A21.51, (AWWA C151), ENDS BELL AND SPIGOT, MECHANICAL JOINTS OR 125 PSI FLANGED. (TYPICAL SERVICE - WATER LINES).	DUCTILE IRON AWWA C110, BELL AND SPIGOT JOINTS (RESTRAINED OR NON-RESTRAINED), MECHANICAL COUPLINGS, ASME B16.1 FLANGES, OR MECHANICAL JOINTS.	GATE: AWWA C500, O-RING SEALS, MECHANICAL JOINT ENDS, CLOW F-5065. BUTTERFLY: AWWA. ECC PLUG DEZURIK PEC, CAST IRON OR MILLIKEN 603E. BALL: PRATT OR APCO-WILLAMETTE.
DI02	DUCTILE IRON, ANSI A21.51, (AWWA C151), ENDS BELL AND SPIGOT, MECHANICAL JOINTS OR 125 PSI FLANGED. (TYPICAL SERVICE - SLUDGE AND SEWAGE LINES).	DUCTILE IRON AWWA C110, BELL AND SPIGOT JOINTS (RESTRAINED OR NON-RESTRAINED), MECHANICAL COUPLINGS, ASME B16.1 FLANGES, OR MECHANICAL JOINTS.	ECC PLUG, SYNTHETIC RUBBER FACED: DEZURIK PEC, CAST IRON OR MILLIKEN 601. SWING TYPE CHECK: CRANE #383 OR POWELL FIG 559. BALL: PRATT OR APCO-WILLAMETTE.
DI03	DUCTILE IRON, ANSI A21.51, (AWWA C151), ENDS BELL AND SPIGOT, MECHANICAL JOINTS OR 125 PSI FLANGED, GLASS-LINED OR STEEL ASTM A53, SCH 40, GLASS-LINED. (TYPICAL SERVICE - PRIMARY DIGESTED SLUDGES AND SCUM).	DUCTILE IRON AWWA C110, BELL AND SPIGOT JOINTS (RESTRAINED OR NON-RESTRAINED), MECHANICAL COUPLING, ASME B16.1 FLANGES, OR MECHANICAL JOINTS, GLASS-LINED OR STEEL, ASME B16.9, SCH 40, GROOVED WITH MECHANICAL COUPLING, GLASS-LINED.	ECCENTRIC PLUG, SYNTHETIC RUBBER FACED: DEZURIK PEC, CAST IRON OR MILLIKEN 601. SWING TYPE CHECK: CRANE #383 OR POWELL FIG 559. BALL: PRATT OR APCO-WILLAMETTE.
FR01	FIBERGLASS REINFORCED PLASTIC (FRP), ASTM D2996, FILAMENT-WOUND, SOCKET AND SPIGOT ENDS, ADHESIVE BONDED.	FRP, FILAMENT-WOUND, SOCKET ENDS, ADHESIVE BONDED, OR FIBERGLASS FLANGED.	PLASTIC LINED, FLANGED. FLANGES TO MATCH ASME B16.5 DIMENSIONS, OR AS INDICATED ON DRAWINGS.
FR02	FIBERGLASS REINFORCED PLASTIC (FRP), AWWA C950.	FRP, MECHANICAL COUPLINGS, BUTT JOINTS, BELL AND SPIGOT JOINTS, OR FLANGED JOINTS.	AS INDICATED ON DRAWINGS.
FR03	FIBERGLASS REINFORCED PLASTIC (FRP), ASTM D3754.	FRP, MECHANICAL COUPLINGS, BUTT JOINTS, BELL AND SPIGOT JOINTS, OR FLANGED JOINTS.	AS INDICATED ON DRAWINGS.
PE01	POLYETHYLENE PIPE, ASTM D3350, SDR AS SPECIFIED.	THERMAL BUTT-FUSED FLANGE CONNECTIONS AT ALL VALVES AND TRANSITIONS.	AS INDICATED ON DRAWINGS.
PE02	POLYETHYLENE PIPE AND TUBING, ASTM D2513, SDR 11 (FOR BURIED NATURAL GAS PIPING).	HEAT FUSION FITTINGS, PE 2306, PE 2406, OR PE 3406 COMPRESSION TYPE OR OTHER APPROVED JOINTS PER PLUMBING CODE.	POLYETHYLENE BALL VALVES APPROVED BY PLUMBING CODE.
PE03	POLYETHYLENE, PROFILE WALL, ASTM F894.	POLYETHYLENE, INTEGRAL BELL & SPIGOT JOINTS, BUTT FUSED JOINTS, OR MECHANICAL JOINTS.	AS INDICATED ON DRAWINGS.
PE04	POLYETHYLENE, CORRUGATED PROFILE WALL, ASTM F2306.	POLYETHYLENE AS PROVIDED BY THE PIPE MANUFACTURER.	-
PE05	POLYETHYLENE, PRESSURE PIPE, AWWA C906.	POLYETHYLENE THERMAL BUTT-FUSED JOINTS, FLANGED JOINTS AT VALVES AND TRANSITIONS.	AS INDICATED ON DRAWINGS.
PF01	POLYVINYLIDENE FLUORIDE (PVDF), ASTM D3222, PRESSURE RATING - ANSI SCH 80.	PVDF ASTM D3222, PRESSURE RATING ANSI SCH 80.	WETTED PARTS TO BE PVDF, CARPENTER 20, OR TEFLON.
PP01	POLYPROPYLENE, ASTM D4101, SCH 40, HEAT FUSED JOINTS.	POLYPROPYLENE, SCH 40, DRAINAGE TYPE WITH HEAT FUSED SOCKET JOINTS.	-
PV01	POLYVINYL CHLORIDE (PVC), ASTM D1785, SCH 80, TYPE I.	PVC, SCH 80, TYPE I, SOCKET SOLVENT WELD JOINTS, ASTM D2467. SOLVENT SHALL BE COMPATIBLE WITH FLUID SERVICE.	PVC, BALL, DIAPHRAGM, BUTTERFLY, OR LIFT CHECK: NIBCO/CHEMTROL, MCCANNA-MARPAC, OR GEORGE FISCHER SLOANE.
PV02	CHLORINATED POLYVINYL CHLORIDE (CPVC), ASTM D1784, CLASS 23447-B, SCH 80.	CPVC, SCH 80, SOCKET AND SOLVENT WELD JOINTS, SOLVENT SHALL BE COMPATIBLE WITH FLUID SERVICE.	CPVC, BALL, DIAPHRAGM, BUTTERFLY, OR LIFT CHECK: NIBCO/ CHEMTROL, MCCANNA-MARPAC, OR GEORGE FISCHER SLOANE.
PV03	POLYVINYL CHLORIDE (PVC), PRESSURE PIPE (4"-12"), AWWA C900, WITH BELL AND SPIGOT JOINTS.	DUCTILE IRON FITTINGS, 125 PSI, FOR PVC PIPE, AWWA C110 CEMENT MORTAR LINED, AWWA C104.	GATE: AWWA C500, O-RING SEALS, MECHANICAL JOINT ENDS, CLOW F-5065. BUTTERFLY: AWWA. ECCENTRIC PLUG DEZURIK PEC, CAST IRON OR MILLIKEN 603E. BALL: PRATT OR APCO-WILLAMETTE. SAME AS GROUP DI01.
PV04	POLYVINYL CHLORIDE (PVC), PRESSURE PIPE (14"-48"), AWWA C905, WITH BELL AND SPIGOT JOINTS.	DUCTILE IRON FITTINGS, 125 PSI, FOR PVC PIPE, AWWA C110 CEMENT MORTAR LINED, AWWA C104.	GATE: AWWA C500, O-RING SEALS, MECHANICAL JOINT ENDS, CLOW F-5065. BUTTERFLY: AWWA. ECCENTRIC PLUG DEZURIK PEC, CAST IRON OR MILLIKEN 603E. BALL: PRATT OR APCO-WILLAMETTE. SAME AS GROUP DI01.
PV05	POLYVINYL CHLORIDE (PVC), GRAVITY SEWER PIPE, ASTM D3034, BELL AND SPIGOT.	PVC, ANSI/ASTM D3034, BELL AND/OR SPIGOT.	-
PV06	POLYVINYL CHLORIDE, CORRUGATED, GRAVITY SEWER PIPE, ASTM F794 AND F949, BELL AND SPIGOT, PERFORATED (FOR STRUCTURE UNDERDRAIN), NON-PERFORATED (FOR STRUCTURE UNDERDRAIN COLLECTOR).	PVC, BELL AND/OR SPIGOT.	-
PV07	POLYVINYL CHLORIDE, ASTM D1785, SCH 40, NORMAL IMPACT.	PVC, SCH 40, NORMAL IMPACT, SOCKET SOLVENT WELD JOINTS, ASTM D2466. SOLVENT SHALL BE COMPATIBLE WITH FLUID SERVICE.	PVC, BALL, DIAPHRAGM, BUTTERFLY, OR LIFT CHECK: NIBCO/CHEMTROL, MCCANNA-MARPAC, OR GEORGE FISCHER SLOANE.
RC01	REINFORCED CONCRETE (RCP), ASTM C76, O-RING BELL AND SPIGOT JOINTS.	RCP, USE MANHOLES.	-
RC02	REINFORCED CONCRETE PRESSURE PIPE (RCP), STEEL-CYLINDER TYPE, AWWA C300.	RCP, PER AWWA C300 AND AWWA M9.	AS INDICATED ON DRAWINGS.
RC03	PRESTRESSED CONCRETE PRESSURE PIPE (RCP), STEEL CYLINDER TYPE, AWWA C301.	RCP, PER AWWA C301 AND AWWA M9.	AS INDICATED ON DRAWINGS.
RC04	PRESTRESSED CONCRETE PRESSURE PIPE (RCP), NON CYLINDER TYPE, AWWA C302.	RCP, PER AWWA C302 AND AWWA M9.	AS INDICATED ON DRAWINGS.
RC05	CONCRETE PRESSURE PIPE, AWWA C303, CLASS - SEE DRAWINGS. (TYPICAL SERVICE - PRESSURE PIPELINES).	WELDED STEEL, AWWA C208, FABRICATED. SAME AS GROUP CS08.	AS INDICATED ON DRAWINGS.
SS01	STAINLESS STEEL, TYPE 316L, ASTM A312, SCH 40S.	STAINLESS STEEL, TYPE 316L, THREADED, WELDED SLIP-ON FLANGE ASME B16.3, OR SOCKET WELDED FITTINGS SCH 40S.	STAINLESS STEEL, TYPE 316, BALL, FLANGED: CONTROMATICS SERIES 2801 OR JAMESBURY SERIES 7150. CHECK: LADISH 5275 OR CRANE FIG 377 OR AS SHOWN ON DRAWINGS.
SS02	STAINLESS STEEL, TYPE 316L, ASTM A312, SCH 10S.	STAINLESS STEEL, TYPE 316L, WELDED SLIP-ON FLANGE, ASME B16.3, OR SOCKET WELDED FITTINGS, SCH 10S.	STAINLESS STEEL, TYPE 316, AS INDICATED ON DRAWINGS.
SS03	ALLOY C-276, ASTM B619, UNS N10276, SCH 40.	ALLOY C-276, SOCKET WELDED FITTINGS, SCH 40.	ALLOLY C-276, SOCKET OR FLANGED ENDS.
SS04	ALLOY 20, ASTM B464, SCH 40.	ALLOY 20, WELDED SOCKET END FITTINGS, SCH 40.	ALLOY 20, FLANGED ENDS.
SS05	SUPER AUSTENITIC STAINLESS STEEL, ASTM A312, UNS S31254, SCH 40S.	SUPER AUSTENITIC STAINLESS STEEL, ASTM A182, UNS S31254 F44, THREADED, WELDED SLIP-ON FLANGE ASME B16.3, OR SOCKET WELDED FITTING, SCH 40S.	SUPER AUSTENITIC STAINLESS STEEL, ASTM A 312, UNS S31254 F44, OR AS INDICATED ON DRAWINGS.
SS06	STAINLESS STEEL, TYPE 316L, ASTM A312, SCH 40S.	STAINLESS STEEL, TYPE 316L, THREADED, WELDED SLIP-ON FLANGE ASME B16.3, OR SOCKET WELDED FITTINGS SCH 40S, (THREADED JOINTS NOT ALLOWED FOR OZ, GOX, LOX SERVICE).	STAINLESS STEEL TYPE 316, BALL, FLANGED: CONTROMATICS SERIES 2801 OR JAMESBURY SERIES 7150. CHECK: LADISH 5275 OR CRANE FIG 377 OR AS SHOWN ON DRAWINGS.
SS07	STAINLESS STEEL, TYPE 316L, ASTM A312, SCH 80	STAINLESS STEEL, TYPE 316L, WELDED SLIP-ON FLANGE ASME B16.3, OR SOCKET WELDED FITTINGS SCH 80S.	AS SPECIFIED.

REV 010119

SHEET KEYNOTES

A. PROPRIETARY NAMES HAVE BEEN QUOTED FOR IDENTIFICATION PURPOSES ONLY. SUBSTITUTIONS WILL BE PERMITTED SUBJECT TO PROVISIONS OF THE SPECIFICATIONS.

B. NO SUBSTITUTIONS UNLESS ACCEPTED BY THE ENGINEER PER THE SPECIFICATIONS.

C. FOR VALVES 8" AND LARGER, SEE VALVE SCHEDULE. FOR SPECIAL VALVES, SEE SPECIFICATIONS. FOR PIPE LINING AND COATING, SEE SPECIFICATIONS.

D. PIPE MATERIALS SHALL BE PER THE REFERENCE STANDARDS AS MODIFIED BY THE CONTRACT SPECIFICATIONS.

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

PIPE SCHEDULE
PIPE MATERIALS
G-006

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 6 OF 255	

PUBLIC WORKS & ENGINEERING ACCEPTED APPROVED
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

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1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

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

B. KEY MAP: 373H AND 373M

C. ADDRESS: 2450 RANKIN RD.; HOUSTON, TX 77032

II. LEGAL DESCRIPTION

A. ACREAGE: 98-ACRES

B. ☐ SUBDIVISION:

☒ SURVEY & ABSTRACT:

TR 6 7 13 AIRPORT FACILITIES HOUSTON INTERCONTINENTAL ABST. 577 M. CAULEY

C. ADJACENT ROADS: RANKIN ROAD

III. PLATTING

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

PLAT NAME:

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

IV. JURISDICTIONS
☒ CITY OF HOUSTON
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF
☐ NO ETJ

V. HCAD ACCOUNT NOS. (ALL)
0440030000005

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD ROW

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

II. USACE ENVIRONMENTAL PERMIT
☐ US ARMY CORPS ENGINEERS NATIONWIDE PERMIT NUMBER(S)
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN:
TBD

III. REFERENCE / BASIS OF DETERMINATION
☐ ENVIRONMENTAL CONSULTANT REPORT
BY
REPORT TITLE
REPORT DATE
☐ OTHER

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

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

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

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

VII. REFER TO PLAN SHEETS C-11-101 FOR EXISTING AND PROPOSED RIGHT OF WAY DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY CRITERIA & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA:
☒ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): 12.74-ACRES
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION

II. METHODOLOGY

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

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☒ .65, H.C.F.C.D. CHANNEL (H.C.F.C.D. UNIT NO.) P140-00-00
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR)
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD OWNER)
☐ OTHER

V. STORMWATER DETENTION BASIN INFORMATION

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

B. DETENTION BASIN TO BE MAINTAINED BY

C. DETENTION SERVICE AREA MAP ON SHEET

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

V. DETENTION PROVIDED IN OTHER PLANS:
HCFCD PROJECT No. 2202100065 DATE SIGNED BY HCFCD: 08/23/2022
PLAN TITLE INTERCONTINENTAL AIRPORT WWTP EXPANSION
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET C-11-101
ENGINEERING FIRM 5ENGINEERING, LLC.
DETENTION BASIN MAINTAINED BY: CITY OF HOUSTON

VI. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE:
RESTRICTOR PIPE SIZE:
RESTRICTOR PLATE DIMENSION:

VII. DETENTION PROVIDED BY
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.):

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

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

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED SEE SECTION 6.

TOTAL ACREAGE =
TOTAL DISCHARGE =

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

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must Complete)
☒ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) TBD
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (Must Complete)

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

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

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

GENERAL:
☒ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: CITY OF HOUSTON

☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN
PROJECT TITLE:
HARRIS COUNTY PROJECT NO. & SWQ PERMIT NO.

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

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY) DETAILS AND CALCULATIONS APPEAR ON SHEET(S)
☒ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) C-11-504
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL:
☐ OTHER(S):

6. REPORTS/ AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

STORMWATER DRAINAGE DESIGN REPORT
REPORT TITLE INTERCONTINENTAL AIRPORT WWTP EXPANSION DRAINAGE ANALYSIS
HCFCD PROJECT # 2202010106
ENGINEERING FIRM 5ENGINEERING, LLC
REPORT ACCEPTANCE DATE 07/29/2022

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

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

II. AGREEMENT TYPE & No.
☐ INTERLOCAL (ILA)
☐ HCFCD MAINTENANCE
☐ TURF ESTABLISHMENT
☐ OTHER

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL(S) FOR PROPERTY: 4820102480M
FIRM PANEL(S) DATE: JUNE 9, 2014
STATUS OF PROPERTY ON MAP
☒ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO.) (1% BASE FLOOD LEVEL) (0.2% BASE FLOOD LEVEL)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO. REVISED FLOODPLAIN IS SHOWN ON SHEET

ELEVATION INFORMATION
BENCHMARK USED
☒ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT *(2001 ADJ.)*
FLOODPLAIN REFERENCE MARK BRASS DISK STAMPED 150670. FROM THE INTERSECTION OF GREENS RD. AND GREENVIEW DR., TRAVEL NORTH ON GREENVIEW APPROXIMATELY 0.31 MILE TO DEAD END. TRAVEL EAST ALONG DRAINAGE EASEMENT 240 FEET TO BEND IN DITCH. MONUMENT IS LOCATED NEAR TOP OF BANK AT THE END OF THE BEND. PUBLISHED ELEV=80.70'(NAVD 1988, 2001 ADJUSTMENT) OBSERVED ELEV=80.08'(NAVD 1988, COMPUTED USING GEOID 12A)
FLOODPLAIN REFERENCE MARK, BRASS DISK STAMPED 150675. FROM THE INTERSECTION OF RANKIN RD. AND AIR CNTER BLVD. MONUMENT IS LOCATED IN THE MEDIAN OF RANKIN RD. PUBLISHED ELEV=83.51'(NAVD 1988, 2001 ADJUSTMENT) OBSERVED ELV=83.01'(NAVD 1988, COMPUTED USING GEIOD 12A)

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
☒ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET

HCFCD SIGNATURE BLOCK

PROJECT NAME: INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT
ADDRESS: 2450 RANKIN RD.; HOUSTON, TX 77032
WAS ACCEPTED BY HARRIS COUNTRY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY
APPROVED:
BY
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY
APPROVED:
BY
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY
NO REVIEW REQUIRED:
BY
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:

ACCEPTED NOTED
30341
CITY DRAINAGE ENGINEER
HOUSTON, TEXAS

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

ENGINEER'S CERTIFICATION

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

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

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 11.

SIGNATURE 12/12/2024 DATE

SEAL: STATE OF TEXAS – MARK R. KOSMOSKI – 57539 – LICENSED PROFESSIONAL ENGINEER – 12-12-2024

G-007

REVISIONS

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

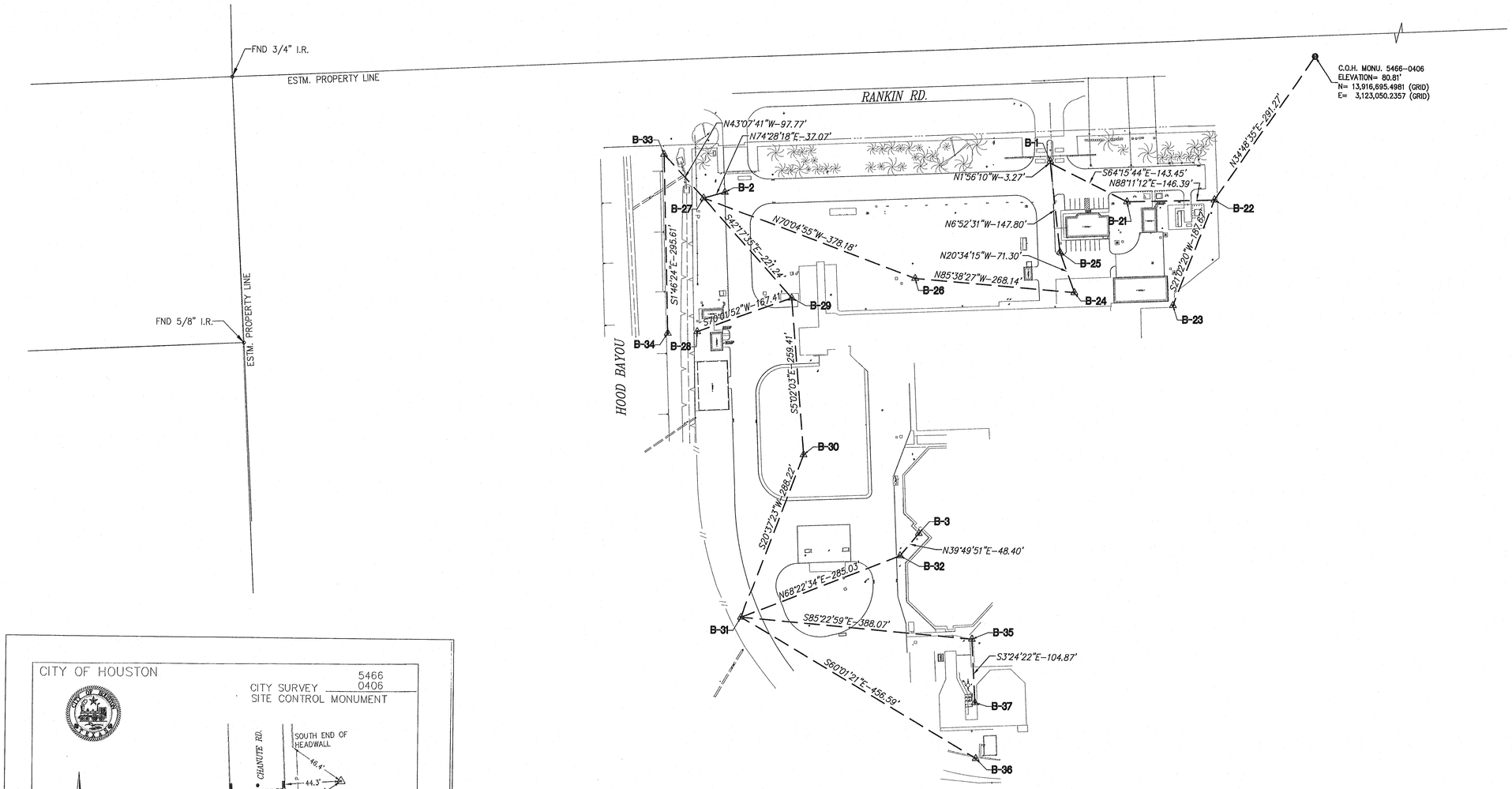
DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C. APPROVED DATE
12/12/2024		NEW ENGINEER OF RECORD	MRK	

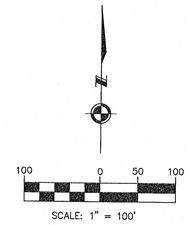
HARRIS COUNTY PROJECT NO.: 2204290087

SHEET NUMBER 7 OF 255

HARRIS COUNTY
FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 18.0 JULY 9, 2019





NO.	DATE	REVISION	APP.

BENCHMARK:

CITY OF HOUSTON MONUMENT 5466-0406, A BRASS DISK IN CONCRETE, LOCATED AT NORTHEAST CORNER OF THE INTERSECTION OF RANKIN ROAD AND CHANUTE ROAD.

ELEV. 80.81 Feet NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED FEBRUARY 4, 2020.

VERTICAL DATUM ADJUSTMENT:

THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN REFERENCE MARK'S (RM 150776) PUBLISHED DATUM NAVD 1988, 2001 ADJUSTMENT AND DATUM NAVD 1988 (GEOID '18) IS 0.46'.

NAVD 1988, 2001 ADJ. ELEVATION
= NAVD 1988 (GEOID '18) ELEVATION + 0.46 FEET.

NOTE:

ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983, (2011) (EPOCH 2010.00). ALL DISTANCES ARE IN SURFACE.

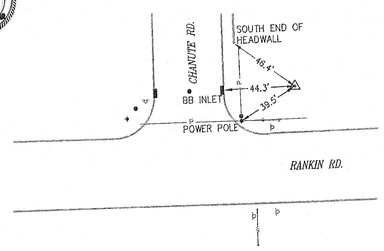
THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

B-X	SURVEY CONTROL POINT NUMBER
C-X	DESIGN BASELINE POINT NUMBER
▲	SURVEY CONTROL POINT
•	DESIGN BASELINE POINT
Ⓐ	CITY OF HOUSTON MONUMENT
S. BL:	SURVEY BASELINE — — —

CITY OF HOUSTON

CITY SURVEY 5466
SITE CONTROL MONUMENT 0406



Project WBS# WBS No. R-000265-0117-3
Texas Coordinate System of 1983,
South Central Zone, U. S. Survey Feet
X= 3,123,050.2357
Y= 13,916,695.4981
Lat.= 29° 57' 56.61879" (N)
Lon.= 95° 21' 11.35194" (W)
Keymap Page: 373 H
Orthometric Elevation =80.81 FEET
Ellipsoid Height= -9.2046 FEET
Geoid: GEOID '18
Datum Source & Adjustment: GPS STATIC
Reference Frame Used: NAD '83 (2011) (EPOCH: 2010) (OBSERVATION MADE ON 02-04-2020)
Vertical Adjustment used: NAVD '88
General Location: NORTHEAST CORNER OF THE INTERSECTION OF CHANUTE ROAD AND RANKIN ROAD.
Date Set: 01-30-1979 Type of Mark: 4A
3 Nearest project control points (bearings and distances stated below):
1 S 34° 48' 10" W 291.33'
2 S 52° 02' 30" W 396.45'
3 S 29° 25' 00" W 475.71'

NOTE:
1. Bearings are grid bearings.
2. Scale Factor = (S.F. 0.999870017).
3. Surface= Grid / S.F.

Surveyed By: Kuo & Associates, Inc.
10300 Westoffice Drive, Suite 800
Houston, TX 77042

STATE OF TEXAS REGISTERED KUTUBUL A. M. MANUDDIN 6404 PROFESSIONAL LAND SURVEYOR
3/18/2020

Date Revised: 02-04-2020
City of Houston, Harris County, Texas

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)						
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	DESCRIPTION
B-1	13,918,326.45	3,123,014.32	13,916,517.30	3,122,608.38	81.84'	SETCUTBOX-TBM 1
B-2	13,918,268.82	3,122,469.97	13,916,459.68	3,122,064.10	80.22'	SETCUTBOX-TBM 2
B-3	13,917,709.61	3,122,800.45	13,915,900.54	3,122,394.54	84.62'	SETCUTBOX-TBM 3
B-21	13,918,260.88	3,123,143.64	13,916,451.75	3,122,737.69	81.26'	SET 1/2" I.R. W/ CAP
B-22	13,918,265.52	3,123,289.96	13,916,456.38	3,122,883.98	80.40'	SET 1/2" I.R. W/ CAP
B-23	13,918,090.36	3,123,222.58	13,916,281.25	3,122,816.62	81.35'	SET 1/2" I.R. W/ CAP
B-24	13,918,109.68	3,123,057.17	13,916,300.56	3,122,651.23	83.70'	SET "X" CUT
B-25	13,918,176.44	3,123,032.12	13,916,367.31	3,122,626.18	81.55'	SET "X" CUT
B-26	13,918,130.06	3,122,789.81	13,916,320.94	3,122,383.90	83.07'	SET "X" CUT
B-27	13,918,258.90	3,122,434.26	13,916,449.76	3,122,028.40	81.92'	SET 1/2" I.R. W/ CAP
B-28	13,918,038.07	3,122,425.78	13,916,228.96	3,122,019.92	82.80'	SET 1/2" I.R. W/ CAP
B-29	13,918,095.24	3,122,583.13	13,916,286.13	3,122,177.25	81.01'	SET "X" CUT
B-30	13,917,836.84	3,122,605.90	13,916,027.76	3,122,200.01	81.32'	SET 1/2" I.R. W/ CAP
B-31	13,917,567.09	3,122,504.38	13,915,758.04	3,122,098.51	81.63'	SET 1/2" I.R. W/ CAP
B-32	13,917,672.13	3,122,769.35	13,915,863.07	3,122,363.45	82.02'	SET 1/2" I.R. W/ CAP
B-33	13,918,330.25	3,122,367.42	13,916,521.11	3,121,961.56	82.98'	SET 1/2" I.R. W/ CAP
B-34	13,918,034.79	3,122,376.57	13,916,225.68	3,121,970.71	82.07'	SET 1/2" I.R. W/ CAP
B-35	13,917,535.85	3,122,891.19	13,915,726.81	3,122,485.27	80.84'	SET "X" CUT
B-36	13,917,338.95	3,122,899.89	13,915,529.93	3,122,493.96	81.55'	SET "X" CUT
B-37	13,917,431.17	3,122,897.42	13,915,622.14	3,122,491.50	80.91'	SET "X" CUT

Stantec

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.
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KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 Westoffice Dr., Suite 800, Houston, Texas 77042
Tel: 713-975-9199, Fax: 713-975-0909, www.kuoassociates.com
TBPELS Engineering Firm Registration No. F-4578
TBPELS Surveying Firm Registration No. 10075600

STATE OF TEXAS REGISTERED KUTUBUL A. M. MANUDDIN 6404 PROFESSIONAL LAND SURVEYOR
04/28/25

SURVEYED BY: KUO & ASSOC.
FB NO. P-6232

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL SURVEY CONTROL MAP (SHEET 1 OF 2) V-001

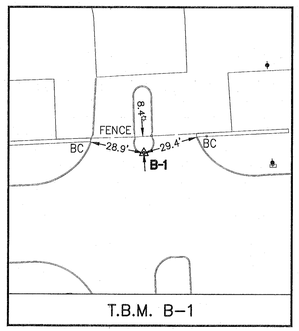
WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	8 OF 255

FOR CITY OF HOUSTON USE ONLY

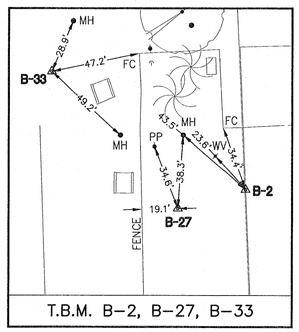
ACCEPTED NOTED
80341
REGISTERED ENGINEER
HOUSTON, TEXAS

PLOT STYLE: LARGE_FORMAT_BW.CTB PLOTTED: 4/28/2025 2:46 PM

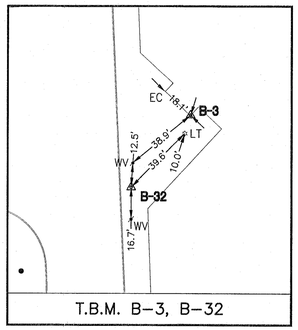
FILE PATH: S:\Proj-2020\20008 (IAH WASTEWATER TREATMENT PLANT)\Dwgs\SCM\SCM-20008.dwg



T.B.M. B–1



T.B.M. B–2, B–27, B–33



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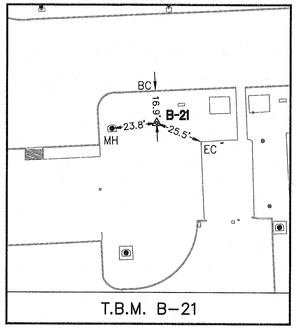

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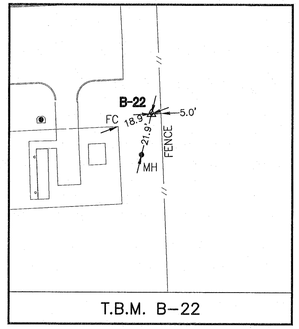

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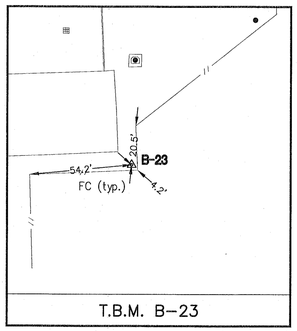

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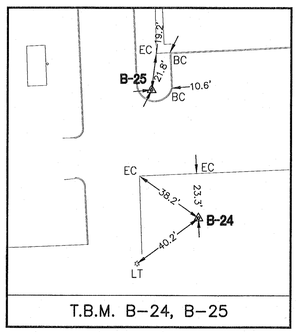

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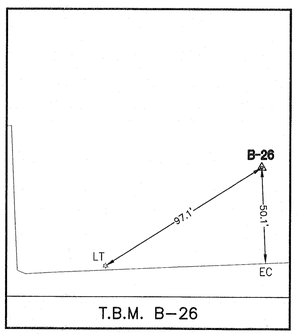

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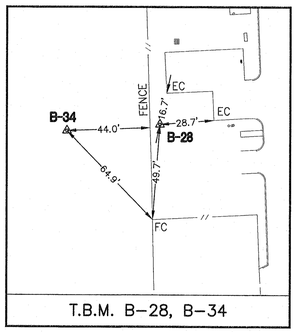
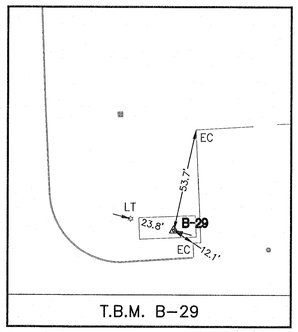


T.B.M. B–28, B–34



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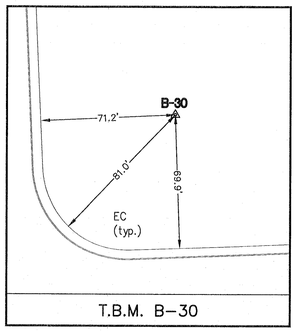

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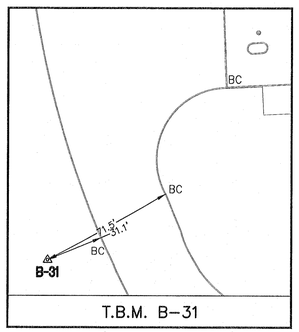

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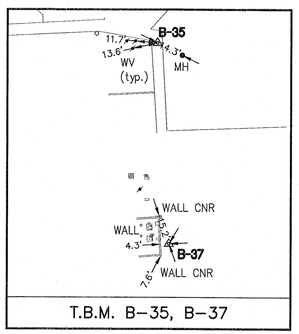

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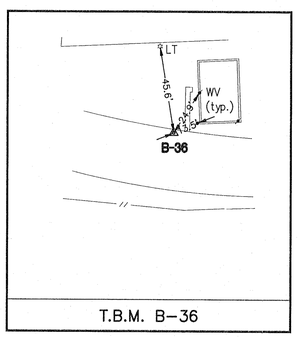

T.B.M. B–36

40 0 20 40

SCALE: 1" = 40'

NO.	DATE	REVISION	APP.

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick columnn
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE–CREPE MYRTLE
- TREE–PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

EC – EDGE OF CONCRETE
FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER

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TBPELS Engineering Firm Registration No. F-4578
TBPELS Surveying Firm Registration No. 10075500

STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MANUDDIN
6404
PROFESSIONAL
LAND SURVEYOR
04/28/25

SURVEYED BY: KUO & ASSOC.
FB NO. P-6232

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL
SURVEY CONTROL MAP
(SHEET 2 OF 2)
V-002

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 9 OF 255

FOR CITY OF HOUSTON USE ONLY

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CITY OF HOUSTON
HOUSTON, TEXAS

PLOT STYLE: LARGE_FORMAT_BW.CTB PLOTTED: 4/28/2025 4:24 PM

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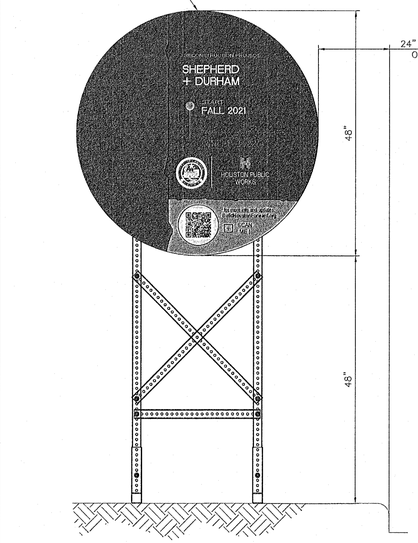
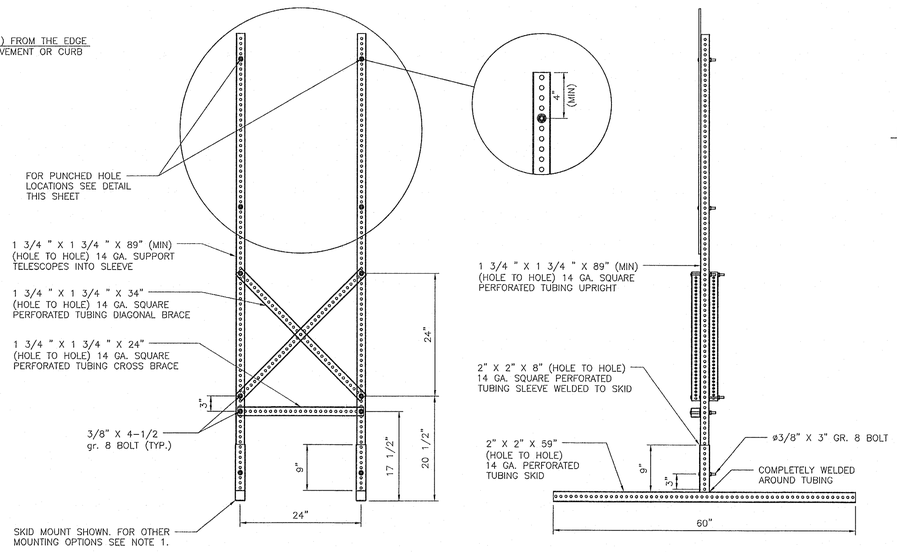


FRONT VIEW

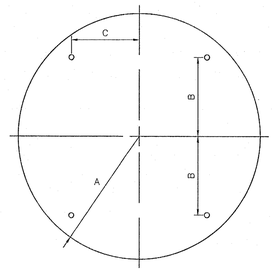
PROJECT SIGN – 48"



FRONT VIEW

SIDE VIEW

SKID MOUNTED SUPPORTS FOR 48" PROJECT SIGN



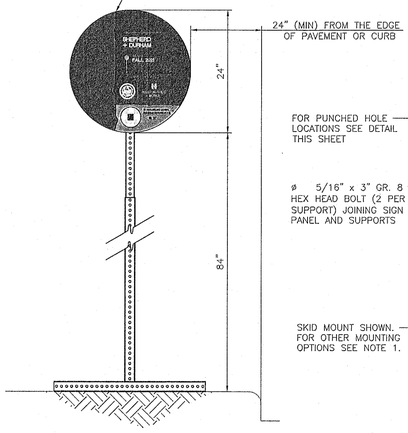
CIRCLE

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

48" SIGN PLATE HOLE DETAIL

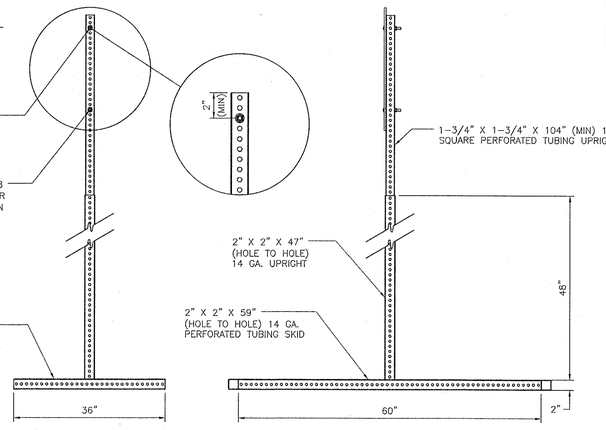
NOTES:

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



FRONT VIEW

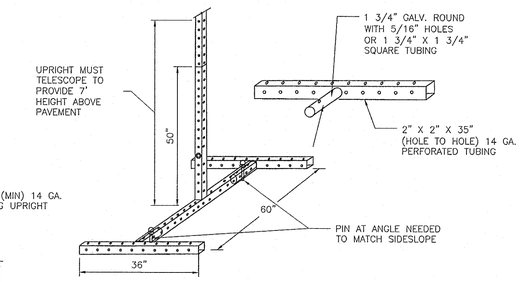
PROJECT SIGN – 24"



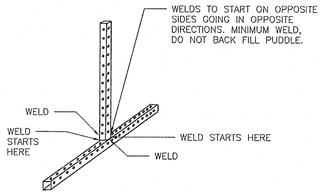
FRONT VIEW

SIDE VIEW

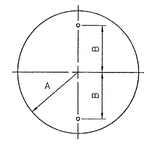
SKID MOUNTED SUPPORTS FOR 24" PROJECT SIGN



ISO VIEW



ISO VIEW



A	B	C
12"	8"	0.080"

24" SIGN PLATE HOLE DETAIL

NO.	DATE	REVISION	APP.

APPROVED BY:	APPROVED BY:
Digitally signed by Shahidur Rahman	Digitally signed by Carl Haddock
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: NOV-27-2023	DWG NO: 01582-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONSTRUCTION SIGN BUILD HOUSTON FORWARD

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STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED
PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS I C-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
S/E SHAHIDUR RAHMAN, P.E.	
SHEET NO. 10 OF 255	

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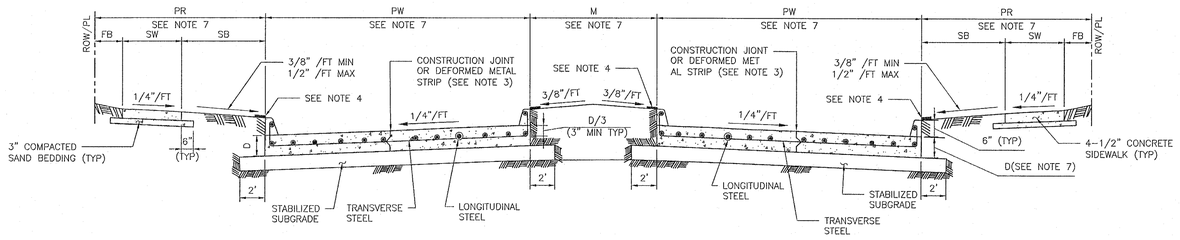
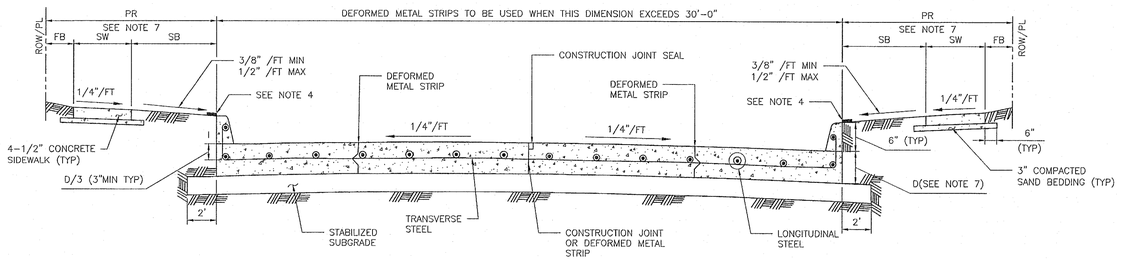


TYPICAL DOUBLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS



TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS

TABLE 1

REINFORCING STEEL BAR SIZES AND SPACINGS FOR VARIOUS PAVEMENT THICKNESSES (D) WITH: MAXIMUM TRANSVERSE CONTROL JOINT SPACING = 20'-0"
MAXIMUM EXPANSION JOINT SPACING = 80'-0"
fc' = 4,000 PSI/28 DAYS AND FY = 60,000 PSI

PAVEMENT THICKNESS 'D' (IN)	PAVEMENT WIDTH 'PW' (FT)	LONGITUDINAL STEEL									TRAVERSE STEEL		
		#4 BARS			#5 BARS			#6 BARS			#4 BARS	#5 BARS	#6 BARS
		NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	SPACING (IN)	SPACING (IN)	SPACING (IN)
6	28	17	20.50	4.00	–	–	–	–	–	–	36	–	–
7	25	17	18.25	4.00	–	–	–	–	–	–	36	–	–
7	35	24	18.00	3.00	–	–	–	–	–	–	36	–	–
7	36	25	17.75	3.00	–	–	–	–	–	–	36	–	–
7	37	25	18.25	3.00	–	–	–	–	–	–	36	–	–
7	41	28	18.00	3.00	–	–	–	–	–	–	36	–	–
7	45	31	17.75	3.75	–	–	–	–	–	–	36	–	–
8	25	20	15.50	2.75	13	24.50	3.0	–	–	–	36	36	–
8	34	27	15.50	2.50	17	25.00	4.0	–	–	–	36	36	–
8	35	27	16.00	2.00	18	24.25	4.0	–	–	–	36	36	–
8	36	28	15.75	3.25	18	25.00	3.0	–	–	–	30	36	–
8	44	24	15.75	4.00	22	24.75	4.0	–	–	–	30	36	–
8	45	35	15.75	2.25	23	24.25	3.0	–	–	–	30	36	–
9	25	22	14.00	3.00	14	22.50	4.0	–	–	–	36	36	–
9	34	31	13.50	2.00	19	22.25	3.5	–	–	–	30	36	–
9	35	31	13.75	3.75	20	21.75	3.5	–	–	–	30	36	–
9	36	32	13.75	3.00	21	21.25	3.5	–	–	–	30	36	–
9	44	39	13.75	2.75	25	21.75	3.0	–	–	–	24	36	–
9	45	39	14.00	4.00	26	21.25	4.5	–	–	–	24	36	–
10	25	24	12.75	3.50	17	18.25	4.0	–	–	–	36	36	36
10	34	33	12.50	4.00	21	20.00	4.0	–	–	–	30	36	36
10	35	34	12.50	3.75	23	18.75	4.0	–	–	–	30	36	36
10	36	35	12.50	3.50	24	18.50	3.0	–	–	–	30	36	36
10	44	44	12.00	4.00	29	18.50	4.5	–	–	–	24	36	36
10	45	44	12.50	3.00	29	19.00	3.0	–	–	–	24	36	36
11	25	27	11.25	3.00	17	18.25	4.0	12	26.75	3	36	36	36
11	34	36	11.50	2.75	24	17.50	2.5	17	25.00	4	24	36	36
11	35	37	11.50	3.00	24	18.00	3.0	17	25.75	4	24	36	36
11	36	40	11.00	2.00	25	17.75	3.0	17	26.50	4	24	36	36
11	44	48	11.125	2.50	30	18.00	3.0	21	26.00	4	24	36	36
11	45	49	11.125	3.00	31	17.75	4.0	22	25.50	3	24	36	36
12	25	–	–	–	19	16.25	4.0	13	24.50	3	36	36	36
12	34	–	–	–	26	16.00	4.0	18	23.50	4	24	36	36
12	35	–	–	–	26	16.50	4.0	19	23.00	3	24	36	36
12	36	–	–	–	27	16.25	4.5	20	22.25	4.5	24	36	36
12	44	–	–	–	33	16.25	4.0	24	22.50	5	24	30	36
12	45	–	–	–	35	15.75	3.0	25	22.25	3	24	30	36

MINIMUM LAP LENGTH (L):
A. # 4 BARS ; L = 22 INCHES
B. # 5 BARS ; L = 27 INCHES
C. # 6 BARS ; L = 32 INCHES

NOTES:

1. THE MAXIMUM WIDTH BETWEEN LONGITUDINAL JOINTS SHALL NOT EXCEED 15'-0".
2. ALL EARTHEN AREAS ARE TO BE HYDROMULCHED UNLESS SHOWN OTHERWISE ON DRAWINGS.
3. CONTRACTOR MAY SAW CUT IN LIEU OF DEFORMED METAL STRIP.
4. USE STRIP OF SOD GRASS TO PREVENT EROSION UNTIL STAND OF GRASS IS ESTABLISHED.
5. AN EQUAL OR LARGER AREA OF WELDED REINFORCEMENT BAR CONFORMING TO ASTM A497, MAY BE SUBSTITUTED FOR REBARS LISTED IN TABLE 1.
6. IF AVAILABLE ROW IS NOT SUFFICIENT TO ACCOMMODATE SIDEWALK WIDTH (SW) ACCORDING TO IDM REQUIREMENTS, ENGINEER SHALL OBTAIN A VARIANCE FROM THE CITY ENGINEER.
7. REFER TO CONTRACT DRAWINGS FOR PAVEMENT WIDTH (PW) AND PAVEMENT THICKNESS (D), MEDIAN (M), PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

APPROVED BY:	APPROVED BY:
DocuSigned by: Salad Bawar	DocuSigned by: HANG NGUYEN
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Hahlbeck	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02751-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONCRETE PAVEMENT DETAILS

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SEAN P. KIRBY
139085
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PROFESSIONAL ENGINEER

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS - II C-002

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SHEET NO. 11 OF 255	

REGISTERED PUBLIC WORKS ENGINEER
80341
CITY OF HOUSTON, TEXAS

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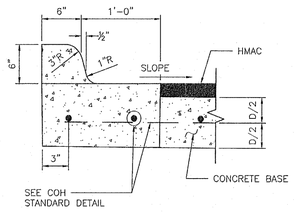
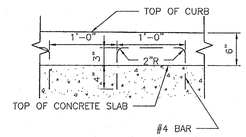
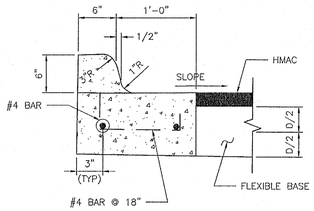


ESPLANADE CURB CONNECTED TO CONCRETE BASE



ALTERNATE CONCRETE CURB REINFORCEMENT



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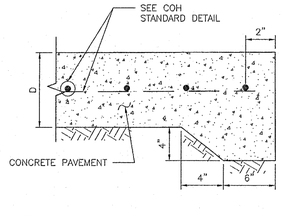
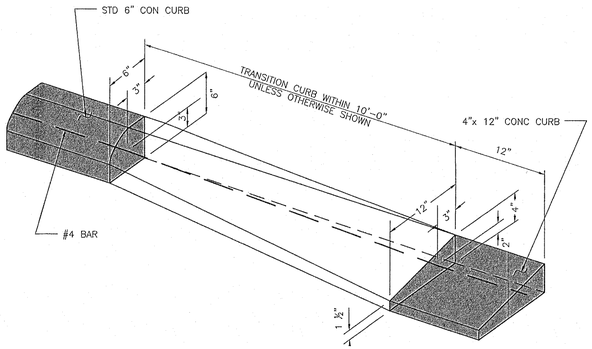
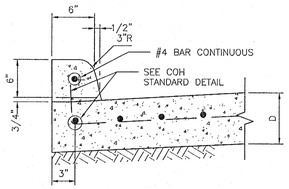


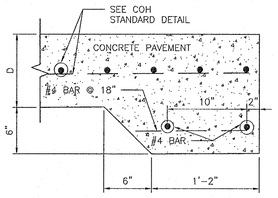
STANDARD CONCRETE PAVING HEADER



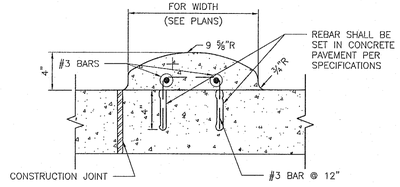
CURB TRANSITION
(SEE NOTES)



CONCRETE CURB

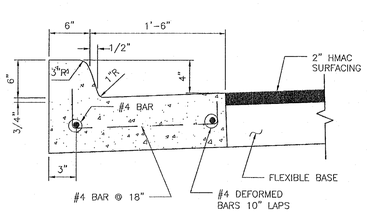


STANDARD RAILROAD HEADER

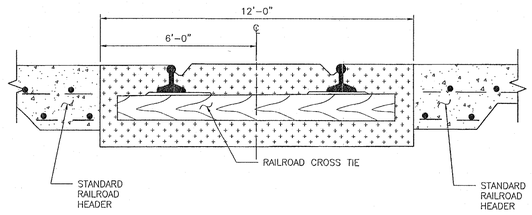


MOUNTABLE CURB

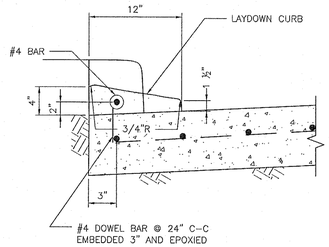
WHEN CONCRETE CURB IS TO BE PLACED EXISTING CONCRETE USE BASE #4 BAR @ 18x10" LONG, DOWELED AND SET IN EPOXY GROUT. SET #4 DOWEL BARS, 25" LONG AT 12" C-C WHEN PAVEMENT SECTION POURED.



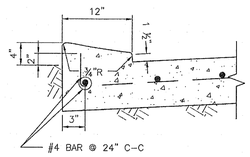
MONOLITHIC CURB AND GUTTER



STANDARD RAILROAD CROSSING – SINGLE TRACK



4-INCH x 12-INCH TRANSITION CURB
(SEE NOTES)



4-INCH x 12-INCH MONOLITHIC CURB
(SEE NOTES)

4"x12" MONOLITHIC AND TRANSITION CURB NOTES:

1. 6-INCH CONCRETE CURB TO BE CONSTRUCTED ON ALL ESPLANADES, ISLANDS, NON-RESIDENTIAL STREETS, AND RESIDENTIAL STREETS.
2. TRANSITIONS FROM 6- INCH CONCRETE CURB TO 4-INCH x 12-INCH CONCRETE CURB TO BE ACCOMPLISHED WITHIN 10 FEET, UNLESS OTHERWISE SHOWN. IF THIS 10-FEET TRANSITION CURB IS NOT POURED MONOLITHICALLY WITH THE PAVEMENT, THEN REINFORCING STEEL AS SHOWN IN "4-INCH x 12-INCH TRANSITION CURB" IS TO BE INSTALLED.

NO.	DATE	REVISION	APP.

APPROVED BY:	APPROVED BY:
Docusigned by: Suhail Tanwar 9EF8D0C61F3F419...	Docusigned by: LONG NGUYEN 05A25EF0A75B4CB...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: Docusigned by: Carl Haddock A0DC1F6B1285453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02771-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CURB, CURB AND GUTTER AND HEADER DETAILS

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STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS III
C-003

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80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

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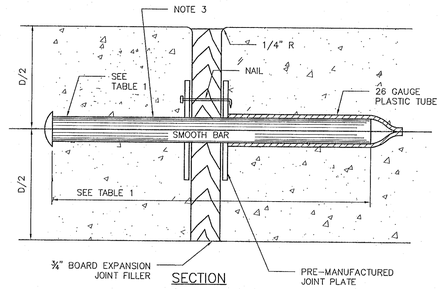
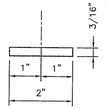


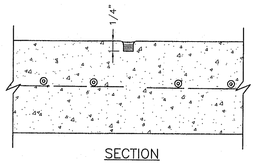
SECTION

DOWEL TYPE EXPANSION JOINT



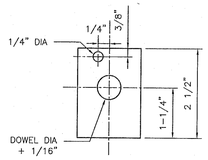
PLAN VIEW

JOINT PLATE



SECTION

CONTROL JOINT

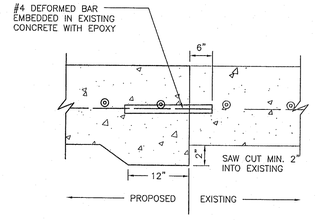


ELEVATION VIEW

JOINT PLATE

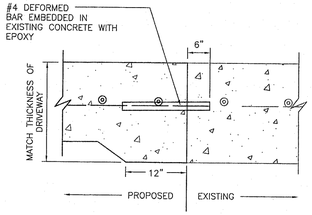
TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
4 1/2	1/2	18	12
5	1/2	18	12
6	3/4	18	12
7	1	18	12



SECTION

SIDEWALK TO EXISTING SIDEWALK



SECTION

SIDEWALK TO EXISTING DRIVEWAY

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 3 FEET MAXIMUM SPACING FOR CONTROL JOINTS SHALL BE 5 FEET.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE AS NEEDED TO MAINTAIN A 2 INCH MINIMUM COVER.

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CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS (SCALE: NOT TO SCALE)	
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EFF DATE: NOV-27-2023	DWG NO: 02752-02

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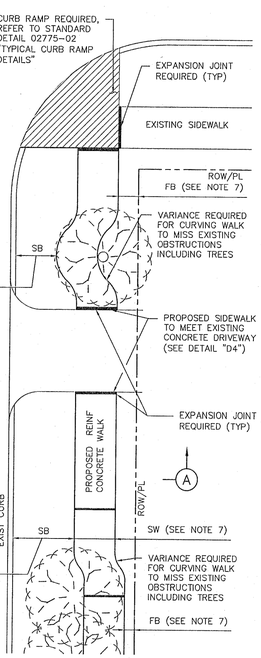
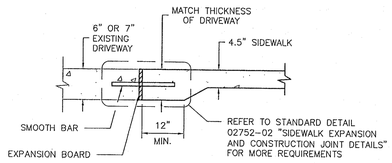


PLAN VIEW



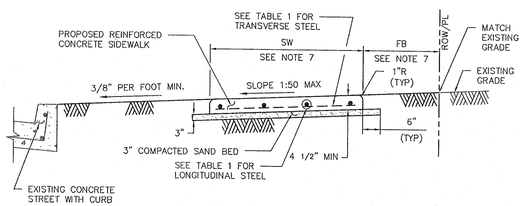
DETAIL D4

DRIVEWAY/SIDEWALK HEADER

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			TRANSVERSE STEEL #3 BARS SPACING (IN)
		#3 BARS			
		NO. OF BARS	SPACING (IN)	END BAR SPACING (IN)	
4.5	5	3	27	3	48
4.5	6	4	22	3	48



SECTION A–A

NOTES:

1. 6X6 – W2.9XW2.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL GIVEN IN TABLE 1.
2. REINFORCED CONCRETE SIDEWALKS THRU DRIVEWAYS OPENINGS SHALL BE EITHER 6" THICK OR 7" THICK AS SPECIFIED ON 6" STABILIZED SUBGRADE. FOR THE REINFORCING STEEL REQUIREMENTS, SEE CITY OF HOUSTON STANDARD DETAILS 02754-01A, 02754-01B, 02754-03, AND 02754-04.
3. MAXIMUM SPACING FOR EXPANSION JOINTS SHALL BE 40 FEET.
4. CONTRACTOR SHALL CONSTRUCT SIDEWALK IN A MANNER NOT TO BLOCK THE NATURAL DRAINAGE FROM ADJACENT PROPERTY.
5. 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.
6. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
7. REFER TO CONTRACT DRAWINGS FOR SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
TYPICAL SIDEWALK LAYOUT AND DETAILS FOR STREETS WITH CURBS (SCALE: NOT TO SCALE)	
APPROVED BY:	
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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS IV C-004

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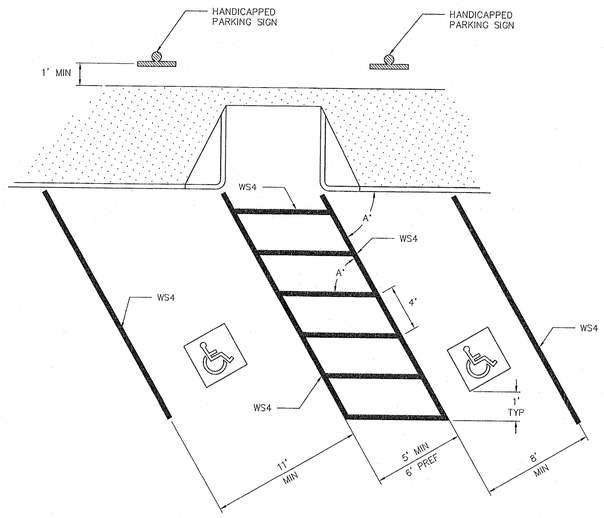
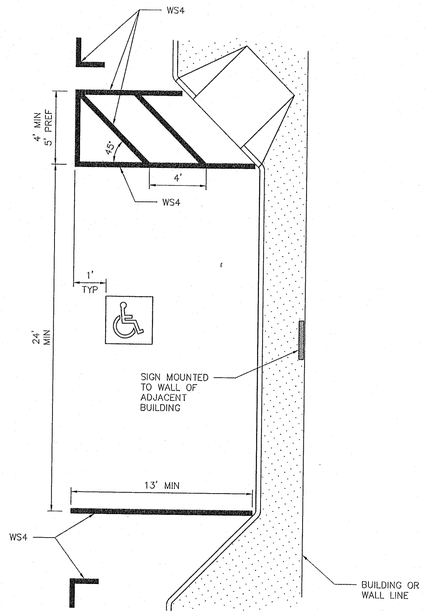
TYPICAL ACCESSIBLE PARKING SPACE DIMENSIONS



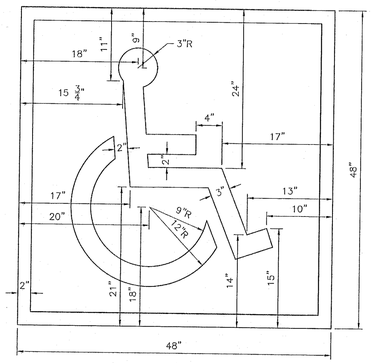
RAMP DETAILS ARE AS SHOWN ELSEWHERE IN THE PLANS.
REFER TO CITY OF HOUSTON STANDARDS ON WHEELCHAIR RAMP CRITERIA.



NOTES:

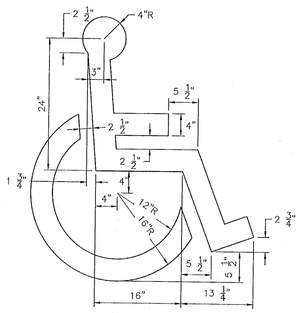
1. ALL PARKING SPACE LIMIT LINES SHALL BE 4", WS4.
2. AISLE MARKINGS SHOWN ARE EXAMPLES ONLY. OTHER METHODS TO INDICATE A NO PARKING AREA ARE ACCEPTABLE. AISLE MARKINGS SHALL BE WHITE.
3. DIMENSIONS OF LIMIT LINES, AISLE MARKINGS, AND SYMBOL (WITH OR WITHOUT BACKGROUND) MAY VARY ± 10%.
4. PAVEMENT MARKING SYMBOLS (WITH BACKGROUND):
   A) ARE REQUIRED UNLESS STATED ELSEWHERE IN THE PLANS,
   B) SHOULD BE PLACED TOWARD THE FAR END OF THE PARKING SPACES SO AS TO BE VISIBLE TO MOTORISTS IN THE TRAVEL LANE,
   C) MAY BE PAINTED OR PREFABRICATED MATERIAL, AND
   D) SHALL BE 30"x 30" MINIMUM.
5. WITH APPROVAL OF THE CITY TRAFFIC ENGINEER, PREFABRICATED PAVEMENT MARKING SYMBOLS WITH BACKGROUND OF OTHER DIMENSIONS EXCEEDING THE 30"x 30" MINIMUM MAY BE USED. ALTERNATIVE DESIGNS SHALL INCLUDE A PROPORTION SIZED SYMBOL OF ACCESSIBILITY, AND SHALL CONFORM TO THE ILLUSTRATED COLORS FOR BACKGROUND, SYMBOL AND BORDER.
6. ALL SLOPE IN AND AROUND EXPECTED WHEELCHAIR PATH SHALL NOT EXCEED ADA REQUIREMENTS FOR WHEELCHAIR RAMPS.
7. REFER TO CITY OF HOUSTON TRAFFIC SIGN STANDARDS FOR HANDICAPPED PARKING SIGN DETAILS.
8. NOTE THAT ANGLED PARKING ON PUBLIC ROADWAYS REQUIRE CITY COUNCIL APPROVAL BEFORE IMPLEMENTATION.

HANDICAPPED PAVEMENT MARKING SYMBOLS



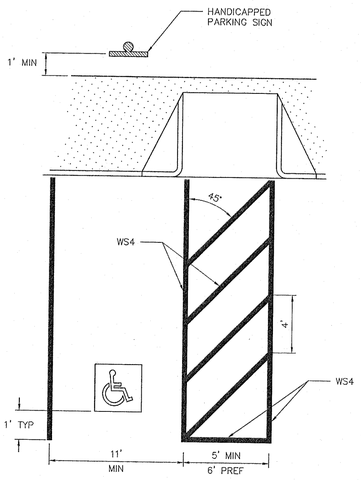
WITH BACKGROUND

SYMBOL & BORDER: WHITE
BACKGROUND: BLUE



SYMBOL ONLY

SYMBOL: BLUE OR WHITE



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APPROVED BY: DocuSigned by: Carl Haddock	
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CITY OF HOUSTON
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PAVEMENT MARKINGS FOR ACCESSIBLE PARKING

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS V C-005

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EXPIRATION 10/2/25

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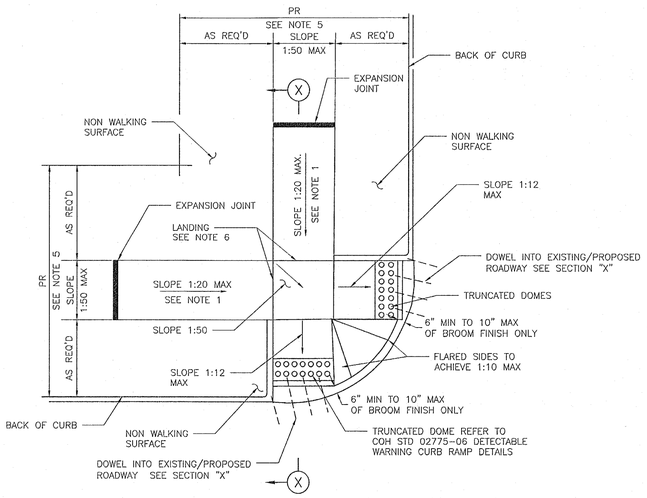
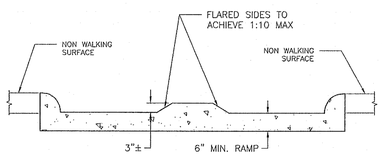
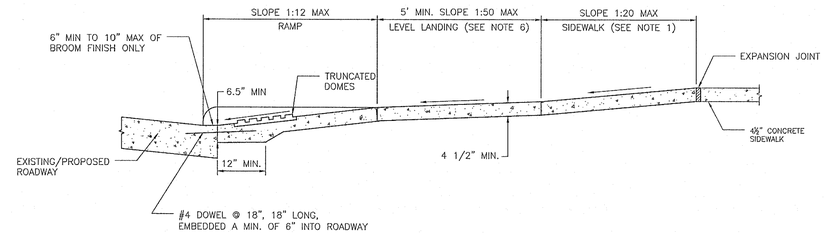


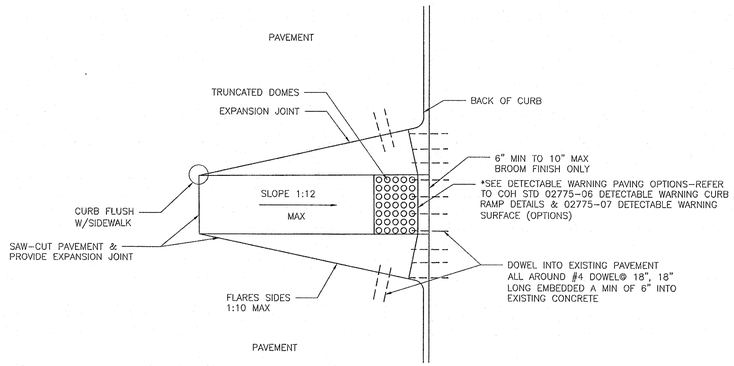
STREETS WITH NON- WALKING SURFACE BEHIND CURB
SEE NOTE-7



ELEVATION
LOOKING UP RAMP



SECTION X-X



CURB RAMP CONSTRUCTION FOR EXISTING PAVEMENT

NOTES:

1. REPLACE EXISTING SIDEWALK FROM LEVEL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE
2. BROOM FINISH IS MEASURED FROM FACE OF CURB.
3. 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.
4. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE.
5. REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR) WIDTH.
6. MINIMUM 5'x5' LANDING PAD ACCORDING TO ADA REQUIREMENTS. WHEN THE APPROACHING SIDEWALK IS WIDER THAN 5', THE LANDING PAD AND RAMP WIDTH MUST MATCH THE SIDEWALK WIDTH.
7. FOR STREETS WITH WALKABLE SURFACES IMMEDIATELY BEHIND THE CURB A FLARE IS REQUIRED ON BOTH SIDES OF THE RAMP.

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DIRECTOR OF HOUSTON PUBLIC WORKS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

TYPICAL CURB RAMP DETAILS

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STATE OF TEXAS SEAN P. KIRBY 139085 LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS VI
C-006

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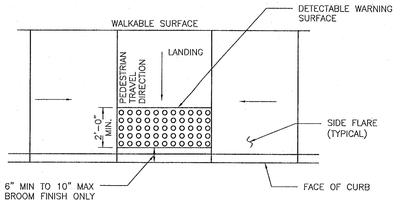
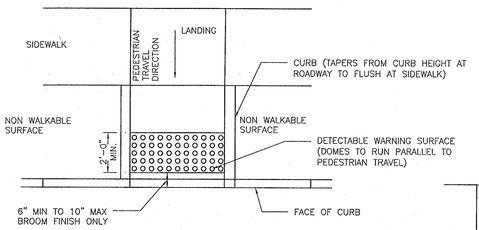
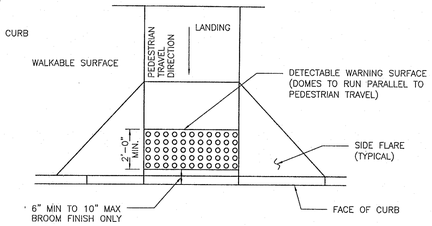


TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE





TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN

GENERAL NOTES FOR DETECTABLE WARNINGS:

1. DETECTABLE WARNING SURFACES MUST BE FULLY ADA COMPLIANT.
2. ALL NEW CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES. THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACE, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
3. DETECTABLE WARNING SURFACES MUST MAINTAIN A SLIP RESISTANCE WITH FA-VALUE OF EQUAL TO OR GREATER THAN 0.8.
4. DETECTABLE WARNING SURFACES MUST MAINTAIN A WATER ABSORPTION RATE OF LESS THAN 1%, DETECTABLE WARNING SHALL NOT ALLOW WATER TO ACCUMULATE.
5. DETECTABLE WARNINGS INSTALLED INTO FRESH CONCRETE SHALL BE WITHOUT VOIDS AND UTILIZING AN ACCEPTABLE ANCHORING SYSTEM.
6. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
7. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
8. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" MIN TO 10" MAX FROM THE DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
9. 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.
10. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

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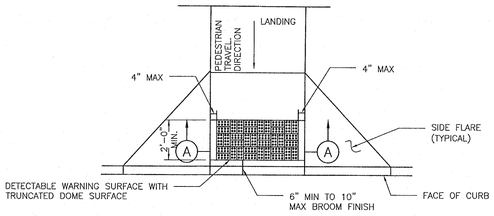
CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
DETECTABLE WARNING CURB RAMP DETAILS (SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: Suhail Kanwar CITY ENGINEER	DocuSigned by: Carl Stablein DIRECTOR OF HPW
DocuSigned by: Hung Nguyen CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 02775-06

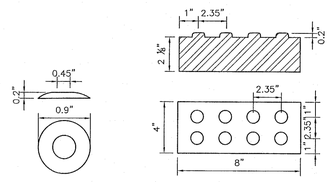
NO.	DATE	REVISION	APP.

DocuSign Envelope ID: 9B122261-CF05-457B-9A65-2650F40B66D5



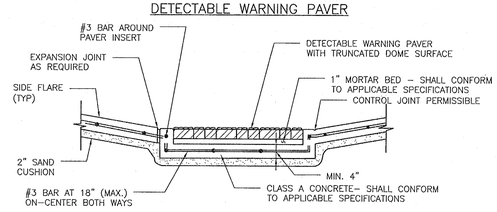
PLAN VIEW

DETECTABLE WARNING SURFACE



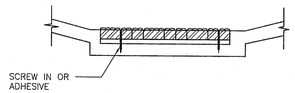
DETAIL

DETECTABLE WARNING PAVER



SECTION A–A

PAVER



DETAIL A–5

NOTES:

GENERAL NOTES

1. 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.
2. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.

PAVERS

1. FURNISH DETECTABLE WARNING SURFACE UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
2. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING POWER UNITS USING A POWER SAW.

POLYMER CONCRETE

1. DETECTABLE WARNING TILES SHALL BE MADE OF POLYMER CONCRETE MATERIALS.
2. DETECTABLE WARNING TILES SHALL BE INSTALLED INTO FRESH CONCRETE (CAST-IN-PLACE) UTILIZING AN ANCHORING SYSTEM.
3. DETECTABLE WARNING TILES SHALL BE OF TERRACOTTA (BRICK-RED) COLOR AND COLORED THROUGHOUT TO GUARANTEE THE ADA REQUIRED COLOR CONTRAST.
4. DETECTABLE WARNING TILES SHALL MEET OR EXCEED THE FOLLOWING ASTM-BASED "STANDARDS" FOR CONCRETE MATERIALS.
   A. COMPRESSION STRENGTH > 12,500 PSI PER ASTM C 39-04
   B. WATER ABSORPTION < 0.25% PER ASTM C 97-09

PADS

1. FURNISH REQUIREMENTS OF ADAAG (MARCH 2003).
2. OTHER MATERIALS MAY BE USED IF APPROVED BY THE CITY ENGINEER

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CITY OF HOUSTON HOUSTON PUBLIC WORKS STANDARD	
DETECTABLE WARNING SURFACE (OPTIONS) (SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: Suhail Kanwar CITY ENGINEER	DocuSigned by: Carl Stablein DIRECTOR OF HPW
DocuSigned by: Hung Nguyen CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 02775-07

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910 Louisiana Street Suite 2600
Houston, Texas 77002
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www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS VII C-007

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	NOT TO SCALE
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	16 OF 255

FOR CITY OF HOUSTON USE ONLY

ACCEPTED AS NOTED
80341
DATE
HOUSTON, TEXAS

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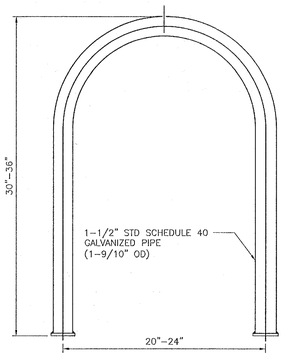
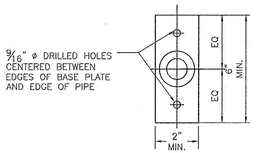
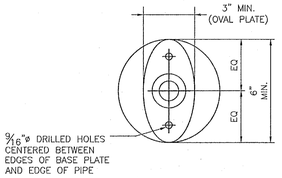


ELEVATION VIEW

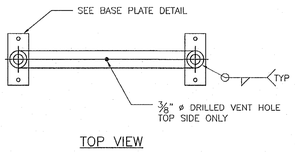


STANDARD BASE PLATE
(RECTANGULAR)



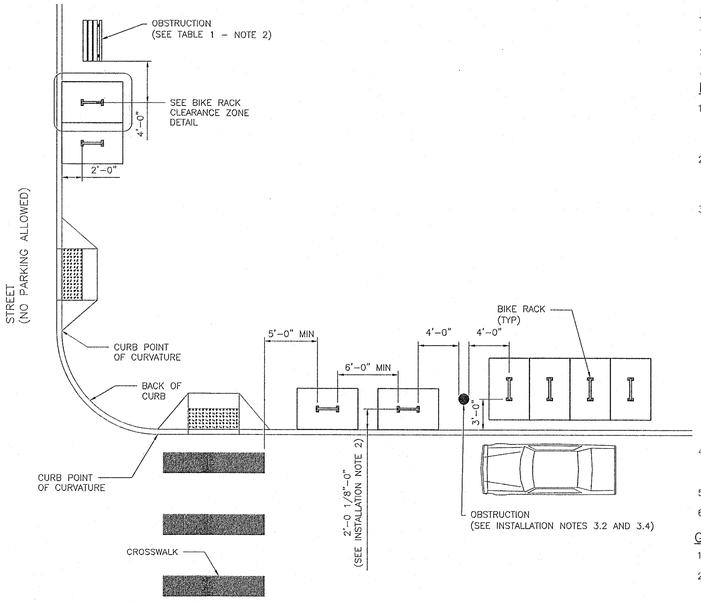
ALTERNATIVE BASE PLATE
(CIRCULAR OR OVAL)

BASE PLATE DETAIL



TOP VIEW

TYPICAL BIKE RACK DETAIL



PLAN VIEW

TABLE 1: SPACING STANDARDS			
LOCATION	ORIENTATION	MINIMUM (FT–IN)	PREFERRED (FT–IN)
BETWEEN RACKS	SIDE–BY–SIDE	3' – 0"	4' – 0"
	END–TO–END	6' – 0"	8' – 0"
BACK OF CURB	PERPENDICULAR	2' – 0" (1)	3' – 0"
	PARALLEL	2' – 0" (1)	3' – 0"
FROM WALL	PERPENDICULAR	4' – 0"	–
	PARALLEL	3' – 0"	–
FROM OBSTRUCTION (2)	ALL	3' – 0"	4' – 0"
FROM CROSSWALK	PERPENDICULAR	5' – 0"	–

TABLE NOTES:
(1) SEE INSTALLATION NOTE 2
(2) SEE INSTALLATION NOTE 3.2 AND 3.4

FABRICATION NOTES:

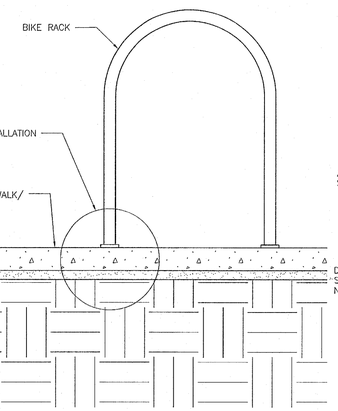
1. BASE PLATES TO BE GALVANIZED ¼" THICK PLATES, ASTM A–36 1010–1018 LOW CARBON PRIME STEEL.
2. BOLT DIMENSIONS PER ASME B18.2.1. BOLT MATERIAL PER ASTM A307, GR. A.
3. ALL VENT HOLES USED DURING FABRICATION MUST BE PLUGGED AND COATED.

INSTALLATION NOTES:

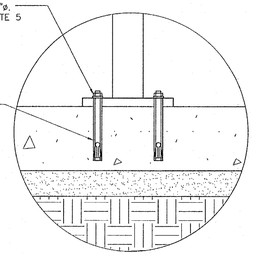
1. BIKE RACKS SHALL BE INSTALLED WITHIN THE PEDESTRIAN REALM OR WITHIN THE CURB–TO–CURB SPACE ONLY IF PLACED WITHIN A BULB–OUT OR IT IS REPLACING ON–STREET PARKING SPACE(S). BIKE RACKS SHALL BE ADJACENT AND CLOSEST TO THE STREET CURB OUTSIDE OF BUS LOADING ZONES. ALL BIKE RACKS INSTALLATION LOCATIONS SHALL BE APPROVED BY TRANSPORTATION & DRAINAGE OPERATIONS.
2. BIKE RACKS SHALL BE SETBACK 3 FEET FROM THE BACK OF CURB WHEN ADJACENT TO AUTO PARKING. BIKE RACKS ORIENTED PARALLEL TO CURB SHALL BE MEASURED TO THE CENTERLINE OF THE BIKE RACK. BICYCLE RACKS ORIENTED PERPENDICULAR TO CURB SHALL BE MEASURED TO THE CENTER OF THE BIKE RACK BASE PLATE.
3. BIKE RACKS SHALL BE INSTALLED WITH THE FOLLOWING CLEARANCES:
   - 3.1. PROVIDE 4 FEET MINIMUM CLEARANCE FROM THE CURB POINT OF CURVATURE OF ANY DRIVEWAY, ROADWAY OR ALLEY.
   - 3.2. 5 FEET MINIMUM CLEARANCE TO FIRE HYDRANTS. 4 FEET MINIMUM CLEARANCE TO FIRE DEPARTMENT CONNECTIONS WHETHER THE CONNECTIONS ARE LOCATED IN THE PUBLIC RIGHT–OF–WAY OR ON PRIVATE PROPERTY ALONG A BUILDING FACE.
   - 3.3. EACH BIKE RACK CLEARANCE ZONE SHALL HAVE AT LEAST ONE 48 INCH WIDE MINIMUM CLEAR AND UNOBSTRUCTED CONTINUOUS SIDEWALK PATH TO ALLOW FOR EGRESS AND INGRESS FROM EACH BIKE RACK PARKING ZONE TO AND FROM THE SIDEWALK AREA. THIS PATH MAYBE ADJACENT TO EITHER THE WIDTH OR THE LENGTH SIDES OF EACH CLEARANCE ZONE.
   - 3.4. PROVIDE 3 FEET MINIMUM CLEARANCE TO OBSTRUCTIONS SUCH AS SIDEWALK FURNITURE OR STREET IMPROVEMENTS INCLUDING BUT NOT LIMITED TO STREET TREES, TREEWELLS, PARKWAYS, PARKING METERS, STREET LIGHTING, TRAFFIC SIGNS OR POSTS, OTHER UTILITY FACILITIES/COVERS.
   - 3.5. PROVIDE A 4 INCH MINIMUM CLEARANCE FROM THE BIKE RACK BASE PLATE EDGE TO ANY EXPANSION JOINT OR CONTROL JOINT IN THE CONCRETE SIDEWALK PAVEMENT.
   - 3.6. NO PART OF THE BIKE RACK CLEARANCE ZONE SHALL PROTRUDE INTO THE REQUIRED PEDESTRIAN ZONE AND/OR THE PEDESTRIAN ACCESS ROUTE.
4. TO PREVENT THEFT OF BIKE RACK OR BIKES, EXPOSED BOLTS MUST BE DEFORMED AND NUTS RE–TIGHTENED TO PREVENT THEM FROM BEING EASILY UNTHREADED. NUTS SHOULD BE TESTED TO ENSURE THAT THEY CANNOT BE EASILY REMOVED AFTER DEFORMATION.
5. INSTALLATION AND ANCHOR TYPE SHALL BE PER MANUFACTURER'S SPECIFICATIONS.
6. BIKE RACKS SHALL NOT BE PLACED ON TOP OF VAULTS AND UTILITY BOX ACCESS COVERS OR STORM DRAIN INLETS.

GENERAL NOTES:

1. BIKE RACK SHALL CONFORM TO CITY OF HOUSTON STANDARD SPECIFICATION 02871 "BIKE RACKS".
2. PREFERRED SPACING STANDARDS ARE SHOWN WHERE APPLICABLE ON THE BIKE RACK PLACEMENT PLAN



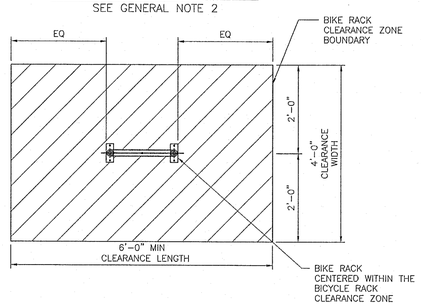
ELEVATION VIEW
BASIC INSTALLATION



INSTALLATION DETAIL
(SEE INSTALLATION NOTE 4)

BIKE RACK INSTALLATION IN CONCRETE SIDEWALK/PAVEMENT

BIKE RACK PLACEMENT
SEE GENERAL NOTE 2



BIKE RACK CLEARANCE ZONE DETAIL

APPROVED BY:	APPROVED BY:
DocuSigned by: Suhail Bawar 5EF89DC61F1F4F8...	DocuSigned by: LEANG NGUYEN 1EA0E4EF0F5F4E8...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Hubbuch 53DC4168F2B3433...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 02871–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

BIKE RACK

	FOR CITY OF HOUSTON USE ONLY
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910 Louisiana Street Suite 2600
Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS VIII
C-008

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 17 OF 255	

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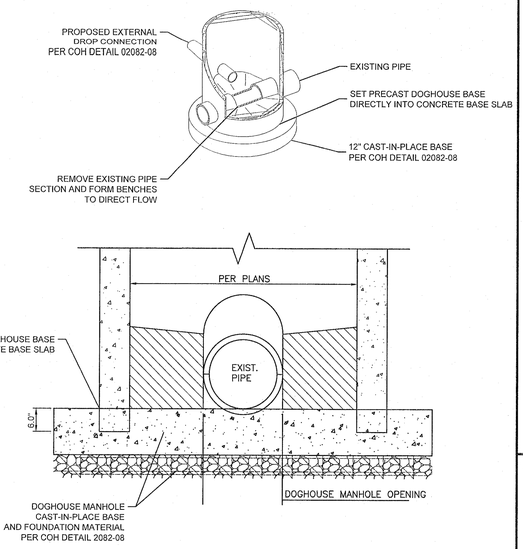
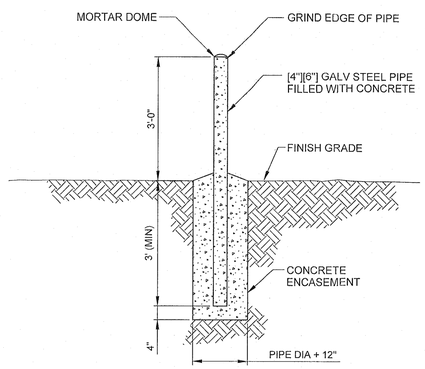
HOUSTON, TEXAS



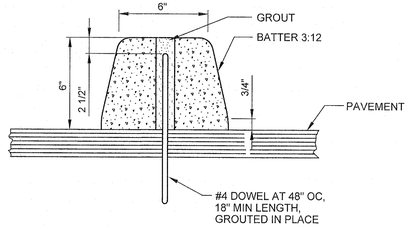
NOTES:

1) REFER TO COH DETAIL 02082-08 FOR ADDITIONAL MANHOLE DETAILS

C-1 DOGHOUSE MANHOLE DETAIL
NTS



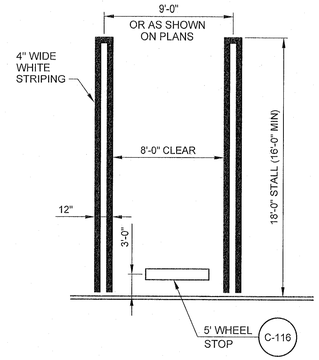
C-114 GUARD POST
REV 010119



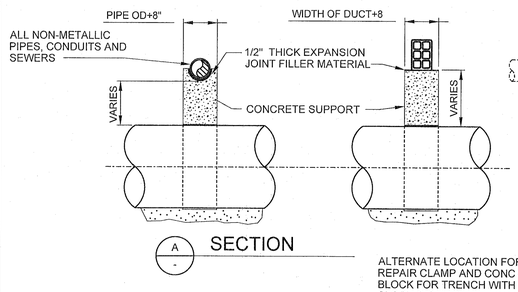
NOTES:

1. WHEEL STOP SHALL BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE.
2. EPOXY CEMENT COAT SHALL BE APPLIED TO PAVEMENT SURFACE PRIOR TO INSTALLATION OF WHEEL STOP.
3. ALL EXPOSED CORNERS ON WHEEL STOP TO BE ROUNDED WITH A 1/2" RADIUS.
4. PRECAST WHEEL STOP SHALL BE 5'-0" LONG UNLESS INDICATED OTHERWISE.

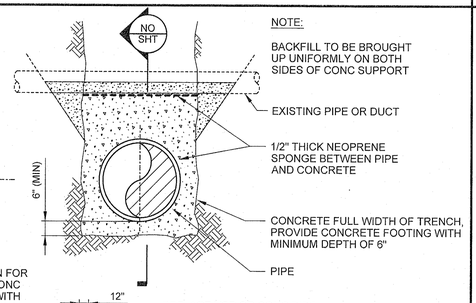
C-116 PRECAST WHEEL STOP
REV 010119



C-170 PARKING STALL
REV 010119



A - SECTION

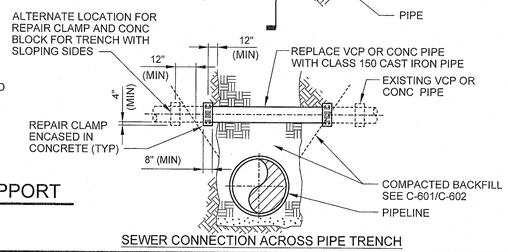


NOTE:

BACKFILL TO BE BROUGHT UP UNIFORMLY ON BOTH SIDES OF CONC SUPPORT

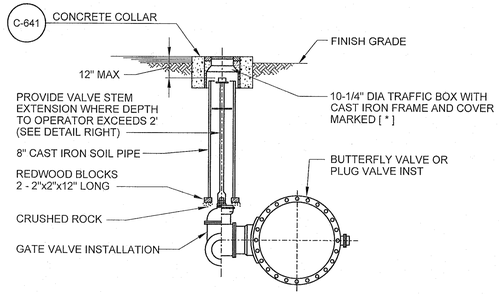
NOTES:

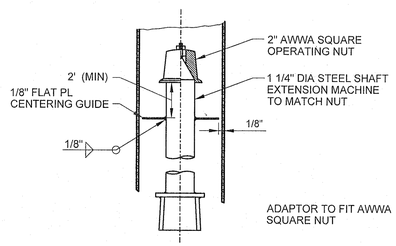
1. UNDERGROUND UTILITY SUPPORTS ARE TO BE PROVIDED WHEN MINIMUM CLEARANCE OF 12 INCHES CANNOT BE PROVIDED.
2. EXISTING PIPE OR DUCT SHALL BE FIRMLY SUPPORTED DURING INSTALLATION OF NEW PIPE AND SUPPORT.



SEWER CONNECTION ACROSS PIPE TRENCH

C-608 UNDERGROUND UTILITY SUPPORT
REV 010119

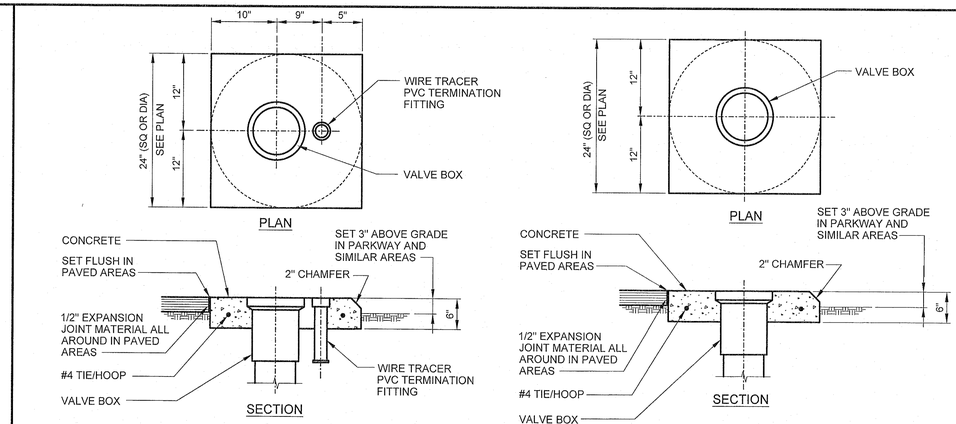




NOTES:

PROVIDE PROTECTIVE COATING TO EXTERIOR SURFACE OF VALVE BODY IN ACCORDANCE WITH SPECS.
FOR LUBRICATED PLUG VALVE, EXTEND LUBRICATION LINE TO GRADE PER MANUFACTURES INSTRUCTIONS.

C-640 BURIED VALVE INSTALLATION
REV 010119



C-641 VALVE BOX COLLAR
REV 010119

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139985
PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS IX C-009

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	NOT TO SCALE
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	18 OF 255

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ACCEPTED AND FILED
80341
HOUSTON, TEXAS

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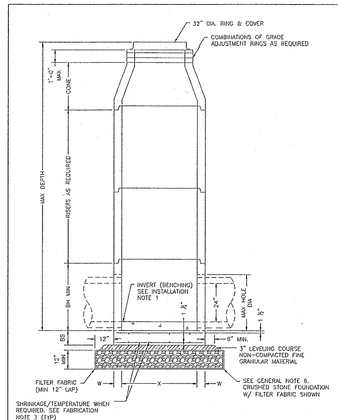
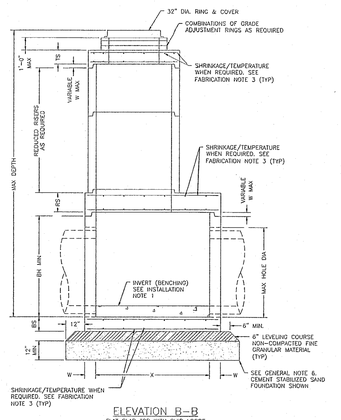
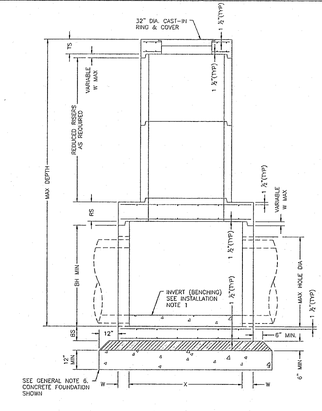


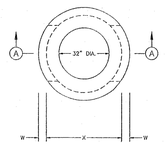
ELEVATION A–A
CONE TOP WITH SHIP LOOSE RING & COVER OPTION



ELEVATION B–B
FLAT SLAB TOP WITH SHIP LOOSE RING & COVER OPTION

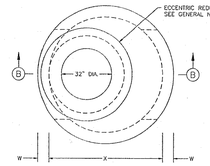


ELEVATION C–C
FLAT SLAB TOP WITH INVERTED RING & COVER OPTION



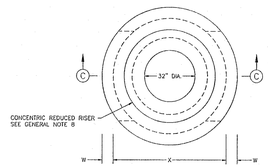
PLAN VIEW A
COVER NOT SHOWN

4–FT DIA MANHOLE



PLAN VIEW B
COVER NOT SHOWN

5–FT & 6–FT DIA MANHOLE
ECCENTRIC MANHOLE
(PREFERRED CONFIGURATION)



PLAN VIEW C
COVER NOT SHOWN

5–FT & 6–FT DIA MANHOLE
CONCENTRIC MANHOLE
(ALTERNATE CONFIGURATION)

TABLE 1
PRECAST ROUND MANHOLE (PRM) MINIMUM REQUIREMENTS FOR 24 IN. TO 42 IN. INTERNAL DIA STORM SEWER PIPES

	CONE TOP WITH SHIP LOOSE RING & COVER OPTION		FLAT SLAB TOP WITH SHIP LOOSE RING & COVER OPTION		FLAT SLAB TOP WITH INVERTED RING & COVER OPTION		MAX DEPTH (FT)	MAX HOLE DIA (IN)	MANHOLE BARREL DIA (IN)
	MIN CONE THICKNESS (IN)	MIN RISER THICKNESS (IN)	MIN SLAB THICKNESS (IN)	MIN RISER THICKNESS (IN)	MIN SLAB THICKNESS (IN)	MIN RISER THICKNESS (IN)			
	T1	T2	T3	T4	T5	T6			
	5	5	9	5	9	5	29	42	54
PRM	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC	STRAIGHT OR ECCENTRIC
	5	5	9	7	49/60*	12	9	35	42	56

(*) 60-IN REDUCED RISER IS TO BE USED WHEN DEEMED NECESSARY TO SATISFY WALL PENETRATION SPACING REQUIREMENTS.

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 BASE, RISER AND CONE IN ACCORDANCE WITH ASTM C478.
3. SLABS WITH A THICKNESS OF 8" OR GREATER REQUIRE SHRINKAGE AND TEMPERATURE REINFORCING STEEL. PROVIDE STEEL AREA = 0.11 IN²/FT EACH WAY.
4. MANUFACTURE BASE AND RISERS TO NEAREST 3" INCREMENT.
5. DESIGN TONGUE AND GROOVE JOINTS FOR FULL CLOSURE ON BOTH SHOULDERS. MINIMUM SPIGOT DEPTH IS ¾".
6. PROVIDE LIFTING DEVICES IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. PROVIDE CAST IRON SOLID COVER, UNLESS NOTED OTHERWISE
8. SEE TABLE 1 FOR MINIMUM DIMENSIONS.
9. THREE DIFFERENT OPTIONS FOR CAPPING THE MANHOLE RISER NEAR THE FINISHED GRADE ARE SHOWN. CONES CAN BE USED WHEN COVER IS SUFFICIENT TO ALLOW FOR PROPER PLACEMENT. FLAT LIDS ARE TO BE USED WHERE COVER IS LIMITED

INSTALLATION NOTES:
1. IF REQUIRED ELSEWHERE, INVERTS (BENCHING) TO BE PROVIDED BY CONTRACTOR. CONCRETE OR MORTAR USED FOR INVERT IS SUBSIDIARY TO THIS ITEM. REFER TO CITY OF HOUSTON SPECIFICATION SECTION 02510 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 1" BETWEEN EACH SECTION, OR ⅓ THE JOINT DEPTH, WHICHEVER IS GREATER.
3. DO NOT GROUT RUBBER GASKET JOINTS WITHOUT MANUFACTURER'S RECOMMENDATION.
4. INITIAL INSTALLATION OF GRADE ADJUSTMENT RINGS IS LIMITED TO 1'-0" MAX AS SHOWN.
5. GRADE ADJUSTMENT RINGS MAY BE INCREASED TO 1'-6" MAX WHEN FUTURE CONSTRUCTION AFFECTS FINAL GRADE OF STRUCTURE. MAKE ADJUSTMENTS GREATER THAN 1'-6" WITH ADDITIONAL RISERS. ADJUSTMENTS MAY BE MADE UP TO THE MAX DEPTH OF 29'-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 THIS CONFIGURATION IS SPECIFIED.
2. DESIGNED ACCORDING TO ASTM C478.
3. PAYMENT FOR PRECAST MANHOLE PER SECTION 02082 "PRECAST CONCRETE MANHOLES".
4. PIPE OD + PLACEMENT TOLERANCE MUST BE EQUAL OR LESS THAN MAX HOLE DIA. FOR RIGID PIPE, PLACEMENT TOLERANCE IS 4" MAX. 2" MIN. FOR FLEXIBLE PIPE, CONSULT BOOT/SEAL MANUFACTURER'S SPECIFICATION FOR PLACEMENT TOLERANCE.
5. STORM WATER SEWER PIPE INTERNAL DIA SHALL NOT BE LESS THAN 24".
6. FOUNDATION/SUBGRADE 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. CONES MAY BE CONCENTRIC OR ECCENTRIC. REDUCTION CONES ARE ACCEPTABLE; REFER TO MANUFACTURER FOR CONE DIMENSIONS.
10. MANHOLE SIZE SHALL CONSIDER ENGINEERING ECONOMY. THIS DETAIL IS NOT APPLICABLE TO ROUND MANHOLES LARGER THAN 6-FOOT DIA.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

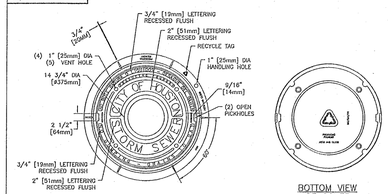
STORM SEWER TYPE 'C'
PRECAST ROUND MANHOLE

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
Suhail Kanwar	Carol Haddock
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS

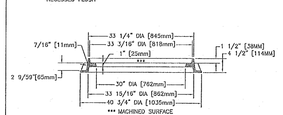
EFF DATE: JUL-01-2021 DWG NO: 02082-12

02084-02

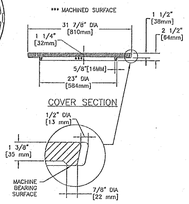


BOTTOM VIEW OF COVER

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



FRAME SECTION

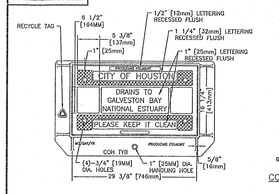


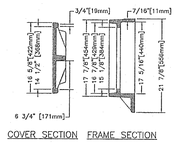
COVER SECTION

OPEN PICKHOLE DETAIL

STORM SEWER MANHOLE FRAME AND COVER
NTS

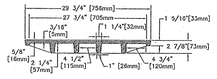
02084-03





COVER SECTION FRAME SECTION

NOTES:
1. APPROXIMATE WEIGHTS.
   FRAME – 125 LBS (57KGS)
   COVER – 130 LBS (59KGS)
   UNIT – 259 LBS (118KGS)
2. MATERIALS – GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-6241 ASY OR APPROVED EQUAL



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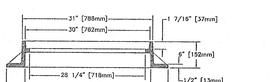
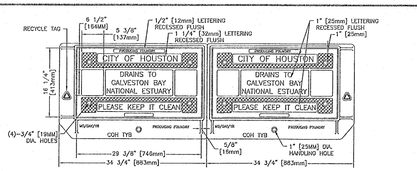
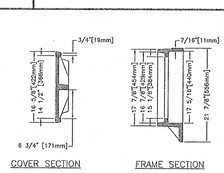


FRAME SECTION

STORM SEWER TYPE "B" INLET ASSEMBLY
NTS

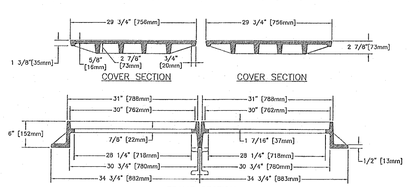
02084-04





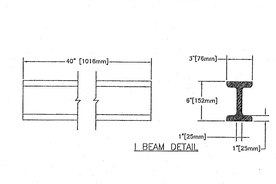
COVER SECTION FRAME SECTION

NOTES:
1. APPROXIMATE WEIGHTS.
   FRAME – 125 LBS (57KGS)
   COVER – 130 LBS (59KGS)
   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-6243 ASY OR APPROVED EQUAL



COVER SECTION COVER SECTION

FRAME SECTION



I BEAM DETAIL

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:	APPROVED BY:
CITY ENGINEER	DEPUTY DIRECTOR
APPROVED BY:	
DIRECTOR	

EFFECTIVE DATE: JUL-01-2019
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www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS X
C-010

WBS NUMBER
R-000265-0117-4
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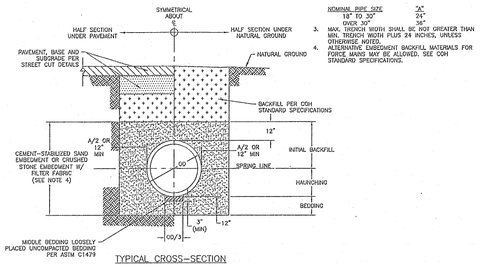


TYPICAL CROSS-SECTION

NOTES:

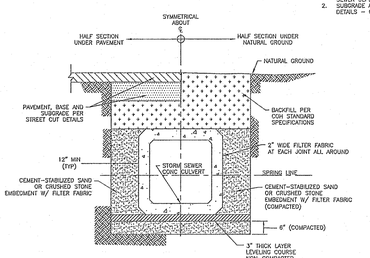
1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
2. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

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 APPROVED.
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



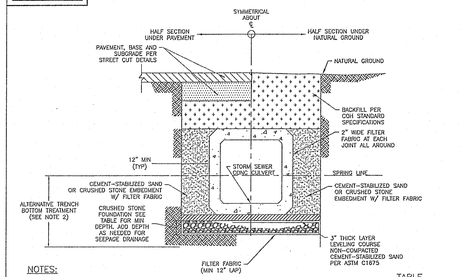
TYPICAL CROSS-SECTION

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:

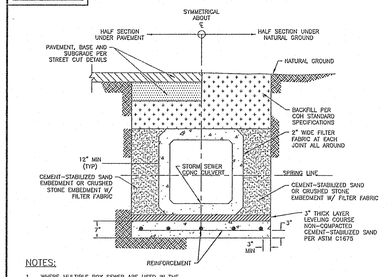
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF ENGINEERS AND AS PVID FOR IN THE PROPOSAL.

TABLE

CULVERT SIZE (FT)	FOUNDATION DEPTH(INCHES)
3' X 3' 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 FILL IS LAID.
4. PRECAST 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

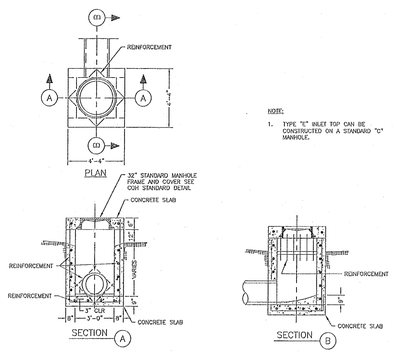
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

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

SHEET NO.

02632-09



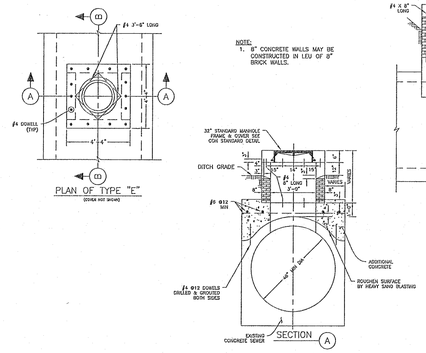
NOTE:

1. TYPE "E" INLET TOP CAN BE CONSTRUCTED ON A STANDARD "C" MANHOLE.

STORM SEWER TYPE "E" INLET
NTS

02632-10

COH IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2019



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

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02632-09
AND 02632-10

APPROVED BY: CITY ENGINEER
APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR
EFFECTIVE DATE: JUL-01-2019
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Tel: 713.548.5700
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STATE OF TEXAS
SEAN P. KIRBY
139265
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XI
C-011

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	NOT TO SCALE
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	20 OF 255

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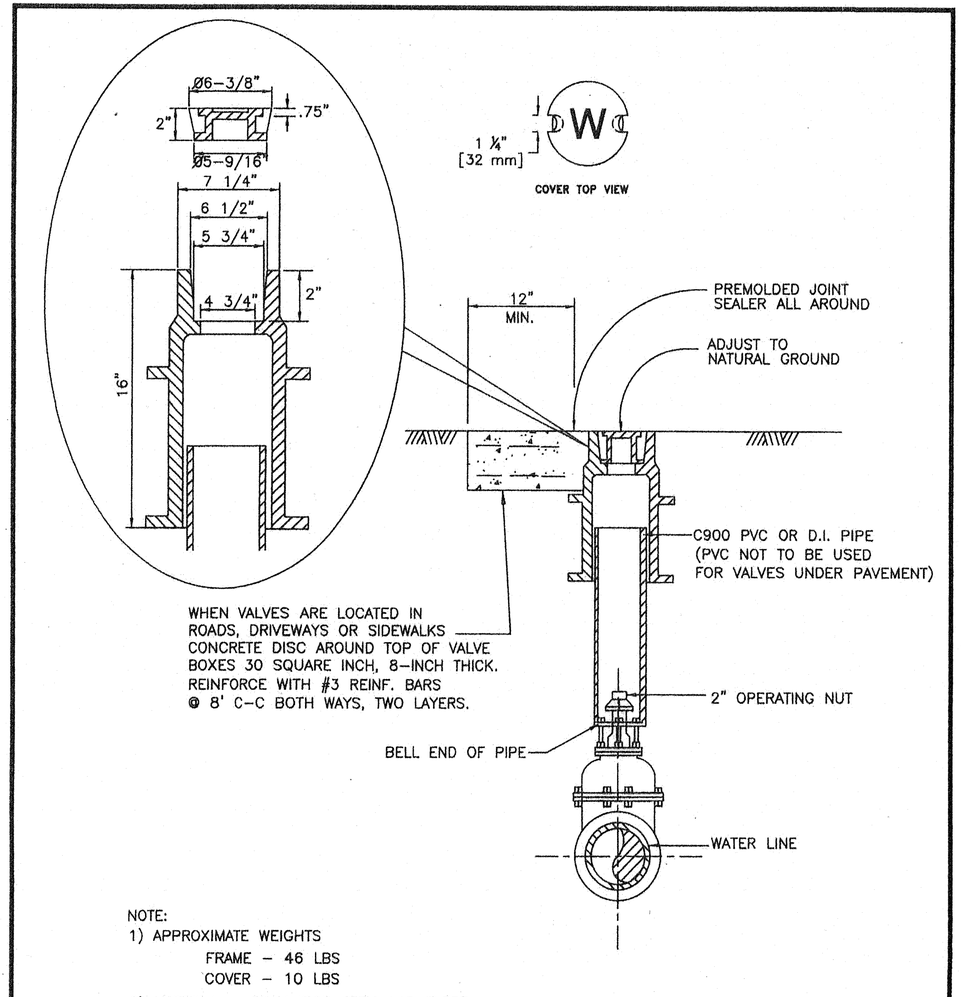
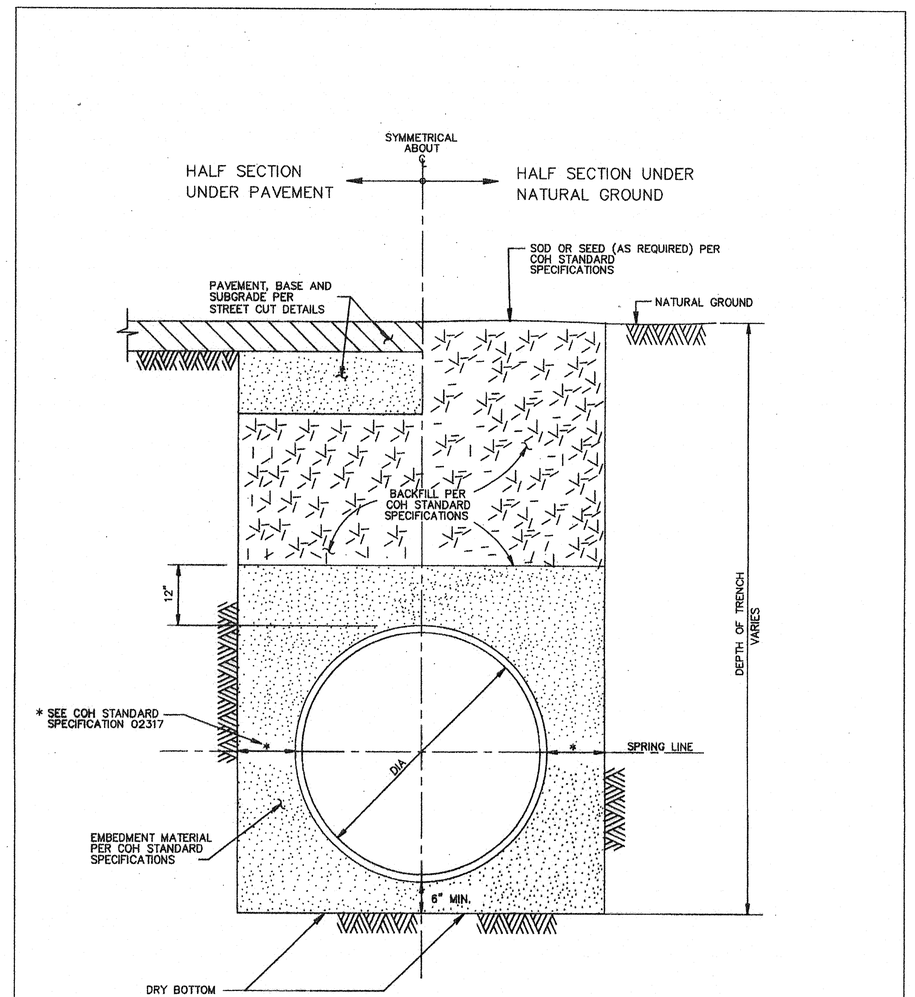
PUBLIC WORKS AND ENGINEERING
80341
CITY ENGINEER
HOUSTON, TEXAS



NOTE:
1) APPROXIMATE WEIGHTS
FRAME – 46 LBS
COVER – 10 LBS
2) MATERIAL – GRAY IRON ASTM A48 CL35B

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
VALVE BOX DETAIL (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY 01, 2010	DWG. NO: 02085-03



CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
WATER DISTRIBUTION MAIN BEDDING AND BACKFILL FOR OPEN CUT TRENCHES (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010	DWG NO: 02317-04

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XII
C-012

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CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 21 OF 255	

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HOUSTON, TEXAS

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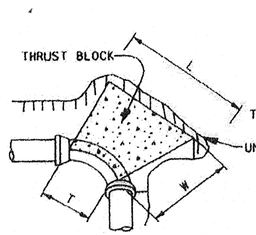
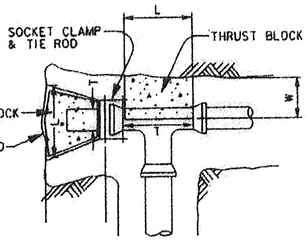
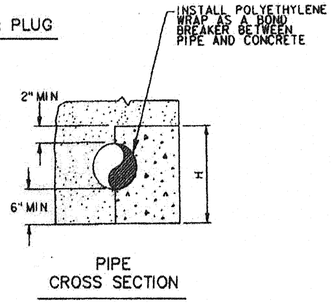


90° BEND

(45° BENDS SIMILAR)



TEE & PLUG



PIPE
CROSS SECTION

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

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

NOTES:

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

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

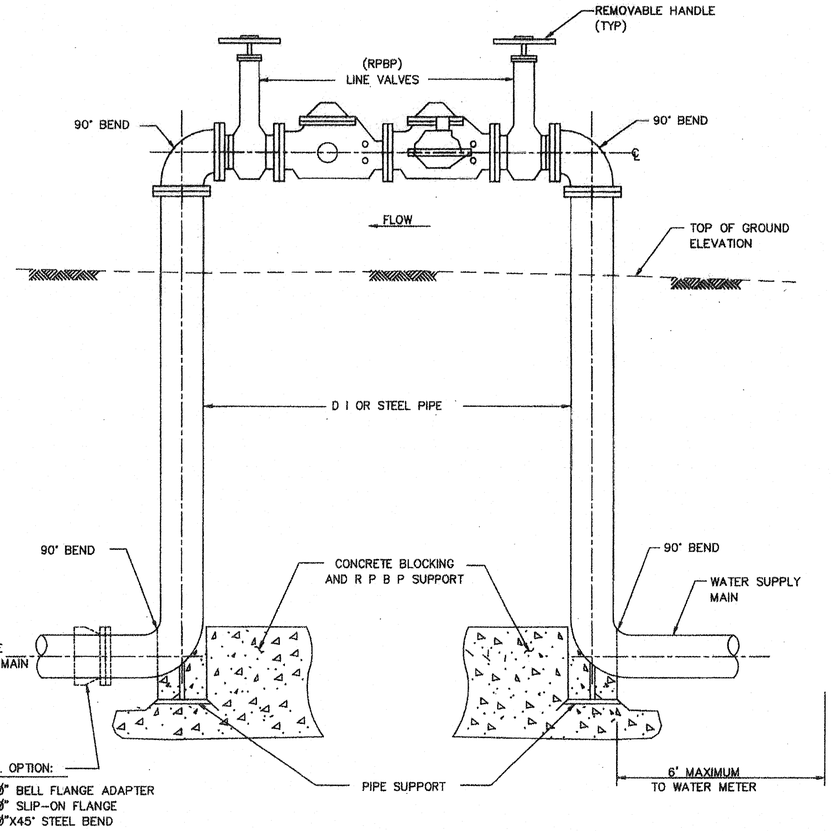
THRUST BLOCK DETAIL
FOR WATER LINES
(4–INCH TO 12 INCH)
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER | APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY–01–2010 | DWG NO: 02511–02

GENERAL NOTES:

1. INSULATE REDUCED PRESSURE BACKFLOW PREVENTER TO AVOID FREEZING.
2. REDUCED PRESSURE BACKFLOW PREVENTER'S DISCHARGE OPENING IS TO BE A MINIMUM OF 12 INCHES ABOVE GROUND ELEVATION OR 100 YEAR FLOOD ELEVATION WHICHEVER IS GREATER.



STEEL OPTION:
1 – Ø" BELL FLANGE ADAPTER
1 – Ø" SLIP–ON FLANGE
1 – Ø"X45° STEEL BEND

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REDUCED PRESSURE
BACKFLOW – PREVENTER
(R P B P)
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER | APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY–01–2010 | DWG NO: 02523–01

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XIII
C-013

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
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CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
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80341
CITY OF HOUSTON, TEXAS

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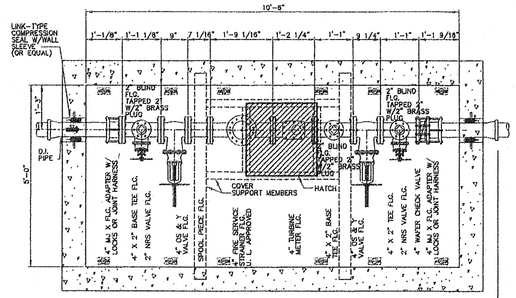
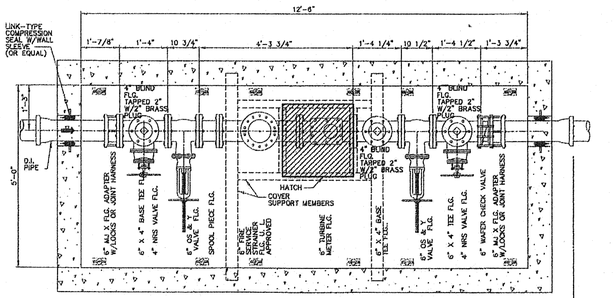
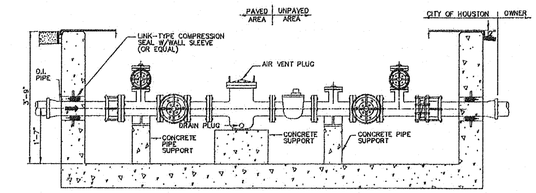


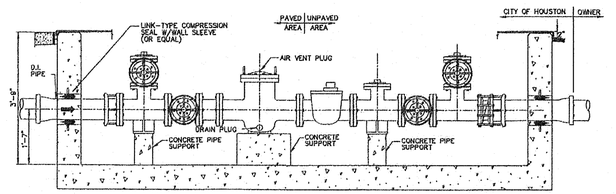
4" FIRE SERVICE TURBINE METER
PLAN VIEW



6" FIRE SERVICE TURBINE METER
PLAN VIEW



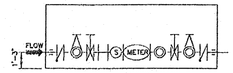
4" FIRE SERVICE TURBINE METER
ELEVATION VIEW



6" FIRE SERVICE TURBINE METER
ELEVATION VIEW

NOTES:

1. SEE CITY OF HOUSTON STANDARD SPECIFICATION, "WATER METERS".
2. METER INSTALLATION SHALL BE IN ACCORDANCE WITH "DESIGN DIVISION SPECIFICATIONS FOR WATER MAIN CONSTRUCTION AND MATERIALS".
3. DIMENSIONS INCLUDE GASKET THICKNESS REQUIRED BETWEEN EACH FLANGE.
4. SEE STRUCTURAL SHEETS.
5. OMIT SPOOL PIECE IF IT IS LESS THAN 6" IN LENGTH.

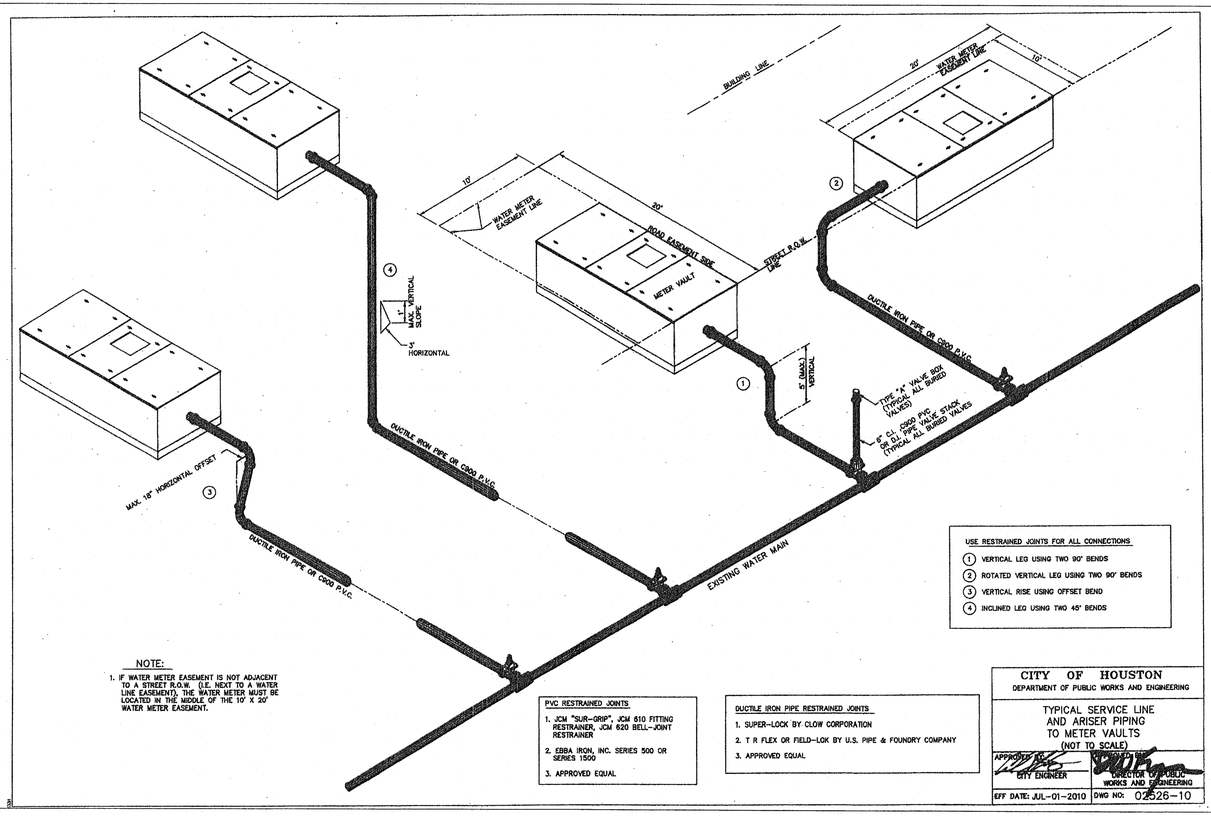


ALTERNATE
PLAN VIEW
(SEE NOTE 3 ON COVER PLATE PLAN)

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

TYPICAL PIPING ARRANGEMENT
4" & 6" FIRE SERVICE TURBINE
METER STANDARD SERVICE
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER
APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010
DWG NO: 02526-07



NOTE:

1. IF WATER METER EASEMENT IS NOT ADJACENT TO A STREET R.O.W. (I.E. NEXT TO A WATER LINE EASEMENT), THE WATER METER MUST BE LOCATED IN THE MIDDLE OF THE 10' X 20' WATER METER EASEMENT.

USE RESTRAINED JOINTS FOR ALL CONNECTIONS

1. VERTICAL LEG USING TWO 90° BENDS
2. ROTATED VERTICAL LEG USING TWO 90° BENDS
3. VERTICAL RISE USING OFFSET BEND
4. INCLINED LEG USING TWO 45° BENDS

PVC RESTRAINED JOINTS

1. JCM "SUR-GRIP", JCM 610 FITTING RESTRAINER, JCM 620 BELL-JOINT RESTRAINER
2. EBBA IRON, INC. SERIES 500 OR SERIES 1500
3. APPROVED EQUAL

DUCTILE IRON PIPE RESTRAINED JOINTS

1. SUPER-LOCK BY CLOW CORPORATION
2. T R FLEX OR FIELD-LOK BY U.S. PIPE & FOUNDRY COMPANY
3. APPROVED EQUAL

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

TYPICAL SERVICE LINE
AND ARISER PIPING
TO METER VAULTS
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER
APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010
DWG NO: 02526-10

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XIV
C-014

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SHAHIDUR RAHMAN, P.E.	
SHEET NO. 23 OF 255	

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80341
STATE OF TEXAS
12/12/2024

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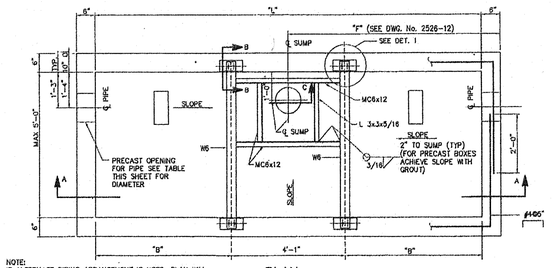
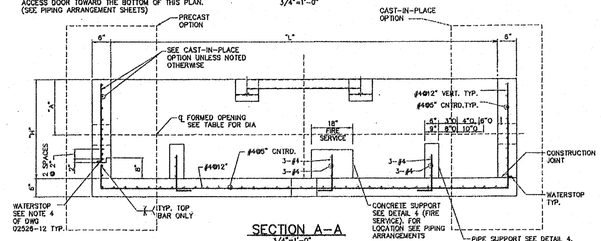


PLAN
3/4"=1'-0"

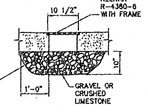
NOTE:
IF ALTERNATE PIPING ARRANGEMENT IS USED, PLAN WILL BE MIRRORED, BY MOVING THE CENTER LINE OF PIPE AND ACCESS DOOR TOWARD THE BOTTOM OF THIS PLAN. (SEE PIPING ARRANGEMENT SHEETS)



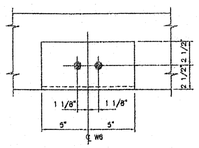
SECTION A-A
3/4"=1'-0"

NOMINAL PIPE DIA. (IN.)	LENGTH "L" (IN.) MAX.	HEIGHT "H" (IN.)	TOP OF BOX TO ℄ PIPE "A" (IN.)	"B"	THUNDERLINE LINK-SEAL MODEL NO.	BLOCKOUT OPENING *(IN.)
3	96	45.0	26.0	1'-11 1/2"	LS-200-M	14.0 ø
4	96	45.0	26.0	3'-2 1/2"	LS-400-M	14.0 ø
6	150	45.0	26.0	4'-2 1/2"	LS-400-M	DETAIL 3
8	150	45.0	29.0	4'-3 1/2"	LS-400-M	DETAIL 3
10	174	50.0	30.5	** 2'-33 3/4", 5 5/8", 4'-1'6"-0"	LS-425-M	DETAIL 3

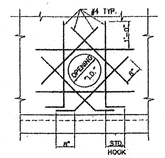
* PROVIDE A BLOCK OUT IN THE PRECAST WALL FOR THE PIPE
** THERE ARE 3 BEAMS FOR THE 10" ø LINE, THE COMPLETE STRING OF DIMENSIONS ARE SHOWN.



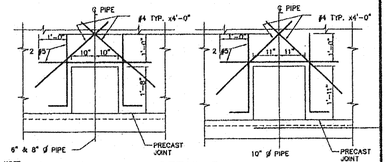
SECTION C-C



DETAIL 1
NOT TO SCALE

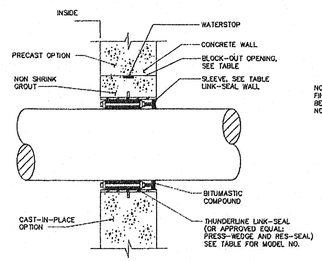


TYPICAL OPENING REINFORCEMENT DETAIL 2

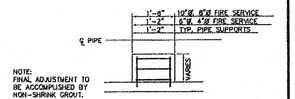


NOTE:
A. REINFORCEMENT SHOWN IS IN ADDITION TO THE SCHEDULED REINFORCEMENT.
B. PLACE ADDITIONAL REINFORCEMENT EACH FACE

DETAIL 3
3/4"=1'-0"



PIPE PENETRATION THRU WALL
NOT TO SCALE



NOTE:
FINAL ADJUSTMENT TO BE ACCOMPLISHED BY NON-SHRINK GROUT.

DETAIL 4
N.T.S.

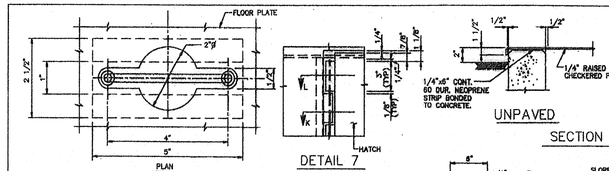
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

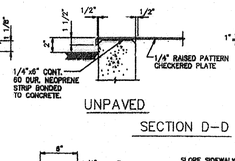
STRUCTURAL DETAILS
TURBINE / COMPOUND
METER STANDARD SERVICE
(NOT FOR TRAFFIC LOADING)
(NOT TO SCALE)

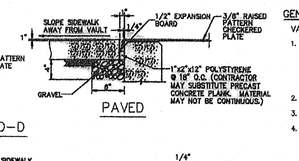
APPROVED — CITY ENGINEER — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE:JULY-01-2010 DWG NO: 02526-11

NO.	DATE	REVISION	APP.







GENERAL NOTES:

VAULT

1. VAULTS SHALL BE CAST-IN-PLACE OR FABRICATED FROM PRECAST UNITS USING NORMAL WEIGHT CONCRETE WITH THE FOLLOWING REQUIREMENTS:
   A. F'C @ 28 DAYS – 4,000 PSI
   B. MAXIMUM WATER/CEMENT RATIO = .45
   C. FY = 60,000 PSI
2. ALL LIFTING HOLES SHALL BE PLUGGED WITH A NONSHRINK GROUT.
3. NONSHRINK GROUT SHALL CONFORM TO ASTM C1107.
4. WATERSTOP SHALL BE A FLEXIBLE STRIP OF BENTONITE COMPOUND SUCH AS WATERSTOP-RX AS MANUFACTURED BY AMERICAN COLLOID COMPANY.

DIMENSIONS 1" X 3/4" CHEMICAL COMPOSITION: (% BY WEIGHT)	
BUTYL RUBBER-HYDROCARBON (ASTM D397)	24.9
BENTONITE (SS-S-210-A)	75.0

5. THIS METER VAULT DESIGN IS PROVIDED FOR THE CONVENIENCE OF THE PUBLIC. ANY USAGE OF THIS DRAWING DOES NOT RELEASE THE OWNER OR HIS DESIGNER FROM THE LIABILITY OF THE STRUCTURAL INTEGRITY OF METER VAULT.

EXCAVATION

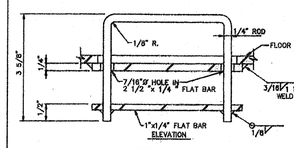
1. EXCAVATE FOR THE VAULT AFTER THE FINISHED GRADE OF THE TOP HAS BEEN DETERMINED AND THE VAULT HAS BEEN FABRICATED. THE EXCAVATION FOR THE VAULT SHALL NOT BE LEFT OPEN FOR MORE THAN ONE DAY. BACKFILL IMMEDIATELY AROUND THE VAULT EXCEPT AS REQUIRED TO PLACE THE PIPE. SHOULD EXCAVATION BECOME MUDDY OR THE EXISTING BOTTOM IS SOFT, THEN EXCAVATE TO SOUND BOTTOM AND BRING BACK TO GRADE WITH GRAVEL OR CRUSHED LIMESTONE. ANY OVER EXCAVATION SHALL ALSO BE RETURNED TO PROPER GRADE WITH GRAVEL OR CRUSHED LIMESTONE. (NO PARTICLES LARGER THEN 1").
2. BACKFILL AROUND WALLS SHALL BE PLACED IN 8" LIFTS AND COMPACTED WITH POWER-DRIVEN HAND TAMPERS.
3. USE EXCESS EXCAVATION MATERIAL IN SITE GRADING WHERE POSSIBLE. IF NOT, THEN DISPOSE OF EXCESS OFF THE JOB SITE IN A LEGAL MANNER.
4. THE METER VAULT SHALL BE LOCATED SO THAT THE DRAINAGE IS AWAY FROM THE METER.

STEEL NOTES

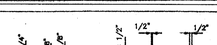
1. ALL ITEMS UNLESS ENCASED IN CONCRETE SHALL BE HOT-DIP GALVANIZED. ANCHOR BOLTS SHALL CONFORM TO ASTM A307. PROVIDE SUITABLE GALVANIZED NUTS.
2. ALL MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36.

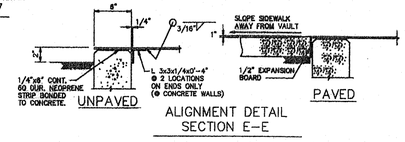
LOADS

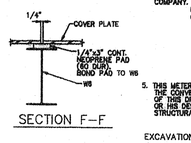
1. STEEL COVER DESIGNED FOR 50 PSF. VAULT IS DESIGNED FOR EQUIVALENT FLUID PRESSURE OF 70 PCF AND 2 FOOT OF SURCHARGE.
2. THIS VAULT IS NOT DESIGNED FOR ROADWAY USAGE. A VAULT SUBJECT TO TRAFFIC WILL REQUIRE A SPECIAL DESIGN.



LIFTING DEVICE FOR REMOVABLE PLATES
DETAIL 6







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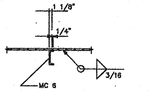

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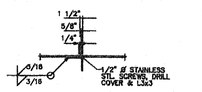

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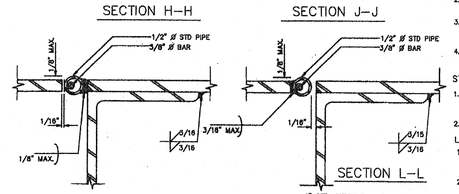

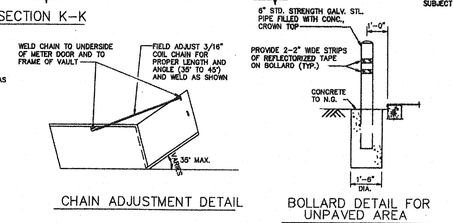

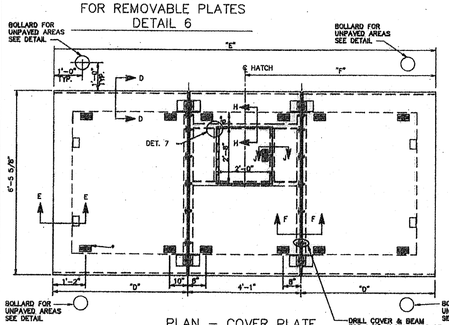

PLAN – COVER PLATE
3/4"=1'-0"

NOTE:
1. COVER PLATE TO BE 3/8" RAISED PATTERN (CHECKERED PLATE) FLOOR PLATE FOR PAVED AREAS AND 1/4" RAISED PATTERN (CHECKERED PLATE) FOR UNPAVED AREAS FLOOR PLATE
2. COVER IS DESIGNED FOR 50 PSF.
3. IF ALTERNATE PIPING ARRANGEMENT IS USED, PLAN WILL BE MIRRORED BY MOVING THE ACCESS DOOR TOWARD THE BOTTOM OF THIS PLAN. (SEE PIPING ARRANGEMENT SHEETS)

PIPE DIA. (IN.)	"D"	"E"	"F"
3	2' 5 1/2"	9"	4' 6"
4	2' 5 1/2"	9"	4' 6"
6	4' 10 1/2"	13" 10"	6' 6 1/2"
8	4' 10 1/2"	13" 10"	6' 6 1/2"
10	*	15" 10"	8' 8"

* D LEFT=2 @ 3'-5 1/2",D RIGHT=4'-10"

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STRUCTURAL DETAILS
TURBINE / COMBINE METER
STANDARD SERVICE
(NOT FOR TRAFFIC LOADING)
(NOT TO SCALE)

APPROVED — CITY ENGINEER — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE:JULY-01-2010 DWG NO: 02526-12

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Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XV
C-015

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
NOT TO SCALE
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 24 OF 255

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ACCEPTED
80341
DATE 12-19-2024
HOUSTON, TEXAS

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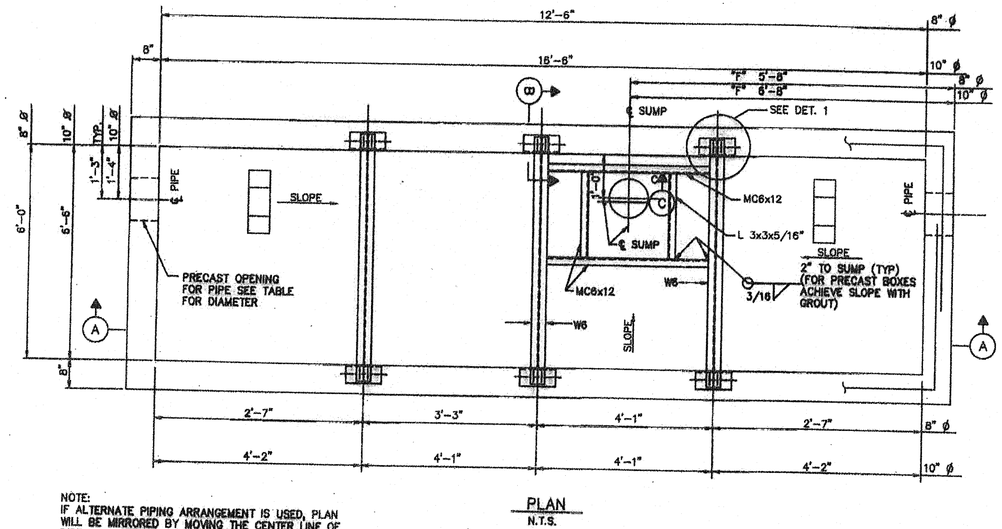
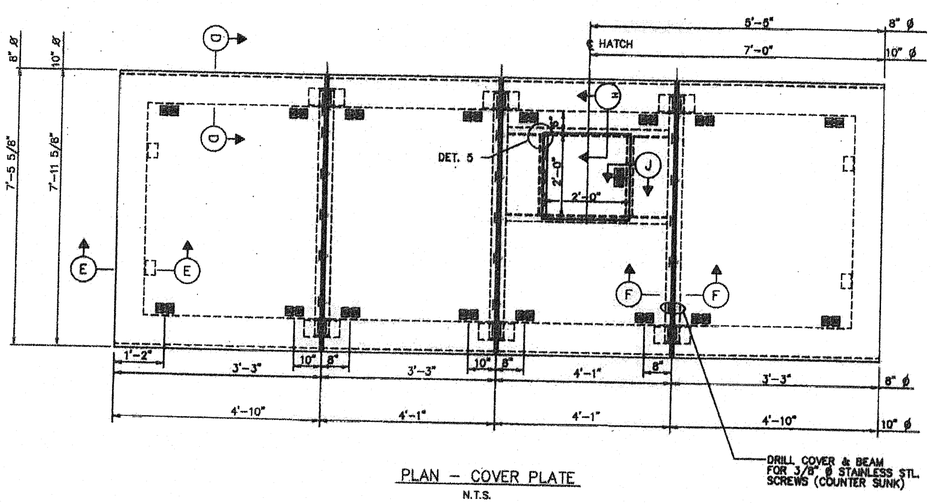


NOTE:
IF ALTERNATE PIPING ARRANGEMENT IS USED, PLAN WILL BE MIRRORED BY MOVING THE CENTER LINE OF PIPE AND ACCESS DOOR TOWARD THE BOTTOM OF THIS PLAN. (SEE PIPING ARRANGEMENT SHEETS)

PLAN
N.T.S.



PLAN – COVER PLATE
N.T.S.

NOTES:

1. SEE SHEETS "STRUCTURAL DETAILS TURBINE/COMPOUND METER STANDARD SERVICE 1 OF 2 AND 2 OF 2" FOR ALL STRUCTURAL DETAILS AND DIMENSIONS NOT SHOWN HERE. THIS SHEET REFLECTS THE PLAN DIMENSIONS THAT DIFFER FOR THE FIRE SERVICE BOXES. (FOR THE 8" ø LINE THIS IS A CHANGE IN WIDTH AND TOP PLATE ARRANGEMENT AND FOR THE 10" ø LINE THERE IS A CHANGE IN LENGTH, WIDTH AND TOP PLATE ARRANGEMENT.)
2. FOR THE 4" ø AND 6" ø FIRE SERVICE BOXES USE SAME DIMENSIONS AS THEIR RESPECTIVE STANDARD SERVICE METER BOXES.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
STRUCTURAL PLANS FIRE SERVICE METER (NOT FOR TRAFFIC LOADING) (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010	DWG NO: 02526-13

NO.	DATE	REVISION	APP.

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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XVI
C-016

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
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CITY OF HOUSTON PM
SH SHAHIDUR RAHMAN, P.E.
SHEET NO. 25 OF 255

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HOUSTON, TEXAS

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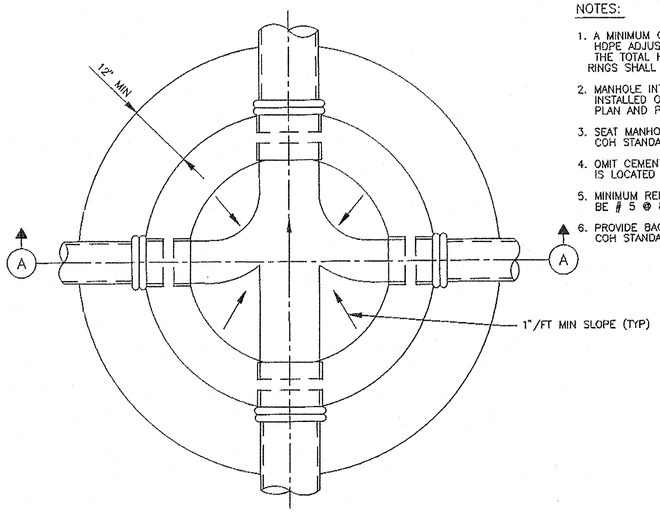
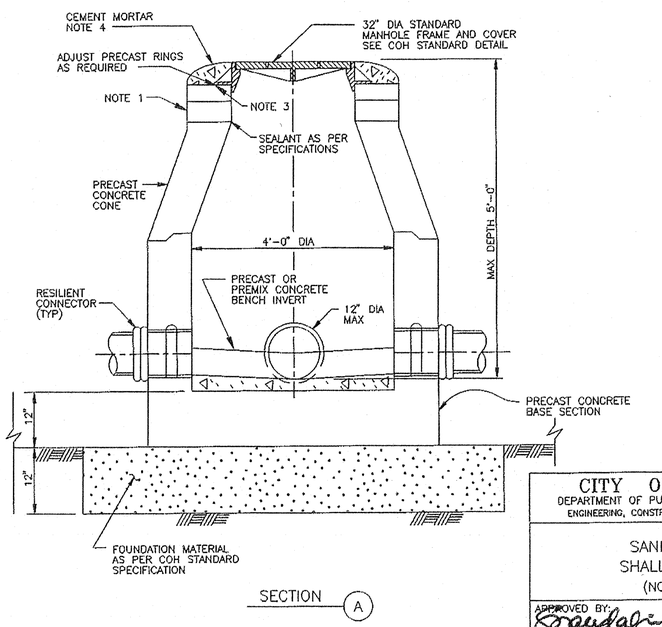
NOTES:

1. A MINIMUM OF 3" PRECAST CONCRETE OR HDPE ADJUSTMENT RING SHALL BE PROVIDED. THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 12".
2. MANHOLE INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
3. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
4. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
5. MINIMUM REINFORCING IN THE BASE BE # 5 @ 8 EW.
6. PROVIDE BACKFILL MATERIAL AS PER COH STANDARD SPECIFICATION.



FOUNDATION PLAN

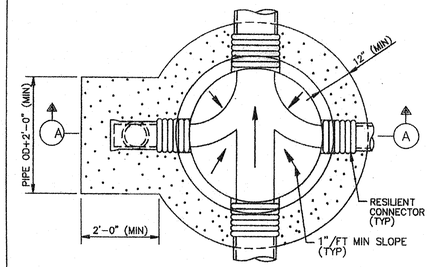


SECTION

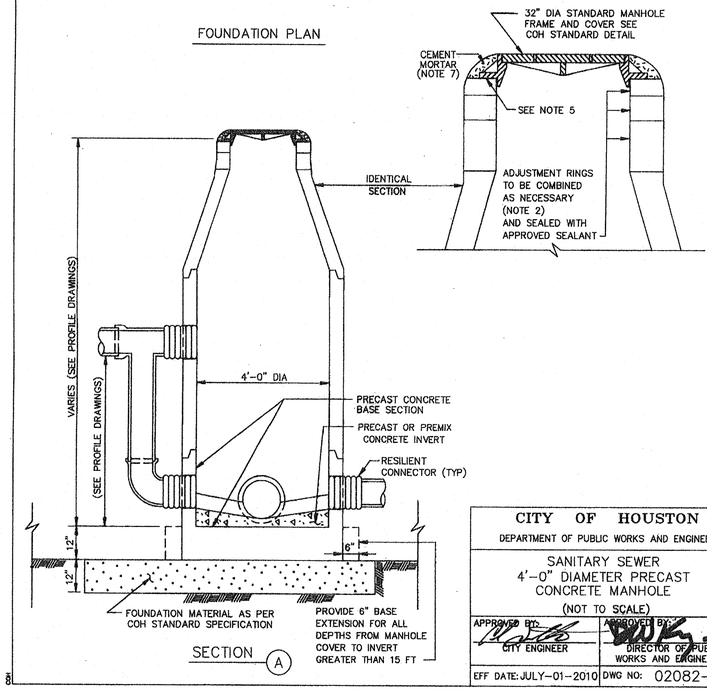
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER SHALLOW MANHOLE (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02082-01

NOTES:

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



FOUNDATION PLAN



SECTION

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

NO.	DATE	REVISION	APP.

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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XVII
C-017

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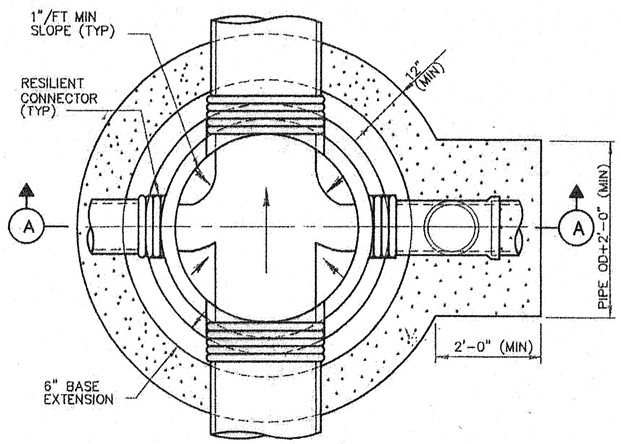
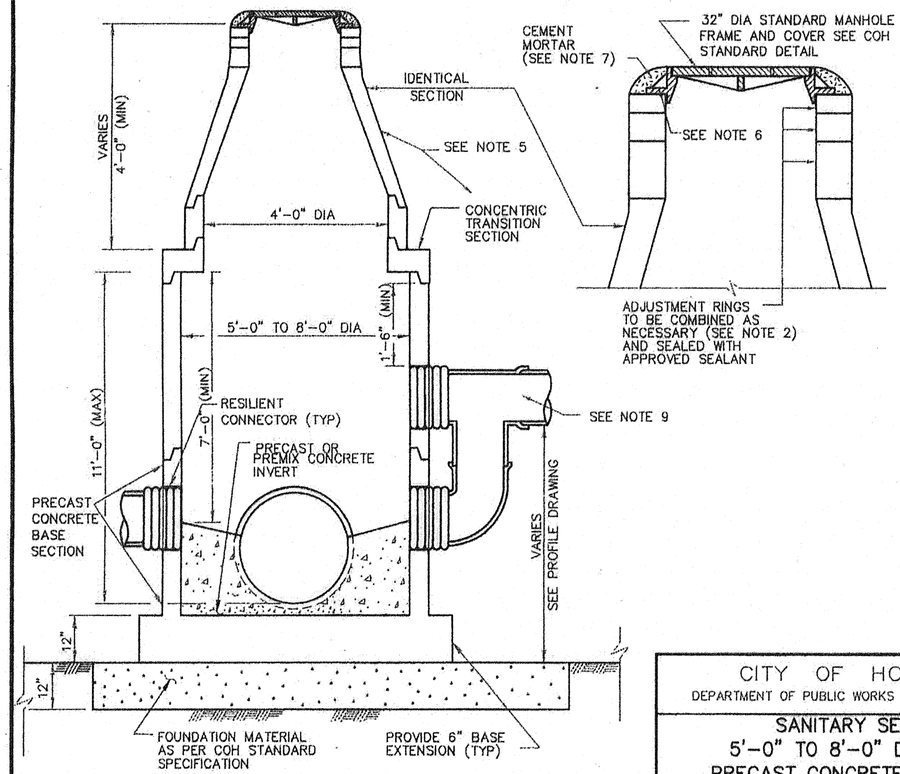


FOUNDATION PLAN

NOTES:

1. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'-0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS. MIN THICKNESS 5".
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
5. ALTERNATE ECCENTRIC CONE AND/OR TRANSITION SECTION MAY BE USED.
6. SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 8 EW.
9. WHERE DIMENSIONAL RESTRICTIONS DICTATE, THE MANHOLE BASE HEIGHT SHALL BE ADJUSTED TO HAVE THE UPPER INLET PIPE OF THE DROP ENTER INTO THE 4'-0" DIAMETER RISER SECTION.



SECTION (A)

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

SANITARY SEWER
5'-0" TO 8'-0" DIAMETER
PRECAST CONCRETE MANHOLE
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02082-03

NO.	DATE	REVISION	APP.

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

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STANDARD DETAILS XVIII
C-018

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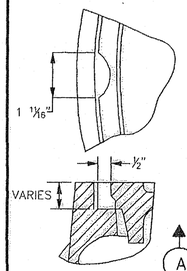
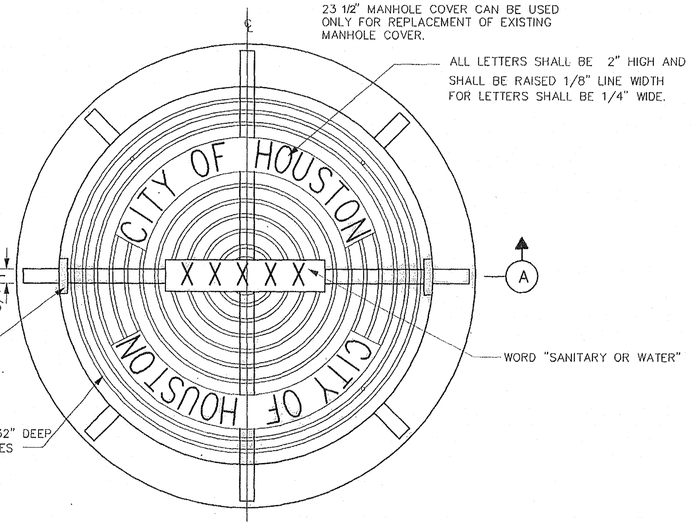
TYPE 1
OPEN PICK HOLE



OTHER OPEN PICK HOLES ARE STANDARD ON CERTAIN COVERS.

NOTE:
23 1/2" MANHOLE COVER CAN BE USED ONLY FOR REPLACEMENT OF EXISTING MANHOLE COVER.



ALL LETTERS SHALL BE 2" HIGH AND SHALL BE RAISED 1/8" LINE WIDTH FOR LETTERS SHALL BE 1/4" WIDE.

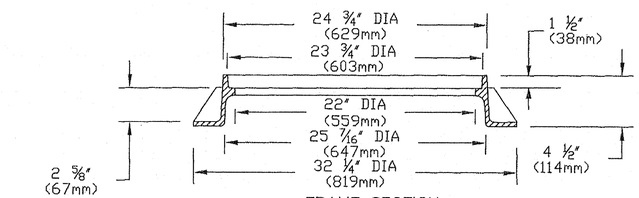
WORD "SANITARY OR WATER"

1/2" x 2 1/2" RECESS (SEE SECTION OF COVER THRU RECESS)

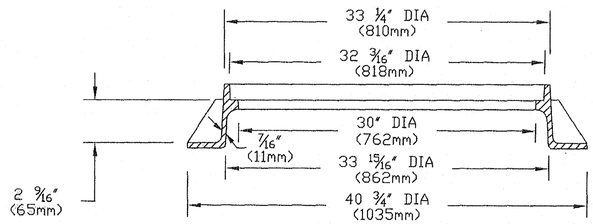
GROOVES 3/16" DIA X 3/32" DEEP APPROX 3/4" TO 1" SPACES

PLAN

23 1/2" MANHOLE COVER WITH FRAME



FRAME SECTION



SECTION (A)

32" 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

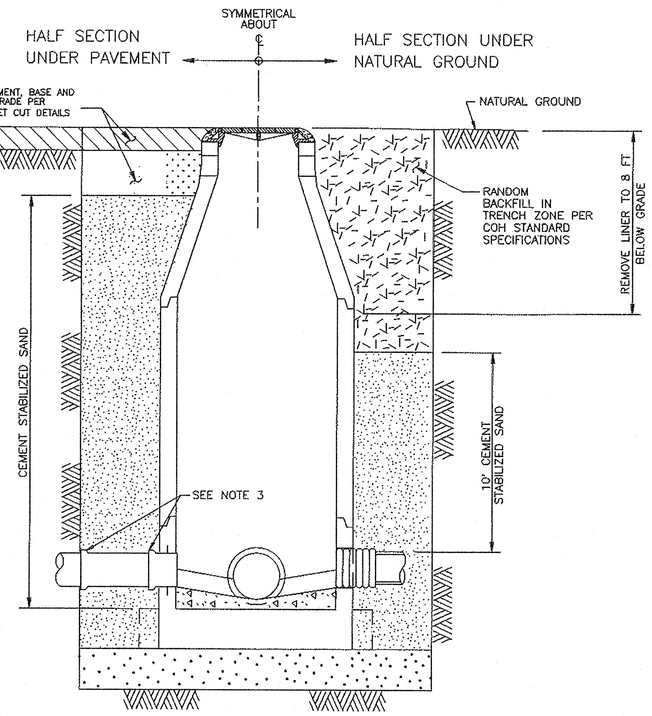
3) CASTING TO MEET M306 PROOF LOAD SPECIFICATION

4) MODEL V-14240 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: Dale A. Rudick DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2016	DWG NO: 02090-01

NOTES:

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



TYPICAL CROSS - SECTION

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

NO.	DATE	REVISION	APP.

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910 Louisiana Street Suite 2600
Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139265
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL
STANDARD DETAILS XIX
C-019

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
NOT TO SCALE
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 28 OF 255

FOR CITY OF HOUSTON USE ONLY

ACCEPTED AND FILED
PUBLIC WORKS AND ENGINEERING
80341
CITY SECRETARY
HOUSTON, TEXAS

PLOTTED: 12/11/2024 1:57 PM
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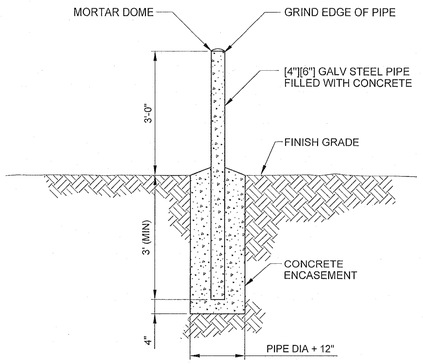
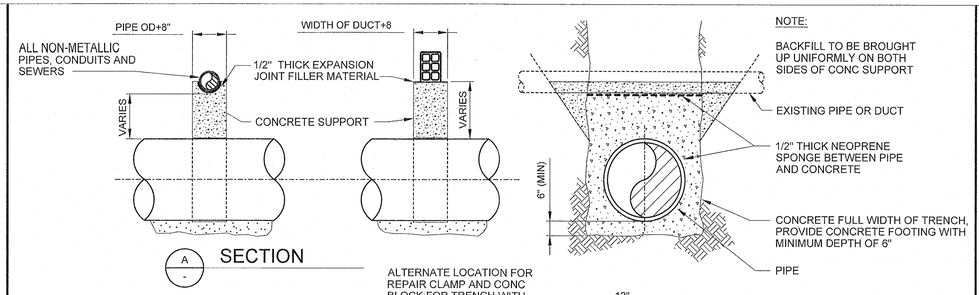


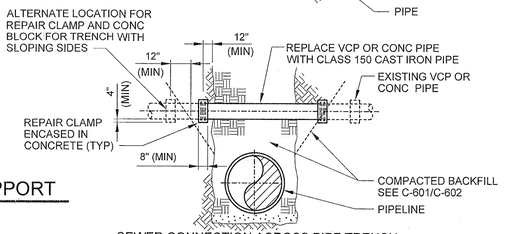
C-114 GUARD POST

REV 010119



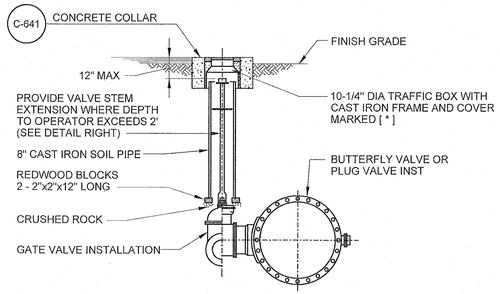
NOTES:

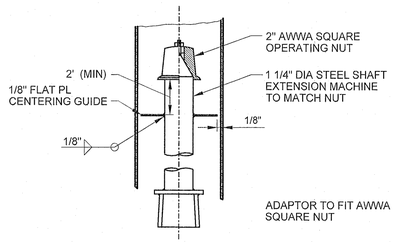
1. UNDERGROUND UTILITY SUPPORTS ARE TO BE PROVIDED WHEN MINIMUM CLEARANCE OF 12 INCHES CANNOT BE PROVIDED.
2. EXISTING PIPE OR DUCT SHALL BE FIRMLY SUPPORTED DURING INSTALLATION OF NEW PIPE AND SUPPORT.



SEWER CONNECTION ACROSS PIPE TRENCH

C-608 UNDERGROUND UTILITY SUPPORT





NOTES:

PROVIDE PROTECTIVE COATING TO EXTERIOR SURFACE OF VALVE BODY IN ACCORDANCE WITH SPECS.
FOR LUBRICATED PLUG VALVE, EXTEND LUBRICATION LINE TO GRADE PER MANUFACTURES INSTRUCTIONS.

C-640 BURIED VALVE INSTALLATION

REV 010119

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
138085
LICENSED PROFESSIONAL ENGINEER
03/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS XX C-020

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
NOT TO SCALE
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 29 OF 255

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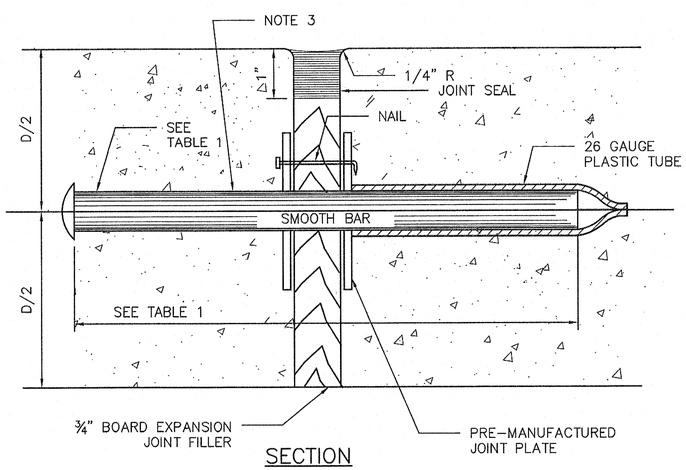
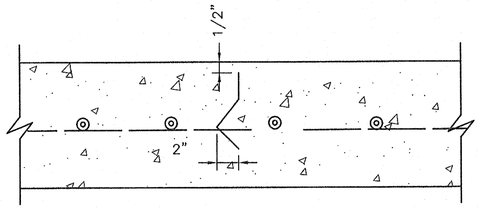


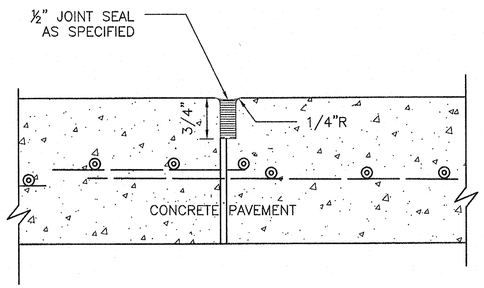
SECTION

DOWEL TYPE EXPANSION JOINT



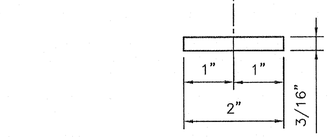
SECTION

DEFORMED METAL STRIP



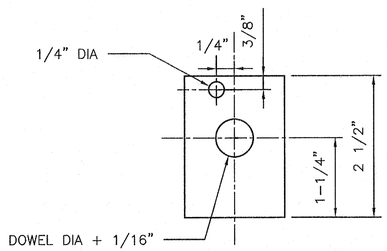
SECTION

CONSTRUCTION JOINT SEAL



PLAN VIEW

JOINT PLATE



ELEVATION VIEW

JOINT PLATE

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS. UNITS TO BE SPACED 12" CENTER ON CENTER.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE BASE. EXTEND THICKENED CONCRETE AS NEEDED TO MAINTAIN 3" MIN COVER.
5. CITY OF HOUSTON APPROVED PRODUCTS MAY BE USED AS JOINT PLATE ALTERNATIVE.

TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
6	3/4	18	12
7	1	18	12
8	1	18	12
9	1 1/4	18	12
10	1 1/4	18	12
11	1 1/4	18	12
12	1 1/4	18	12

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO 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 FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

CITY OF HOUSTON	
HOUSTON PUBLIC WORKS STANDARD	
PAVEMENT EXPANSION AND CONSTRUCTION JOINT DETAILS	
(SCALE: NOT TO SCALE)	
APPROVED BY:	
DocuSigned by: Suhail Kanwar 9EF8B0C641F5478... CITY ENGINEER	DocuSigned by: Carol Haddock A93C4105729343... DIRECTOR OF HPW
DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD... CITY TRAFFIC ENGINEER	
EFF DATE: NOV-27-2023	DWG NO: 02752-01

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED
PROFESSIONAL ENGINEER
05/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

CIVIL STANDARD DETAILS XXI C-021

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 30 OF 255	

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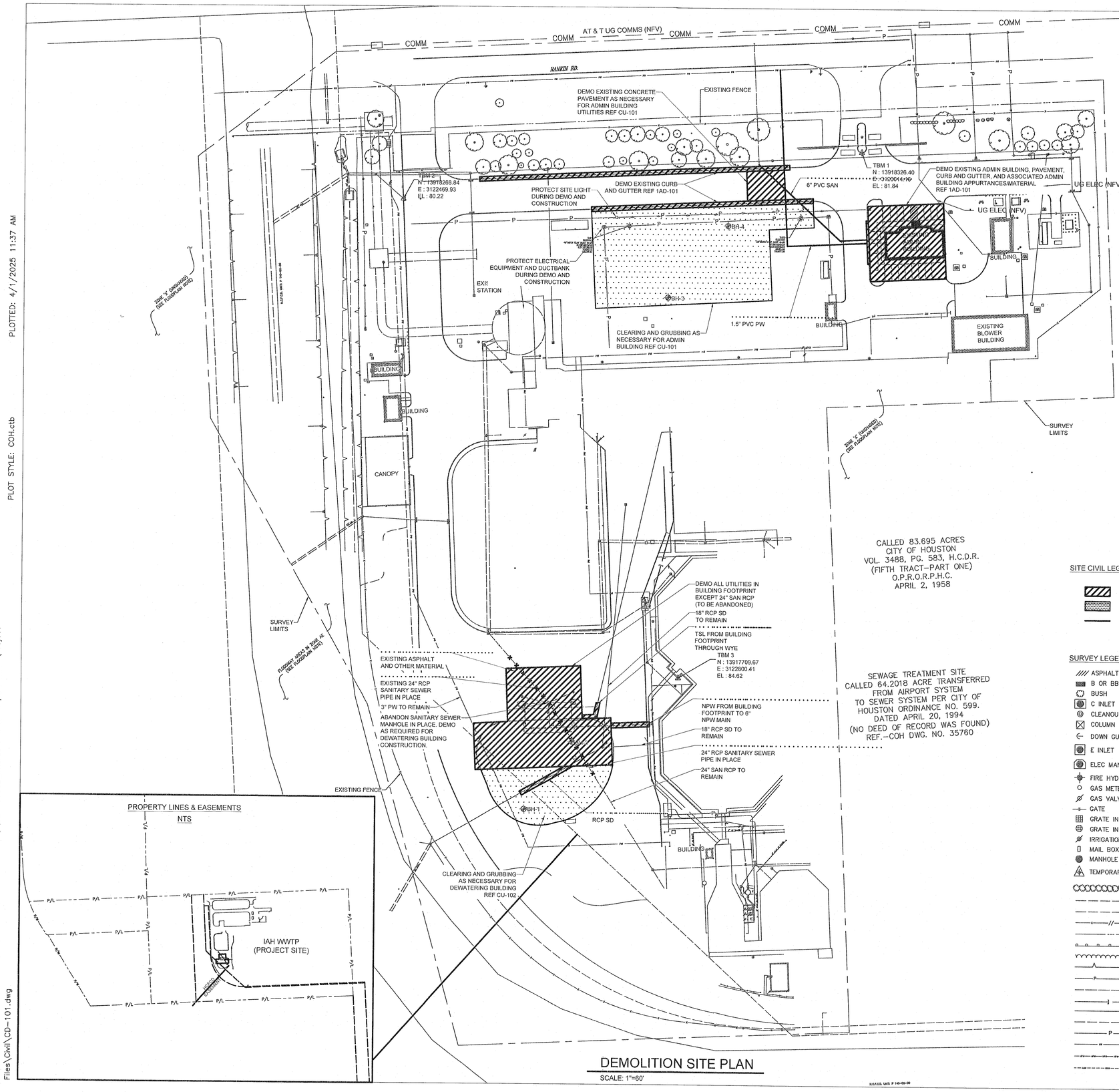

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0 60 120
SCALE IN FEET

NOTES:

1. COH SHALL FIRST RIGHT OF REFUSAL FOR DEMOLITION BY-PRODUCTS

NO.	DATE	REVISION	APP.

SITE CIVIL LEGEND:

- DEMOLITION HATCH
- CLEARING AND GRUBBING HATCH
- PIPE ABANDONMENT

SURVEY LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- MANHOLE
- TEMPORARY BENCH MARK
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKLER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- TEST/BORE HOLE
- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
- TELEPHONE LINE
- UG STREET LIGHT CABLE
- WATER LINE
- NON POTABLE WATER
- AT & T UG COMMUNICATION LINE (NFV)

NOTICE:

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
03/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL DEMOLITION SITE PLAN CD-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	31 OF 255

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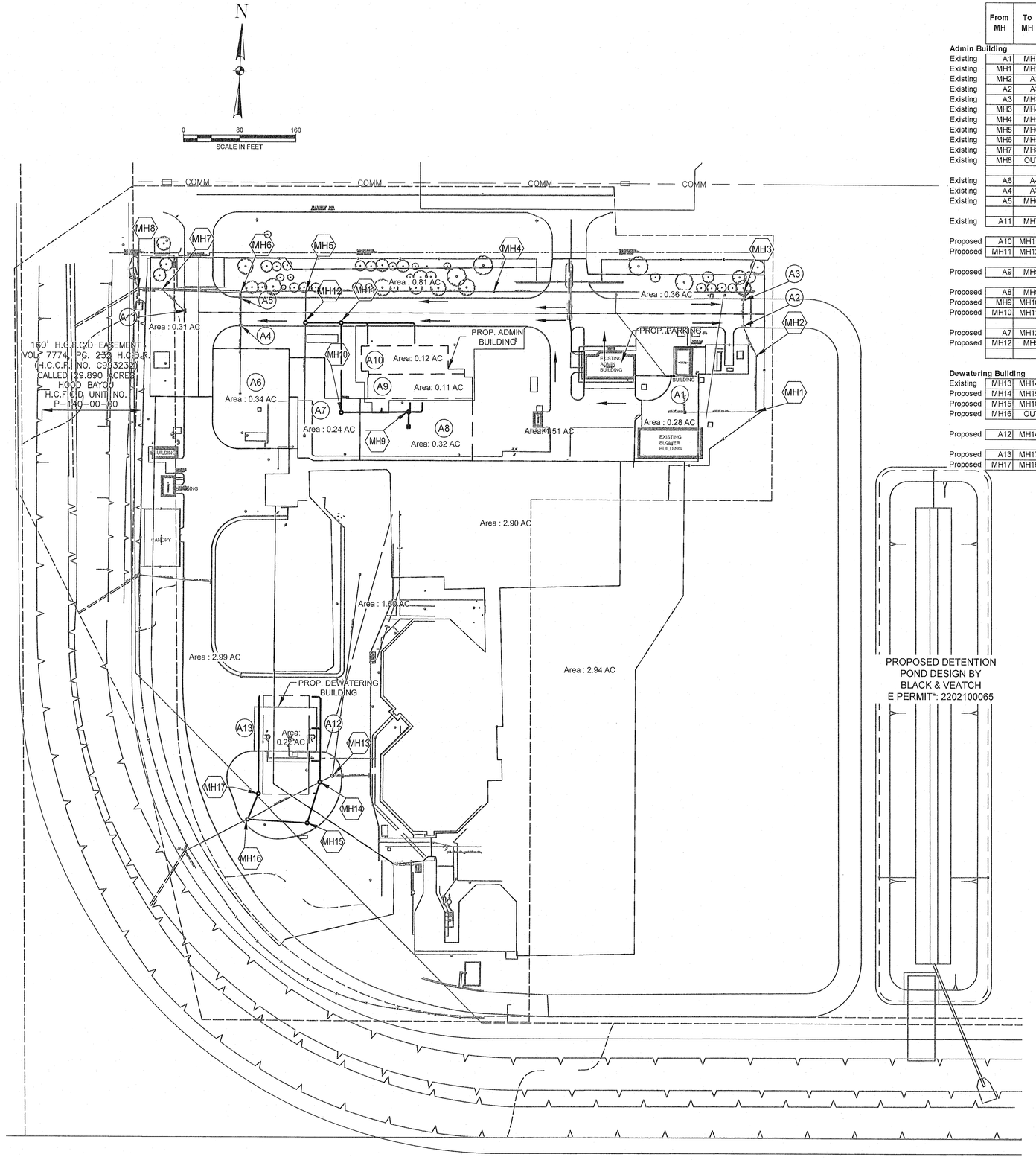

	From MH	To MH	Sub Area (ac)	Sub Runoff Coeff. C	Total Area A (ac)	Sum of C A	Intensity I (in / hr)	Sum of Flows Q (cfs)	Time of Conc. TC (min)	LINE: Reach Length (ft)	LINE: Diameter (in)	LINE: Slope (%)	LINE: Manning's "n"	DESIGN: Capacity Q (cfs)	DESIGN: Velocity V (fps)	drop at down stream manhole	Actual Velocity (fps)	Hydraulic Gradient (%)	Change in Head (ft)	Flowline Upstream (ft)	Flowline Downstream (ft)
Admin Building																					
Existing	A1	MH1	0.28	0.80	0.28	0.22	8.90	1.99	22.99	100	12	1.08	0.013	3.70	4.71	1.92	4.79	1.080	1.080	78.83	77.75
Existing	MH1	MH2	0.00	0.80	0.28	0.22	8.83	1.99	23.35	77	12	0.44	0.013	2.36	3.01		3.37	0.440	0.337	75.83	75.49
Existing	MH2	A2	0.00	0.80	0.28	0.22	8.75	1.99	23.77	43	12	0.44	0.013	2.36	3.01		3.37	0.440	0.189	75.49	75.30
Existing	A2	A3	0.42	0.64	0.70	0.49	8.71	4.29	24.01	39	18	0.50	0.013	7.43	4.20		4.34	0.500	0.195	75.30	75.11
Existing	A3	MH3	0.36	0.64	1.06	0.72	8.68	6.28	24.16	10	18	0.50	0.013	7.43	4.20		4.71	0.500	0.050	75.11	75.06
Existing	MH3	MH4	0.00	0.64	1.06	0.72	8.68	6.28	24.20	355	24	0.18	0.013	9.60	3.06		3.24	0.180	0.639	75.06	74.42
Existing	MH4	MH5	0.00	0.64	1.06	0.72	8.35	6.28	26.14	267	24	0.18	0.013	9.60	3.06	0.15	3.24	0.180	0.481	74.42	73.94
Existing	MH5	MH6	0.00	0.59	1.85	1.25	8.13	10.14	27.59	92	24	0.18	0.013	**9.60**	3.06		3.23	0.032	0.029	73.79	73.62
Existing	MH6	MH5	0.00	0.49	4.51	2.38	8.06	19.16	28.10	112	30	0.76	0.013	35.76	7.28	0.37	7.40	0.760	0.851	73.62	72.77
Existing	MH7	MH8	0.31	0.48	5.13	2.65	8.02	21.24	28.35	33	30	0.13	0.013	**14.79**	3.01	4.81	4.33	0.042	0.014	72.40	72.36
Existing	MH8	OUT	0.00	0.35	5.13	2.65	7.99	21.24	28.53	105	36	0.11	0.013	22.12	3.13		3.56	0.110	0.116	67.55	67.43
Existing	A6	A4	0.34	0.30	0.34	0.10	8.84	0.90	23.27	96	18	1.69	0.013	13.65	7.72		4.31	1.688	1.620	75.84	74.22
Existing	A4	A3	1.51	0.44	1.85	0.77	8.81	6.75	23.48	38	18	0.21	0.013	**4.82**	2.73		3.82	0.065	0.025	74.69	74.61
Existing	A5	MH6	0.81	0.45	2.66	1.13	8.76	9.91	23.71	8	18	0.50	0.013	**7.43**	4.20		5.61	0.140	0.011	74.33	**74.47**
Existing	A11	MH7	0.31	0.39	0.31	0.12	8.87	1.07	23.14	44	18	0.18	0.013	4.48	2.54		2.07	0.182	0.080	75.24	**75.43**
Proposed	A10	MH11	0.12	0.80	0.12	0.10	9.11	0.87	21.88	109	12	0.44	0.011	2.79	3.56	1.99	3.13	0.440	0.480	77.25	76.77
Proposed	MH11	MH12	0.00	0.80	0.55	0.44	9.01	3.96	22.39	51	18	0.26	0.011	6.33	3.58		3.77	0.260	0.133	74.78	74.65
Proposed	A9	MH9	0.11	0.80	0.11	0.09	9.13	0.80	21.78	30	12	0.44	0.011	2.79	3.56		3.04	0.440	0.132	77.25	77.12
Proposed	A8	MH9	0.32	0.80	0.32	0.26	8.86	2.27	23.18	21	18	0.26	0.011	6.33	3.58		3.27	0.260	0.055	77.21	77.16
Proposed	MH9	MH10	0.00	0.80	0.43	0.34	8.84	3.04	23.28	95	18	0.26	0.011	6.33	3.58	0.38	3.52	0.260	0.247	77.16	76.91
Proposed	MH10	MH11	0.00	0.80	0.43	0.34	8.76	3.04	23.72	126	18	0.26	0.013	5.36	3.03		3.10	0.260	0.328	76.53	76.20
Proposed	A7	MH12	0.24	0.35	0.24	0.08	8.94	0.75	22.78	157	18	1.06	0.013	10.80	6.11	0.05	3.41	1.057	1.654	76.29	74.68
Proposed	MH12	MH5	0.00	0.35	0.79	0.52	8.86	4.64	23.20	42	18	1.06	0.013	10.80	6.11	0.40	5.83	1.057	0.446	74.62	74.19
Dewatering Building																					
Existing	MH13	MH14	1.64	0.42	1.64	0.68	8.39	5.73	25.91	17	18	0.50	0.013	7.43	4.20		4.62	0.500	0.087	77.79	77.70
Proposed	MH14	MH15	0.00	0.80	1.75	1.49	8.37	12.47	26.04	60	24	0.40	0.013	14.31	4.55	0.01	5.13	0.400	0.240	77.70	77.46
Proposed	MH15	MH16	0.00	0.80	1.75	1.40	8.37	11.73	26.04	85	24	0.40	0.013	14.38	4.58	8.07	5.09	0.404	0.341	77.45	77.11
Proposed	MH16	OUT	0.00	0.80	1.86	1.58	8.35	13.18	26.16	99	24	0.50	0.013	16.00	5.09		5.68	0.500	0.495	69.04	68.55
Proposed	A12	MH14	0.11	0.80	0.11	0.09	9.13	0.80	21.78	130	12	0.44	0.013	2.36	3.01	(0.00)	2.71	0.440	0.572	78.27	77.70
Proposed	A13	MH17	0.11	0.80	0.11	0.09	9.13	0.80	21.78	140	12	0.44	0.013	2.36	3.01		2.71	0.440	0.616	77.90	77.28
Proposed	MH17	MH16	0.00	0.80	0.11	0.09	9.13	0.80	21.78	37	12	0.44	0.013	2.36	3.01		2.71	0.440	0.163	77.28	77.12

LEGEND

- MH1 — MANHOLE NUMBER
- A2 — DRAINAGE AREA NUMBER
- — — — DRAINAGE AREA
- 0.36 AC — AREA ACREAGE
- ← FLOW ARROW

PER DRAINAGE IMPACT ANALYSIS FOR THE
"INTERCONTINENTAL AIRPORT WWTP EXPANSION PROJECT"
PREPARED FOR BY BLACK & VEATCH
BY 5enginnering
DATED 7/29/2022
E PERMIT PROJECT*: 2202010106
PROPOSED DETENTION POND VOLUME PROVIDED: 14.3 AC-FT
PROPOSED DETENTION POND VOLUME REQUIRMENT: 8.3 AC-FT
DETENTION POND STORAGE VOLUME AVAILABLE : 6.0 AC-FT
DETENTION RATE: 0.65 AC-FT/AC

DETENTION SUMMARY FOR THIS PROJECT:

DISTURBED AREA/ INCREASE
IMPERVIOUS COVER:
- ADMIN BUILDING / PARKING LOT (19980 SQ FT): 0.46 AC
- DEWATERING BUILDING (9607 SQ FT): +0.22 AC
0.68 AC

DETENTIONS RATE: 0.75 AC-FT/AC
DETENTION REQUIRED: 0.51 AC-FT

OVER DETAIN IN PROPOSED DETENTION POND

AVAILABLE STORAGE VOLUME IN DETENTION POND: 6.0 AC-FT
DETENTION VOLUME REQUIRED: -0.51 AC-FT
DETENTION POND STORAGE REMAINING: 5.49 AC-FT

- THE PROPERTY IS LOCATED IN TIER 1 OF GEORGE BUSH INTERNATIONAL AIRPORT. THE DETENTION PONDS ARE NOT ALLOWED TO HOLD WATER FOR MORE THAN 48 HOURS PER FAA REQUIREMENTS.
- PURSUANT TO FAA ADVISORY CIRCULAR 150\5200-33B 2-3 SUB-SECTION B: STORM WATER DETENTION PONDS SHALL BE DESIGNED, ENGINEERED, CONSTRUCTED, AND MAINTAINED FOR A MAXIMUM 48-HOUR DETENTION PERIOD AFTER THE DESIGN STORM AND REMAINS COMPLETELY DRY BETWEEN STORMS.

NO.	DATE	REVISION	APP.

EJES INCORPORATED
6161 SAVOY DRIVE.
SUITE 830
HOUSTON, TEXAS 77036
(P) 281-272-1612
(F) 281-272-1619
FIRM REG. F-2488

Stantec

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910 Louisiana Street Suite 2600
Houston, Texas 77002
Tel: 713.548.5700
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SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

STATE OF TEXAS
MARK R. KOSINSKI
57539
LICENSED PROFESSIONAL ENGINEER
12-12-2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL - PAVING, GRADING AND DRAINAGE MAP CG-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	32 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING
ACCEPTED NOTICED
80341
CITY ENGINEER NUMBER
HOUSTON, TEXAS

PLOTTED: 3/27/2025 1:50 PM
PLOT STYLE: COH.ctb
FILE PATH: F:\Projects\254-02-IAH WWTP - Drainage\4-Drawings\1-Sheets\CG-101.dwg

PLOTTED: 3/27/2025 1:50 PM
PLOT STYLE: Coh.ctb
FILE PATH: F:\Projects\254-02-IAH WWTP - Drainage\4-Drawings\1-Sheets\CG-102.dwg

RANKIN RD

EXIST. 16" WATER

EXISTING FENCE

EXISTING FIRE HYDRANT (TYP)

EXIST. 8" PVC SAN.

CENTERPOINT ENERGY 4" IP STL GAS SERVICE LINE (APPROX. LOCATION)

PRESSURE VALVE (2)

EXIST. 2" WATER

EXISTING STM MH (POSSIBLE CONFLICT)

STM MH
TOP 81.32
24" E-FL 74.04
24" W-FL 74.40

TC=81.27
G=80.77

TC=81.07
G=80.57

EXIST. 24" RCP STM

MATCH EXISTING ELEVATION

EXIST.
STM MH
TOP 80.45
24" E-FL 73.80
18" S-FL 74.47
30" W-FL 73.61
LEC. BOX

TC=80.29
G=79.79

STM MH
TOP 81.07
24" E-FL 73.94
18" S-FL 74.19
24" W-FL 73.79

PROPOSED 6" CONCRETE CURB

TC=80.84
G=80.34

MATCH EXIST. ELEVATION

PROP. MH11 DMH TYPE C
N:13918262.4226
E:3122693.2938
RIM: 80.08
18" S FL: 76.20
12" E FL: 76.77
18" W FL: 74.78

PROP. MH12 DOGHOUSE MH
N:13918260.1772
E:3122642.8286
RIM: 79.91
*18" PVC INV IN:74.65(E)
18" PVC INV IN:74.68(S)
*18" PVC INV OUT:74.62(N)

PROP 29 LF~12" PVC @ 1.0%

PROP. 109 LF~12" PVC @ 0.44%

TC=80.85
G=80.35

TC=80.89
G=80.39

TC=80.67
G=80.17

TC=81.14
G=80.64

TC=81.54
G=81.04

TC=81.14
G=80.64

TC=81.13
G=80.63

EXIST. 8" PVC SAN.
G=80.58

INLET
P 79.95
N-FL 74.33
S-FL 74.61

EXIST. 18" RCP STM.

PROP. 51 LF~18" PVC @ 0.26%

TC=80.44
G=79.94

TC=80.48
G=79.98

PROP. DOWNSPOUT
12"℄=77.25 (TYP)

PROP. DOWNSPOUT
12"℄=77.25 (TYP)

TP=82.00

TC=81.68
G=81.18

TC=82.09
G=81.59

EXIST. 6" PVC SAN.

EXIST.1 1/2" WATER

PROP. 126 LF~18" PVC @ 0.26%

TP=82.00

TP=83.00

PROP. ADMIN BUILDING
FFE = 83.25

TP=83.19

TP=83.00

5% MAX

PROP 13 LF~12" PVC @ 1.0%

PROP. DOWNSPOUT
12"℄=77.25 (TYP)

PROP. DOWNSPOUT
12"℄=77.25 (TYP)

TP=82.71

TP=82.75

TP=82.60

PROP 31 LF~12" PVC @ 0.44%

PROP MH9-DMH TYPE C
N:13918142.0265
E:3122794.8661
RIM: 82.00
12" N FL: 77.12
18" S FL: 77.16
12" E FL: 77.12
18" W FL: 77.16

PROP 20 LF~18" PVC @ 0.26%

PROP. MH10 DMH TYPE C
N:13918136.8386
E:3122699.3549
RIM:82.35
18" E FL: 76.91
18" N FL: 76.53

PROP 95 LF~18" PVC @ 0.26%

PROP TYPE E INLET
N:13918121.3760
E:3122795.7262
RIM: 82.35
THROAT: 80.85
12" N FL: 77.21

EXIST. 6" N.P.W. LINE (4' COVER)

EXIST. 3" N

GRATE INLET
TOP 79.38
18" N-FL 75.84

'GRATE'

EXISTING LIFT STATION

EXIST.
BB INLET
TOP 79.79
18" N-FL 74.69
18" S-FL 74.22

EXIST. 18" RCP STM.

SAN MH
TOP 81.21
24" SE-FL 74.56
UNABLE TO GET BOTTOM FL

SAN MH

EXIST. 24" RCP SAN.

SAN MH
TOP 80.19
8" E-FL 77.49
24" NW-FL 75.92
E-FL TANK BASING CONNECT

EXIST. 8" STL SAN.

6" DIP DRAIN.

EXISTING HEADWORKS

EXIST. 48" RCP SAN.

EXISTING GRATE INLET
TOP 79.68
18" N-FL 76.29

EXIST. 24" RCP STM.

MATCH EXISTING ELEVATION

MATCH EXISTING ELEVATION

MATCH EXISTING ELEVATION

MATCH EXISTING ELEVATION

CENTERPOINT ENERGY 8" STL GAS SERVICE LINE (APPROX LOCATION)

TC=81.50
G=81.00

TC=81.80
G=81.30

TC=81.90
G=81.40

TC=82.10
G=81.60

G=81.60

G=81.20

NEW CURB

TC=82.00
G=81.50

G=81.80

PROP. PARKING LOT

G=82.00

TC=82.50
G=82.00

TC=82.30
G=81.80

G=82.20

TC=82.10
G=81.60

NOTE:
1. CONTRACTOR TO FIELD VERIFY PIPE ELEVATIONS PRIOR TO CONSTRUCTION (✱).
2. CONTRACTOR TO GRADE NATURAL GROUND FROM THE SIDEWALK NEAR THE BUILDING TO NATURAL GROUND WITHIN 20' OF THE BUILDING AT A MAX.SLOPE OF 5%.
3. CONTRACTOR TO GRADE THE AREA BEHIND THE ADMIN BUILDING TO DRAIN TO THE THROAT OF THE PROPOSED "E" INLET AT A MAX SLOPE OF 5%.
4. THE PROPOSED DOG HOUSE MANHOLE IS TO STRADDLE THE EXISTING STORM SEWER. CONCRETE IS TO BE POURED TO FORM THE A BOTTOM SLAB AND INVERT SHELF. THE EXISTING STORM SEWER WILL BE CUT TO PROVIDE A MEANS OF DRAINAGE.

LEGEND

FLOW ARROWS

N

0 20 40
SCALE IN FEET

NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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STATE OF TEXAS
MARK R. KOSWOSKI
57539
LICENSED PROFESSIONAL ENGINEER
12-12-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION - PAVING, GRADING AND DRAINAGE PLAN
CG-102

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	33 OF 255

FOR CITY OF HOUSTON USE ONLY

PROFESSIONAL ENGINEER
80341
JOSHUA L. FEIN

PLOTTED: 3/27/2025 1:50 PM

PLOT STYLE: COH.ctb

FILE PATH: F:\Projects\254-02-IAH WWTP - Drainage\4-Drawings\1-Sheets\CG-103.dwg

EXISTING FENCE

NOTE:
1. CONTRACTOR TO FIELD VERIFY STORM SEWER ELEVATIONS PRIOR TO CONSTRUCTION (*).
2. CONTRACTOR TO GRADE NATURAL GROUND FROM THE SIDEWALK NEAR THE BUILDING TO NATURAL GROUND WITHIN 20' OF THE BUILDING AT A MAX.SLOPE OF 5%.
3. THE PROPOSED DOG HOUSE MANHOLE IS TO STRADDLE THE EXISTING STORM SEWER. CONCRETE IS TO BE POURED TO FORM THE A BOTTOM SLAB AND INVERT SHELF. THE EXISTING STORM SEWER WILL BE CUT TO PROVIDE A MEANS OF DRAINAGE.

NO.	DATE	REVISION	APP.

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12-12-2024

CITY OF HOUSTON

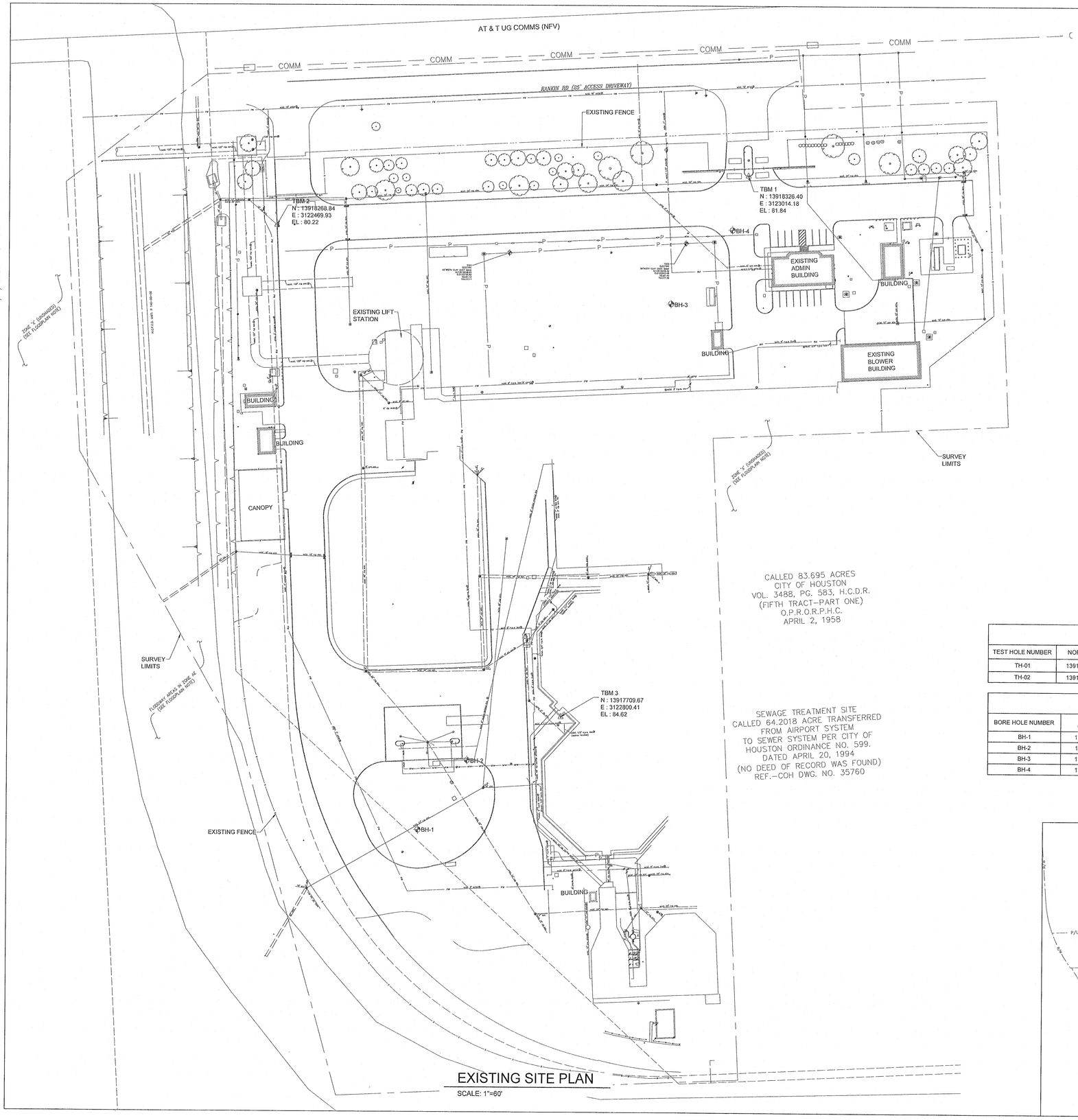
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING - PAVING, GRADING AND DRAINAGE PLAN CG-103

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
S/ SHAHIDUR RAHMAN, P.E.	
SHEET NO. 34 OF 255	

PUBLIC WORKS & ENGINEERING
ACCEPTED NOV 15 2024
80341
HOUSTON, TEXAS



EXISTING SITE PLAN

SCALE: 1"=60'

N

0 60 120

SCALE IN FEET

SURVEY LEGEND:

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

- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
- TELEPHONE LINE
- UG STREET LIGHT CABLE
- WATER LINE
- NON POTABLE WATER
- AT & T UG COMMUNICATION LINE (NFV)

TESTHOLE TABLE

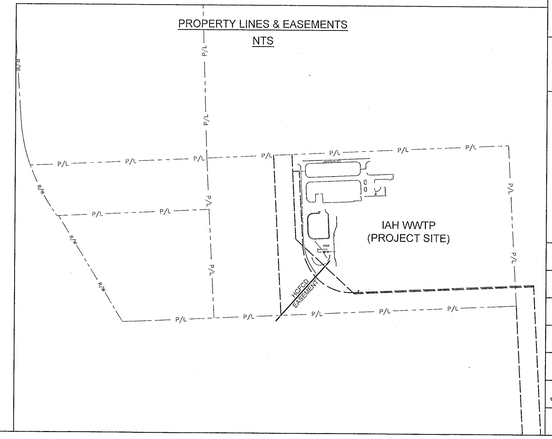
TEST HOLE NUMBER	NORTHING	EASTING	ELEVATION	TOP OF UTILITY	RAW DESCRIPTION
TH-01	13918238.25	3122738.62	81.13	77.11	40" WIDTH CLAY DUCT BANK
TH-02	13918249.39	3122942.46	81.49	77.39	38" WIDTH CLAY DUCT BANK

IAH WASTEWATER TREATMENT PLANT - BOREHOLE TABLE

BORE HOLE NUMBER	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION
BH-1	13917554.597	3122618.549	13915745.552	3122212.662	82.72
BH-2	13917634.111	3122675.105	13915825.056	3122269.210	81.26
BH-3	13918154.678	3122785.352	13916345.554	3122379.443	82.97
BH-4	13918239.182	3122855.998	13916430.048	3122450.080	82.00

PROPERTY LINES & EASEMENTS

NTS



NOTES:

1. REFER TO SHEET V-001 FOR SURVEY BENCHMARK AND DATUM INFORMATION
2. FEMA INFORMATION FIRM#: 48201C0480M DATE: JUNE 9, 2014
3. LOCATION SHOWN OF EXISTING MOBILE BELT FILTER PRESS IS APPROXIMATE. CONTRACTOR SHALL COORDINATE WITH IAH WWTP OPERATIONS STAFF PRIOR TO CONSTRUCTION START TO RELOCATE MOBILE BFP AND ALL ASSOCIATED HOSES/PIPING TO A LOCATION TO BE DETERMINED BY THE OWNER.

NO.	DATE	REVISION	APP.

NOTICE:

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
PROFESSIONAL ENGINEER

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL EXISTING SITE PLAN CS-101

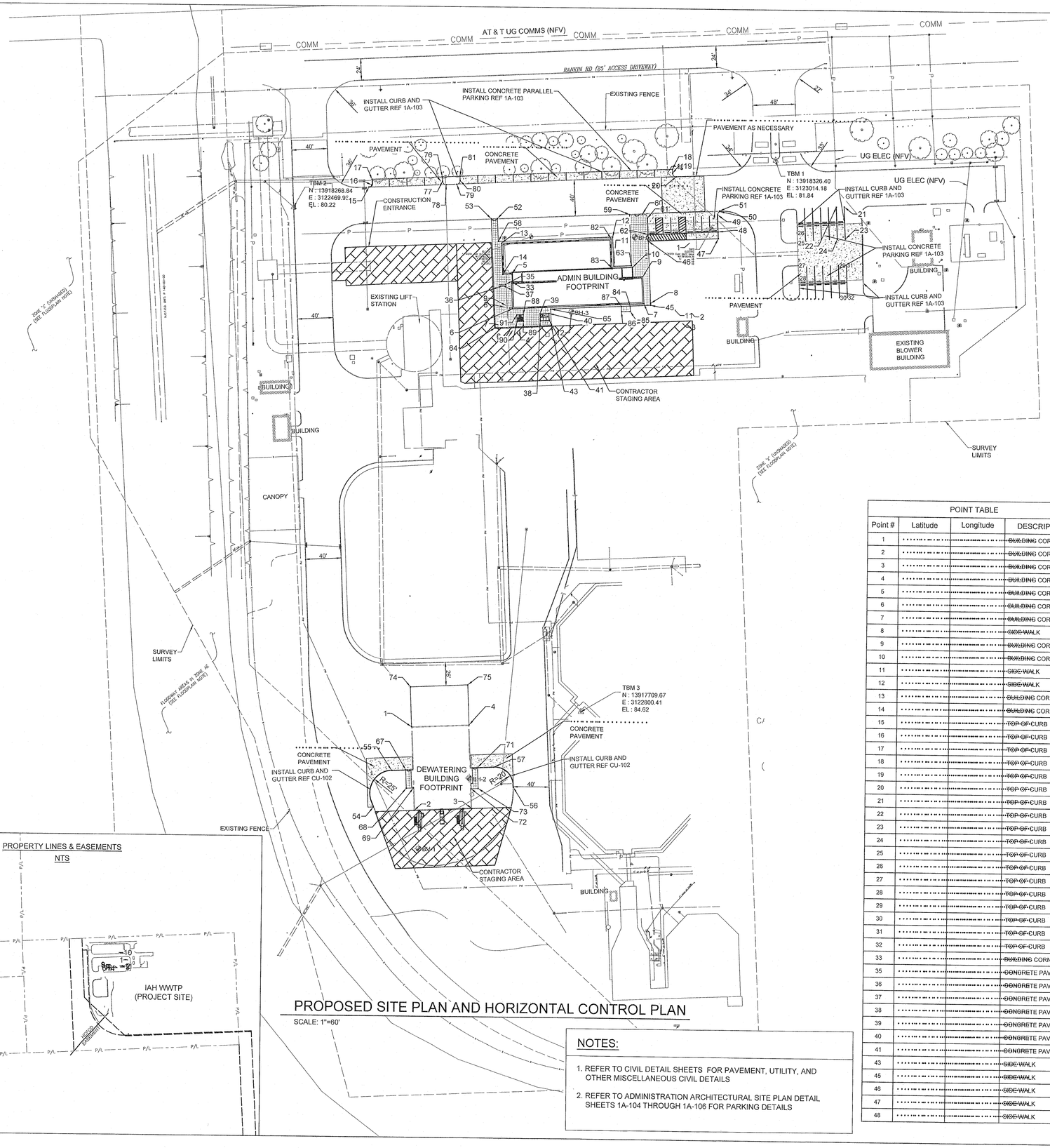
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 35 OF 255	

ACCEPTED AND APPROVED
80341
CITY OF HOUSTON, TEXAS

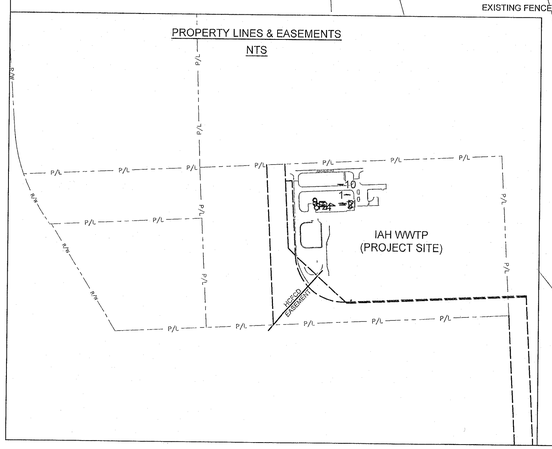
PLOTTED: 6/2/2025 1:01 PM

PLOT STYLE: COH.ctb

FILE PATH: C:\Users\SPKIRBY\DC\ACCDocs\Stantec Consulting\224701062_Intercontinental Airport WWTP\Project Files\Civil\CS-101.dwg



PROPERTY LINES & EASEMENTS
NTS



PROPOSED SITE PLAN AND HORIZONTAL CONTROL PLAN
SCALE: 1"=60'

NOTES:
1. REFER TO CIVIL DETAIL SHEETS FOR PAVEMENT, UTILITY, AND OTHER MISCELLANEOUS CIVIL DETAILS
2. REFER TO ADMINISTRATION ARCHITECTURAL SITE PLAN DETAIL SHEETS 1A-104 THROUGH 1A-106 FOR PARKING DETAILS

POINT TABLE

Point #	Latitude	Longitude	DESCRIPTION
1			BUILDING CORNER
2			BUILDING CORNER
3			BUILDING CORNER
4			BUILDING CORNER
5			BUILDING CORNER
6			BUILDING CORNER
7			BUILDING CORNER
8			SIDEWALK
9			BUILDING CORNER
10			BUILDING CORNER
11			SIDEWALK
12			SIDEWALK
13			BUILDING CORNER
14			BUILDING CORNER
15			TOP OF CURB
16			TOP OF CURB
17			TOP OF CURB
18			TOP OF CURB
19			TOP OF CURB
20			TOP OF CURB
21			TOP OF CURB
22			TOP OF CURB
23			TOP OF CURB
24			TOP OF CURB
25			TOP OF CURB
26			TOP OF CURB
27			TOP OF CURB
28			TOP OF CURB
29			TOP OF CURB
30			TOP OF CURB
31			TOP OF CURB
32			TOP OF CURB
33			BUILDING CORNER
35			CONCRETE PAVEMENT
36			CONCRETE PAVEMENT
37			CONCRETE PAVEMENT
38			CONCRETE PAVEMENT
39			CONCRETE PAVEMENT
40			CONCRETE PAVEMENT
41			CONCRETE PAVEMENT
43			SIDEWALK
45			SIDEWALK
46			SIDEWALK
47			SIDEWALK
48			SIDEWALK

POINT TABLE

Point #	Latitude	Longitude	DESCRIPTION
49			SIDEWALK
50			SIDEWALK
51			SIDEWALK
52			SIDEWALK
53			SIDEWALK
54			CONCRETE PAVEMENT
55			CONCRETE PAVEMENT
56			CONCRETE PAVEMENT
57			CONCRETE PAVEMENT
58			SIDEWALK
59			SIDEWALK
60			SIDEWALK
61			SIDEWALK
62			SIDEWALK
63			SIDEWALK
64			SIDEWALK
65			SIDEWALK
67			SIDEWALK
68			SIDEWALK
69			SIDEWALK
71			SIDEWALK
72			SIDEWALK
73			SIDEWALK
74			BUILDING CORNER
75			BUILDING CORNER
76			TOP OF CURB
77			TOP OF CURB
78			TOP OF CURB
79			TOP OF CURB
80			TOP OF CURB
81			TOP OF CURB
82			BUILDING CORNER
83			BUILDING CORNER
84			BUILDING CORNER
85			BUILDING CORNER
86			BUILDING CORNER
87			BUILDING CORNER
88			BUILDING CORNER
89			BUILDING CORNER
90			BUILDING CORNER
91			BUILDING CORNER

SITE CIVIL LEGEND:
- STAGING AREA HATCH
- CONCRETE PAVEMENT HATCH
- SIDE WALK HATCH

SURVEY LEGEND:
- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- MANHOLE
- TEMPORARY BENCH MARK
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE--CREPE MYRTLE
- TREE--PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- TEST/BORE HOLE
- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
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N

0 60 120
SCALE IN FEET

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
PROFESSIONAL ENGINEER
03/07/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL PROPOSED SITE PLAN AND HORIZONTAL CONTROL PLAN
CS-102

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	36 OF 255

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING
80341
HOUSTON, TEXAS

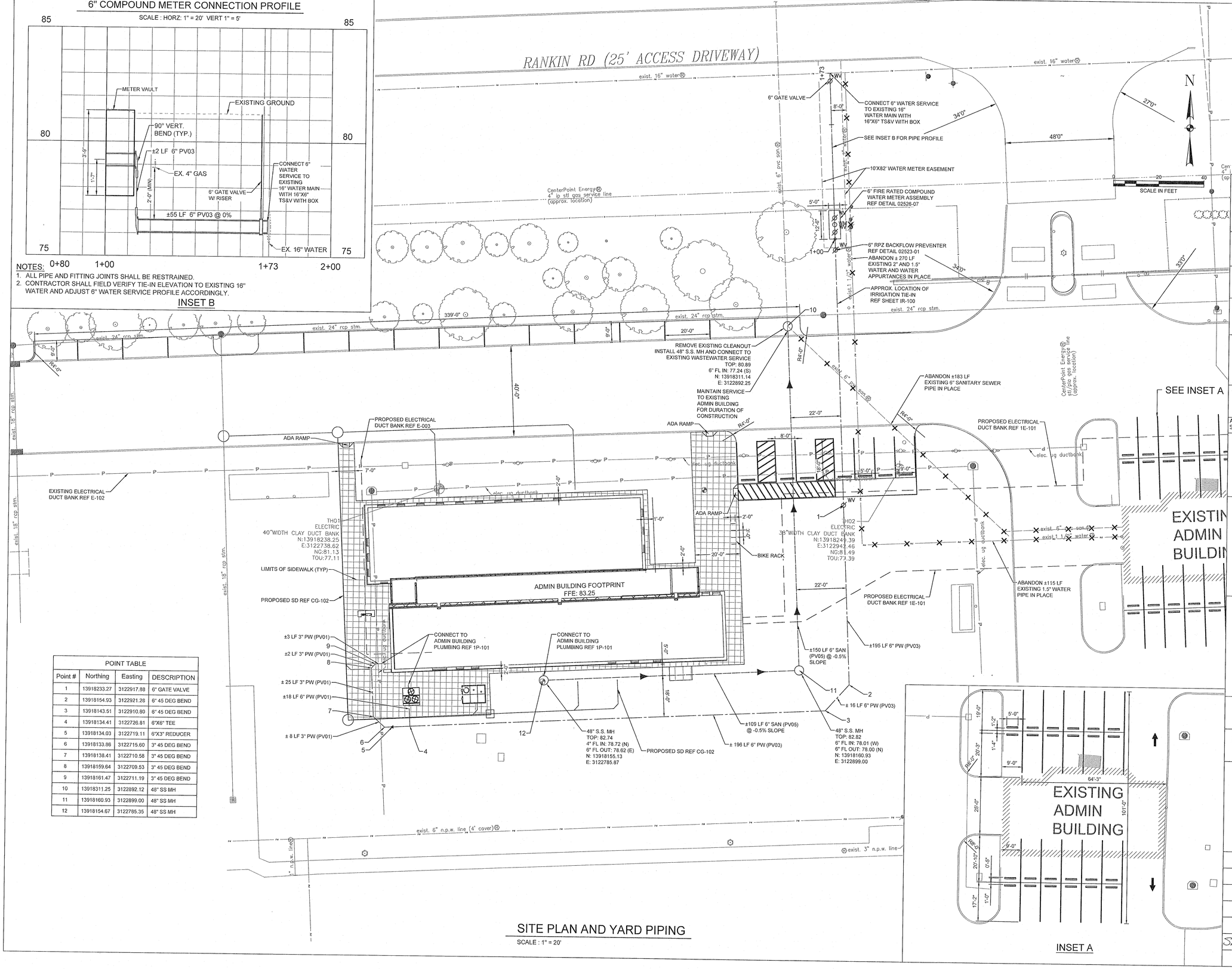
PLOTTED: 6/2/2025 12:53 PM
PLOT STYLE: COH.ctb
FILE PATH: C:\Users\SPKIRBY\DC\ACCDocs\Stantec Consulting\224701062_Intercontinental Airport WWTP\Project Files\Civil\CS-102.dwg

6" COMPOUND METER CONNECTION PROFILE

SCALE : HORZ: 1" = 20' VERT 1" = 5'

NOTES:
1. ALL PIPE AND FITTING JOINTS SHALL BE RESTRAINED.
2. CONTRACTOR SHALL FIELD VERIFY TIE-IN ELEVATION TO EXISTING 16" WATER AND ADJUST 6" WATER SERVICE PROFILE ACCORDINGLY.

INSET B



POINT TABLE			
Point #	Northing	Easting	DESCRIPTION
1	13918233.27	3122917.88	6" GATE VALVE
2	13918154.93	3122921.28	6" 45 DEG BEND
3	13918143.51	3122910.80	6" 45 DEG BEND
4	13918134.41	3122726.81	6"X6" TEE
5	13918134.03	3122719.11	6"X3" REDUCER
6	13918133.86	3122715.60	3" 45 DEG BEND
7	13918138.41	3122710.58	3" 45 DEG BEND
8	13918159.64	3122709.53	3" 45 DEG BEND
9	13918161.47	3122711.19	3" 45 DEG BEND
10	13918311.25	3122892.12	48" SS MH
11	13918160.93	3122899.00	48" SS MH
12	13918154.67	3122785.35	48" SS MH

SITE PLAN AND YARD PIPING

SCALE : 1" = 20'

INSET A

NOTES:

1. PROP WATER SERVICE LINE SHALL TIE INTO EXISTING 16" WATER MAIN IN RANKIN RD. PROP WATER SERVICE SHALL HAVE AT LEAST 48" OF COVER.
2. PROP WASTEWATER SERVICE LINE SHALL TIE INTO EXISTING 6" SERVICE LINE. PROP WASTEWATER SERVICE SHALL HAVE AT LEAST 36" OF COVER AND MAINTAIN A MINIMUM OF 0.5% SLOPE.
3. REFER TO CIVIL DETAILS SHEETS C-020 FOR PAVEMENT, UTILITY, AND OTHER MISCELLANEOUS CIVIL DETAILS
4. REFER TO ADMINISTRATION ARCHITECTURAL SITE PLAN DETAIL SHEETS 1A-104 THROUGH 1A-106 FOR PARKING DETAILS.

NO.	DATE	REVISION	APP.

NOTICE:

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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910 Louisiana Street Suite 2600
Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
05/19/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILED SITE PLAN AND YARD PIPING CU-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	37 OF 254

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HOUSTON, TEXAS

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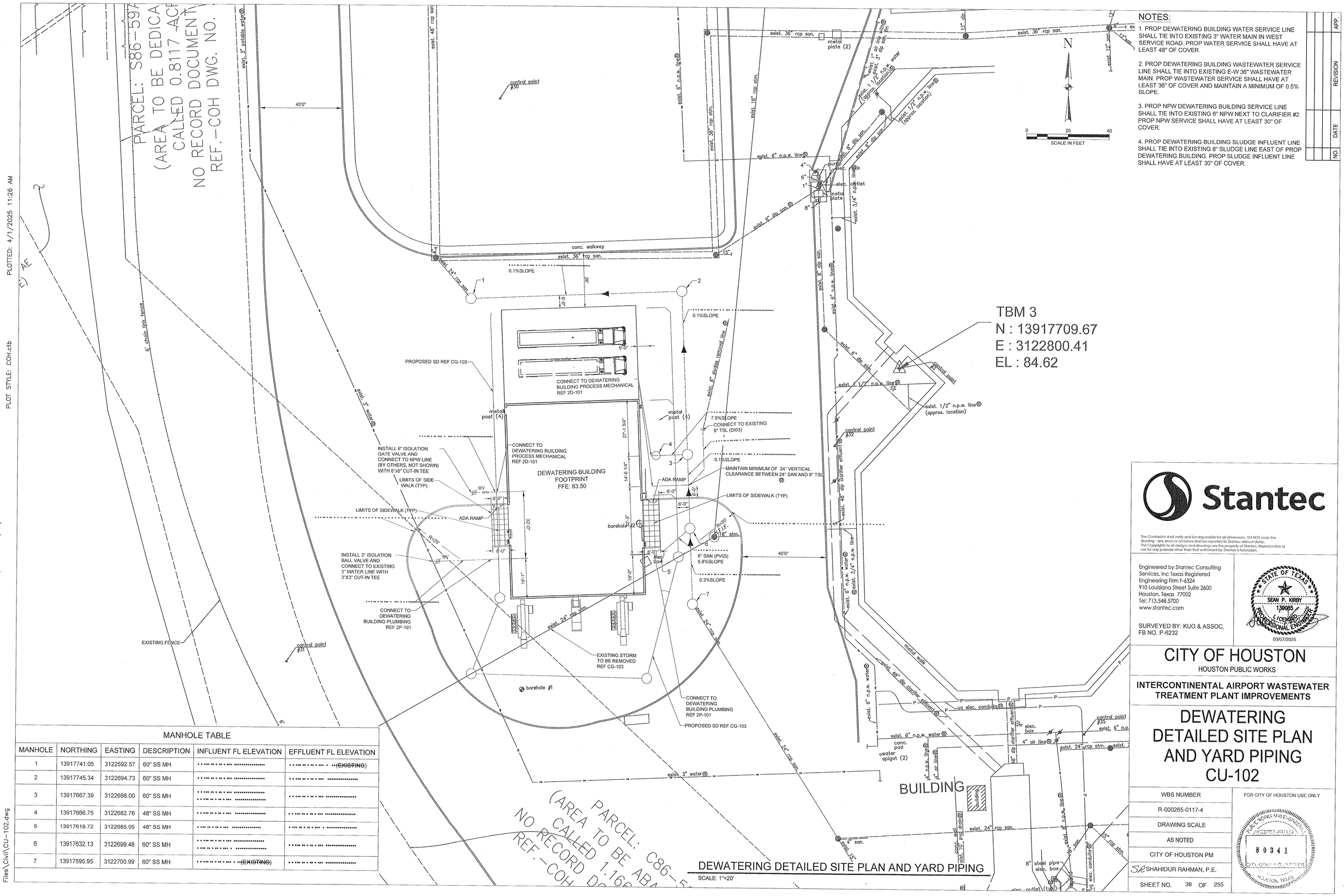

NOTES:

1. PROP DEWATERING BUILDING WATER SERVICE LINE SHALL TIE INTO EXISTING 3" WATER MAIN IN WEST SERVICE ROAD. PROP WATER SERVICE SHALL HAVE AT LEAST 48" OF COVER.

2. PROP DEWATERING BUILDING WASTEWATER SERVICE LINE SHALL TIE INTO EXISTING E-W 36" WASTEWATER MAIN. PROP WASTEWATER SERVICE SHALL HAVE AT LEAST 36" OF COVER AND MAINTAIN A MINIMUM OF 0.5% SLOPE.

3. PROP NPW DEWATERING BUILDING SERVICE LINE SHALL TIE INTO EXISTING 6" NPW NEXT TO CLARIFIER #2. PROP NPW SERVICE SHALL HAVE AT LEAST 30" OF COVER.

4. PROP DEWATERING BUILDING SLUDGE INFLUENT LINE SHALL TIE INTO EXISTING 8" SLUDGE LINE EAST OF PROP DEWATERING BUILDING. PROP SLUDGE INFLUENT LINE SHALL HAVE AT LEAST 30" OF COVER.

NO.	DATE	REVISION	APP.

MANHOLE TABLE

MANHOLE	NORTHING	EASTING	DESCRIPTION	INFLUENT FL ELEVATION	EFFLUENT FL ELEVATION
1	13917741.05	3122592.57	60" SS MH		~~(EXISTING)~~
2	13917745.34	3122694.73	60" SS MH		
3	13917667.39	3122698.00	60" SS MH		
4	13917666.75	3122682.78	48" SS MH		
5	13917619.72	3122685.05	48" SS MH		
6	13917632.13	3122699.48	60" SS MH		
7	13917595.95	3122700.99	60" SS MH		~~(EXISTING)~~

DEWATERING DETAILED SITE PLAN AND YARD PIPING

SCALE: 1"=20'

PARCEL: C86-5
(AREA TO BE ABA
CALLED 1.16
NO RECORD DO
REF.-COH D

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Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
SEAN P. KIRBY
139085
LICENSED PROFESSIONAL ENGINEER
03/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING DETAILED SITE PLAN AND YARD PIPING CU-102

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 38 OF 255	

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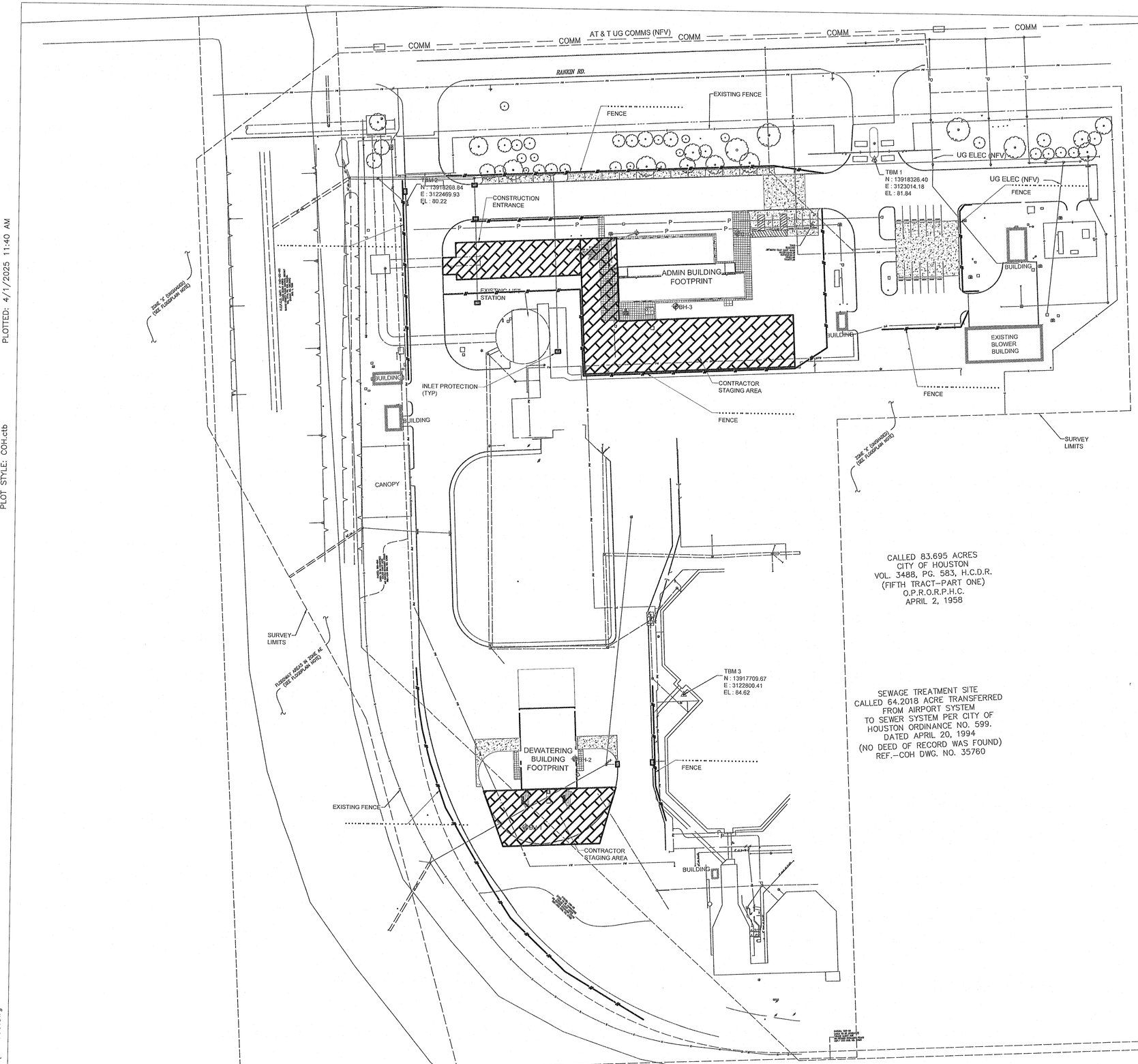
80341
CITY ENGINEER
HOUSTON, TEXAS



CALLED 83.695 ACRES
CITY OF HOUSTON
VOL. 3488, PG. 583, H.C.D.R.
(FIFTH TRACT–PART ONE)
O.P.R.O.R.P.H.C.
APRIL 2, 1958

SEWAGE TREATMENT SITE
CALLED 64.2018 ACRE TRANSFERRED
FROM AIRPORT SYSTEM
TO SEWER SYSTEM PER CITY OF
HOUSTON ORDINANCE NO. 599.
DATED APRIL 20, 1994
(NO DEED OF RECORD WAS FOUND)
REF.–COH DWG. NO. 35760

SWPPP CONSTRUCTION NOTES:

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING, FURNISHING, AND DISPLAYING ALL NECESSARY SWPPP PERMITS FOR THE CONSTRUCTION SHOWN IN THESE PLANS.
3. 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.
4. 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.
5. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
6. 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.
7. 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.

SITE CIVIL LEGEND:

- STAGING AREA HATCH
- CONCRETE PAVEMENT HATCH
- SIDE WALK HATCH

SITE CIVIL LEGEND:

- SILT FENCE
- INLET PROTECTION

N

0 60 120
SCALE IN FEET

NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

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STATE OF TEXAS
SEAN P. KIRBY
139055
LICENSED PROFESSIONAL ENGINEER
03/07/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

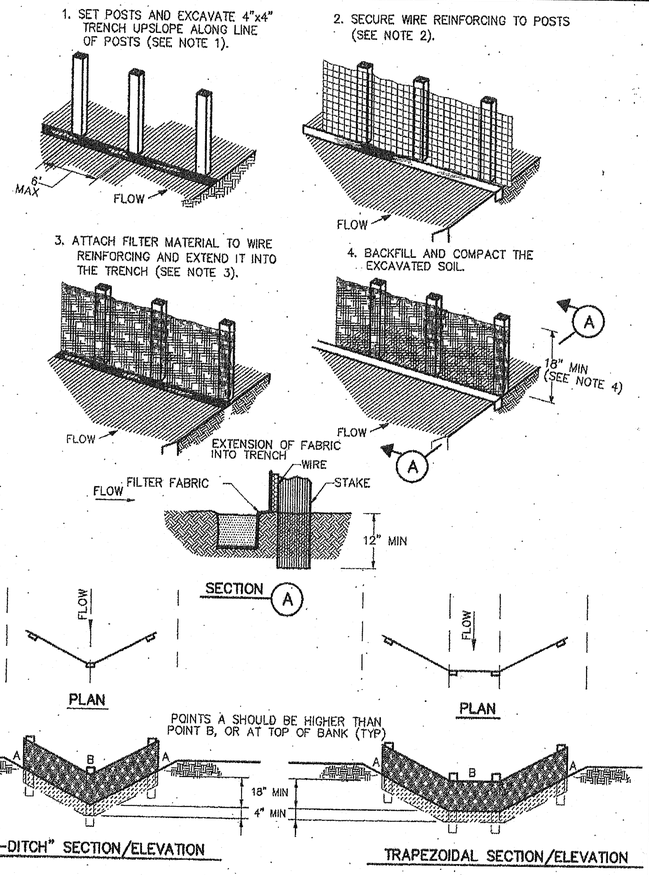
SWPPP AND EROSION AND SEDIMENTATION CONTROL PLAN EC-100

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 39 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED
80341
CITY ENGINEER
12,3,10h, 16,25

SWPPP AND EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1"=60'

PLOTTED: 4/1/2025 11:40 AM
PLOT STYLE: COH.ctb
FILE PATH: C:\Users\SPKIRBY\DC\ACCDocs\Stantec Consulting\224701062_Intercontinental Airport WWTP\Project Files\Civil\EC-100.dwg

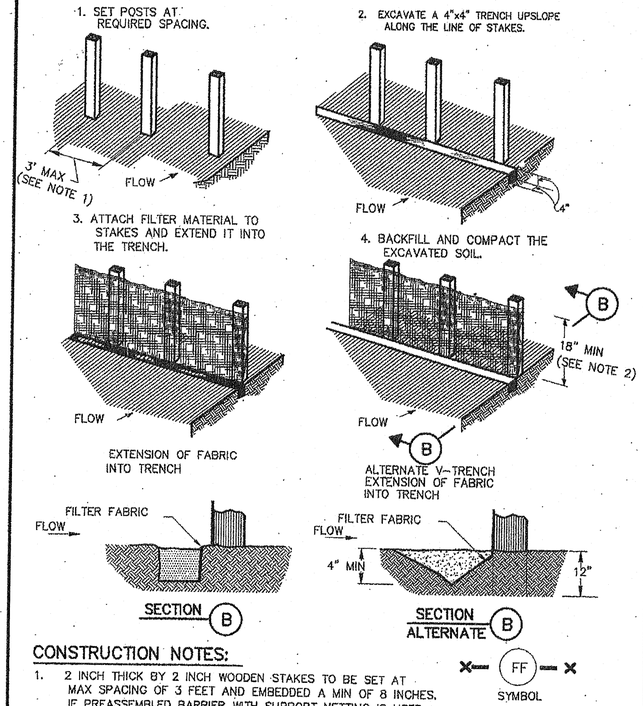


CONSTRUCTION NOTES:

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.

X—(RFB)—X SYMBOL

REINFORCED FILTER FABRIC BARRIER

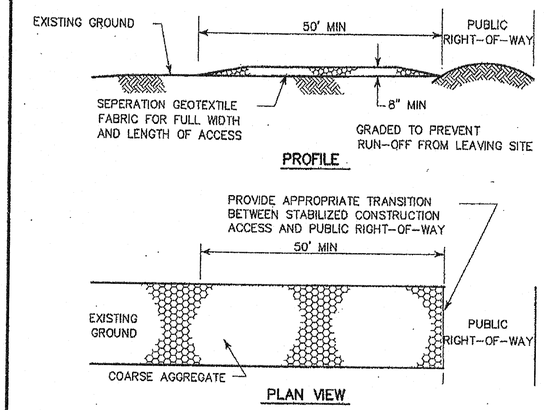


CONSTRUCTION NOTES:

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.

X—(FF)—X SYMBOL

FILTER FABRIC BARRIER



CONSTRUCTION NOTES:

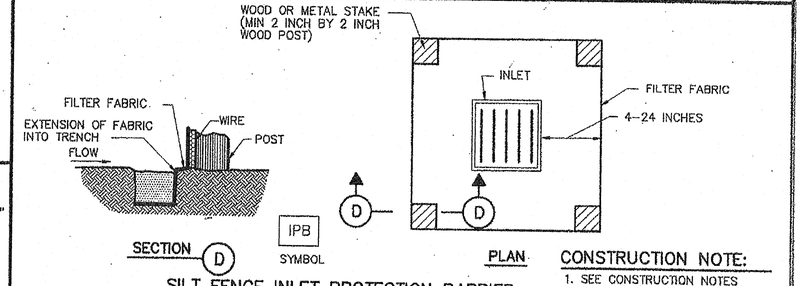
1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS 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

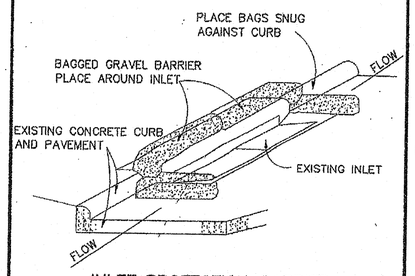
STABILIZED CONSTRUCTION ACCESS

CONSTRUCTION NOTES:

1. SEE CONSTRUCTION NOTES FOR RFB.

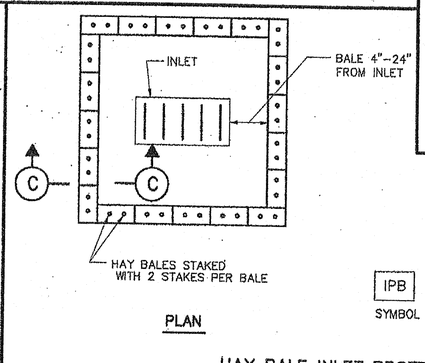


SILT FENCE INLET PROTECTION BARRIER



INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER



HAY BALE INLET PROTECTION BARRIER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS

(NOT TO SCALE)

APPROVED BY: CITY ENGINEER
APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010
DWG NO: 01571-01

NO.	DATE	REVISION	APP.

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STATE OF TEXAS — SEAN P. KIRBY — 139085 — LICENSED PROFESSIONAL ENGINEER — 12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

EROSION CONTROL

SW POLLUTION PREVENTION PLAN DETAILS

EC-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	NOT TO SCALE
CITY OF HOUSTON PM	S/E SHAHIDUR RAHMAN, P.E.
SHEET NO.	40 OF 255

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IRRIGATION CONSTRUCTION NOTES

1. IRRIGATION INSTALL TO BE COORDINATED WITH LANDSCAPE PLAN AND FIELD CONDITIONS TO ENSURE ALL PLANT MATERIAL WILL BE WATERED IN ACCORDANCE WITH THE INTENT OF THE PLANS. CONTRACTOR TO ENSURE COMPLETE HEAD TO HEAD COVERAGE W/ MINIMUM TO NO OVERSPRAY ON ALL IMPERVIOUS SURFACES. ALL ADJUSTMENTS TO BE MADE BY CONTRACTOR AT NO ADDITIONAL COST.
2. ALL STATE OF TEXAS, TCEQ, AND LOCAL CODES, ORDINANCES, LAWS, AND RULES ARE MADE PART OF THESE PLANS AND SPECIFICATIONS WEATHER SHOWN OR NOT. THESE CODES, ORDINANCES, LAWS, AND RULES WILL SUPERCEDE THE PLANS, DETAILS, AND/OR SPECIFICATIONS FOR THIS PROJECT. CONTRACTOR IS CAUTIONED THAT HE IS TO INCLUDE ANY AND ALL COST NECESSARY TO MEET OR EXCEED THE CODES, ORDINANCES, LAWS, AND RULES CONCERNING LANDSCAPE IRRIGATION.
3. A LICENSED IRRIGATION CONTRACTOR (L.I.C.) SHALL SECURE ANY AND ALL NECESSARY PERMITS REQUIRED FOR THEIR SCOPE. A L.I.C. OR LICENSED IRRIGATION TECHNICIAN SHALL BE ON-SITE AT ALL TIMES WHILE THE LANDSCAPE IRRIGATION SYSTEM IS BEING INSTALLED.
4. L.I.C. TO CONFIRM MINIMUM STATIC WATER OF 65 P.S.I. AT THE DISCHARGE SIDE OF THE IRRIGATION METER OR POINT OF CONNECTION, AND A MAXIMUM STATIC WATER PRESSURE OF 90 P.S.I. AT THE DISCHARGE SIDE OF THE IRRIGATION METER OR POINT OF CONNECTION. CONTACT CLIENT/ GENERAL CONTRACTOR IF STATIC PRESSURE IS OUTSIDE OF MINIMUM/MAXIMUM RANGE.
5. MAINLINE PIPING SHALL BE INSTALLED AT A MINIMUM DEPTH OF 18' AND LATERAL LINE PIPING SHALL BE INSTALLED AT A MINIMUM DEPTH OF 12". CONTRACTOR TO USE WELD-ON #P-68 PURPLE PRIMER AND WELD-ON #705 SOLVENT ON THESE CONNECTIONS AND FITTINGS.
6. PIPES TO BE SIZED PER MANUFACTURER'S RECOMMENDATIONS WITH FLOW TO NOT EXCEED A VELOCITY OF (5) FEET PER SECOND.
7. HAND TRENCHING OR AIR SPADE ALLOWED ONLY IN EXITING ROOT ZONES WITH MACHINE TRENCHING STRICTLY PROHIBITED.
8. CONTRACTOR TO PROVIDE SLEEVES UNDER ALL HARDSCAPE, PAVING, WALKS, ETC. SLEEVES SHALL BE SCH. 40 PVC A MINIMUM OF TWO (2) SIZES LARGER THAN TOTAL PIPE SIZES. ALL SLEEVES FOR TEMPORARY IRRIGATION TO BE PERMANENT.
9. ELECTRICAL POWER (120V) SHALL BE PROVIDED BY THE GENERAL CONTRACTOR WITHIN FIVE (5) FEET OF FINAL CONTROLLER LOCATION. L.I.C. TO PROVIDE FINAL INSTALLATION OF CONTROLLER AFTER FIVE (5) FEET. L.I.C. TO VERIFY EXACT LOCATION OF THE IRRIGATION CONTROLLER WITH CLIENT/GENERAL CONTRACTOR PRIOR TO INSTALLATION.
10. ALL VALVE WIRE SHALL BE A MINIMUM OF 24 VOLT, #14 GAUGE, SINGLE CONDUCTOR "IRRIGATION WIRE" U.F. APPROVED FOR DIRECT BURIAL. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR PROPER WIRE SIZE. ALL WIRE SPLICES SHALL INCLUDE 3M-DBY PERMANENT AND WATERPROOF PEN MANUFACTURES SPECIFICATIONS. ALL SPLICES SHALL BE LOCATED IN VALVE BOXES FOR FIELD INSPECTION.
11. IF DECODERS ARE INSTALLED A DECODER GROUND ROD SHALL BE INSTALLED WITHIN A VALVE BOX AT A MINIMUM OF EVERY 500 L.F..
12. ALL VALVE BOXES TO BE INSTALLED FLUSH WITH FINISH GRADE.
13. ALL ROTARY HEADS TO BE INSTALLED WITH RIGID SCH. 80 PVC SWING JOINTS PER DETAIL SHOWN.
14. ALL SPRAY HEADS TO BE INSTALLED WITH A MINIMUM 12" LENGTH 1/2" FLEX PIPE AND 1/2" SCH. 80 PVC FITTINGS AS REQUIRED PER DETAIL SHOWN. USE WELD-ON #P-68 PURPLE PRIMER AND WELD-ON #795 SOLVENT ON THESE CONNECTIONS.
15. NEW IRRIGATION SYSTEMS SHALL NOT UTILIZE ABOVE-GROUND SPRAY EMISSION DEVICES IN LANDSCAPES THAT ARE LESS THAN 48 INCHES NOT INCLUDING THE IMPERVIOUS SURFACES IN EITHER LENGTH OR WIDTH AND WHICH CONTAIN IMPERVIOUS PEDESTRIAN OR VEHICULAR TRAFFIC SURFACES ALONG TWO OR MORE PERIMETERS. IF POP-UP SPRAYS OR ROTARY SPRINKLER HEADS ARE USED IN A NEW IRRIGATION SYSTEM, THE SPRINKLER HEADS MUST DIRECT FLOW AWAY FROM ANY ADJACENT SURFACE AND SHALL NOT BE INSTALLED CLOSER THAN SIX (6) INCHES FROM A HARDSCAPE (OR AS REQUIRED BY ORDINANCE), SUCH AS, BUT NOT LIMITED TO, A BUILDING FOUNDATION, FENCE, CONCRETE, ASPHALT, PAVERS, OR STONES SET WITH MORTAR.
16. ALL PLANTING BED DRIPLINE AND DISTRIBUTION TUBING TO BE INSTALLED 2-INCHES (2") BELOW FINISH GRADE. ALL DRIPLINE TO BE INSTALLED A MAX. OF 18" ROW SPACING UNLESS SHOWN OTHERWISE. L.IC. IS RESPONSIBLE TO VERIFY THE EXACT EMITTER FLOW, EMITTER SPACING, AND ROW SPACING WITH MANUFACTURER PRIOR TO INSTALLING TO PROVIDE PROPER PRECIPITATION RATE BASED ON THE PLANT MATERIAL AND SOIL TYPE. DRIPLINE TO BE STAKED WITH BEND GALVANIZED TIE DOWN STAKES INSTALLED EVERY 4'-0" ON CENTER ALONG LENGTH OF TUBING AND A MINIMUM OF 24" FROM ANY FITTINGS.
17. ALL TURF DRIPLINE AND DISTRIBUTION TUBING TO BE INSTALLED 2-INCHES (2") BELOW FINISH GRADE. ALL DRIPLINE TO BE INSTALLED A MAX. OF 12" ROW SPACING UNLESS SHOWN OTHERWISE. L.IC. IS RESPONSIBLE TO VERIFY THE EXACT EMITTER FLOW, EMITTER SPACING, AND ROW SPACING WITH MANUFACTURER PRIOR TO INSTALLING TO PROVIDE PROPER PRECIPITATION RATE BASED ON THE PLANT MATERIAL AND SOIL TYPE. DRIPLINE TO BE STAKED WITH BEND GALVANIZED TIE DOWN STAKES INSTALLED EVERY 4'-0" ON CENTER ALONG LENGTH OF TUBING AND A MINIMUM OF 24" FROM ANY FITTINGS.
18. INCLUDE THE FOLLOWING ALLOWANCES FOR PROVIDING AND INSTALLING AIR RELIEF VALVES AND FLUSH VALVES FOR THE DRIP SYSTEM. EXACT QUANTITY AND LOCATION OF THESE DEVICES WILL BE DETERMINED AT THE TIME OF INSTALLATION. IN GENERAL, ALL AIR RELIEF VALVES WILL BE INSTALLED AT THE HIGH POINTS AND FLUSH VALVES WILL BE INSTALLED AT THE LOW POINTS. ALLOW FOR APPROXIMATELY TWO (2) AIR RELIEF VALVES AND APPROXIMATELY TWO (2) FLUSH VALVES FOR EACH DRIP ZONE KIT.
19. CHECK VALVES TO BE USED AS NEEDED TO PREVENT LOW-HEAD DRAINAGE.
20. FINAL LOCATION OF BACKFLOW PREVENTER, CONTROLLER AND WEATHER SENSORS SHALL BE APPROVED BY BOTH THE GENERAL CONTRACTOR AND LANDSCAPE ARCHITECT/OWNERS REPRESENTATIVE.
21. L.I.C TO CONTACT LOCAL 811 AND LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
22. PROVIDE TEMPORARY, ABOVE GROUND IRRIGATION TO ALL DISTURBED AREAS THAT DO NOT HAVE PERMANENT IRRIGATION. MANUAL 2" GATE VALVES HAVE BEEN PROVIDED AS PART OF THE IRRIGATION SYSTEM FOR THE TEMPORARY IRRIGATION. PROVIDE ALL LABOR AND MATERIAL TO CONNECT TO THESE VALVES. PROVIDE ALL MATERIAL AND LABOR NECESSARY TO INSTALL AND OPERATE THE TEMPORARY SYSTEM. TEMPORARY SYSTEM TO BE LEFT IN PLACE UNTIL PLANT MATERIAL IS ESTABLISHED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. SHOULD IT BECOME NECESSARY TO REMOVE AND REPLACE THE TEMPORARY SYSTEM FOR MOWING AND MAINTENANCE OPERATIONS, THE LANDSCAPE IRRIGATION CONTRACTOR SHALL CONSIDER THIS PART OF HIS SCOPE OF WORK. EXACT METHOD OF PROVIDING AND OPERATING THE TEMPORARY SYSTEM WILL BE THE LANDSCAPE IRRIGATION CONTRACTOR'S RESPONSIBILITY. OPERATION OF THE TEMPORARY SYSTEM MUST BE COORDINATED WITH THE PERMANENT SYSTEM TO INSURE PROPER HYDRAULIC OPERATION OF BOTH SYSTEMS.

IRRIGATION LEGEND

- HUNTER PCB-50 SERIES PRESSURE COMPENSATING BUBBLER NOZZLE (2) PER TREE
- HUNTER PROS-04 SERIES POP UP SPRAY HEAD WITH HUNTER MP ROTATOR SERIES NOZZLES
- RAINBIRD 5000 SERIES ROTOR HEAD
- NETAFIM TECHLINE TLCV6-12 SERIES DRIP TUBE SPACED 18" IN PLANT BEDS INSTALLED AT 2" BELOW GRADE
- TEMPORARY IRRIGATION AREA
- HUNTER ICV-G SERIES ELECTRIC REMOTE CONTROL VALVE WITH FLOW CONTROL (INSTALL ICD-100 SINGLE STATION DECODER W/ VALVE ON 2-WIRE SYSTEMS)
- HUNTER ICV-G SERIES ELECTRIC REMOTE CONTROL VALVE WITH FLOW CONTROL (INSTALL ICD-100 SINGLE STATION DECODER W/ VALVE ON 2-WIRE SYSTEMS) - "TREE BUBBLER ZONE"
- HUNTER ICZ SERIES ELECTRIC REMOTE CONTROL VALVE WITH FLOW CONTROL (1"-ICV-101-LF) (1-1/2"-ICV-151-XL) (INSTALL ICD-100 SINGLE STATION DECODER W/ VALVE ON 2-WIRE SYSTEMS) - "LANDSCAPE DRIP ZONE" SET PRESSURE REGULATOR TO 30 P.S.I
- IRRIGATION WATER METER AND TAP, SIZE AS NOTED ON THE PLAN
- FEBCO 860 SERIES R.P.Z. INSTALLED PER CITY CODE, WITH SAME SIZE WATTS 6000 SERIES BRONZE BALL VALVE
- HUNTER I-CORE IC-600-M CONTROLLER W/ ICM-600 MODULES AS NEEDED; PLUS DUAL48M FOR 2-WIRE SYSTEMS - LOCATED AS FIELD DIRECTED BY G.C.
- HUNTER WRF-CLIK WIRELESS RAIN/FREEZE SENSOR - LOCATED AS FIELD DIRECTED BY G.C.
- CLASS 200 PVC MAINLINE PIPE (REF. PLAN FOR SIZE)
- CLASS 200 LATERAL LINE PIPE; (CLASS 315 FOR 1/2" PIPE) (REF. PLAN FOR SIZE)
- SCH 40 SLEEVE PIPES (2) SIZES LARGER THAN TOTAL PIPE SIZES

** L.I.C.SHALL SELECT APPROPRIATE NOZZLES AS TO HAVE HEAD TO HEAD COVERAGE FOR MINIMUM OVERSPRAY ONTO WALLS AND WALKS. NO OVERSPRAY INTO STREETS IS PERMITTED.

VALVE KEY

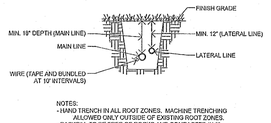
CONTROLLER ZONE / VALVE SIZE / FLOW IN GPM

L.F. OF DRIP TUBE

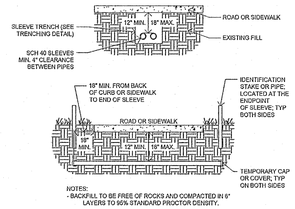
PRESSURE CALCULATIONS

ZONE 2

	SIZE	CALCULATIONS	PRESSURE LOSS
WATER METER	1"		4.6
RPZ BACKFLOW	1"		12.2
MASTER VALVE	1-1/2"		1.5
MAIN LINE	2"	6.7 x .55	3.7
ZONE VALVE	1-1/2"		1.5
LATERAL LINES	VARIES		1.8
		TOTAL LOSS	25.3
		RECOMMENDED PRESSURE	30
		DESIGN PRESSURE	60.0
		ACTUAL HEAD PRESSURE	34.7



TRENCH DETAIL
NOT TO SCALE



SLEEVE DETAIL
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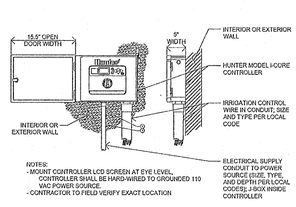
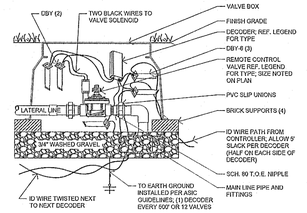
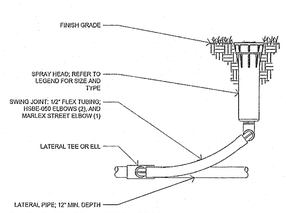


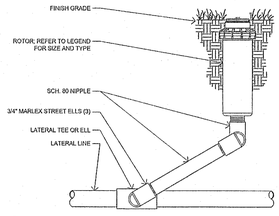
HUNTER I-CORE WALL MOUNTED CONTROLLER
NOT TO SCALE



VALVE ASSEMBLY W/ OPTIONAL DECODER
NOT TO SCALE



POP-UP SPRAY HEAD DETAIL
NOT TO SCALE



ROTOR HEAD DETAIL
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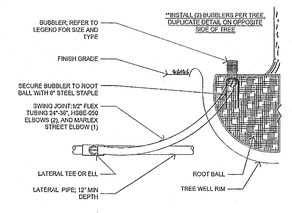

TREE BUBBLER DETAIL
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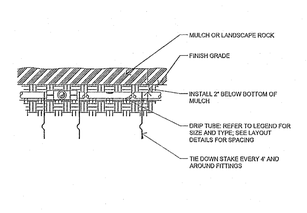

DRIP DETAIL
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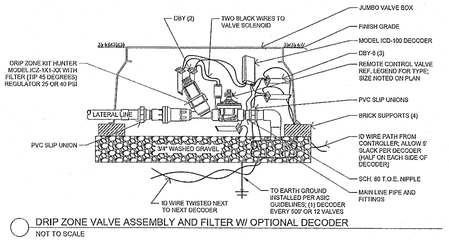
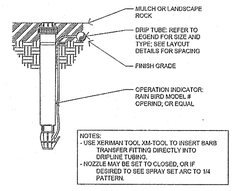


DRIP ZONE VALVE ASSEMBLY AND FILTER W/ OPTIONAL DECODER
NOT TO SCALE



DRIP ZONE INDICATOR DETAIL
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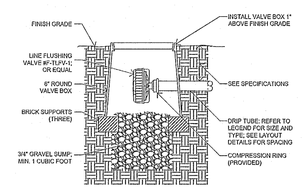
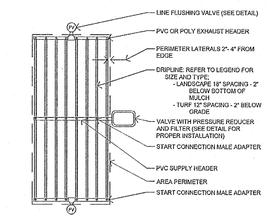


LINE FLUSHING VALVE DETAIL
NOT TO SCALE



DRIP CENTER FEED LAYOUT DETAIL
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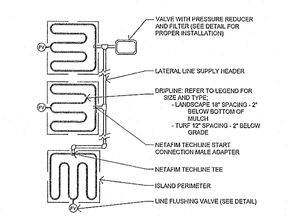
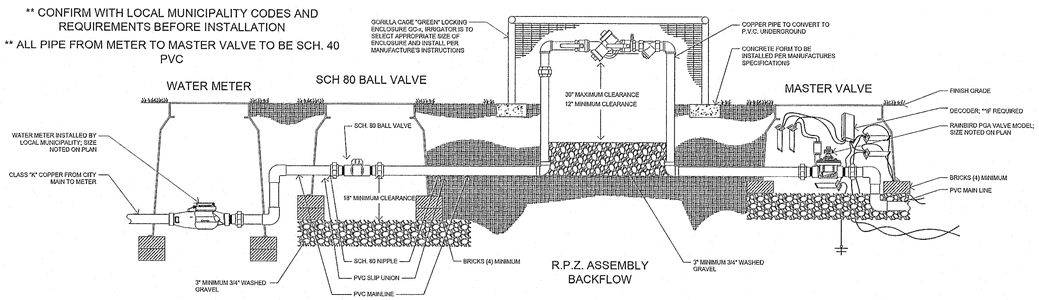


DRIP ISLAND LAYOUT DETAIL
NOT TO SCALE

** CONFIRM WITH LOCAL MUNICIPALITY CODES AND REQUIREMENTS BEFORE INSTALLATION

** ALL PIPE FROM METER TO MASTER VALVE TO BE SCH. 40 PVC



WATER SOURCE LAYOUT DETAILS; WATER METER - BALL VALVE - BACKFLOW ASSEMBLY - MASTER VALVE
NOT TO SCALE

NO.	DATE	REVISION	APP.

ECOLAND DESIGN GROUP
2800 S. IH 35 FRONTAGE RD. | SUITE 170 | AUSTIN, TX | 78704
KELLIOTT@ECOLANDDESIGNGROUP.COM | 270.219.7548

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Houston, Texas 77002
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www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS · KYLE ELLIOTT · 18926 · LICENSED LANDSCAPE ARCHITECT
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

IRRIGATION NOTES AND DETAILS

IR-001

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1"=30'
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	41 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING · ACCEPTED NOTED · 80341 · CITY OF HOUSTON, TEXAS

PLOTTED: 3/28/2023 12:21 AM
PLOT STYLE: COH.ctb
FILE PATH: C:\Users\kyleel\OneDrive\ECOLAND\4 - Stantec\Houston WWTP\landscape\L1.00.dwg

PLOT STYLE: COH.ctb
PLOTTED: 3/28/2023 12:21 AM
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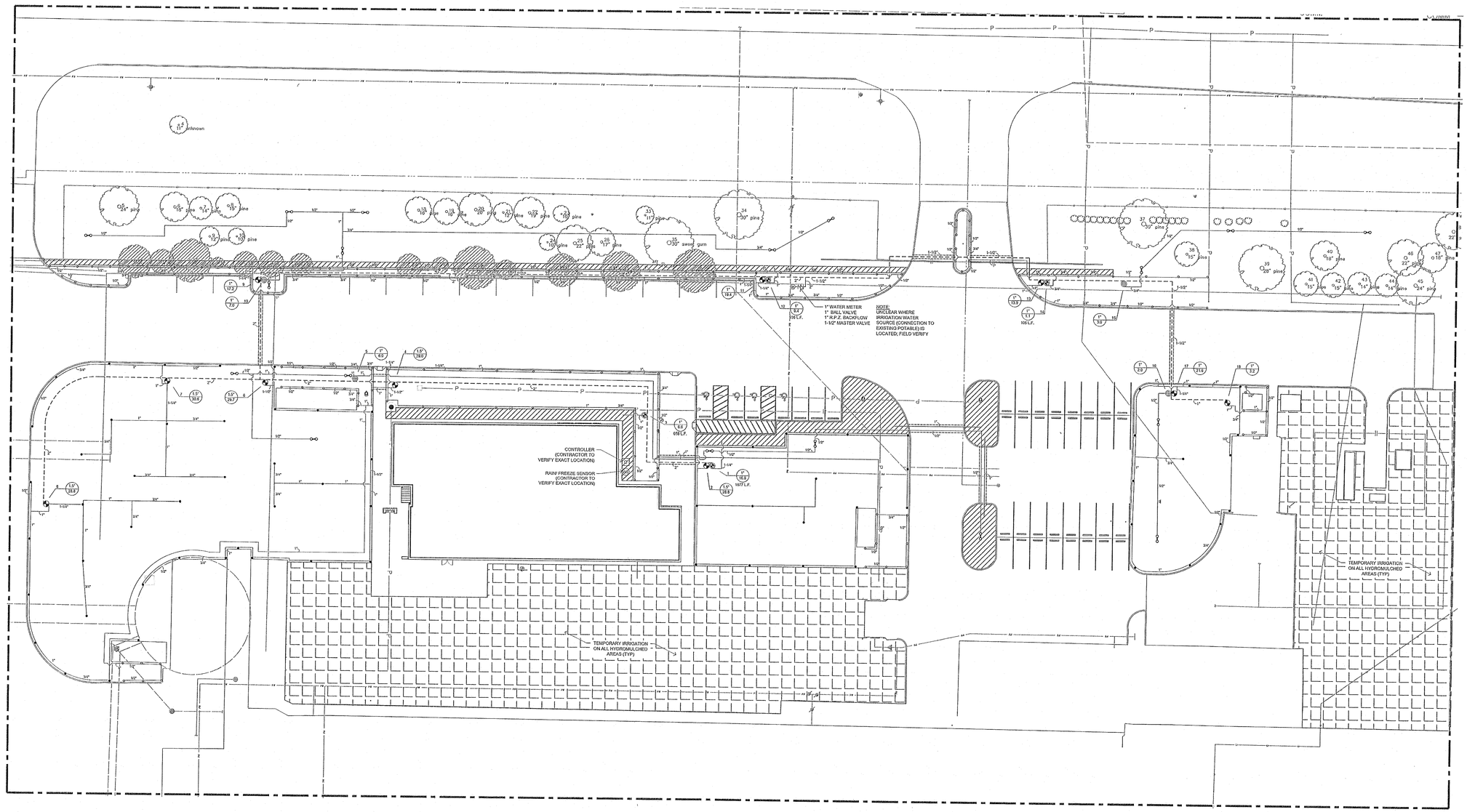
NO.	DATE	REVISION	APP.



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Houston, Texas 77002
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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
KYLE ELLIOTT
18926
LICENSED IRRIGATOR
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL IRRIGATION PLAN

IR-100

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	PUBLIC WORKS AND ENGINEERING — 80341 — HOUSTON, TEXAS
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 42 OF 255	

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IRRIGATION NOTES:

CONTRACTOR TO DESIGN AND INSTALL AUTOMATIC IRRIGATION SYSTEM TO PROVIDE 100% COVERAGE TO ALL LANDSCAPE & TURF AREAS. IRRIGATION SYSTEM TO BE DESIGNED AND INSTALLED IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL LAWS, ORDINANCES, RULES, REGULATIONS OR ORDERS. AUTOMATIC IRRIGATION SYSTEMS SHALL COMPLY WITH TCEQ CHAPTER 344, AS WELL AS THE FOLLOWING REQUIREMENTS:

IRRIGATION REQUIREMENTS:

1. IRRIGATION CONTRACTOR SHALL SUBMIT A DETAILED IRRIGATION DESIGN DRAWING FOR THE IRRIGATION SYSTEM. INCLUDE LOCATION OF WATER TAP, PIPING LAYOUT AND SIZING, LOCATION OF SPRINKLER HEADS, VALVES (NUMBERED, W/GPM RATES).
2. THE IRRIGATION INSTALLER SHALL ALSO PROVIDE LAMINATED EXHIBITS TO BE PERMANENTLY INSTALLED INSIDE OR ATTACHED TO THE IRRIGATION CONTROLLER, INCLUDING: ZONE NUMBERS, PRECIPITATION RATE, AND GALLONS PER MINUTE AND THE LOCATION OF THE ISOLATION VALVE; AND ZONE MAP WITH THE ISOLATION VALVE LOCATION AS BUILT PLAN.
3. SYSTEM SHALL BE DESIGNED FOR HEAD-TO-HEAD COVERAGE WITH CAPABILITY FOR 1" WATER/ HOUR COVERAGE OF ALL AREAS. COVERAGE INCLUDES ALL PLANTING BEDS, LAWN AREAS AND TREES. SYSTEM MUST INCLUDE AN AUTOMATIC RAIN SHUT-OFF DEVICE SHUTTING OFF THE IRRIGATION SYSTEM AUTOMATICALLY AFTER NO MORE THAN A ONE-HALF INCH (½") RAINFALL.
4. KEEP FACE OF BUILDING, WALKS, DRIVES, PARKING AND OTHER PAVED AREAS DRY. DO NOT INCLUDE SPRAY IRRIGATION ON AREAS LESS THAN TEN (10) FEET WIDE (SUCH AS MEDIANS, BUFFER STRIPS, AND PARKING LOT ISLANDS). NEWLY PLANTED TREES SHALL HAVE PERMANENT IRRIGATION CONSISTING OF DRIP OR BUBBLERS.
5. IN GENERAL, PROVIDE SEPARATE ZONES FOR LAWN VERSES PLANTING VERSES PERENNIAL AREAS.
6. PIPING MUST BE LAID OUT TO AVOID ROOTS OF NEW AND EXISTING TREES. IF HEADS MUST BE LOCATED NEAR EXISTING TREES, THE PIPE ROUTE SHOULD BE AIMED RADIALLY TOWARD THE TREE, NOT ACROSS ITS ROOT ZONE.
7. UPON COMPLETION OF THE INSTALLATION, INSPECT AND FINE TUNE THE ENTIRE SYSTEM.
8. DEMONSTRATE THE SUCCESFUL OPERATION OF ALL ZONES IN THE PRESENCE OF THE OWNER OR PROJECT LANDSCAPE ARCHITECT. UNLESS FISCAL SECURITY IS PROVIDED TO THE OWNER FOR THE INSTALLATION OF THE SYSTEM, IT MUST BE OPERATIONAL AT THE TIME OF THE FINAL LANDSCAPE INSPECTION.
9. THE IRRIGATION INSTALLER SHALL DEVELOP AND PROVIDE AN AS-BUILT DESIGN PLAN TO THE CITY AT THE TIME THE FINAL IRRIGATION INSPECTION IS PERFORMED.

PLANT & MATERIAL SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CALIPER	SPACING
TREES					
	Qf	5	QUERCUS FALCATA SOUTHERN RED OAK	65 GAL	PER PLAN
	Qm	3	QUERCUS MACROCARPA BUR OAK	65 GAL	PER PLAN
	Qv	4	QUERCUS VIRGINIANA LIVE OAK	65 GAL	PER PLAN
ORNAMENTAL TREES					
	Cv	3	CHIONANTHUS VIRGINICUS WHITE FRINGETREE	30 GAL	PER PLAN
	Td	3	TAXODIUM DISTICHUM BALD CYPRESS	30 GAL	PER PLAN
SYMBOL	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONTAINER**	**SPACING**
SHRUBS					
	Lm	86	LIRIOPE MUSCARI 'BIG BLUE' LILY TURF	5 GAL	36" O.C.
	Ri	441	RAPHIOLEPIS INDICA INDIAN HAWTHORNE	5 GAL	36" O.C.
	Ni	67	SPIRAEA X BUMALDA "ANTHONY WATERER" RED SPIREA	5 GAL	36" O.C.
SYMBOL	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONTAINER**	**REMARKS**
GROUND COVERS					
	Cd	39,163 SF	CYNODON DACTYLON BERMUDA GRASS	HYDROMULCH/PER PLAN	
	Cd2	44,518 SF	CYNODON DACTYLON BERMUDA GRASS	SOLID SOD	
	Mulch	1,720 SF	MULCH MULCH	SF	AS SHOWN IN SHRUB BEDS & TREE RINGS
	STEEL EDGING	805 LF	STEEL EDGING		

GENERAL TREE PROTECTION NOTES:

1. All trees indicated on the tree preservation plans to be protected, shall be protected with temporary fencing throughout construction.
2. Tree protection fences shall be installed prior to the commencement of any demolition and/or site preparation work (clearing, grubbing or grading).
3. Fences shall completely surround the tree or clusters of trees; fences shall be located at the outermost limits of the tree branches (drip line); and shall be maintained throughout the construction project. Fences may be moved or removed to enable the progress of construction only as approved by the owner's representative.
4. Where exceptions result in a fence being closer than 4 feet to a trunk, protect the trunk with strapped-on planking to a height of 8' (or to the limits of the lower branching) as indicated on tree preservation plans.
5. Cover the root zone area with 4" of hardwood mulch, under direction of owner's representative, where root zones within drip lines are unprotected by fencing.
6. All grading and excavation within tree root zone areas shall be done by hand to minimize root damage and soil compaction. Prior to grading, relocate protective fencing to 2' behind the grade change area. Grade shall remain unchanged where possible.
7. Any trenching required for the installation of utilities, lighting, conduit, or landscape irrigation shall be placed outside root zone areas. Roots shall not be severed as a result of the excavation. Roots shall remain in place, bridging trenches. Conduit pipes, etc., shall be placed between roots. while exposed, roots shall be wrapped with burlap and be kept moist. After backfilling with specified bedding, fill remaining excavation with soil excavated from the trench. Any excess soil may be disposed of on site as approved by owner. In the process of excavation, avoid stockpiling material within the dripline of existing trees. If unavoidable, stockpiled material shall be placed on plywood board roading set on top existing grade. Board roading shall not remain in place longer than (7) days.
8. Any root severed by construction activity shall be pruned flush with the soil. Backfill root areas with specified top soil as soon as possible. If exposed root areas are not backfilled within 2 days, cover them with specified organic material.
9. Prior to excavation or grade cutting within tree drip-lines, root prune by making a clean cut between the disturbed and undisturbed root zones with a rock saw, irrigation trencher or similar equipment to minimize damage to remaining roots. Mark and review trench line with owner's representative prior to trenching.
10. Trees heavily impacted by construction activities shall be watered thoroughly once a week during periods of hot, dry weather as directed by the owner's representative. Tree crowns shall be sprayed with water periodically to reduce dust accumulation on the leaves.
11. No landscape topsoil dressing greater than 3" maximum shall be permitted within the dripline of trees. No soil or mulch is permitted on the root flare of any tree.
12. Pruning to provide clearance for structures, vehicular traffic, and equipment shall take place before construction begins by a recognized arborist.
13. All finished pruning must be done according to recognized, approved standards of the industry (Reference the National Arborist Association Pruning Standards for Shade Trees).
14. Cover severed roots and tree side of trench with 8 mil black visquene to full depth of trench and 6" over top. Staple visquene in place, backfill and compact trench with excavated soil, to protect root ends from concrete and lime.
15. Core aerate and deep root fertilize trees by probe and water injection of Davey Arbor Green Fertilizer. Refer to Manufacturer's Recommended Rates per tree caliper inches. Inject 18"-24" deep 5'-0" O.C. throughout drip-line of tree.

LANDSCAPE ANALYSIS FORM

Non single-family begin here

☒ Non-Single Family Residential

☒ Plant, ☐ Preserve, ☐ In R-O-W, ☐ On Property

Sec. 33-130 Preservation

☐ Calculations:

A. STREET TREES: **Sec. 33-126 (a)** Calculations **T = (x/30)**
Sec. 33-126 (b) Minimum Spacing **20'oc.**
Sec. 33-126 (6) Required trees will be applies separately to each block face

- Street A (Rankin Rd.) Length of property line in lineal feet as measured along the each block face.
  1,079 lineal feet/30 = 36 Street trees required.
- Street B (N/A) Length of property line in lineal feet as measured along the each block face.
  _____ lineal feet/30 = _____ Street trees required.
- Street C (N/A) Length of property line in lineal feet as measured along the each block face.
  _____ lineal feet/30 = _____ Street trees required.
- Street D (N/A) Length of property line in lineal feet as measured along the each block face.
  _____ lineal feet/30 = _____ Street trees required.

(Staff may create an artificial lot)

B. **PARKING LOT TREES: Sec. 33-127 (a)** parking lot trees. **T = (1x10 pkg. Sp.) Sec. 33-127 (a)** Each parking space must be within 120' of a tree.

Number of new parking stalls to be constructed 47 /10 = 5 parking lot trees required.

C. **TOTAL TREE REQUIREMENT:**
A + B = 41 total number of street and parking lot trees required.

D. SHRUBS: **Sec. 33-127 (b)** shrubs **S = (Tx10) Sec. 33-127 (b) 75%** of the shrubs must be planted along the perimeter of the parking lot.
(Are required for new or the expanded portion of parking lots)
Total number of Street trees required, from "A" above 36 x 10 = 360 shrubs.

PLANTING NOTES

1. TREE LOCATIONS ARE DIAGRAMMATIC. CONTRACTOR SHALL STAKE OUT ALL INFORMAL TREE LOCATIONS IN FIELD USING COLORED FLAGS FOR EACH DIFFERENT TREE SPECIES FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATION. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO ADJUST PLANTS TO EXACT LOCATION IN FIELD.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADVISE THE LANDSCAPE ARCHITECT OF ANY CONDITION FOUND ON THE SITE WHICH PROHIBITS INSTALLATION AS SHOWN ON THESE DRAWINGS.
4. ALL SHRUB, GROUNDCOVER, PERENNIAL & SEASONAL BEDS SHALL HAVE A TWO (2") INCH MULCH LAYER.
5. ALL PLANT MATERIAL SHALL BE MAINTAINED IN A HEALTHY AND GROWING CONDITION, AND MUST BE REPLACED WITH PLANT MATERIAL OF SIMILAR VARIETY AND SIZE IF DAMAGED, DESTROYED, OR REMOVED.
6. LANDSCAPED AREAS SHALL BE KEPT FREE OF TRASH, LITTER, AND WEEDS AT ALL TIMES DURING CONSTRUCTION.
7. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR FINE GRADING, REMOVAL OF MISCELLANEOUS DEBRIS AND ANY ADDITIONAL FILL REQUIRED TO CREATE A SMOOTH CONDITION PRIOR TO PLANTING IN ALL AREAS.
8. FINAL GRADING SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT IN THE FIELD PRIOR TO PLANTING.
9. ALL QUANTITIES ON THIS PLAN ARE FOR INFORMATION ONLY. (PLANT SPACING IS AS INDICATED ON 'PLANT SCHEDULE' UNLESS OTHERWISE NOTED). IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE FULL COVERAGE IN ALL PLANTING AREAS AS SPECIFIED IN THE PLANT SCHEDULE REMARKS.
10. ALL LANDSCAPE AREAS TO BE IRRIGATED BY AUTOMATIC IRRIGATION SYSTEM. ALL LANDSCAPE AREAS TO BE IRRIGATED BY AUTOMATIC IRRIGATION SYSTEM. REFER TO IRRIGATION NOTES THIS PAGE.
11. REFER TO L1.01 FOR MASS GRADING.

CITY REQUIREMENTS

TOTAL PARKING SPACES	47
TOTAL PARKING LOT TREES REQUIRED	5
TOTAL PARKING LOT TREES PROPOSED	6

a. One tree for every ten parking spaces
b. At least one parking lot or street tree within 120 feet of each parking space

TOTAL PARKING LOT SHRUBS REQUIRED	360
TOTAL PARKING LOT SHRUBS PROPOSED	360

a. The number of shrubs required under this subsection shall be equal to the total number of street trees required under this division multiplied by ten
b. No less than 75 percent of the shrubs required under this section shall be planted along the perimeter of the parking surface adjacent to the public street

TOTAL LENGTH (L.F.)	1079
TOTAL STREET TREES REQUIRED	36
TOTAL STREET TREES PRESERVED	28
TOTAL STREET TREES PROPOSED	8

The number of street trees planted shall equal the total number of trees (T) required under the following formula: T = (X/30), where X shall represent the length in linear feet measured along each side of the property line on the public street(s).

NO.	DATE	REVISION	APP.

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Tel: 713.548.5700
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SURVEYED BY:
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REGISTERED LANDSCAPE ARCHITECT Bradley Cooper STATE OF TEXAS
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION LANDSCAPE NOTES AND SCHEDULE L-001

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	43 OF 255

FOR CITY OF HOUSTON USE ONLY
PUBLIC WORKS AND ENGINEERING ACCEPTED NOTED
80341
HOUSTON, TEXAS

PLOTTED: 6/3/2025 1:38 PM
PLOT STYLE: Stantec_mono.ctb
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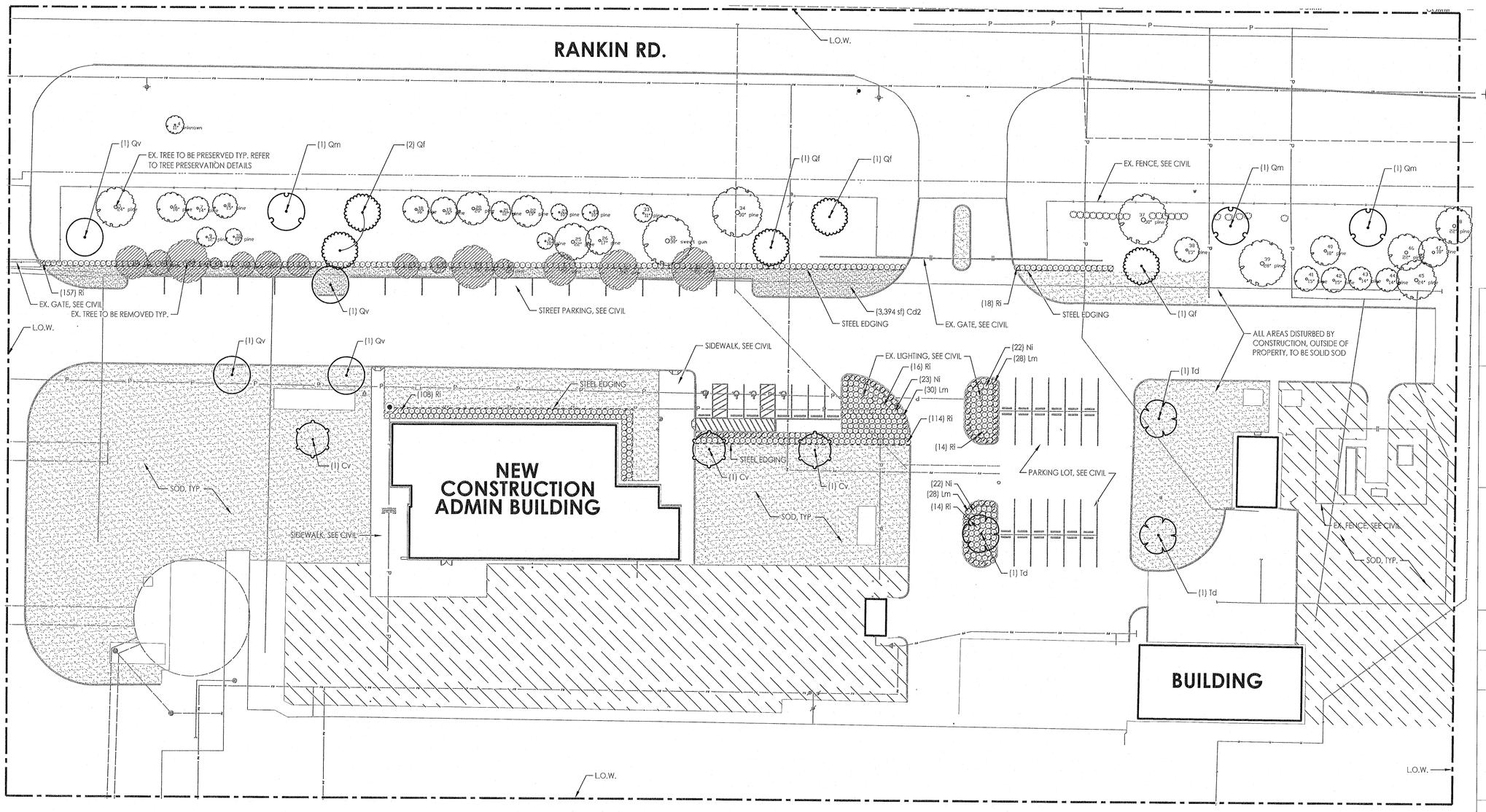
NOTES:
FOR PLANTING LEGENDS, REFER TO ADMINISTRATION LANDSCAPE NOTES AND SCHEDULE L-001.



BENCHMARK:
CITY OF HOUSTON MONUMENT 5466-0406, A BRASS DISK IN CONCRETE, LOCATED AT NORTHEAST CORNER OF THE INTERSECTION OF RANKIN ROAD AND CHANUTE ROAD.

ELEV. 80.81 **Feet** NAVD 1988 (GEOID '18)*

* OBSERVED BY GPS SURVEYING AND PROCESSED IN REFERENCE TO THE CORS DATED FEBRUARY 4, 2020.

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

T.B.M #2:
SET " " CUT ON TOP OF BB INLET SOUTH OF THE GATE AT THE WEST ENTRANCE OF THE PLANT.

ELEV.= 80.22 FT.

VERTICAL DATUM ADJUSTMENT:
THE ELEVATION DIFFERENCE IN BETWEEN THE FLOODPLAIN ADJUSTMENT AND DATUM NAVD 1988 (GEOID '18) IS 0.46'.

NAVD 1988, 2001 ADJ. ELEVATION = NAVD 1988 (GEOID '18) ELEVATION + 0.46 FEET.

NO.	DATE	REVISION	APP.

0 15 30 60 90
SCALE: 1"=30'

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REGISTERED LANDSCAPE ARCHITECT 2316 STATE OF TEXAS
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

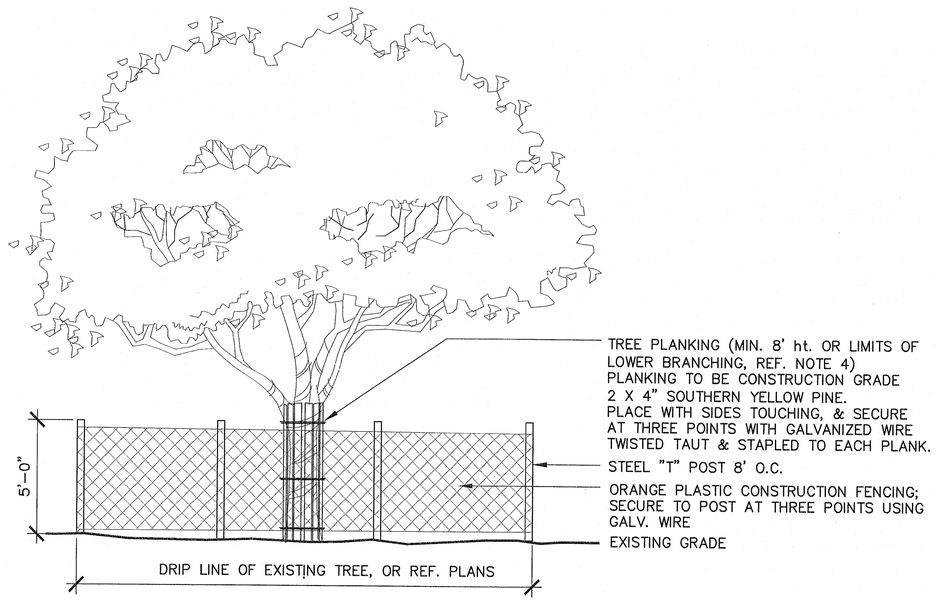
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION OVERALL PLANTING PLAN L-100

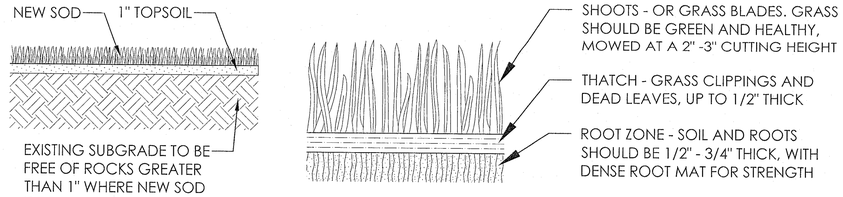
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1"=30'	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 44 OF 255	

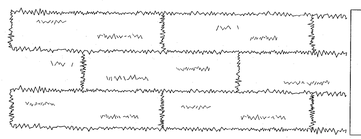
ACCEPTED AS NOTED
30341
HOUSTON, TEXAS

FOR REVIEW ONLY



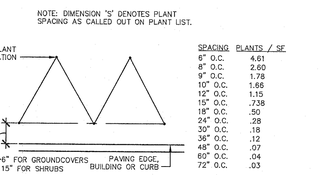
E TREE PRESERVATION DETAIL
1"=1'

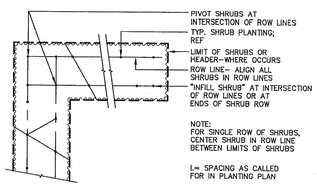




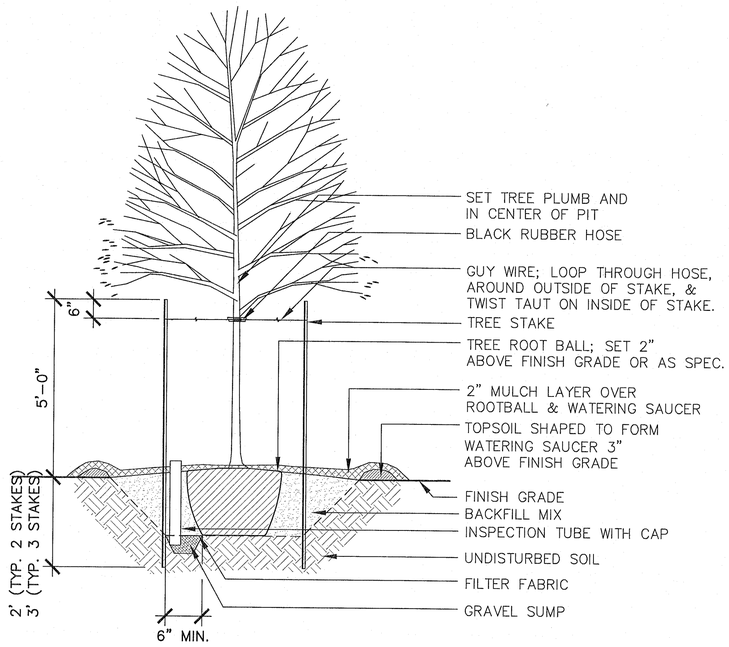
LAY SOD IN A STAGGERED PATTERN, BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.
SOD SHALL BE THOROUGHLY WATERED IN AND ROLLED AFTER INSTALLATION TO A SMOOTH FINISH.

C SOD DETAIL
NOT TO SCALE

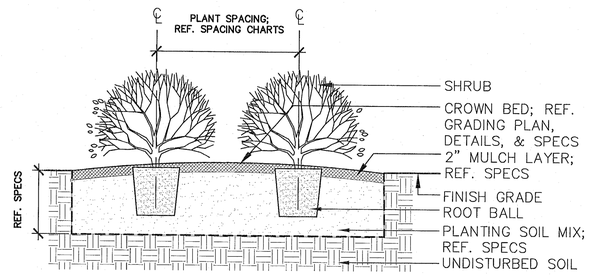




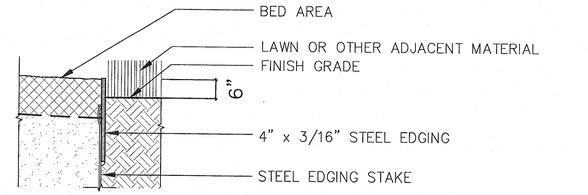
F PLANT SPACING CHARTS
NOT TO SCALE



D TREE PLANTING DETAIL
1/2"=1'



B SHRUB PLANTING DETAIL
1/2"=1'



A STEEL EDGING DETAIL
1/2"=1'

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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION LANDSCAPE DETAILS L-501

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 45 OF 255	

REGISTERED PROFESSIONAL ENGINEER 80341 CIVIL ENGINEER STATE OF TEXAS

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GENERAL NOTES

1. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ANCHORS, INSERTS, REGLETS AND EMBEDDED ITEMS NOT SHOWN ON STRUCTURAL DRAWINGS.
2. CONTRACTOR TO VERFIY ALL EXISTING DIMENSIONS, ELEVATIONS, CONCRETE THICKNESSES AND CONCRETE CONDITIONS PRIOR TO BEGINNING ANY CONSTRUCTION. IF CONSTRUCTED ELEMENTS PREVENT THE CONTRACTOR FROM PERFORMING WORK AS SHOWN IN THE CONSTRUCTION DOCUMENTS, THE ENGINEER OF RECORD SHALL BE NOTIFIED (IN WRITING). NO WORK SHALL BE PERFORMED PRIOR TO THE ENGINEER OF RECORD'S REVIEW OF THE EXISTING CONDITION(S) AND ALLOWED THE OPPORTUNITY TO PROVIDE AN AGREED UPON SOLUTION. ANY WORK PERFORMED PRIOR TO THE ISSUANCE OF THE ENGINEERED SOLUTION WILL BE AT THE CONTRACTOR'S RISK AND IS SUBJECT TO REMOVAL AT THE EXPENSE OF THE CONTRACTOR.
3. CONTRACTOR IS TO VERIFY MECHANICAL LOADINGS AND LOCATIONS. NOTIFY ARCHITECT IF WEIGHTS AND LOCATIONS OF MECHANICAL UNITS DIFFER FROM THOSE SHOWN ON PLAN.
4. PRINCIPAL OPENINGS ARE INDICATED ON THE DRAWINGS. SEE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCKOUTS AND CURBS.
5. CONCRETE TRUCKS, CRANES, OR OTHER CONSTRUCTION VEHICLES WITH A WHEEL LOAD GREATER THAN 1000 POUNDS ACTING ON AN AREA NOT LESS THAN 4.5 INCHES SQUARE SHALL NOT BE PERMITTED ON THE STRUCTURAL SLAB WITHOUT PRIOR WRITTEN AGREEMENT OF THE ARCHITECT/ENGINEER. EQUIPMENT EXCEEDING THE ABOVE REFERENCED LOADING SHALL BE EVALUATED ACCORDING TO NOTE 9 BELOW.
6. CONCURRENT USE OR STORAGE OF MORE THAN ONE VEHICLE ON THE STRUCTURAL SLAB SHALL NOT BE PERMITTED WITHOUT PRIOR WRITTEN AGREEMENT OF THE ARCHITECT/ENGINEER.
7. CONSTRUCTION EQUIPMENT WITH A TOTAL LOADED WEIGHT OF MORE THAN 3000 POUNDS IS NOT PERMITTED ON THE COMPOSITE FLOOR SLAB WITHOUT PRIOR WRITTEN AGREEMENT OF THE ARCHITECT/ENGINEER.
8. STATIONARY CONSTRUCTION EQUIPMENT AND MATERIALS ARE TO BE EVENLY DISTIBUTED IF PLACED ON STRUCTURAL FLOOR FRAMING/SLABS OR ROOF FRAMING/DECK. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT OBTAINED DESIGN STRENGTH.
9. SUBMISSIONS FOR PROPOSED CONSTRUCTION VEHICLES AND CONSTRUCTION PHASE EQUIPMENT SHALL BE PREPARED BY A THIRD PARTY ENGINEER (LICENSED IN THE STATE IN WHICH THE PROJECT IS BEING PERFORMED) INDICATING CODE COMPLIANCE OF THE CONSTRUCTION LOADS ACTING ON THE STRUCTURE, INCLUDING THE DESIGN OF CONSTRUCTION BRACING AND/OR SHORING AS REQUIRED. CALCULATIONS SHALL INCLUDE CONSIDERATION OF LOAD PATH, CONCENTRATED LOADS, MOVING LOADS, AND COMBINED LOAD EFFECTS ON THE STRUCTURE.
10. THERE SHALL BE NO DEVIATIONS FROM THESE CONSTRUCTION DOCUMENTS UNLESS APPROVED BY THE ENGINEER OF RECORD. ANY DEVIATION FROM, ADDITION TO, SUBSTITUTION FOR, OR MODIFICATION TO THE STRUCTURE OR ANY PART OF THE STRUCTURE SHOWN ON THESE DRAWINGS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER OF RECORD FOR REVIEW. SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW DO NOT CONSTITUTE "IN-WRITING" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING SUGGESTED.

CODES

1. BUILDING CODE: INTERNATIONAL BUILDING CODE 2015.
2. STRUCTURAL CONCRETE: BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, AMERICAN CONCRETE INSTITUTE ACI 318-11.
3. CONCRETE MASONRY: BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES, AMERICAN CONCRETE INSTITUTE, ACI 530/530.1-11/ASCE 5-11/TMS 402-11.
4. BRICK MASONRY: RECOMMENDED PRACTICE FOR ENGINEERED BRICK MASONRY, BRICK INSTITUTE OF AMERICA, 1969.
5. STRUCTURAL STEEL: AISC STEEL CONSTRUCTION MANUAL - FOURTEENTH EDITION.
6. COLD FORMED STEEL: NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS, AMERICAN IRON AND STEEL INSTITUTE, 2015 EDITION.

DESIGN LIVE LOADS

1. MINIMUM DESIGN LIVE LOADS ARE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE (IBC). DESIGN LOADS ARE (IN PSF) UNLESS NOTED OTHERWISE:

ROOF	20
MECHANICAL AREAS	150
STORAGE AREAS / BOOKROOM	125
TOILET AREAS	60
HEAVY STORAGE	250
CRANE (TON)	10

FIXED EQUIPMENT: DESIGNED FOR ACTUAL WEIGHT OF EQUIPMENT

2. FLOOR LIVE LOADS HAVE BEEN REDUCED IN ACCORDANCE WITH THE METHOD PRESCRIBED IN THE ABOVE REFERENCED BUILDING CODE. ROOF LIVE LOADS HAVE NOT BEEN REDUCED.

SNOW DESIGN DATA

1. THE FOLLOWING SNOW LOAD DATA WAS USED IN THE DESIGN OF THE STRUCTURE:

GROUND SNOW LOAD (Pg)	5 PSF
FLAT ROOF SNOW LOAD (Pf)	6 PSF
SNOW EXPOSURE FACTOR (Ce)	1.00
THERMAL FACTOR (Ct)	1.00
IMPORTANCE FACTOR (Is)	1.10

2. THE DESIGN SNOW LOAD IS MULTIPLIED BT THE APPROPRIATE FACTORS TO ACCOUNT FOR DRIFTING AT PARAPETS, CHANGES IN ROOF HEIGHT AND AT ROOF PROJECTIONS GREATER THAN 15 FEET LONG.

SEISMIC DESIGN DATA

1. THE FOLLOWING SEISMIC DESIGN DATA WAS USED IN THE DESIGN OF THE STRUCTURE:

		ASCE 7-16
BUILDING RISK CATEGORY	III	(TABLE 1.5-1)
SEISMIC IMPORTANCE FACTOR (Ie)	1.25	(TABLE 1.5-2)
SPECTRAL RESPONSE ACCELERATION (Ss)	7.5% g	
SPECTRAL RESPONSE ACCELERATION (S1)	4.1% g	
SEISMIC SITE CLASS	D	(DEFAULT)
SPECTRAL RESPONSE COEFFICIENT (Sds)	8.0% g	
SPECTRAL RESPONSE COEFFICIENT (Sd1)	6.6% g	
SEISMIC DESIGN CATEGORY	A	(TABLE 11.6-2)

2. BASIC SEISMIC RESISTING FORCE SYSTEM: STRUCTURAL STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE

RESPONSE MODIFICATION FACTOR (R)	3
SEISMIC RESPONSE COEFFICIENT (Cs)	0.033
DESIGN BASE SHEAR	0.033w

ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE

WIND DESIGN DATA

1. THE FOLLOWING WIND LOAD DATA WAS USED IN THE DESIGN OF THE STRUCTURE:

BASIC WIND SPEED (3 SECOND GUST-ULTIMATE)	150 MPH
BASIC WIND SPEED (3 SECOND GUST-SERVICE)	110 MPH
EXPOSURE CATEGORY	C
INTERNAL PRESSURE COEFFICIENT(ENCLOSED)	+/- 0.18
INTERNAL PRESSURE COEFFICIENT(PARTIALLY ENCLOSED)	+/- 0.55
RISK CATEGORY	III

2. COMPONENTS AND CLADDING AT ROOF: SEE UPLIFT DIAGRAM ON SHEET 1S-601.

FORMWORK

1. FORMWORK IS TO COMPLY WITH ACI 347R, "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK".
2. ANCHOR BOLTS ARE TO BE SET WITH SECURELY FASTENED TEMPLATES.
3. EARTH FORMING OF GRADE BEAMS IS NOT ACCEPTABLE.
4. PROVIDE CHAMFER STRIPS IN ALL FORMS AS NOTED BY ARCHITECTURE.

FOUNDATION

1. THE OWNER HAS OBTAINED A GEOTECHNICAL REPORT TITLED GEOTECHNICAL INVESTIGATION INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS WBS NO. R-000265-0117-3 HOUSTON, TEXAS, **REPORT NO. 1140253001 AND ADDENDUM NO. 1**, AND IT IS APPENDED AS PART OF THE BID DOCUMENTS FOR INFORMATION ONLY. NEITHER THE OWNER NOR THE CONSULTANTS WARRANT THE ACCURACY OR THE COMPLETENESS OF THE REPORT. IN SUBMITTING A TENDER, THE BIDDER ACKNOWLEDGES AND REPRESENTS THAT IT HAS REVIEWED THE REPORT AND HAS MADE ITS' OWN INDEPENDENT ASSESSMENT OF THE CONDITIONS OF THE SITE AND THE REQUIREMENTS OF THE WORK AND THAT IT IS SOLELY RESPONSIBLE FOR DECISIONS PERTAINING TO IMPLEMENTATION OF THE GEOTECHNICAL RECOMMENDATIONS.
2. REFER TO THE AFOREMENTIONED GEOTECHNICAL REPORT FOR FOUNDATION, PAVING AND SUBSURFACE DESIGN INFORMATION. THE CONTRACTOR SHALL REFERENCE THIS REPORT IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS FOR GUIDELINES AND RECOMMENDATIONS FOR FOUNDATION AND SUBSURFACE PREPARATION, EXCAVATION AND CONSTRUCTION.
3. ESTABLISH THE BOTTOM OF FOOTINGS AT ELEVATIONS SHOWN ON PLANS. IF FIELD CONDITIONS REQUIRE CHANGES TO REACH DESIRED STRATUM, ADJUSTMENTS TO CONTRACT ARE TO BE MADE ON A UNIT PRICE BASIS.

SLAB SUBGRADE PREPARATION

1. FOR SUBGRADE PREPARATION WITHIN THE BUILDING AREA, REFER TO THE ABOVE MENTIONED GEOTECHNICAL REPORT. THIS WORK IS TO BE PERFORMED AS DIRECTED BY THE OWNER'S SOILS TESTING LAB. OBSERVATION REPORTS AND TEST REPORTS OF THE SOIL COMPACTION ARE TO BE SUBMITTED TO THE ARCHITECT/ENGINEER TO VERIFY THE WORK IS IN GENERAL CONFORMANCE PRIOR TO PLACEMENT OF CONCRETE.
2. TOP SOIL AND VEGETATION IS TO BE STRIPPED TO DEPTHS ENCOUNTERED AND AS DIRECTED BY THE OWNER'S SOILS TESTING LAB PRIOR TO DRILLING PIERS, REFER TO SOIL REPORT FOR SITE PREPARATION.
3. PROVIDE VAPOR RETARDER UNDER STRUCTURAL BEAMS AND SLABS CAST ON GRADE, UNLESS OTHERWISE NOTED.
4. REMOVE EXISTING SOIL AND PROVIDE A MINIMUM OF 12 INCHES OF PROPERLY COMPACTED ENGINEERED FILL BELOW THE BUILDING PAD PER GEOTECHINCAL REPORT REQUIREMENTS.

DRILLED PIERS - BELLED/UNDERREAMED

1. PIER DESIGN OF ADMINISTRATION BUILDING IS BASED UPON THE FOLLOWING CRITERIA:
   ALLOWABLE END BEARING PRESSURE
   - DEAD + SUSTAINED LOADING = 3,000 PSF
   - TOTAL LOAD = 4,000 PSF
2. BEARING ELEVATION SHOWN ON THE PIER DETAIL IS 8'-0" BELOW EXISTING NATURAL GRADE ELEVATION.
3. DRILLED HOLES ARE TO BE EXCAVATED, CLEANED, REINFORCED, AND FILLED WITH CONCRETE DURING THE SAME DAY. NO HOLE IS TO BE LEFT OPEN OVERNIGHT. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS.
4. REINFORCING CAGE SHALL BE HELD SECURELY AWAY FROM EARTH AT SIDES AND BOTTOM BY SETS OF 3 OR MORE SPACERS AT A MAXIMUM SPACING OF 5 FEET ALONG THE LENGTH OF THE CAGE AND 1 FOOT FROM THE BOTTOM.
5. THE CONTRACTOR SHALL VERIFY DEPTHS OF PIERS BEFORE PIER STEEL IS CUT. PIER STEEL MAY BE DELIVERED TO THE JOBSITE IN STANDARD LENGTHS OF 40 OR 60 FEET AND CUT AS REQUIRED. PROVIDE 64 BAR DIAMETER LAPS IN ALL VERTICAL PIER REINFORCING.
6. TOP OF PIERS SHALL BE OF THE SPECIFIED DIAMETER, AND SHALL NOT BE ENLARGED TO FORM A MUSHROOM UNDER ANY CIRCUMSTANCE. FORM TOP OF PIER IF REQUIRED TO MAINTAIN THE SPECIFIED DIAMETER. ANY CONCRETE EXTENDING BEYOND THE SPECIFIED DIAMETER SHALL BE REMOVED.

REINFORCING STEEL

1. DEFORMED BAR CONCRETE REINFORCEMENT FOR STRUCTURES IS TO CONFORM TO ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED.
2. ELECTRICALLY-WELDED WIRE FABRIC OF COLD-DRAWN WIRE SHALL CONFORM TO ASTM A1064 (70,000 PSI) UNLESS OTHERWISE NOTED.
3. REINFORCEMENT IS TO BE DESIGNED AND DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE CRSI "MANUAL OF STANDARD PRACTICE" AND THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES" (ACI 315).
4. ALL STEEL SHALL BE DOMESTICALLY (INCLUDING CANADA) MILLED AND FABRICATED. FOREIGN STEEL SHALL NOT BE UTILIZED WITHOUT PRIOR APPROVAL FROM THE STRUCTURAL ENGINEER. THE APPROVAL PROCESS SHALL TAKE PLACE DURING BIDDING TIME. ANY REQUEST TO UTILIZE FOREIGN STEEL MADE AFTER BIDDING SHALL BE REJECTED.
5. REINFORCEMENT BAR BENDS ARE TO BE MADE COLD.
6. WELDING OF REINFORCING STEEL IS NOT PERMITTED.
7. DEFORMED BAR ANCHORS (DBA'S) SHALL BE WELDED BY A METHOD IN WHICH THE CONNECTION CAN DEVELOP THE FULL TENSION AND SHEAR CAPACITY OF THE BAR.
8. REINFORCEMENT IS TO BE SUPPORTED ON CHAIRS PROVIDING THE FOLLOWING MINIMUM CONCRETE COVER:

CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3 IN
FORMED, EXPOSED TO EARTH OR WEATHER	
#6 THROUGH #18 BARS	2 IN
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1 1/2 IN
FORMED, NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
SLABS, WALLS, JOISTS	
#14 AND #18 BARS	1 1/2 IN
#11 BAR AND SMALLER	3/4 IN
BEAMS, GIRDERS, COLUMNS	
PRIMARY REINF, TIES, STIRRUPS, SPIRALS	1 1/2 IN
SHELLS, FOLDED PLATE MEMBERS	
#6 BAR AND LARGER	3/4 IN
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1/2 IN

8. CONTINUOUS REINFORCEMENT MAY BE USED IN PLACE OF SCHEDULED REINFORCEMENT AS LONG AS THE SCHEDULED SIZE AND SPACING IS SATISFIED. WHERE SPLICES ARE NECESSARY, THEY ARE TO BE MADE AT LOCATIONS SHOWN IN THE SCHEDULES.
9. UNLESS OTHERWISE DETAILED, HOOKS ARE TO BE ACI STANDARD 90-DEGREE HOOKS.
10. HOOK TOP AND SIDE REINFORCING BARS AT DISCONTINUOUS ENDS.
11. STIRRUPS OF THE SIZE AND SPACING DETAILED ARE TO PROVIDE THE COVER LISTED ABOVE. HOOKS ON STIRRUPS ARE TO BE 90 DEGREES AND ARE TO HAVE 4" MINIMUM EXTENSIONS UNLESS OTHERWISE NOTED.
12. MINIMUM LAP OF WELDED WIRE FABRIC IS TO BE 6" OR ONE MESH AND ONE-HALF, WHICHEVER IS GREATER.
13. UNLESS OTHERWISE SHOWN OR NOTED, CORNER BARS OF THE SAME SIZE AS MAIN TOP AND BOTTOM REINFORCEMENT ARE TO BE PROVIDED AT CORNERS OF BEAMS AND INTERSECTIONS OF BEAMS IN WHICH ONE MEMBER IS DISCONTINUOUS. SEE SHEET S301 AND DETAILS FOR TYPICAL GRADE BEAM CORNER BARS AND REINFORCEMENT LAP SPLICES.

STEEL DECKING

1. ROOF AND FLOOR DECK SHALL BE CONTINUOUS OVER 3 OR MORE SUPPORTS. AT LOCATIONS WHERE SINGLE OR DOUBLE SPAN CONDITIONS OCCUR, THE CONTRACTOR SHALL EITHER SHORE THE DECK, OR ADJUST THE GAGE THICKNESS OF THE DECK IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. DECK SHALL BE DESIGNED TO PROVIDE EQUIVALENT OR GREATER LOAD CAPACITY AS THE SPECIFIED DECK SUPPORT OVER FOUR SUPPORTS.
   - METAL ROOF DECK SHALL BE CONNECTED TO STRUCTURAL SUBSTRATE WITH WELDS PROVIDING A CAPACITY MEETING THE UPLIFT DIAGRAM SHOWN ON SHEET 1S-601 OTHERWISE NOTED ON PLAN. MINIMUM WELDS AND SIDELAPS ARE THE FOLLOWING:

     TYPE B ROOF DECK: 36/5/4
2. PUDDLE WELDS SHALL BE 5/8 INCH DIAMETER. ALL WELDS SHALL BE MADE WITH E70 ELECTRODES. WELD WASHERS SHALL BE USED ON ALL DECK UNITS LESS THAN 22 GAGE. METAL AROUND WELDS SHALL BE COMPLETELY INTACT AFTER WELDING. POWDER-ACTUATED FASTENERS SHALL BE HILTI X-HSN24 (1/8" ≤ tf ≤ 3/8"), X-ENP19 (tf ≥ 1/4").

   SIDELAP CONNECTIONS SHALL BE #10 TEK SCREWS OR EQUAL
   SIDELAP CONNECTIONS SHALL BE HILTIS-SLC
3. AN INSPECTION REPORT PER SDI AND AWS REQUIREMENTS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD.
4. DO NOT SUSPEND LIGHT FIXTURES, CEILINGS, DUCTS OR OTHER UTILITIES FROM THE STEEL DECK UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.

STEEL DECKING TYPE PROPERTIES

STEEL DECK TYPE	DEPTH (IN)	PROFILE	GAGE	MIN SECTION MODULUS (IN^3)	MIN MOMENT OF INERTIA (IN^4)	MIN YIELD STRENGTH (KSI)	FINISH
ACOUSTIC STEEL ROOF DECK	1.5	1.5BA	20	0.234	0.201	33	GALVANIZED G90

CONCRETE

1. CAST IN PLACE CONCRETE SHALL MEET THE FOLLOWING REQUIREMENTS:

CLASS A: **PIERS**

a. 28 DAY STRENGTH	3,000 PSI
b. AGGREGATE TYPE	ASTM C33
c. AGGREGATE SIZE	1 INCH MAXIMUM
d. SLUMP	6-8 INCHES
e. WATER / CEMENTITIOUS RATIO	0.50
f. ALLOWABLE FLY ASH REPLACEMENT	40%
g. AIR ENTRAINMENT	3% - 6%
h. ACI 318 EXPOSURE CLASSES	F0, S0, P0, C1

CLASS B: **GRADE BEAMS, PLINTHS, PILASTERS**

a. 28 DAY STRENGTH	4,500 PSI
b. AGGREGATE TYPE	ASTM C33
c. AGGREGATE SIZE	1 INCH MAXIMUM
d. SLUMP	4-6 INCHES
e. WATER / CEMENTITIOUS RATIO	0.50
f. ALLOWABLE FLY ASH REPLACEMENT	30%
g. AIR ENTRAINMENT	3% - 6%
h. ACI 318 EXPOSURE CLASSES	F1, S0, P0, C1

CLASS C: **SLABS ON GROUND**

a. 28 DAY STRENGTH	4,000 PSI
b. AGGREGATE TYPE	ASTM C33
c. AGGREGATE SIZE	1 INCH MAXIMUM
d. SLUMP	4-6 INCHES
e. WATER / CEMENTITIOUS RATIO	0.45
f. ALLOWABLE FLY ASH REPLACEMENT	20%
g. AIR ENTRAINMENT	NONE
h. ACI 318 EXPOSURE CLASSES	F0, S0, P0, C0

2. HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS SHALL BE PERMITTED ONLY WHERE INDICATED ON THE DRAWINGS. ALL VERTICAL CONSTRUCTION JOINTS SHALL BE MADE AT THIRD POINTS IN ACCORDANCE WITH TYPICAL DETAILS. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS FOR CONSTRUCTION JOINTS NOT SHOWN ON DRAWINGS FOR REVIEW BY THE ARCHITECT AND STRUCTURAL ENGINEER. ADDITIONAL CONSTRUCTION JOINTS MAY REQUIRE ADDITIONAL REINFORCING AS SPECIFIED BY THE ENGINEER WHICH SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. ROUGHEN THE SURFACE OF ALL CONSTRUCTION JOINTS SO THAT THE AGGREGATE IS EXPOSED UNIFORMLY, LEAVING NO LAITANCE, LOOSENED PARTICLES, OR DAMAGED CONCRETE.
4. ALL CONCRETE SHALL BE DESIGNED, MIXED, TRANSPORTED, AND PLACED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS OF THE AMERICAN CONCRETE INSTITUTE.
5. SLEEVES OR OTHER PENETRATIONS CAN BE ALLOWED THROUGH STRUCTURAL MEMBERS ONLY WITH PRIOR WRITTEN AGREEMENT OF ARCHITECT/ENGINEER. REQUESTS FOR REVIEW ARE TO BE SUBMITTED IN WRITING A MINIMUM OF FIVE WORKING DAYS PRIOR TO THE CONCRETE POUR.
6. CONTINUOUS WATERSTOP ARE TO BE USED AT JOINTS WHERE DETAILED AND AT OTHER CONSTRUCTION JOINTS IN CONCRETE ELEMENTS BELOW FINISH GRADE.
7. EMBEDDED CONDUITS, PIPES, AND SLEEVES SHALL MEET THE REQUIREMENTS OF ACI 318-14 SECTION 20.7 AND 26.8, INCLUDING THE FOLLOWING:
   A. CONDUITS AND PIPES EMBEDDED WITHIN A SLAB, WALL, OR BEAM (OTHER THAN THOSE PASSING THROUGH) SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN 1/3 THE OVERALL THICKNESS OF THE SLAB, WALL, OR BEAM IN WHICH THEY ARE EMBEDDED.
   B. CONDUITS, PIPES AND SLEEVES SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS OR WIDTHS ON CENTER.

STRUCTURAL STEEL

1. STRUCTURAL STEEL IS TO CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS, AND IS TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC SPECIFICATIONS:
   A. STEEL WIDE FLANGE SECTIONS..... ASTM A992 OR ASTM A572 - GRADE 50
   B. MISCELLANEOUS STEEL SECTIONS..... ASTM A36
   C. HOLLOW STEEL SECTIONS..... ASTM A500, GRADE B
   D. STEEL PIPE SECTIONS..... ASTM A53, GRADE B
2. ALL STEEL SHALL BE DOMESTICALLY (INCLUDING CANADA) MILLED AND FABRICATED. FOREIGN STEEL SHALL NOT BE UTILIZED WITHOUT PRIOR APPROVAL FROM THE STRUCTURAL ENGINEER. THE APPROVAL PROCESS SHALL TAKE PLACE DURING BIDDING TIME. ANY REQUEST TO UTILIZE FOREIGN STEEL MADE AFTER BIDDING SHALL BE REJECTED.
3. CONNECTION BOLTS FOR STRUCTURAL STEEL MEMBERS SHALL CONFORM TO ASTM A325 OR A490, UNLESS OTHERWISE NOTED. STRUCTURAL STEEL CONNECTIONS SHALL BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH THE MINIMUM REQUIREMENTS SPECIFIED ON 1S-506.
4. WELDING IS TO CONFORM TO THE REQUIREMENTS OF THE AMERICAN WELDING SOCIETY AND THE AISC, AND IS TO BE PERFORMED ONLY BY CERTIFIED WELDERS.
5. STRUCTURAL STEEL, MISCELLANEOUS METAL, AND EMBEDS EXPOSED TO THE EXTERIOR ARE TO BE HOT DIP GALVANIZED AFTER FABRICATION, EXCEPT AS NOTED ON THE DRAWINGS. TUBE SHAPE MEMBERS EXPOSED TO THE EXTERIOR SHALL HAVE CAP PLATES SEAL WELDED, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
6. STRUCTURAL STEEL IS TO BE PREPARED AND PRIMED ACCORDING TO THE PROJECT SPECIFICATIONS. STRUCTURAL STEEL LOCATED IN CRAWL SPACES OR OTHERWISE INACCESSIBLE AREAS IS TO RECEIVE 2 COATS OF PRIMER.
7. EMBED PLATES TO BE INSTALLED IN THE FOUNDATION AND/OR SLAB SHALL BE SUBMITTED FOR REVIEW WITH THE ANCHOR BOLTS.
8. HEADED STUDS SHALL BE WELDED TO EMBED PLATES BY A METHOD IN WHICH THE CONNECTION CAN DEVELOP THE FULL TENSION AND SHEAR CAPACITY OF THE STUD.
9. IN ADDITION TO THE STEEL INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL INCLUDE THREE (3) PERCENT OF TOTAL TONNAGE OF FABRICATED STEEL (INCLUDING ERECTION IN FORM OF SHAPES, PLATES, ETC.) DURING THE PROCESS OF WORK AS MAY BE DIRECTED BY THE ARCHITECT/ENGINEER OF RECORD. IF STEEL IS NOT USED DURING THE COURSE OF THE PROJECT, OWNER IS TO RECEIVE A CREDIT FOR THE PORTION NOT USED.

REINFORCED MASONRY

1. COMPRESSIVE STRENGTH OF MASONRY (F'm) = 2000 PSI.
2. HOLLOW LOAD BEARING UNITS SHALL CONFORM TO ASTM C90, LIGHTWEIGHT, GRADE N, TYPE I OR II, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI ON THE NET AREA.
3. MORTAR SHALL CONFORM TO ASTM C270, TYPE S.
4. COARSE MASONRY GROUT SHALL CONFORM TO ASTM C476 WITH A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS.
5. LOW LIFT CONSTRUCTION SHALL BE USED W/ A MAXIMUM GROUT POUR HEIGHT OF 4 FT.
6. REFER TO ARCHITECTURAL DRAWINGS FOR SURFACE AND HEIGHT OF UNITS, LAYING PATTERN AND JOINT TYPE. USE OPEN END UNITS FOR STACKED BOND PATTERN AND BOND BEAM UNITS AT HORIZONTAL REINFORCING.
7. STEEL JOISTS AND STRUCTURAL STEEL ARE TO BE CLEAR OF MASONRY AND MORTAR IN WALLS, EXCEPT AS CONNECTED WITH MASONRY ANCHORS OR TIES AS DETAILED.
8. HORIZONTALLY REINFORCE GROUTED MASONRY WITH A MINIMUM OF TWO 9 GAGE OR 3/16" DIAMETER WIRES 16" OC IN BED JOINTS.
9. CONTRACTOR SHALL NOT "WET SET" VERTICAL REINFORCEMENT STEEL IN LOAD BEARING MASONRY WALLS. CONTRACTOR SHALL PROVIDE MECHANICAL SPLICE OR REINFORCEMENT POSITIONERS WHERE REINFORCEMENT IS DISCONTINUOUS.
10. PROVIDE HORIZONTAL BOND BEAMS W/ (2) - #5 BARS CONT @ 8'-0" VERTICAL SPACING OR CLOSER.

STRUCTURAL - DRAWING INDEX

1S-001	ADMINISTRATION	GENERAL NOTES - I
1S-002	ADMINISTRATION	GENERAL NOTES - II
1S-003	ADMINISTRATION	GENERAL NOTES - III
1S-101	ADMINISTRATION	FOUNDATION PLAN
1S-102	ADMINISTRATION	ROOF PLAN
1S-501	ADMINISTRATION	TYPICAL FOUNDATION DETAILS - I
1S-502	ADMINISTRATION	TYPICAL FOUNDATION DETAILS - II
1S-503	ADMINISTRATION	TYPICAL FOUNDATION DETAILS - III
1S-504	ADMINISTRATION	TYPICAL MASONRY DETAILS - I
1S-505	ADMINISTRATION	TYPICAL MASONRY DETAILS - II
1S-506	ADMINISTRATION	TYPICAL STEEL DETAILS - I
1S-601	ADMINISTRATION	LOAD DIAGRAMS

NO.	DATE	REVISION	APP.

Stantec

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS — BRITNEY R. WEIDERT — 117358 — LICENSED PROFESSIONAL ENGINEER — 12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION GENERAL NOTES - I

1S-001

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1/4" = 1'-0"
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	46 OF 255

FOR CITY OF HOUSTON USE ONLY

REGISTERED AND LICENSED — PROFESSIONAL ENGINEER — 80341 — SIGNATURE NUMBER — HOUSTON, TEXAS

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BRICK MASONRY

1. MORTAR SHALL CONFORM TO ASTM C270, TYPE 'S', AND SHALL BE FRESHLY PREPARED AND UNIFORMLY MIXED IN THE RATIO OF:
   - 1 PART PORTLAND CEMENT
   - 1/4 PART MINIMUM TO 1/2 PART MAXIMUM LIME PUTTY OR HYDRATED LIME
   - DAMP LOOSE SAND NOT LESS THAN 2-1/4 AND NOT MORE THAN 3 TIMES THE SUM OF THE VOLUMES OF THE CEMENT AND LIME USED.
2. OPENINGS IN MASONRY WALLS SHALL HAVE STEEL LINTELS AS DETAILED ON THE DRAWINGS. STEEL LINTELS SHALL BEAR 8" MINIMUM AT EACH END. VERTICAL CONTROL JOINTS SHALL EXTEND UP FROM THE ENDS OF THE LINTEL, UNLESS 15# FELT OR FLASHING IS PROVIDED TOP AND BOTTOM OF LINTEL ANGLE WHERE THE ANGLE BEARS ON THE BRICK.
3. ALL MASONRY TIES TO BACKUP STRUCTURE SHALL BE HOT DIP GALVANIZED. PROVIDE A HECKMANN NO. 315 ANCHOR WITH NO. 316 TRIANGULAR TIE ON COLUMNS AT 16" (15" AT KING SIZE BRICK) ON CENTER VERTICALLY AND A HECKMANN NO. 357 ANCHOR ON ALL BEAMS AT 16" ON CENTER HORITZONTALLY UNLESS NOTED OTHERWISE ON THE DRAWINGS. MASONRY TIES TO WALL STUDS SHALL BE A HECKMANN NO. 316 TRIANGULAR TIE WITH A HECKMANN NO. 315-C SCREW ON ANCHOR STRAP SPACED 16" (15" AT KING SIZE BRICK) ON CENTER HORIZONTALLY AND 16" ON CENTER VERTIACALLY. AT WALL CORNERS AND INTERSECTIONS PROVIDE TWO VERTICAL ROWS OF ANCHORS SPACED 16" APART AND 16" ON CENTER VERTICALLY. TRIANGULAR TIES SHALL EXTEND 3/4" FROM FACE OF MASONRY. ANCHOR STRAPS SHALL BE ATTACHED TO METAL STUDS WITH TWO (2) - #10-16 X 1 1/2" CADMIUM PLATED SHEET METAL SCREWS.
4. REF ARCH DRAWINGS FOR VERTICAL CONTROL JOINTS AT MASONRY WALLS. COORDINATE THE LOCATION OF JOINTS WITH THE ARCHITECT.

POST-INSTALLED ANCHORS

1. POST INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.
2. INSTALLER TRAINING: CONDUCT A THOROUGH TRAINING WITH THE MANUFACTURER OR THE MANUFACTURER'S REPRESENTATIVE FOR THE PROJECT WHICH POST-INSTALLED COMPONENTS ARE SPECIFIED/APPROVED. TRAINING IS TO CONSIST OF A REVIEW OF THE COMPLETE INSTALLATION PROCESS FOR DRILLED-IN-ANCHORS. COPIES OF TRAINING CERTIFICATES MUST BE SUBMITTED TO THE ENGINEER OF RECORD.
3. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER OF RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
4. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR.
5. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. CONTACT MANUFACTURER'S REPRESENTATIVE FOR THE INITIAL TRAINING AND INSTALLATION OF ANCHORS AND FOR PRODUCT RELATED QUESTIONS AND AVAILABILITY.
6. PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL MECHANICAL AND ADHESIVE ANCHORS PER THE APPLICABLE BUILDING CODE.
7. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD.
8. CONCRETE ANCHORS:
   A. **MECHANICAL ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "TITEN-HD" & "TITEN-HD ROD HANGER"..... ICC-ES ESR-2713
      b. SIMPSON STRONG-TIE "STRONG-BOLT 2"..... ICC-ES ESR-3037
      c. SIMPSON STRONG-TIE "TORQ-CUT"..... ICC-ES ESR-2705
      d. DEWALT "POWER-STUD+ SD2"..... ICC-ES ESR-2502
      e. DEWALT "POWER-STUD+ SD1"..... ICC-ES ESR-2818
      f. DEWALT "POWER BOLT +"..... ICC-ES ESR-3260
      g. DEWALT "SCREW BOLT+"..... ICC-ES ESR-3889
      h. DEWALT "HANGER-MATE+"..... ICC-ES ESR-3889
      i. DEWALT "ATOMIC+ UNDERCUT"..... ICC-ES ESR-3067
      j. DEWALT "SNAKE+"..... ICC-ES ESR-2272
      k. HILTI "HDA"..... ICC-ES ESR-1546
      l. HILTI "HSL-3"..... ICC-ES ESR-1545
      m. HILTI "KWIK BOLT TZ"..... ICC-ES ESR-1917
      n. HILTI "KB-VTZ"..... ICC-ES ESR-3904
      o. HILTI "KWIK BOLT 3"..... ICC-ES ESR-2302
      p. HILTI "KWIK HUS-EZ & KH-EZ-1"..... ICC-ES ESR-3027
      q. RED HEAD "TRUBOLT"..... ICC-ES ESR-2251
   B. **ADHESIVE ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "SET-XP"..... ICC-ES ESR 2508
      b. DEWALT "PE1000+"..... ICC-ES ESR-2583
      c. DEWALT "AC100+GOLD"..... ICC-ES ESR-2582
      d. DEWALT "AC200+"..... ICC-ES ESR-4027
      e. DEWALT "PURE 110+"..... ICC-ES ESR-3298
      f. HILTI "HIT-HY 200 SAFESET"..... ICC-ES ESR-3187
      g. HILTI "HIT RE 500 V3 SAFESET"..... ICC-ES ESR-3187
      h. HILTI "HIT HY 100 SAFESET"..... ICC-ES ESR-3574
      i. HILTI "HIT RE 100 SAFESET"..... ICC-ES ESR-3829
      j. RED HEAD "EPCON G5"..... ICC ES ESR-1137
   C. **POWDER ACTUATED FASTENERS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC70. PRE-APPROVED POWDER ACTUATED FASTENERS INCLUDE:
      a. SIMPSON STRONG-TIE "POWER-DRIVEN FASTENERS"..... ICC-ES ESR-2138
      b. DEWALT "POWER DRIVEN FASTENERS"..... ICC-ES ESR-2024
      c. DEWALT "TRAK-IT CS FASTENERS"..... ICC-ES ESR-3275
      d. HILTI LOW-VELOCITY "X-U IS UNIVERSAL POWDER DRIVEN FASTENERS"..... ICC-ES ESR-2269
      e. HILTI LOW-VELOCITY "POWDER DRIVEN FASTENER"..... ICC-ES ESR-1669
      f. HILTI LOW-VELOCITY "POWDER DRIVEN FASTENER"..... ICC-ES ESR-1752
9. MASONRY ANCHORS-(SOLID GROUTED CONCRETE MASONRY):
   A. **MECHANICAL ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "TITEN-HD"..... ICC-ES ESR-1056
      b. SIMPSON STRONG-TIE "STRONG-BOLT 2"..... IAPMO-ES ER-0240
      c. SIMPSON STRONG-TIE "WEDGE-ALL"..... ICC-ES ESR-1396
      d. POWERS "POWER-STUD+ SD1"..... ICC-ES ESR-2966
      e. POWERS "SCREW BOLT+"..... ICC-ES ESR-4042
      f. HILTI "KWIK BOLT 3"..... ICC-ES ESR-1385
      g. HILTI "KWIK HUS-EZ (KH-EZ) CARBON STEEL SCREW ANCHOR"..... ICC-ES ESR-3056
   B. **ADHESIVE ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "SET"..... ICC-ES ESR-1772
      b. HILTI "HIT-HY 270"..... ICC-ES ESR-4143
      c. DEWALT "AC100+GOLD"..... ICC-ES ESR-3200
10. MASONRY ANCHORS-(HOLLOW CONCRETE MASONRY/UNREINFORCED CLAY BRICK MASONRY):
   A. **MECHANICAL ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC106. PRE-APPROVED SCREW ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "TITEN-HD"..... ICC-ES ESR-1056
   B. **ADHESIVE ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC58 OR AC60. THE APPROPRIATE SCREEN TUBE SHALL BE USED AS RECOMMENDED BY THE ADHESIVE MANUFACTURER. PRE-APPROVED ADHESIVE ANCHORS WITH SCREEN TUBES INCLUDE:
      a. SIMPSON STRONG-TIE "SET"..... ICC-ES ESR-1772
      b. DEWALT "AC100+GOLD"..... ICC-ES ESR-4105
      c. HILTI "HIT-HY 270"..... ICC-ES ESR-4144

COLD FORMED METAL FRAMING

1. METAL FRAMING IS TO CONFORM TO ASTM A653. MINIMUM YIELD STRENGTH IS TO BE 50,000 PSI, WITH 1 5/8" MINIMUM FLANGE WIDTH.
2. MEMBERS ARE TO BE FABRICATED IN ACCORDANCE WITH AISI SPECIFICATIONS FOR THE DESIGN OF COLD-FORM STEEL STRUCTURAL MEMBERS, LATEST EDITION. MEMBERS ARE TO BE GALVANIZED.
3. CONNECTIONS ARE TO BE SCREWED OR WELDED, WITH A MINIMUM OF 2 - #12 TEK SCREWS OR 3/16 FILLET WELD AND USED AT EACH CONNECTION AS MINIMUM.
4. METAL FRAMING MEMBERS ARE TO BE CLOSED OFF AT BOTH ENDS WITH CONTINUOUS METAL TRACK OF EQUIVALENT GAGE OR GREATER THICKNESS THAN METAL GAGE MEMBERS.
5. METAL FRAMING SUPPLIER IS TO PROVIDE DESIGN CALCULATIONS FOR REVIEW. CALCULATIONS ARE TO BE PREPARED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS AND ARE TO BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND TO VERIFY THAT WORK IS IN GENERAL CONFORMANCE. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.

SUBMITTALS

1. THE GENERAL CONTRACTOR SHALL SUBMIT FOR ENGINEER REVIEW SHOP DRAWINGS FOR THE FOLLOWING ITEMS:

   CONCRETE MIX DESIGNS AND ACCESSORIES
   REINFORCING STEEL
   SLAB CONTRACTION JOINT LAYOUT
   STRUCTURAL STEEL (*,^)
   METAL DECK
   BAR JOISTS (^)
   MISCELLANEOUS STEEL
   LIGHT-GAGE FRAMING (*,^)
   CONCRETE MASONRY (MATERIAL AND REBAR PLACEMENT PLANS)

   ITEMS MARKED (*) SHALL HAVE SHOP DRAWINGS SEALED BY A REGISTERED ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED. ITEMS MARKED (#) SHALL BE SUBMITTED TO ENGINEER FOR OWNER'S RECORD ONLY AND WILL NOT HAVE ENGINEER'S SHOP DRAWING STAMP. ITEMS MARKED (^) SHALL HAVE SEALED STRUCTURAL CALCULATIONS SUBMITTED TO ENGINEER FOR OWNER'S RECORD. SEE DIFFERED SUBMITTALS FOR MORE INFO.
2. ALL SHOP DRAWINGS MUST BE REVIEWED AND SEALED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL.
3. CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES (E.G. PDFS) OF ALL SHOP DRAWINGS SPECIFIED TO BE RETURNED BY THE ENGINEER.
4. THE OMISSION FROM THE SHOP DRAWINGS OF ANY MATERIAL REQUIRED BY THE CONTRACT DOCUMENTS TO BE FURNISHED SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING AND INSTALLING SUCH MATERIALS, REGARDLESS OF WHETHER THE SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED.
5. SUBMIT TWO COPIES OF MANUFACTURER'S LITERATURE FOR ALL MATERIALS AND PRODUCTS USED IN CONSTRUCTION ON THE PROJECT.
6. THE USE OF REPRODUCTIONS OF THESE CONTRACT DOCUMENTS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREIN AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HEREIN.

DIFFERED SUBMITTALS

DIFFERED SUBMITTALS REQUIRED DRAWINGS TO BE SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. REFERE TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. STEEL CONNECTION DESIGN
2. COLD-FORMED METAL FRAMING DESIGN
3. DESIGN OF ALUMINUM AND/OR PREMANUFACTURED CANOPIES
4. OPEN WEB STEEL JOIST DESIGN
5. DESIGN OF CLADDING AND ATTACHMENTS, INCLUDING CURTAIN WALL AND STOREFRONT SYSTEMS.

STRUCTURAL TESTING AND INSPECTIONS

1. EARTHWORK:
   UNLESS NOTED OTHERWISE BY THE OWNER OR ARCHITECT, THE GENERAL CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER OR OTHER AUTHORIZED INSPECTOR DURING EARTHWORK OPERATIONS, AND KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT ON SITE DURING OPERATIONS. SERVICES PROVIDED SHALL INCLUDE:
   A. OBSERVE STRIPPING OPERATIONS AND EVALUATE THE REQUIRED STRIPPING DEPTH DURING THESE OPERATIONS.
   B. OBSERVE PROOFROLLING OPERATIONS AFTER SITE STRIPPING AND DETERMINE IF ANY SOFT SPOTS NEED TO BE UNDERCUT TO FIRM SOILS, REPLACED WITH SELECT FILL AND RECOMPACTED.
   C. VERIFY THAT THE SUBGRADE IS SCARIFIED, MOISTURE CONDITIONED, AND LIME STABILIZED (IF REQUIRED) PER THE EARTHWORK NOTES.
   D. THE SELECT FILL PAD MATERIAL SHALL BE TESTED FOR ACCEPTABILITY AND A MOISTURE DENSITY CURVE SHALL BE ESTABLISHED. SELECT FILL MATERIAL SHALL BE AS INDICATED ON THE EARTHWORK NOTES.
   E. VERIFY THAT THE SELECT FILL IS PLACED IN EIGHT INCH LOOSE LIFTS AND COMPACTED PER THE EARTHWORK NOTES.
   F. SELECT FILL MATERIAL SHALL BE TESTED DURING PLACEMENT OF EACH LIFT FOR THE ATTERBERG LIMITS IN ACCORDANCE WITH ASTM D4318-98 METHOD B "STANDARD TEST METHOD FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS" TO VERIFY THAT THE SELECT FILL MATERIAL IS IN ACCORDANCE WITH THE ORIGINALLY APPROVED SELECT FILL MATERIAL PROVIDE TESTS PER THE EARTHWORK NOTES.
   G. PROVIDE FIELD MOISTURE TESTS FOR THE FULL DEPTH OF THE PAD PER THE EARTHWORK NOTES.
   H. OBSERVE THE EXCAVATION DAILY AND ENSURE THAT THE CONTRACTOR MAINTAINS A CLEAN EXCAVATION THAT IS FREE OF WATER 100% OF THE TIME. CONTRACTOR SHALL PROVIDE PUMPS AS REQUIRED TO REMOVE WATER AT ALL TIMES.
   I. OBSERVE GRADING OPERATIONS TO ENSURE THAT PROPER DRAINAGE AWAY FROM THE BUILDING PAD IS PROVIDED.
2. DRILLED PIERS:
   UNLESS NOTED OTHERWISE BY THE OWNER OR ARCHITECT, THE GENERAL CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER OR OTHER AUTHORIZED INSPECTOR DURING EARTHWORK OPERATIONS, AND KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT ON SITE DURING OPERATIONS. SERVICES PROVIDED SHALL INCLUDE:
   A. OBSERVING THE BOTTOM OF SHAFT FOR CLEANLINESS.
   B. PROPER BEARING MATERIAL SHALL BE VERIFIED BEFORE CONCRETE POURING OCCURS. THE BOTTOM ELEVATION OF PIERS IS SHOWN ON THE DRAWINGS. THE ACTUAL BEARING ELEVATION MAY VARY AS REQUIRED TO PROVIDE PROPER CAPACITY AS DETERMINED BY THE GEOTECHNICAL ENGINEER OF RECORD.
   C. CHECKING SHAFT FOR CONFORMANCE TO REQUIRED TOLERANCES. FOOTINGS SHALL BE WITHIN 3" OF THEIR REQUIRED LOCATIONS AND SHAFTS SHALL NOT BE OUT OF PLUMB BY MORE THAN 2 PERCENT OF THE SHAFT LENGTH.
   D. CHECK FOR CAVING OF THE SHAFT.
   E. NOTING DEPTH AND DIAMETER OF ALL FOOTINGS.
   F. VERIFY QUANTITY, SIZE AND LOCATION OF REINFORCEMENT.
   G. ENSURE THAT ALL SPOILS FROM THE DRILLED PIER EXCAVATIONS ARE REMOVED FROM THE BUILDING PAD AND THAT THE PAD IS MOISTURE CONDITIONED AND RECOMPACTED AS SPECIFIED.
3. CONCRETE:
   A. CONCRETE MIX DESIGNS SHALL BE SUBMITTED FOR ENGINEER AND OWNER'S TESTING LABORATORY REVIEW AND APPROVAL A MINIMUM OF 7 DAYS PRIOR TO THE START OF THE WORK, PRIOR TO THE PLACEMENT OF CONCRETE. MIX DESIGNS MUST INDICATE CONFORMANCE WITH ACI 318.
   B. AT THE POINT OF DISCHARGE SLUMP TESTS, CONFORMING TO ASTM C143, SHALL BE TAKEN. SEE CONCRETE NOTE NO. 3E BELOW FOR RATE OF TESTS.
   C. AIR CONTENT TESTS CONFORMING TO ASTM C173 (VOLUMETRIC METHOD FOR LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE; ASTM C231 PRESSURE METHOD FOR NORMAL WEIGHT CONCRETE) SHALL BE TAKEN FOR EACH DAY'S POUR FOR ALL TYPES OF AIR-ENTRAINED CONCRETE BEING USED.
   D. CONCRETE TEMPERATURE SHALL BE TESTED HOURLY WHEN THE AIR TEMPERATURE IS 40 DEG F AND BELOW, 80 DEG F AND ABOVE AND EACH TIME A SET OF COMPRESSION TEST SPECIMENS ARE MADE.
   E. ONE SET OF FOUR COMPRESSION TEST SPECIMENS CONFORMING TO ASTM C31 SHALL BE MOLDED AND STORED FOR LABORATORY-CURED SPECIMENS. COMPRESSIVE STRENGTH TESTS SHALL CONFORM TO ASTM C39 AND SHALL CONSIST OF ONE SET FOR EACH DAY'S POUR EXCEEDING 5 CU. YDS. PLUS ADDITIONAL SETS FOR EACH 50 CU. YDS. MORE THAN THE FIRST 25 CU. YDS OF EACH CONCRETE CLASS PLACED IN ANY ONE DAY. ONE SPECIMEN SHALL BE TESTED AT 7 DAYS, TWO SPECIMENS SHALL BE TESTED AT 28 DAYS, AND ONE SPECIMEN SHALL BE RETAINED FOR LATER TESTING AS REQUIRED.
   F. VERIFY THAT POST INSTALLED ANCHORS ARE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
4. STRUCTURAL STEEL:
   A. WELDERS SHALL BE AISC CERTIFIED FOR THE WELD TYPES ON THE PROJECT. CONDUCT INSPECTIONS AND TESTS AS REQUIRED. DEFECTS, INCLUDING LOCATIONS, SHALL BE RECORDED ALONG WITH THE WORK REQUIRED TO CORRECT THE DEFECTS.
   B. 100% OF ALL FILLET WELDS SHALL BE VISUALLY INSPECTED.
   C. 100% OF ALL FULL PENETRATION WELDS SHALL BE VISUALLY INSPECTED. 30% OF ALL FULL PENETRATION WELDS SHALL BE TESTED BY ONE OF THE FOLLOWING METHODS: LIQUID PENETRANT INSPECTION (ASTM E165) MAGNETIC PARTICLE INSPECTION (ASTM E709; PERFORMED ON THE ROOT PASS AND ON THE FINISHED WELD; CRACKS AND ZONES OF INCOMPLETE FUSION OR PENETRATION IS NOT ACCEPTABLE) RADIOGRAPHIC INSPECTION (ASTM E94 AND ASTM E142; MINIMUM QUALITY LEVEL OF "2-2T") ULTRASONIC INSPECTION (ASTM E164) IF THE FAILURE RATE IS 20% OR GREATER, 100% OF THE WELDS SHALL BE TESTED AT THE CONTRACTOR'S EXPENSE UNTIL FAILURE RATE FALLS BELOW 20%.
   D. ANY WELDS THAT FAIL MUST BE REWELDED AND RETESTED UNTIL THEY PASS THE TEST. TWO ADDITIONAL WELDS SHALL BE TESTED, AT THE CONTRACTOR'S EXPENSE, FOR EVERY WELD THAT FAILS.
   E. VISUALLY INSPECT WELDS ON 100% OF ALL STUDS AND TEST 10% BY THE METHOD DESCRIBED BELOW IN COMPLIANCE WITH AWS D1.1: HEADED STUDS SHALL BE TESTED BY ALTERNATELY BENDING 30 DEG. IN OPPOSITE DIRECTIONS FROM ITS ORIGINAL AXIS BY EITHER STRIKING THE STUDS WITH A HAMMER ON THE UNWELDED END OR PLACING A PIPE OR OTHER SUITABLE HOLLOW DEVICE OVER THE STUD AND BENDING THE STUD. IF THE FAILURE RATE IS 10% OR GREATER, TEST 100% OF ALL STUDS AT CONTRACTOR'S EXPENSE UNTIL THE FAILURE RATE FALLS BELOW 10%. IF A VISUAL INSPECTION REVEALS ANY STUD THAT DOES NOT SHOW A FULL 360 DEGREE FLASH (AS DEFINED IN AWS D1.1) OR THAT HAS BEEN REPAIRED BY WELDING, SUCH STUD SHALL BE BENT TO AN ANGLE OF APPROXIMATELY 15 DEGREE FROM ITS ORIGINAL AXIS. THE DIRECTION OF BENDING FOR STUDS WITH LESS THAN 360 DEGREE FLASH SHALL BE OPPOSITE TO THE MISSING PORTION OF FLASH.
   F. ALL FULL PENETRATION WELDS AT MOMENT CONNECTIONS REQUIRING TESTING SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY USING NON-DESTRUCTIVE TESTING METHODS, AS DESCRIBED IN AWS D1.1. FOR SHOP WELDS, CERTIFICATION SHALL BE SUBMITTED PRIOR TO SHIPPING TO THE JOB SITE. FOR FIELD WELDS, CERTIFICATION SHALL BE SUBMITTED PRIOR FLOOR DECK INSTALLATION AND CONCRETE PLACEMENT AND PRIOR TO COVERING CONNECTIONS WITH FIREPROOFING OR ARCHITECTURAL FINISHES.
   G. BOLTS SHALL BE VISUALLY INSPECTED WHEN TWIST-OFF SPLINES ARE USED. OTHERWISE, BOLTS SHALL BE SNUG TIGHT. THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. AT BRACES AND MOMENT CONNECTIONS, BOLTS SHALL BE TIGHTENED AS REQUIRED BY THE LOAD INDICATING WASHERS OR TENSION BOLTS.
5. MASONRY:
   MASONRY TESTING SHALL CONSIST OF A QUALIFIED TESTING LABORATORY PROVIDING THE FOLLOWING SERVICES:
   A. OBSERVE THE INSTALLTION OF MASONRY UNITS.
   B. VERIFY THE QUANTITY, SIZE AND THE SPACING OF THE REQUIRED REINFORCING THAT IS SHOWN ON THE DRAWINGS.
   C. INSPECT THE GROUT SPACE PRIOR TO THE CLOSING OF CLEANOUTS AND ALL GROUTING OPERATIONS. VERIFY THAT THE SPECIFIED CELLS ARE FULLY GROUTED AS NOTED.
   D. MONITOR THE PROPORTIONING, MIXING AND CONSISTENCY OF MORTAR AND GROUT. PROVIDE 28 DAY COMPRESSIVE STRENGTH TESTS ON EACH GROUT MIX IN ACCORDANCE WITH ASTM C1019. PROVIDE COMPRESSION TESTS ON MASONRY PRISMS FOR EACH TYPE OF WALL CONSTRUCTION, IN ACCORDANCE WITH ASTM C1314. CONTRACTOR SHALL PREPARE ONE SET FOR TESTING AT 28 DAYS. TESTS ARE TO BE CONDUCTED FOR EACH 2000 SQUARE FEET OF WALL INSTALLED, BUT NOT LESS THAN TWO TESTS.
6. SPECIAL INSPECTIONS:
   SPECIAL INSPECTION WORK AND THE FINAL LETTER OF COMPLIANCE HAVE NOT BEEN INCLUDED IN THE STRUCTURAL ENGINEER'S SCOPE OF SERVICES. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING THE SERVICES OF THE SPECIAL INSPECTOR AND THE TESTING LABORATORY. SPECIAL INSPECTIONS CAN BE PROVIDED BY AN INDEPENDENT SPECIAL INSPECTOR WHO IS APPROVED BY THE BUILDING AUTHORITY OR THE ENGINEER OF RECORD. THE SPECIAL INSPECTION WORK DOES NOT INCLUDE THE TESTING LABORATORY SERVICES AS CALLED FOR ON THE DRAWINGS. ARRANGEMENTS FOR SPECIAL INSPECTIONS SHOULD BE MADE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE OWNER IF SPECIAL INSPECTIONS ARE REQUIRED ON THE APPROVED PERMIT DRAWINGS AND FOR NOTIFYING THE TESTING LABORATORY AND SPECIAL INSPECTOR IN A TIMELY MANNER BEFORE CONSTRUCTION OPERATIONS CONTINUE. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK REQUIRING INSPECTIONS WITHOUT THE TESTING LABORATORY'S OR SPECIAL INSPECTOR'S PRESENCE. PROCEEDING WITHOUT WRITTEN CONFIRMATION OF A PASSED INSPECTION BY THE AHJ AND/OR SPECIAL INSPECTOR MAY RESULT IN REWORK INCLUDING, BUT NOT LIMITED TO, REMOVAL AND REPLACEMENT OF NON-CONFORMING MATERIAL AT THE EXPENSE OF THE CONTRACTOR. THE STRUCTURAL ENGINEER WILL NOT PROVIDE A FINAL LETTER OF COMPLIANCE AFTER THE WORK IS COMPLETE UNLESS HE HAS REVIEWED ALL SPECIAL INSPECTIONS/TESTING LABORATORY TEST RESULTS.

CHAPTER 17 OF THE 2015 INTERNATIONAL BUILDING CODE, INCLUDING ANY LOCAL AMENDMENTS, REQUIRES SPECIAL INSPECTION ON THE FOLLOWING ITEMS:

- STEEL..... SECTION 1705.2 / TABLE 1705.2.2
- CONCRETE..... SECTION 1705.3 / TABLE 1705.3
- MASONRY..... SECTION 1705.4 / ASCE 5-11
- WOOD..... SECTION 1705.5
- SOILS..... SECTION 1705.6 / TABLE 1705.6
- PIER FOUNDATIONS..... SECTION 1705.8 / TABLE 1705.8
- WIND RESISTANCE..... SECTION 1705.10
- SEISMIC RESISTANCE..... SECTION 1705.11
- SPRAYED FIRE RESISTANT MATERIALS..... SECTION 1705.13
- INTUMESCENT FIRE RESISTANT MATERIALS... SECTION 1705.14

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STATE OF TEXAS — BRITNEY R. WEIDERT — 117956 — LICENSED PROFESSIONAL ENGINEER — 12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION GENERAL NOTES - II

1S-002

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/4" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 47 OF 255	

PUBLIC WORKS AND ENGINEERING — ACCEPTED AS NOTED — 80341 — HOUSTON, TEXAS

STRUCTURAL ABBREVIATIONS

&	AND
@	AT
AB	ANCHOR BOLT
ADDTL	ADDITIONAL
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
ALT	ALTERNATE
ARCH, ARCH'L	ARCHITECT, ARCHITECTURAL
BFF	BELOW FINISH FLOOR
BL	BRICKLEDGE
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DECK
BOS	BOTTOM OF STEEL
BOTT	BOTTOM
BRG	BEARING
BTWN	BETWEEN
CB	CASTELLATED BEAM
CFMF	COLD-FORMED METAL FRAMING
CJ	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLR	CLEAR
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
COND	CONDITION
CONNX	CONNECTION
CONT	CONTINUOUS
COORD	COORDINATE
CTR	CENTERED
CWI	CERTIFIED WELDING INSPECTOR
D, DIA	DIAMETER
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DEF	DEFORMED, DEFINITION
DEFL	DEFLECTION
DET, DTL	DETAIL
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DTL	DETAIL
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
ELEV	ELEVATOR
EOD	EDGE OF DECK
EOF	EDGE OF FOUNDATION
EOS	EDGE OF SLAB
EQ	EQUAL
EQ SPA	EQUAL SPACE
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FD	FLOOR DRAIN
FF EL	FINISH FLOOR ELEVATION
FND	FOUNDATION
FOA	FACE OF ANGLE
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FT	FEET
FTG	FOOTING
FV	FIELD VERIFY
Fy	YIELD STRESS
GA	GAGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GLULAM	GLUED-LAMINATED BEAM
H, HORIZ	HORIZONTAL
HC	HOLLOW CORE
HI	HIGH
HK	HOOK

STRUCTURAL ABBREVIATIONS

HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTION
INFO	INFORMATION
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIP(S)
KB	KNEE BRACE
L	ANGLE, ANGLE SHAPE
LB	POUND, CELLULAR BEAM
LF	LINEAR FOOT
LG	LENGTH
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOW
LT WT	LIGHTWEIGHT
MAX	MAXIMUM
MC	MOMENT CONNECTION
MCJ	MASONRY CONTROL JOINT
MECH'L	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MEZZ	MEZZANINE
MFR	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTL	METAL
N	NORTH
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT CONCRETE
OC	ON CENTER
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
PC	PRECAST
PL	PLATE
PLYWD	PLYWOOD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
REF	REFER, REFERENCE
REINF	REINFORCED, REINFORCEMENT
REM	REMAINDER
REQD	REQUIRED
REQMTS	REQUIREMENTS
SC	SLIP CRITICAL
SCHED	SCHEDULE(D)
SCJ	SAWN CONTROL JOINT
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPA	SPACES
SPEC	SPECIFICATION(S)
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRUCT	STRUCTURE, STRUCTURAL
T&B	TOP AND BOTTOM
TEMP	TEMPERATURE, TEMPORARY
TL	TOTAL LOAD
TOB	TOP OF BLOCKING
TOC	TOP OF CURB, TOP OF CONCRETE
TOGB	TOP OF GRADE BEAM
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOSC	TOP OF STRUCTURAL CONCRETE
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V, VERT	VERTICAL
VER	VERIFY
W/	WITH
WB	WIND BRACE
WBBP	WIND BRACE BASEPLATE
WD	WOOD
WP	WORKING POINT
WT	WEIGHT
WWF	WELDED-WIRE FABRIC

STRUCTURAL PLAN SYMBOLS AND LEGEND

WALL OR FOOTING TYPE: WT10 WF24

LATERAL BRACE:

KNEE BRACE: SEE PLAN FOR SIZE; DENOTES BOTT OF KNEE BRACE

SLAB DEPRESSION OVER 8":

SLAB DEPRESSION UNDER 8":

SLOPE UP:

SLOPE DOWN:

SLAB RECESS & SLOPE:

RIDGE:

VALLEY:

FOOTING TAG: F5.0 -2'-0"

MOMENT CONNECTION:

BEAM SPLICE:

SLOPE MARK: SLOPE

GRID BUBBLE: NEW A; EXISTING A

REVISION NUMBER: 1

SECTION MARK: A1 S501

ELEVATION: A1 S501

ELEVATION MARK: SURFACE REFERENCED — TOS EL; ELEV OF SURFACE — VARIES, SEE PLAN

DECK SYMBOL: DIRECTION OF DECK SPAN

SLAB LEGEND: SLAB MARK; S1; DENOTES DIRECTION OF SCHEDULED MAIN REINFORCEMENT; DENOTES EXTENT OF SLAB

CMU LINTEL: WL1

INDICATES APPROXIMATE EXISTING GRADE BASED ON SURVEY BY CIVIL ENGINEER. CONTRACTOR TO FIELD VERIFY ACTUAL CONDITIONS PRIOR TO BEGINNING PIER CONSTRUCTION. 670

WF COLUMN LEGEND: COLUMN SIZE — W10X49; BP-1 — BASE PLATE TYPE

HOLLOW STRUCTURAL STEEL LEGEND: HSS SIZE — HSS4X4X3/16; BP-1 — BASE PLATE TYPE

OPEN- WEB STEEL JOIST KEY: 18KSPI; LOADING CONDITION, SEE GENERAL NOTES; JOIST SERIES; NOMINAL JOIST DEPTH

STEEL BEAM LEGEND: HORIZONTAL REACTION AT END OF BEAM, (FACTORED); A = ±20K; W16X26 (10); C=3/4"; R=30K; BEAM SIZE; HEADED STUD COUNT; CAMBER AT MIDSPAN; FACTORED VERTICAL REACTION AT BEAM END

PIER LEGEND: PIER — SHAFT SIZE (INCHES); DEPTH — PENETRATION INTO BEARING STRATA (FT); DENOTES SHAFT DIAMETER (IN); DENOTES BELL DIAMETER (IN)

PILE CAP LEGEND: MARK — PILE CAP TYPE; DEPTH — TOP OF PILE CAP ELEV

ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) FABRICATION, ERECTION, AND COATING

AISC CODE OF STANDARD PRACTICE SECTION	PROCESS	STANDARD AISC CODE OF STANDARD PRACTICE (SECTION 10)	CATEGORY 3, HIGH PROFILE, OUT OF REACH, VIEW DISTANCE >20FT	CATEGORY 2, HIGH PROFILE, OUT OF REACH, VIEW DISTANCE <20FT	CATEGORY 1, HIGH PROFILE, WITHIN REACH	*NOTES
10.4.1	CARE IN PROCESSING AESS	X	X	X	X	
10.2.1, 10.4.2	TOLERANCES: ONE-HALF STANDARD	X	X	X	X	
10.2.5	WELDS GROUND SMOOTH			X	X	
	WELDS CONTOURED AND BLENDED			X	X	1
	CONTINUOUS WELDS				X	2
10.2.3	WELDS SHOW THROUGH MINIMIZED			X	X	3
	COPING AND BLOCKING TOLERANCES MINIMIZED	X	X	X	X	
10.2.4	JOINT GAP TOLERANCES MINIMIZED	X	X	X	X	
10.2.6	PIECE MARKS HIDDEN	X	X	X	X	
10.2.8	SURFACE DEFECTS MINIMIZED	X	X	X	X	
10.2.7	MILL MARKS REMOVED				X	
	GRINDING OF SHEARED EDGES				X	4
	ROLLED MEMBERS DISTORTION MINIMIZED		X	X	X	5
	SEAL WELDS TO CLOSE OPEN GAPS				X	6
	BOLT HEAD ORIENTATION DICTATED		X	X	X	7
	FIELD WELDING AIDS REMOVED			X	X	8
	CLOSE WELD ACCESS HOLES AT FULL PEN WELDS			X	X	9

AESS GENERAL NOTES

1. THE SCOPE OF AESS REQUIREMENTS SHALL BE ADDRESSED (BUT NOT LIMITED TO) EITHER ARCHITECTURAL OR STRUCTURAL CONSTRUCTION DOCUMENTS OR AS ADDRESSED BY SPECIFIC OWNER/ARCHITECT DIRECTIVES (IN WRITING).
2. MOCK-UP AND/OR SAMPLES SHALL BE SUBMITTED AND APPROVED A MINIMUM OF FOUR (4) WEEKS PRIOR TO FABRICATION.
3. WELD PROFILE, QUALITY AND FINISH SHALL BE CONSISTANT WITH MOCK-UPS AND/OR SAMPLES APPROVED PRIOR TO FABRICATION AND ERECTION.
4. TORCH CUTTING IN THE FIELD WILL NOT BE ALLOWED.
5. FIELD FABRICATED OR FIELD MODIFIED ELEMENTS REQUIRE THE APPROVAL OF THE ARCHITECT OF RECORD BEFORE ERECTION.
6. THE ARCHITECT SHALL OBSERVE THE AESS STEEL PLACEMENT AND DETERMINE ACCEPTABILITY BASED ON MOCK-UP.
7. THE OWNER SHALL ENGAGE AN INDEPENDENT TESTING AND INSPECTION AGENCY TO PERFORM FIELD INSPECTIONS, TESTS AND TESTING REPORTS.
8. CLEANING AND TOUCH-UP PAINTING OF FIELD WELDS, BOLTED CONNECTIONS, AND ABRADED SURFACES OF SHOP PAINT SHALL BE COMPLETED TO BLEND WITH ADJACENT SURFACES OF AESS IN ACCORDANCE WITH DIVISION 9 OF THE SPECIFICATIONS AND MANUFACTURER'S INSTRUCTIONS.
9. GALVANIZED SURFACES DAMAGED BY ERECTION SHALL BE CLEANED AND REPAIRED WITH GALVANIZING MATERIAL COMPLYING WITH ASTM A780.

***NOTES**

1. WHERE FILLET WELDS ARE INDICATED TO BE GROUND, CONTOURED, AND BLENDED, OVERSIZE WELDS AS REQUIRED AND GRIND TO PROVIDE A SMOOTH TRANSITION TO MATCH PROFILE. MOCK-UP AND/OR SAMPLES SHALL BE REQUIRED FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND ERECTION.
2. WHERE CONTINUOUS WELDS ARE INDICATED IN CONSTRUCTION DRAWINGS, PROVIDE CONTINUOUS WELDS OF UNIFORM SIZE AND PROFILE.
3. MAINTAIN A UNIFORM GAP OF 1/8" ± 1/32" AT ALL COPES AND BLOCKS.
4. FABRICATOR SHALL GRIND ALL EDGES OF SHEARED, PUNCHED OR FLAME-CUT STEEL TO MATCH APPROVED MOCK-UP AND/OR SAMPLE.
5. WHERE MEMBERS ARE SHOWN TO BE ROLLED, THE MEMBER SHALL BE SHAPED IN THE SHOP TO THE FINAL ROLLED DIMENSION AND TIED DURING SHIPPING TO PREVENT STRESS RELIEVING. DISTORTION OF THE WEB OR STEM, AND OF OUTSTANDING FLANGES OR LEGS OF ANGLES SHALL BE VISIBLY ACCEPTABLE TO THE ARCHITECT FROM A DISTANCE OF TWENTY (20) FEET UNDER ANY LIGHTING CONDITION DETERMINED BY THE ARCHITECT. TOLERANCES FOR THE VERTICAL AND HORIZONTAL WALLS OF RECTANGULAR HSS MEMBERS AFTER ROLLING SHALL BE THE SPECIFIED DIMENSION ±1/2".
6. SEAL WELD OPEN ENDS OF ROUND AND RECTANGULAR HSS SECTIONS WITH 3/8" CLOSURE PLATES. PROVIDE CONTINUOUS, SEALED WELDS AT ANGLE TO GUSSET PLATE CONNECTIONS AND SIMILAR LOCATIONS WHERE AESS IS EXPOSED TO WEATHER.
7. BOLT HEADS SHALL BE ORIENTED AS INDICATED ON THE CONTRACT DOCUMENTS. WHERE BOLT HEAD ALIGNMENT IS SPECIFIED, THE ORIENTATION SHALL BE NOTED FOR EACH CONNECTION ON THE ERECTION DRAWINGS. WHERE NOT NOTED, THE BOLT HEADS IN A GIVEN CONNECTION SHALL BE ORIENTED TO ONE SIDE.
8. RUN-OUT TABS, ERECTION BOLTS AND OTHER STEEL MEMBERS ADDED TO CONNECTIONS TO ALLOW FOR ALIGNMENT, FIT-UP, AND WELDING IN THE FIELD, SHALL BE REMOVED FROM THE STRUCTURE. FIELD GROOVE WELDS SHALL BE SELECTED TO ELIMINATE THE NEED FOR BACKING BARS OR TO PERMIT THEIR REMOVAL AFTER WELDING. WELDS AT RUN-OUT TABS SHALL BE REMOVED TO MATCH ADJACENT SURFACES AND GROUND SMOOTH. HOLES FOR ERECTION BOLTS SHALL BE PLUG WELDED AND GROUND SMOOTH.
9. WHERE HOLES MUST BE CUT IN THE WEB AT THE INTERSECTION WITH FLANGES ON W-SHAPES AND STRUCTURAL TEES TO PERMIT FIELD WELDING OF THE FLANGES, THEY SHALL BE FILLED. FILLING SHALL BE EXECUTED WITH PROPER PROCEDURES TO MINIMIZE RESTRAINT AND ADDRESS THERMAL STRESS IN GROUP 4 AND 5 SHAPES.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

BRITNEY R. WEIDERT — 137268 — PROFESSIONAL ENGINEER — 12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION GENERAL NOTES - III

1S-003

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1" = 1'-0"
CITY OF HOUSTON PM	S/E SHAHIDUR RAHMAN, P.E.
SHEET NO.	48 OF 255

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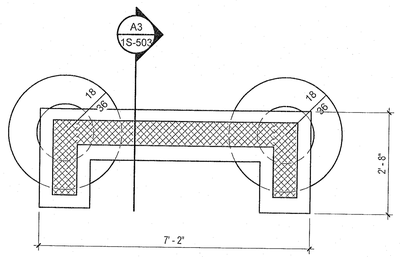
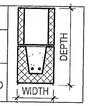


C1 / 1S-101 SCREEN WALL FOUNDATION PLAN

1/2" = 1'-0"

CMU WALL SCHEDULE			
TYPE	WIDTH (IN)	VERTICAL BAR REINFORCING	NOTES
8WT1	8	#5 @ 24" OC	
12WT1	12	#5 @ 16" OC	EACH FACE

CMU LINTEL SCHEDULE					
TYPE	WIDTH (IN)	DEPTH (IN)	MAX. CLEAR SPAN (FT)	BOT. REINF.	NOTES
12WL1	12	40	22	(2) #8	SEE C2/1S-504 FOR OTHER UNSCHEDULED LINTELS



NOTES:
1. COORDINATE ALL OPENINGS IN CMU WALLS WITH ARCH AND MEP AND SUBMIT TO ENGINEER PRIOR TO CONSTRUCTION. OPENINGS MAY REQUIRE ADDITIONAL REINFORCEMENT.

C3 / 1S-101 CMU WALL & LINTEL SCHEDULE

3/4" = 1'-0"

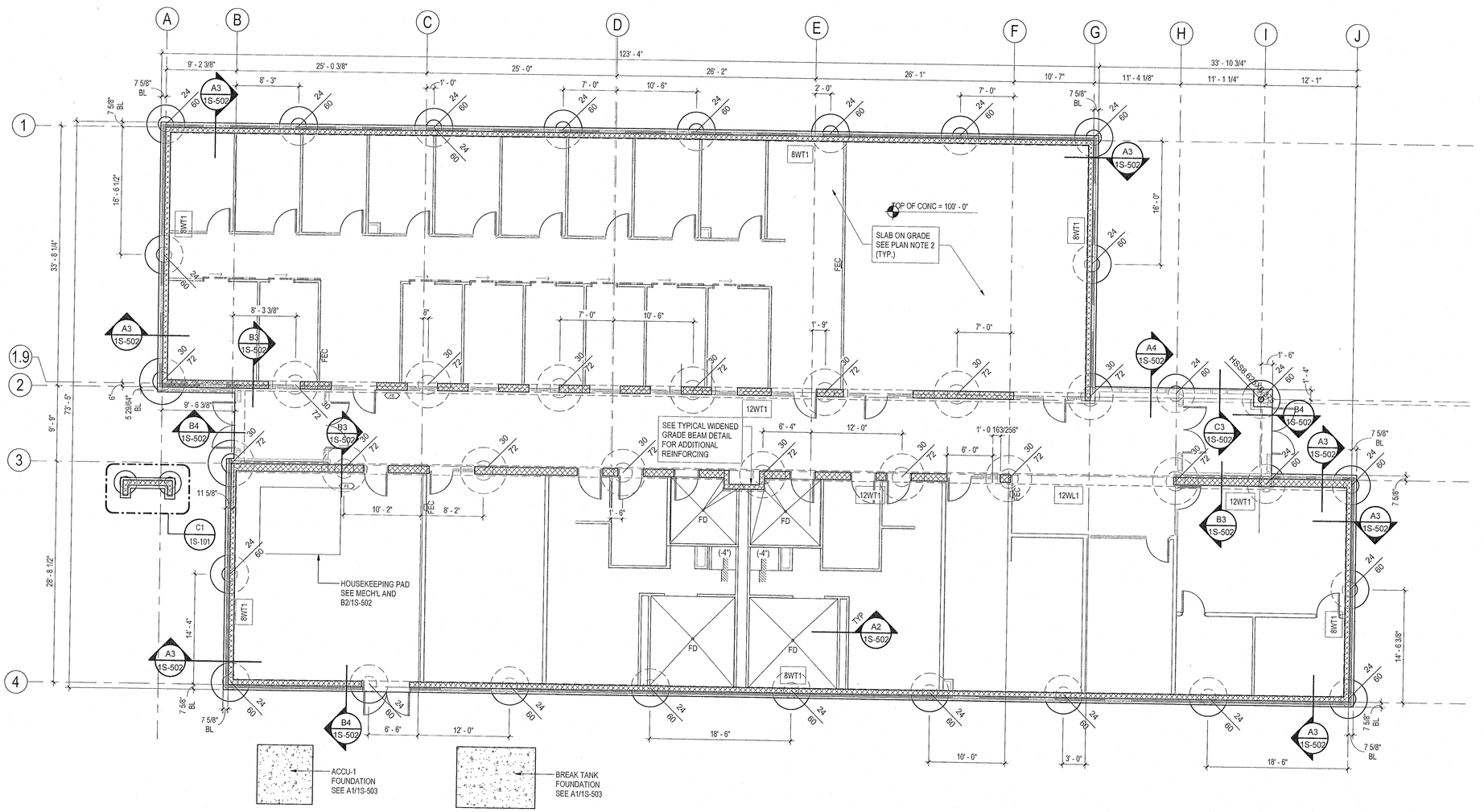
SLAB-ON-GRADE PLAN NOTES

1. TOP OF CONCRETE ELEVATION 0' - 0" EQUALS TRUE FINISH FLOOR ELEVATION OF 83.25 FT, UNO. SEE PLAN FOR TOP OF CONCRETE ELEVATION.
2. UNLESS OTHERWISE NOTED, SLAB-ON-GRADE SHALL BE FIVE (5) INCHES THICK W/ #4 BARS AT 16" OC EACH WAY. CHAIR REBAR AT ONE THIRD THE DEPTH BELOW THE TOP OF SLAB, BUT NOT LESS THAN REQUIRED CLEAR COVER.
3. REFER TO A1/1S-502 FOR SLAB CONTROL JOINT REQUIREMENTS.
4. ALL DEPRESSIONS THAT ARE DIMENSIONED ON PLAN ARE FOR REFERENCE ONLY. DEPTH OF DEPRESSIONS ARE REFERENCED FROM FINISH FLOOR ELEVATION. VERIFY EXACT LOCATION OF ALL DEPRESSIONS WITH ARCHITECTURAL PLANS PRIOR TO CONSTRUCTION.
5. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF RAMPS, STAIRS, AND OTHER EDGE OF SLAB CONDITIONS NOT SHOWN IN STRUCTURAL DOCUMENTS.
6. SEE ARCHITECTURAL PLANS FOR LOCATION OF NON-STRUCTURAL MASONRY WALLS AND MASONRY OPENINGS. ALL MASONRY WALLS THAT ARE HATCHED ARE LOAD BEARING STRUCTURAL WALLS. STRUCTURAL MASONRY DETAILS APPLY TO STRUCTURAL MASONRY WALLS ONLY. WIDTH DIMENSIONS OF CMU STRUCTURAL WALLS INDICATED ARE NOMINAL.
7. 8WT1 INDICATES CMU SHEAR WALL TYPE. SEE C3/1S-101.

FOUNDATION PLAN NOTES

1. REFER TO A4/1S-503 FOR ALL DRILLED AND UNDERREAMED PIER REQUIREMENTS.
2. CENTER DRILLED PIER BELOW GRADE BEAM, PLINTH OR STEEL COLUMN UNLESS NOTED OTHERWISE.
3. CENTER GRADE BEAMS AND THICKENED SLABS BELOW WALLS WHERE SHOWN UNLESS NOTED OTHERWISE.
4. TOP OF ALL PIERS SHALL BE THIRTY EIGHT (38) INCHES (3'-2") BELOW TOP OF SLAB ELEVATION UNLESS NOTED OTHERWISE.
5. TOP OF GRADE BEAM SHALL BE EIGHT (8) INCHES BELOW TOP OF SLAB ELEVATION UNLESS NOTED OTHERWISE.
6. SLEEVES OR OTHER PENETRATIONS SHALL BE ALLOWED THRU STRUCTURAL MEMBERS ONLY WITH PRIOR APPROVAL OF ARCHITECT/ENGINEER. REQUESTS FOR APPROVAL SHALL BE SUBMITTED IN WRITING A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE CONCRETE POUR.
7. SEE 1S-506 FOR COLUMN BASE PLATE DETAILS

NO.	DATE	REVISION	APP.



A1 / 1S-101 ADMINISTRATION FOUNDATION PLAN

1/8" = 1'-0"

N

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TBPE Firm Registration No. F-13678

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

BRITNEY R. WEIDERT
129911
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FOUNDATION PLAN

1S-101

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
As indicated
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 49 OF 255

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PUBLIC WORKS AND ENGINEERING
80341
HOUSTON, TEXAS

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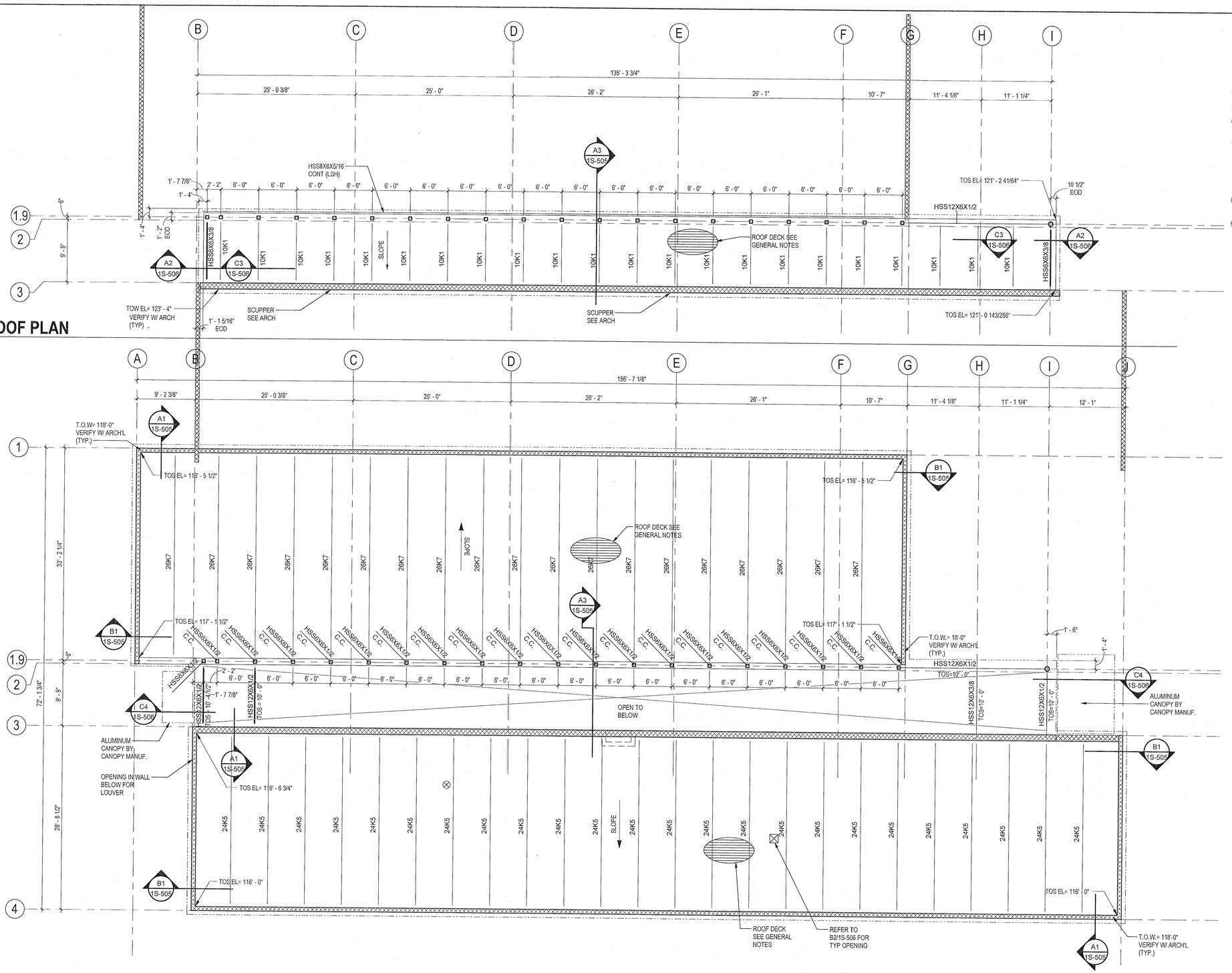

C1 / 1S-102 HIGH ROOF PLAN

1/8" = 1'-0"

A1 / 1S-102 ADMINISTRATION ROOF PLAN

1/8" = 1'-0"

ROOF FRAMING PLAN NOTES

1. TOS = TOP OF STEEL DENOTES BOTTOM OF DECK ELEVATION.
2. BEAMS AND JOISTS ARE CENTERED ON GRIDS OR EQUALLY SPACED BETWEEN GRIDS UNLESS OTHERWISE NOTED ON PLAN
3. JOIST MANUFACTURER SHALL DESIGN ROOF JOISTS FOR ADDITIONAL ROOF LOADS SHOWN ON PLAN AND SUBMIT TO ENGINEER FOR REVIEW DURING SHOP DRAWING STAGE.
4. JOIST MANUFACTURER SHALL COORDINATE ALL CONDITIONS WHERE ARCHITECTURAL MASONRY BEARS ON STEEL JOISTS.
5. ALL OPEN WEB STEEL JOISTS SHALL BE DESIGNED FOR A NET UNFACTORED UPLIFT LOAD AS SHOWN ON 1S-601.
6. ROOF JOISTS MAY BE OFFSET NO MORE THAN SIX (6) INCHES TO MEET MINIMUM BEARING REQUIRMENTS. INDICATE OFFSET SPACING DURING SHOP DRAWING STAGE TO BE REVIEWED BY ENGINEER.
7. ROOF TOP EQUIPMENT AND PENETRATIONS HAVE BEEN SHOWN FOR JOIST LOADING AND COORDINATION PURPOSES ONLY. CONTRACTOR SHALL VERIFY FINAL SUPPORT REQUIREMENTS FOR EQUIPMENT AND PENETRATION SIZE AND LOCATION WITH ALL TRADES. ANY SUBSEQUENT SUPPORT FRAMING NOT SHOWN IN THE STRUCTURAL DOCUMENTS SHALL BE PROVIDED BY THE CONTRACTOR TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW AND COMMENT.
8. REFER TO MECHANICAL DRAWINGS FOR CONDITIONS WHERE DUCTWORK RUNS ARE ABOVE BOTTOM OF JOIST CHORD. SEE GENERAL NOTES FOR BRIDGING ADJUSTMENTS.
9. C.C. INDICATES CARRIED COLUMN

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TBPE Firm Registration No. F-13678

STATE OF TEXAS — BRITNEY R. WEIDERT — 117268 — LICENSED PROFESSIONAL ENGINEER

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ROOF PLAN

1S-102

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
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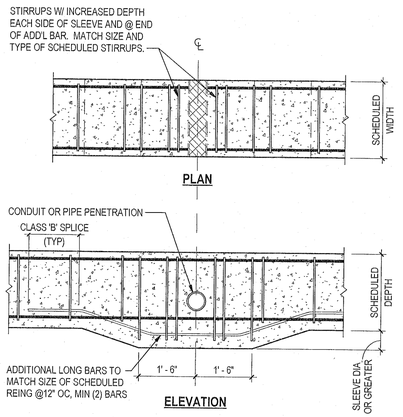
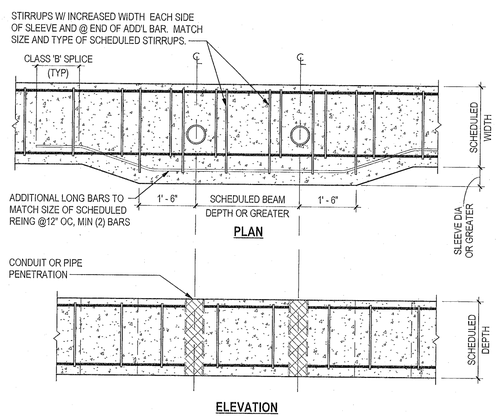


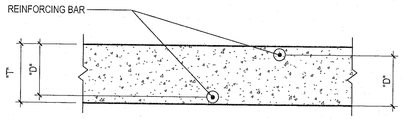
HORIZONTAL PIPE PENETRATION



VERTICAL PIPE PENETRATION

NOTE:
1. SLEEVE SHALL OCCUR IN MIDDLE 1/3 OF GRADE BEAM SPAN AND WITHIN THE MIDDLE 1/3 OF THE GRADE BEAM DEPTH UNLESS PRIOR APPROVAL IS RECEIVED FROM THE ENGINEER OF RECORD.
2. MAXIMUM 5" DIAMETER SLEEVE FOR A 4" DIAMETER PIPE.
3. FOR PIPE PENETRATIONS OUTSIDE THE MIDDLE 1/3 OF THE BEAM, CONTACT EOR.

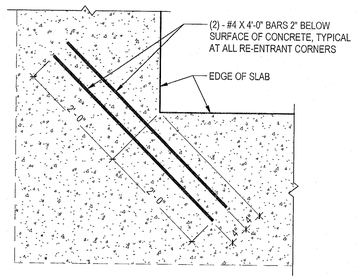
C1 / 1S-501 TYP PIPE PENETRATION



UNLESS OTHERWISE NOTED, REINFORCING SHALL BE PLACED AS SHOWN ON THE DRAWINGS WITH THE FOLLOWING TOLERANCES:	
DEPTH "D" IN SLABS, JOISTS, BEAMS, WALLS, COLUMNS AND SIMILAR ELEMENTS WHERE "D" IS 24" OR LESS	+/- 1/4"
WHERE "D" IS MORE THAN 24"	+/- 1/2"
LONGITUDINAL LOCATION OF BENDS AND ENDS OF BARS	+/- 2"
FABRICATED DIMENSIONS OF TIES, STIRRUPS AND SPIRALS	+/- 1/4"
OFFSET DIMENSIONS IN BENT BARS	+/- 1/2"
DIMENSION FROM FACE OF SUPPORT TO LOCATION OF TIE OR STIRRUP	+/- 1"
EXCEPT THAT SPECIFIED CONCRETE COVER AT ENDS OF MEMBERS SHALL NOT BE REDUCED.	

C3 / 1S-501 TOLERANCES FOR PLACEMENT AND FABRICATION OF REINFORCING BARS

NOTE:
PROVIDE RE-ENTRANT BARS AT ALL SUCH SLAB CONDITIONS INCLUDING RE-ENTRANT CORNERS, OPENINGS, ISOLATION JOINTS AND POUR JOINTS, AS WELL AS WALL OPENINGS.



PLAN VIEW

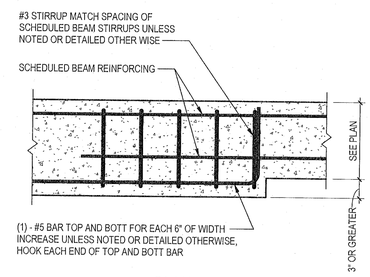
C4 / 1S-501 TYP CORNER BAR DETAIL

TENSION DEVELOPMENT AND LAP SPLICE LENGTHS (INCHES)

CONCRETE STRENGTH (PSI)	SPLICE CLASS	BAR SIZE							
		#3	#4	#5	#6	#7	#8	#9	#10	#11
3000	CLASS A (1.0 Ld)	17	22	28	33	48	55	62	70	78
	CLASS B (1.3 Ld)	22	29	36	43	63	72	81	91	101
4000	CLASS A (1.0 Ld)	15	19	24	29	42	48	54	61	67
	CLASS B (1.3 Ld)	19	25	31	37	54	62	70	79	87
5000	CLASS A (1.0 Ld)	13	17	22	26	38	43	48	54	60
	CLASS B (1.3 Ld)	17	23	28	34	49	56	63	71	78
6000	CLASS A (1.0 Ld)	12	16	20	24	34	39	44	50	55
	CLASS B (1.3 Ld)	16	21	26	31	45	51	57	64	71

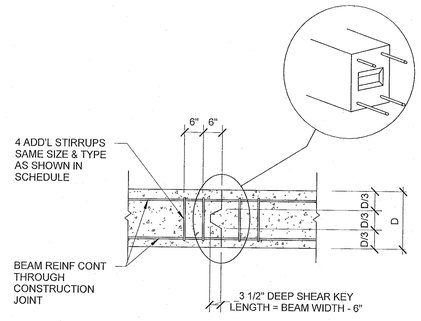
NOTES:
1. DEVELOPMENT LENGTHS AND LAP SPLICES APPLY TO BEAMS, JOISTS, COLUMNS, WALLS, AND SLABS.
2. TABLE IS BASED ON A 3" BARS SPACING WITH A MINIMUM 1 1/2" COVER.
3. LAP SPLICE LENGTHS ARE BASED ON THE LARGER BAR DIAMETER WHEN DIFFERENT SIZES ARE SPLICED.
4. FOR TOP BARS, MULTIPLY LENGTHS BY 1.3. TOP BARS ARE DEFINED AS ANY HORIZONTAL REINFORCEMENT WITH 12" OR MORE OF CONCRETE CAST MONOLITHICALLY BELOW THE REINFORCEMENT SPLICE.
5. WHEN LIGHTWEIGHT CONCRETE IS USED, MULTIPLY BAR LENGTHS BY A FACTOR OF 1.33.
6. TABLE VALUES ARE FOR UNCOATED OR ZINC-COATED (GALVANIZED) REINFORCEMENT.

C5 / 1S-501 TABLE - REINFORCEMENT LAP SPLICES



PLAN VIEW

B1 / 1S-501 TYP BEAM WITH VARYING WIDTH REINFORCING DETAIL



ELEVATION

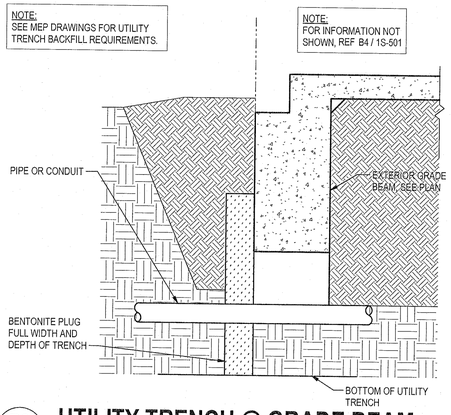
NOTE: CONSTRUCTION JOINT SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN BETWEEN SUPPORTS - DO NOT LOCATE A BEAM CONSTRUCTION JOINT IN THE END SPAN

B2 / 1S-501 TYPICAL BEAM CONSTRUCTION JOINT

1/2" = 1'-0"

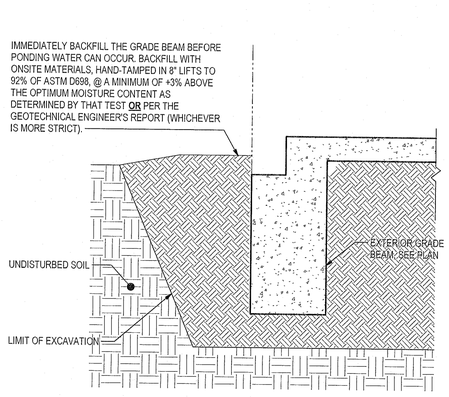
NOTE:
SEE MEP DRAWINGS FOR UTILITY TRENCH BACKFILL REQUIREMENTS.

NOTE:
FOR INFORMATION NOT SHOWN, REF B4 / 1S-501

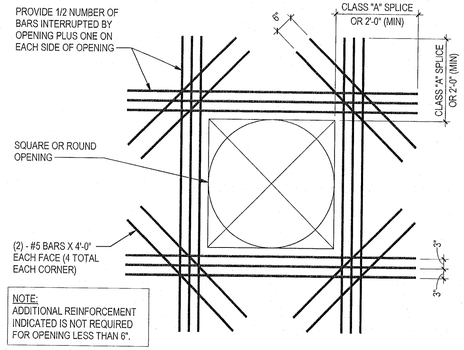


B3 / 1S-501 UTILITY TRENCH @ GRADE BEAM

IMMEDIATELY BACKFILL THE GRADE BEAM BEFORE PONDING WATER CAN OCCUR. BACKFILL WITH ONSITE MATERIALS, HAND-TAMPED IN 8" LIFTS TO 92% OF ASTM D698, @ A MINIMUM OF +3% ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THAT TEST **OR** PER THE GEOTECHNICAL ENGINEER'S REPORT (WHICHEVER IS MORE STRICT).

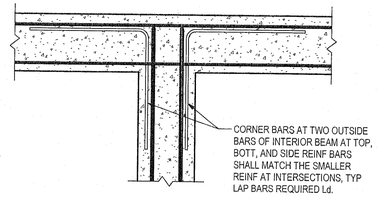


B4 / 1S-501 TYP EXTERIOR BEAM BACKFILL



NOTE:
ADDITIONAL REINFORCEMENT INDICATED IS NOT REQUIRED FOR OPENING LESS THAN 6".

A1 / 1S-501 TYP STRUCTURAL SLAB OR WALL OPENING



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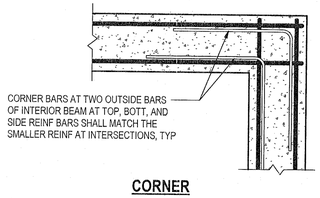
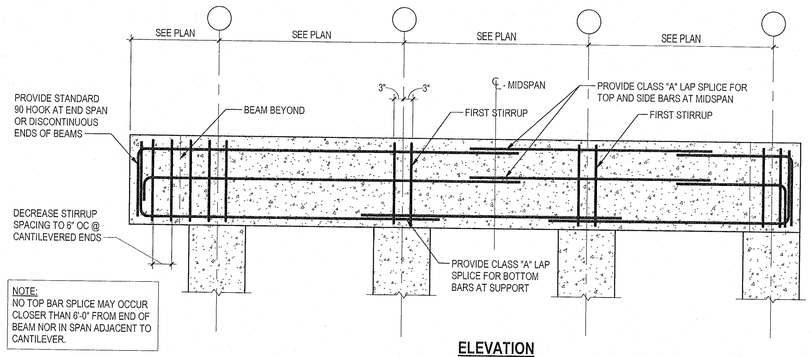


CORNER

A2 / 1S-501 TYP GRADE BEAM CORNER BAR DETAIL

NOTE:
NO TOP BAR SPLICE MAY OCCUR CLOSER THAN 6'-0" FROM END OF BEAM NOR IN SPAN ADJACENT TO CANTILEVER.



ELEVATION

A3 / 1S-501 TYP REINFORCING SPLICE DETAIL

REVISION	DATE	APP.

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SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

TBPE Firm Registration No. F-13678

STATE OF TEXAS — BRITNEY R. WEIDERT — 117968 — LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL FOUNDATION DETAILS - I
1S-501

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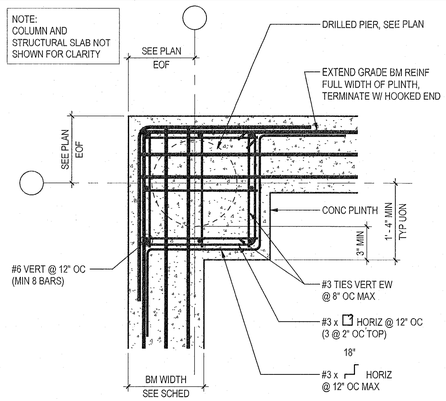
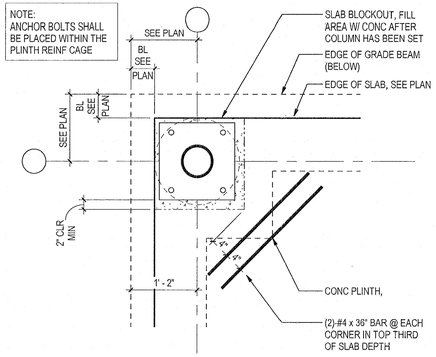


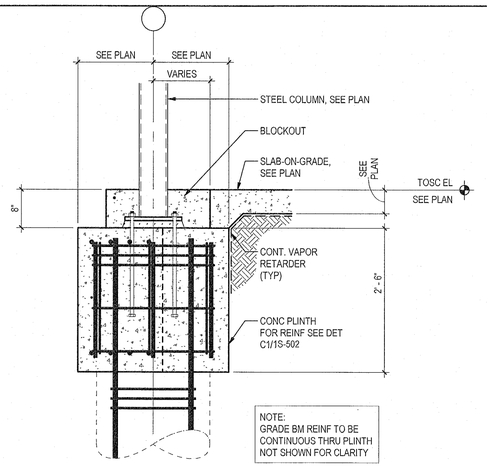
C1 1S-502 TYPICAL OUTSIDE CORNER PLINTH REINFORCEMENT

3/4" = 1'-0"



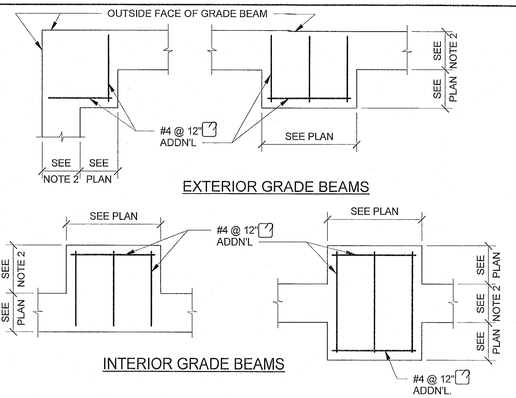
C2 1S-502 TYP OUTSIDE CORNER BLOCKOUT PLAN

3/4" = 1'-0"



C3 1S-502 EXT PIER FOOTING @ COL

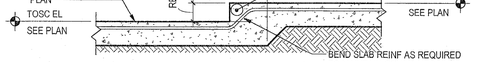
3/4" = 1'-0"



NOTES:
1. PLAN VIEWS FOR TYPICAL WIDENED GRADE BEAMS ARE SHOWN. FOR SIMILAR CONDITION NOT SHOWN, PROVIDE ADDN'L. @ 12" O.C. MAX. IN WIDENED SECTION.
2. SEE DETAIL SHEETS FOR GRADE BEAM WIDTH.

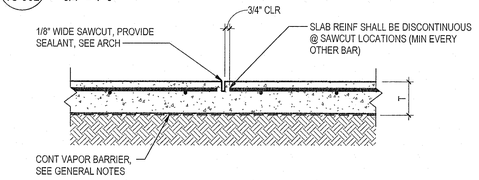
C5 1S-502 TYPICAL DETAIL ADDITIONAL BARS AT WIDENED GRADE BEAM (PLAN VIEW)

3/4" = 1'-0"



B1 1S-502 TYP SECTION @ SLAB RECESS

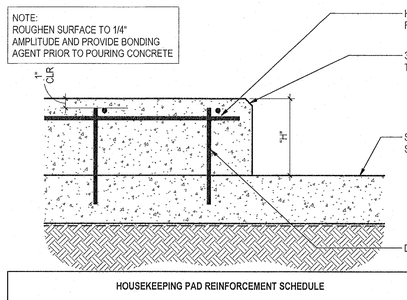
3/4" = 1'-0"



SAWCUT NOTES:
1. SAWCUT SLAB BETWEEN 6-8 HOURS AFTER FINISH (2-4 HOURS FOR EARLY-ENTRY DRY-CUT SAWS).
2. SAWCUT DEPTH SHALL BE 1/4 THE SLAB THICKNESS "T" BUT NOT LESS THAN 1" (WHICHEVER IS GREATER). SAWCUT DEPTH SHALL BE ONE (1) INCH MINIMUM FOR EARLY-ENTRY DRY-CUT SAWS.
3. JOINTS SHALL BE PROTECTED FROM HARD-WHEELED EQUIPMENT TRAFFIC OR WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. SPACING OF CONSTRUCTION/CONTROL JOINTS SHALL BE NO FURTHER THAN 18'-0" APART. ALIGN WITH COLUMN CENTERLINE OR WALL FACE WHERE POSSIBLE.

A1 1S-502 TYP SLAB JOINT DETAILS

1" = 1'-0"



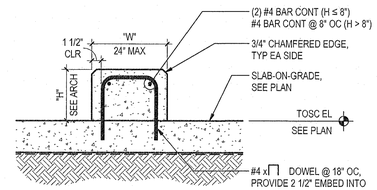
HOUSEKEEPING PAD REINFORCEMENT SCHEDULE

PAD THICKNESS "H"	PAD REINFORCEMENT	
	VERTICAL DOWEL	HORIZONTAL REINFORCEMENT
≤ 5 IN	#3 @ 12" OC EW	#3 @ 12" OC EW
≤ 12 IN	#3 @ 12" OC EW	#4 @ 12" OC EW

NOTE:
VERTICAL DOWELS SHALL
HAVE 2 1/2" EMBEDMENT
INTO ADHESIVE,
SEE S001 FOR
ALLOWABLE ADHESIVES

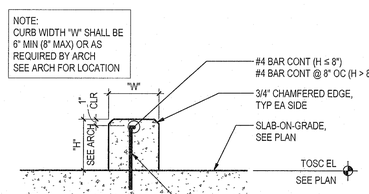
B2 1S-502 TYP SECTION @ HOUSEKEEPING PAD

1 1/2" = 1'-0"



CONCRETE CURB GREATER THAN 8 INCHES

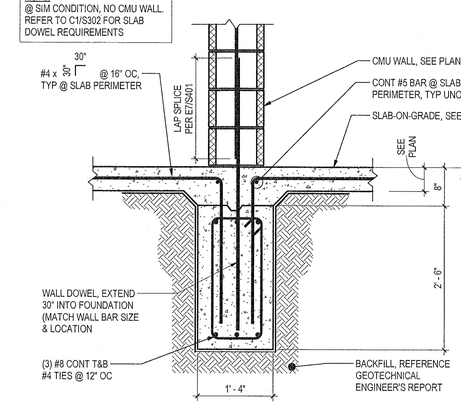
NOTE:
CURB WIDTH "W" SHALL BE
8" MIN (8" MAX) OR AS
REQUIRED BY ARCH
SEE ARCH FOR LOCATION



CONCRETE CURB LESS THAN OR EQUAL TO 8 INCHES

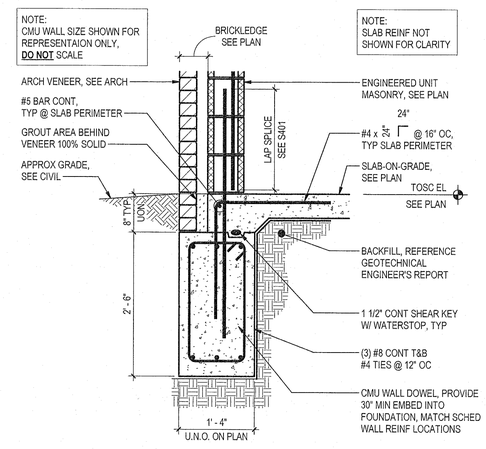
A2 1S-502 TYP SECTION @ CONCRETE CURB

1" = 1'-0"



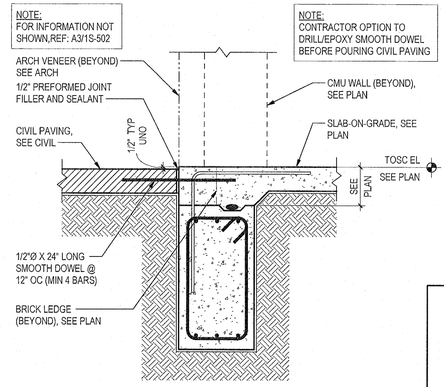
B3 1S-502 TYP INT GRADE BEAM W/ CMU

3/4" = 1'-0"



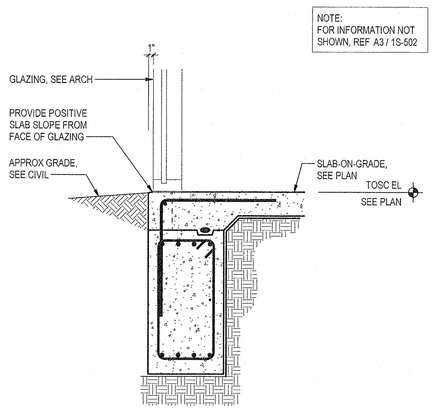
A3 1S-502 TYP SECTION AT EXTERIOR GRADE BEAM (CMU)

3/4" = 1'-0"



B4 1S-502 TYP SECTION @ EXTERIOR DOOR

3/4" = 1'-0"



A4 1S-502 TYP SECTION AT EXTERIOR GRADE BEAM (GLAZING)

3/4" = 1'-0"

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TBPE Firm Registration No. F-13678

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

STATE OF TEXAS
BRITNEY R. WEIDERT
117068
LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL FOUNDATION DETAILS - II 1S-502

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	As indicated
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	52 OF 255

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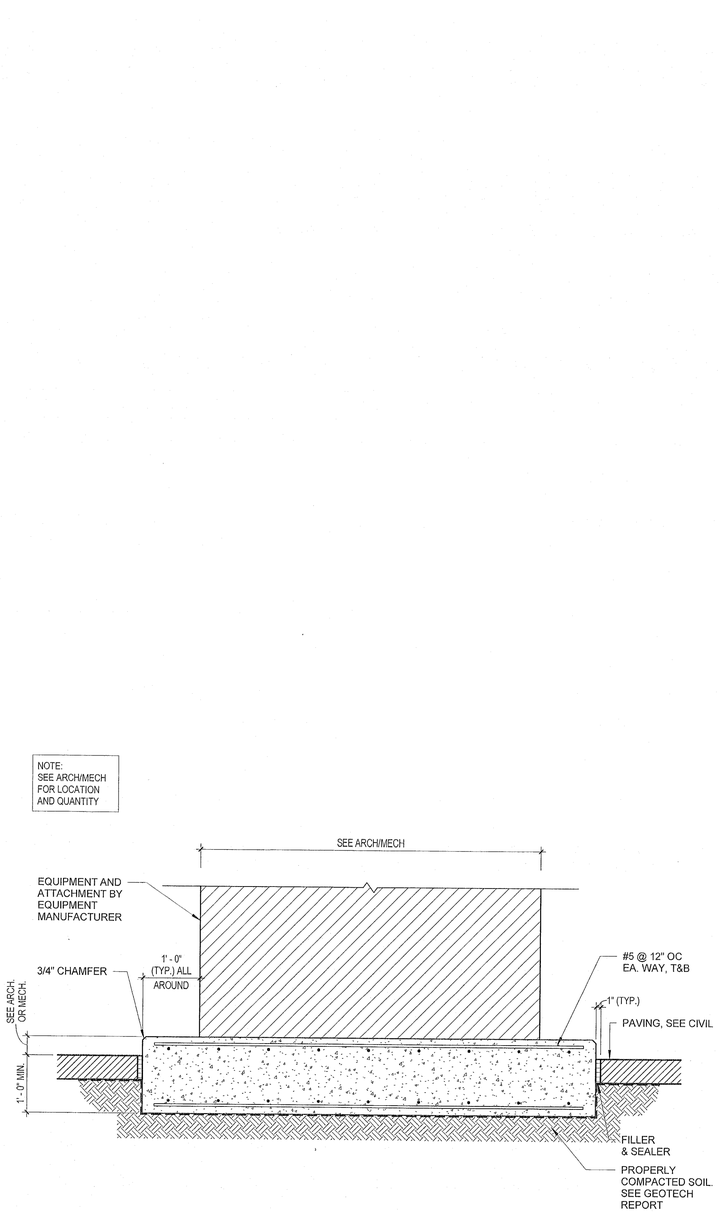
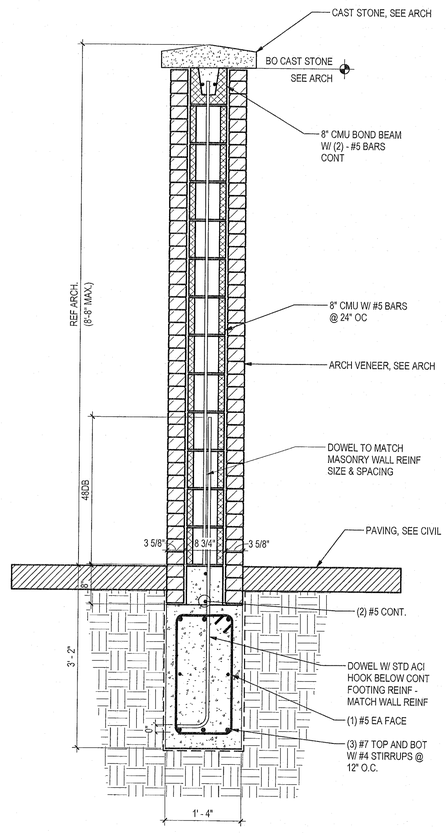
NO.	DATE	REVISION	APP.

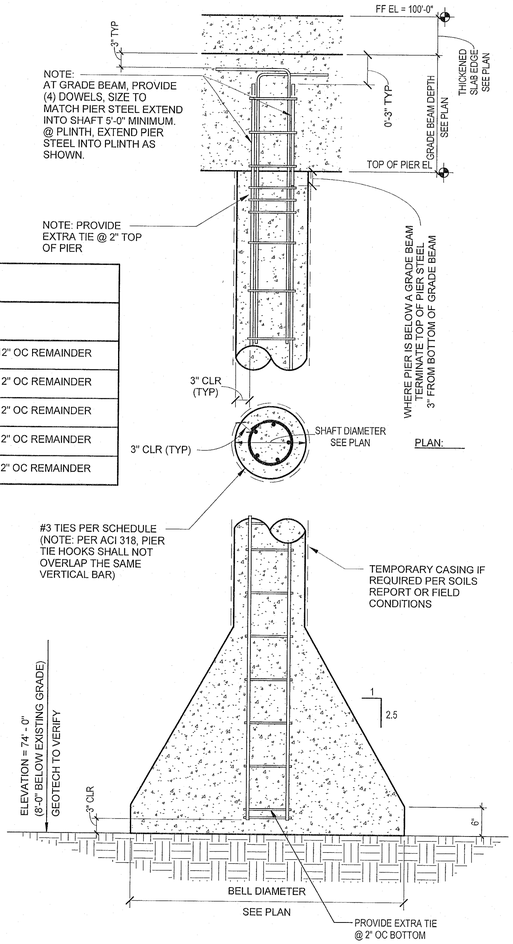


A1 / 1S-503 **TYP EXTERIOR EQUIPMENT PAD**
3/4" = 1'-0"



A3 / 1S-503 **SCREEN SIGN WALL SECTION**
3/4" = 1'-0"

PIER REINFORCING		
SHAFT DIA (IN)	VERT REINF	TIES
12"	4 - #5	(4) #3 @ 3" TOP & #3 @ 12" OC REMAINDER
18"	6 - #6	(4) #3 @ 5" TOP & #3 @ 12" OC REMAINDER
24"	8 - #7	(4) #3 @ 6" TOP & #3 @ 12" OC REMAINDER
30"	12 - #7	(4) #3 @ 7" TOP & #3 @ 12" OC REMAINDER
36"	14 - #8	(4) #3 @ 7" TOP & #3 @ 12" OC REMAINDER



A4 / 1S-503 **TYP DRILLED PIER DETAIL**
3/4" = 1'-0"

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STATE OF TEXAS — BRITNEY R. WEIDERT — 117968 — LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL FOUNDATION DETAILS - III
1S-503

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	3/4" = 1'-0"
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	53 OF 255

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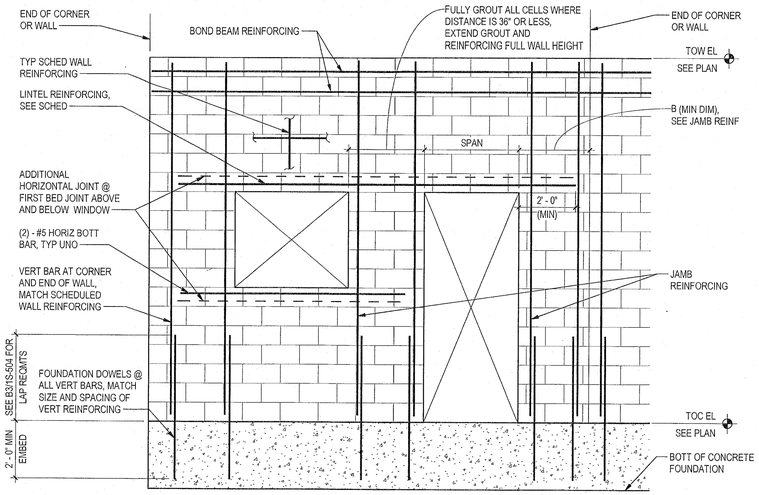


NOTES:
1. ALL REINF SHOWN IN ADDITION TO SCHEDULED WALL REINFORCEMENT.
2. ALL REINFORCING SHALL BE SOLID GROUTED USING 2500 PSI (SPEC COURSE GROUT.
3. REFER TO PLANS, GENERAL NOTES, AND WALL ELEVATIONS FOR TYPICAL VERTICAL AND HORIZONTAL WALL REINFORCEMENT.
4. SEE ARCH FOR LOCATION OF CONTROL JOINTS.
5. USE VERT BAR POSITIONERS AT 192 BAR DIAMETER OR 10 FT WHICH EVER IS LESS.
6. ALL HORIZONTAL REINFORCEMENT SHALL BE PLACED IN BOND BEAM BLOCKS EXCEPT JOINT REINFORCING.
7. HORIZONTAL REINFORCEMENT SHALL BE DISCONTINUOUS THROUGH CONTROL JOINTS EXCEPT BOND BEAMS AT ROOF FLOORS AND AT MASONRY LINTELS.
8. PROVIDE HORIZONTAL JOINT REINFORCEMENT AT FIRST BED JOINT ABOVE AND BELOW OPENINGS AND EXTEND 1'-0" BEYOND THE OPENING.

C1 / 1S-504 TYP REINFORCEMENT MASONRY WALL ELEVATION

3/8" = 1'-0"

ELEVATION

UNSCHEDULED MASONRY LINTEL TABLE

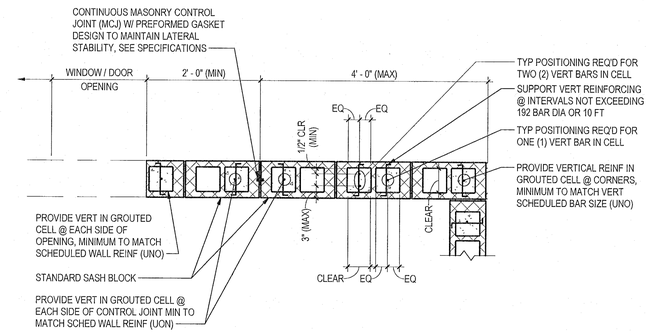
CLEAR OPENING	4" CMU AND FACEBRICK	6" CMU	8" CMU	12" CMU
UP TO 4'-0"	L3-1/2X3-1/2X1/4	8" DEEP BOND BEAM W/ (1) - #4	8" DEEP BOND BEAM W/ (2) - #4	8" DEEP BOND BEAM W/ (2) - #5
UP TO 6'-0"	L3-1/2X3-1/2X1/4	8" DEEP BOND BEAM W/ (1) - #4	8" DEEP BOND BEAM W/ (2) - #4	8" DEEP BOND BEAM W/ (2) - #5
UP TO 8'-0"	L4X3-1/2X5/16	#4 @ 24" 16" DEEP BOND BEAM W/ (1) - #4	#4 @ 24" 16" DEEP BOND BEAM W/ (2) - #4	#4 @ 24" 16" DEEP BOND BEAM W/ (2) - #5
UP TO 10'-0"	L7X4X3/8	#4 @ 24" 24" DEEP BOND BEAM W/ (2) - #5	#4 @ 24" 24" DEEP BOND BEAM W/ (2) - #6	#4 @ 24" 24" DEEP BOND BEAM W/ (2) - #7

NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF OPENINGS.
2. FOR UNSCHEDULED OPENING GREATER THAN 10'-0", CONSULT THE STRUCTURAL ENGINEER.
3. PROVIDE SOLID BOTTOM MASONRY LINTEL FOR HEAD CONDITION OF ALL CMU OPENINGS. SOLID GROUTED KNOCK-OUT CMU CORES SHALL NOT BE ALLOWED AND WILL BE REQUIRED TO BE REPLACED AT THE CONTRACTOR'S EXPENSE IF USED.
4. PROVIDE BLOCK LINTELS FOR ALL OPENINGS AT INTERIOR/EXTERIOR WALLS FOR WHICH A STEEL LINTEL IS NOT SCHEDULED.
5. PROVIDE 1" OF BEARING @ EACH JAMB FOR EACH FOOT OF CLEAR-SPAN, BUT NOT LESS THAN 8". REINFORCING SHALL EXTEND A MINIMUM OF 6" ONTO THE BEARING.
6. PROVIDE (2) - #5 VERTICALS IN FULLY GROUTED CELLS AT EACH JAMB.

C2 / 1S-504 UNSCHEDULED MASONRY LINTEL TABLE

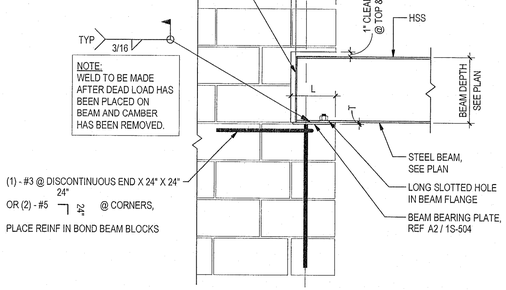
3/4" = 1'-0"

NOTES:
1. SEE PLAN FOR CMU WALL TYPE AND LOCATION.
2. UNLESS NOTED OTHERWISE, ALL MASONRY WALLS SHALL BE REINFORCED AS FOLLOWS: 8" WALL: #5 BARS @ 24" OC, 12" WALL: #6 BARS @ 24" OC.
3. BOND BEAM SHALL BE REINFORCED WITH (2) - #5 BARS CONT AT 8' - 0" OC, AT TOP OF PARAPET AND ROOF DECK ELEVATIONS.
4. PROVIDE STANDARD HORIZONTAL JOINT REINFORCEMENT AT 16" OC TYP, 8" OC AT PARAPET AND BELOW GRADE.
5. PROVIDE 2500 PSI COURSE GROUT FOR ALL GROUTING.
6. FOR LOAD-BEARING MASONRY, CONTROL JOINT SPACING SHOULD BE 24' - 8" OC MAXIMUM UNO. FOR NON-REINFORCED WALL, REFER TO ARCHITECTURAL FOR CONTROL JOINT SPACING (20' - 0" MAXIMUM).
7. CUT HORIZONTAL REINFORCEMENT AT CONTROL JOINTS, EXCEPT AT BOND BEAMS AT ROOF FLOORS AND MASONRY LINTELS.



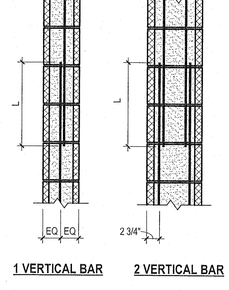
C3 / 1S-504 TYP MASONRY JOINTS

3/4" = 1'-0"



B2 / 1S-504 TYP STEEL BEAM BEARING ELEVATION

3/4" = 1'-0"



1 VERTICAL BAR 2 VERTICAL BAR

LAP LENGTH "L" (INCHES) FOR F'm = 2000 PSI

BAR SIZE	NOMINAL CMU WIDTH "W"						
	16"		12"		8"		6"
	1 BAR	2 BAR	1 BAR	2 BAR	1 BAR	2 BAR	1 BAR
#3	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
#4	1'-0"	1'-8"	1'-0"	1'-8"	1'-0"	1'-8"	1'-4"
#5	1'-1"	2'-9"	1'-1"	2'-9"	1'-6"	2'-9"	2'-0"
#6	1'-7"	5'-4"	1'-10"	5'-4"	2'-10"	5'-4"	3'-9"
#7	1'-11"	NOTE 2	2'-6"	NOTE 2	3'-10"	NOTE 2	5'-2"
#8	2'-10"	↓	3'-9"	↓	5'-9"	↓	—
#9	3'-7"	↓	4'-9"	↓	—	—	—

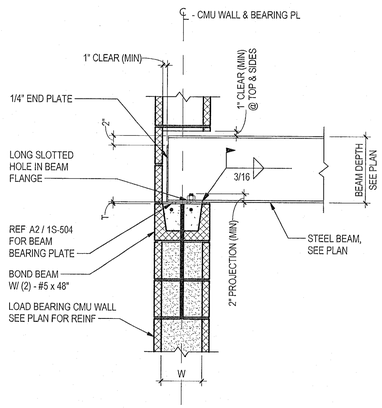
NOTES:
1. BARS SHALL BE SPACED W/ "DUR-O-WAL" VERTICAL BAR POSITIONER OR APPROVED EQUAL.
2. PROVIDE ONE OF THE FOLLOWING MECHANICAL SPLICES OR APPROVED EQUAL:
   A. ERICO "LENTON" COUPLER SYSTEM
   B. BARLOCK "S-SERIES" COUPLER SYSTEM
   C. RICHMOND "USIMC-SAE" COUPLERS SYSTEM
3. MECHANICAL COUPLERS MAY BE USED IN LIEU OF LAP SPLICES AT CONTRACTOR'S OPTION.

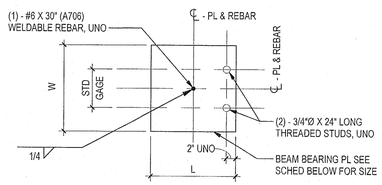
B3 / 1S-504 TYP SPLICE DETAIL IN CMU

3/4" = 1'-0"

B1 / 1S-504 TYP STEP IN BOND BEAM

3/4" = 1'-0"



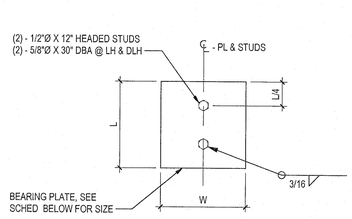


PLAN VIEW

BEAM BEARING PLATE SCHEDULE

BEAM SIZE	T (IN)	W (IN)	L (IN)	REMARKS
W8, W10, W12	1/2	8	7 1/2	L = 11 1/2 @ 12" CMU
W14, W16	1/2	10	7 1/2	L = 11 1/2 @ 12" CMU
W18, W21	5/8	12	7 1/2	L = 11 1/2 @ 12" CMU
W24, W27	7/8	18	7 1/2	L = 11 1/2 @ 12" CMU
W33	1 1/4	24	7 1/2	L = 11 1/2 @ 12" CMU

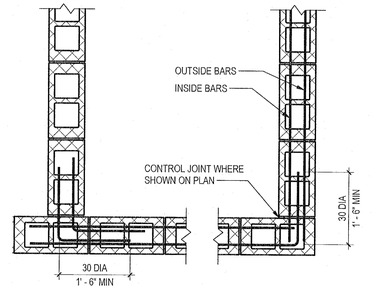
NOTES:
1. ALL CELLS UNDER BEAM SHALL BE FULLY GROUTED AND REINFORCED TO MATCH WALL REINFORCING SCHEDULE.



PLAN VIEW

JOIST BEARING PLATE SCHEDULE

PLATE TAG	JOIST SERIES	THICKNESS (IN)	MIN LENGTH (IN)	W (IN)	REMARKS
P1	K & KCS	3/8	8	6	
P2	K & KCS (HEAD TO HEAD)	3/8	8	7 1/2 11 1/2	FOR 8" WALLS FOR 12" WALLS



PLAN AT INTERSECTION PLAN AT CORNER

NOTES:
1. OUTSIDE BARS EXTEND AROUND CORNER, INSIDE BARS EXTEND AS FAR AS POSSIBLE AND BEND INTO CORNER CELL.
2. WHERE SINGLE LAYER OF REINFORCING OCCURS, BEND REINFORCEMENT AS SHOWN OUTSIDE BARS.

A1 / 1S-504 TYP STEEL BEAM DETAIL AT CMU

3/4" = 1'-0"

A2 / 1S-504 TYP BEAM BEARING PLATE

3/4" = 1'-0"

A3 / 1S-504 TYP JOIST BEARING PLATE

3/4" = 1'-0"

A4 / 1S-504 TYP STRUCTURAL MASONRY WALL CORNER BARS

3/4" = 1'-0"

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TBPE Firm Registration No. F-13678

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS — BRITNEY R. WEIDERT — 117968 — LICENSED PROFESSIONAL ENGINEER — 12/12/2024

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL MASONRY DETAILS - I 1S-504

WBS NUMBER	R-000265-0117-4
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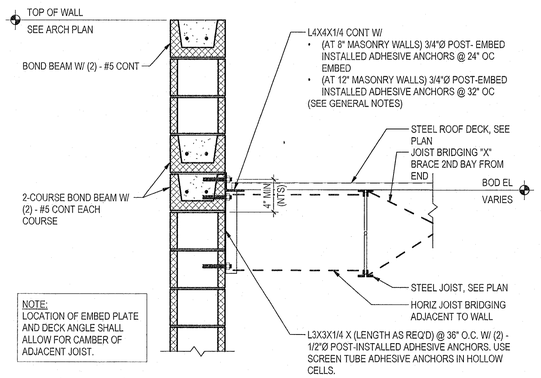
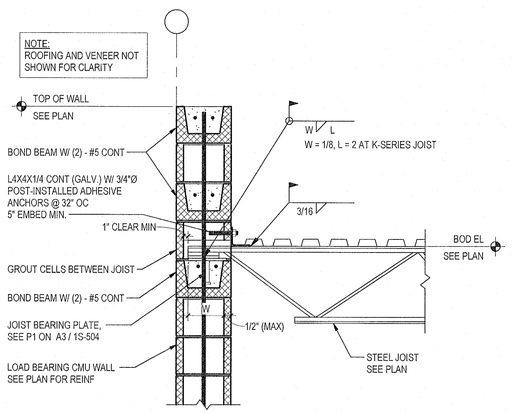


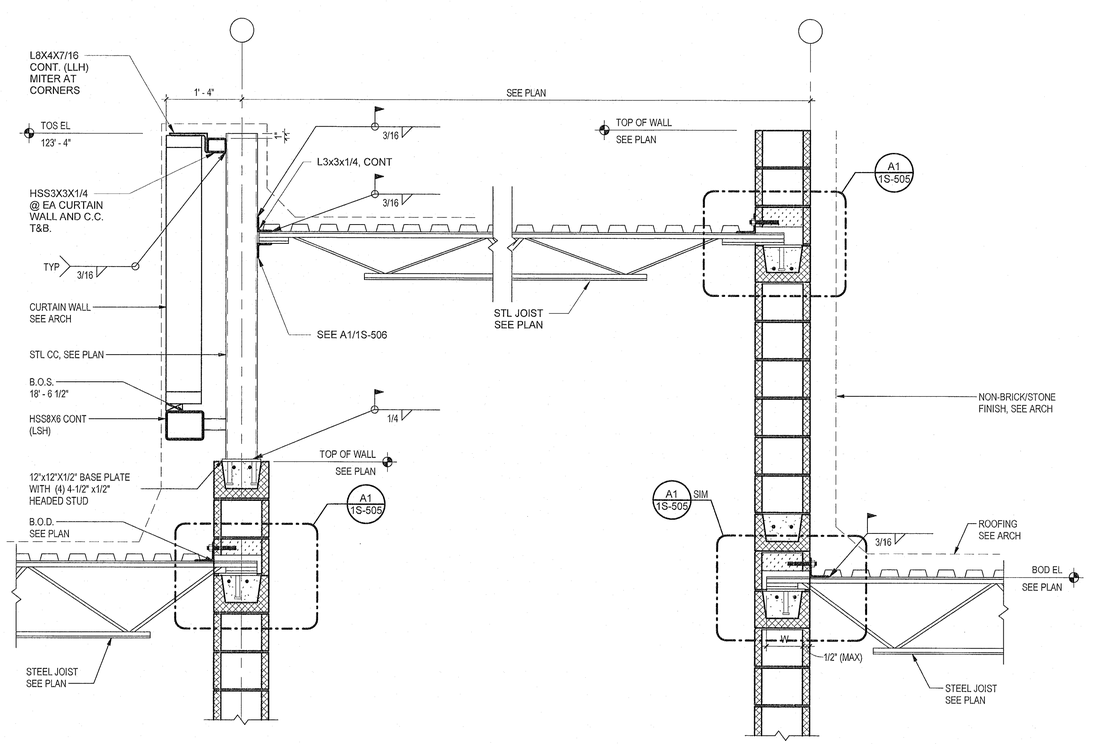
B1 / 1S-505 TYP METAL DECK AT ROOF

3/4" = 1'-0"



A1 / 1S-505 TYP JOIST BEARING AT ROOF

3/4" = 1'-0"



A3 / 1S-505 SECTION AT HIGH ROOF

3/4" = 1'-0"

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SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

STATE OF TEXAS
BRITNEY R. WEIDERT
112998
LICENSED LANDSCAPE ARCHITECT
12/12/2024

CITY OF HOUSTON

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL MASONRY DETAILS - II 1S-505

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	3/4" = 1'-0"
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
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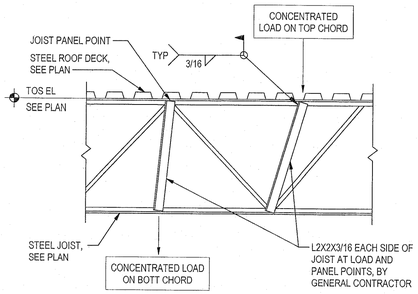
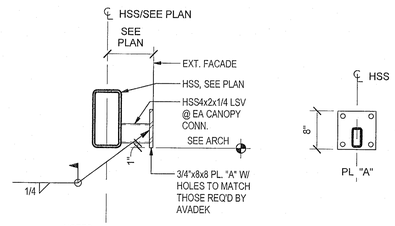
NOTES:
THIS DETAIL IS APPLICABLE TO ALL CONCENTRATED LOADS THAT ARE ATTACHED TO JOIST(S) WHETHER INDICATED ON THE STRUCTURAL DRAWINGS OR NOT. EXAMPLES OF THESE LOADS ARE:
1. HANGING LOAD, PARTITION THAT EXCEEDS 150#
2. HANGING PLUMBING, MECH STEEL PIPE 4" DIA OR LARGER
3. HANGING BASKETBALL GOALS



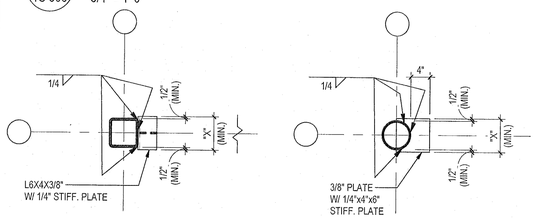
ELEVATION

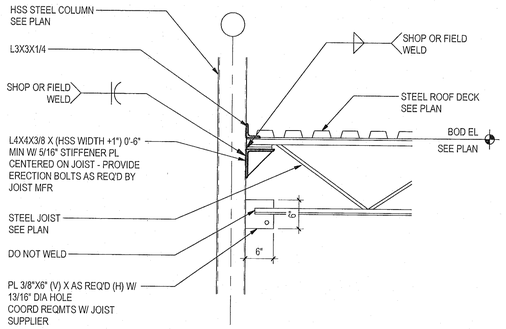
C1 TYP JOIST REINFORCING DETAIL
1S-506 — 3/4" = 1'-0"



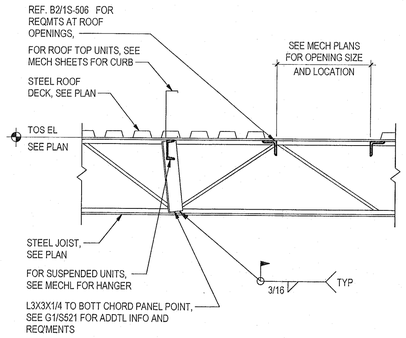
NOTES:
1. CONTRACTOR SHALL CONFIRM SPACING FROM CANOPY SUPPLIER PRIOR TO FABRICATION & SUBMIT SHOP DRAWINGS FOR APPROVAL
2. ALL STEEL TO BE HOT DIPPED GALVANIZED

B1 TYP ALUMINUM CANOPY CONN. DTL
1S-506 — 3/4" = 1'-0"



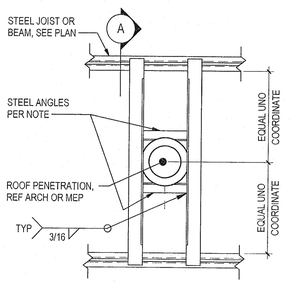


A1 TYP JOIST TO COLUMN DETAIL
1S-506 — 3/4" = 1'-0"

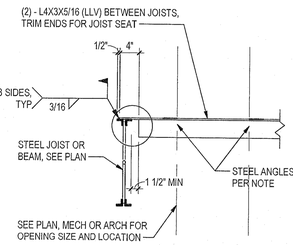


ELEVATION

C2 TYP MECHANICAL SUPPORT
1S-506 — 3/4" = 1'-0"



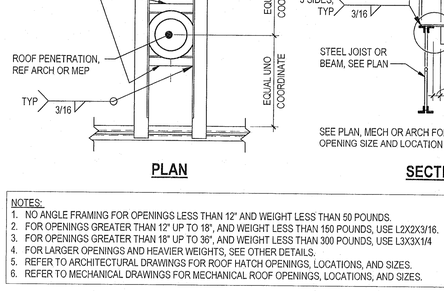
PLAN



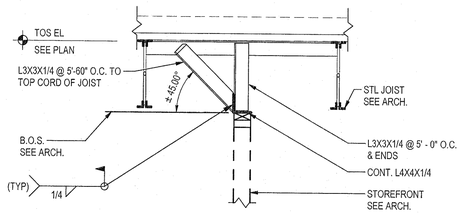
SECTION 'A'

NOTES:
1. NO ANGLE FRAMING FOR OPENINGS LESS THAN 12" AND WEIGHT LESS THAN 50 POUNDS.
2. FOR OPENINGS GREATER THAN 12" UP TO 18", AND WEIGHT LESS THAN 150 POUNDS, USE L2X2X3/16.
3. FOR OPENINGS GREATER THAN 18" UP TO 36", AND WEIGHT LESS THAN 300 POUNDS, USE L3X3X1/4
4. FOR LARGER OPENINGS AND HEAVIER WEIGHTS, SEE OTHER DETAILS.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ROOF HATCH OPENINGS, LOCATIONS, AND SIZES.
6. REFER TO MECHANICAL DRAWINGS FOR MECHANICAL ROOF OPENINGS, LOCATIONS, AND SIZES.

B2 TYP ROOF OPENING
1S-506 — 3/4" = 1'-0"



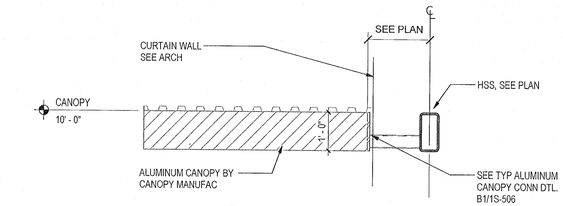
A2 CURTAIN WALL SUPPORT
1S-506 — 3/4" = 1'-0"



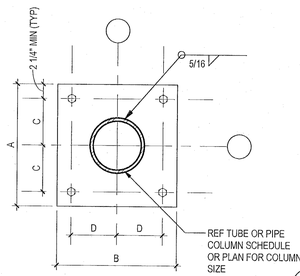
C3 INTERIOR STORE FRONT SUPPORT
1S-506 — 3/4" = 1'-0"

MAXIMUM SIZES FOR ANCHOR ROD HOLES IN BASE PLATES			
ANCHORD ROD DIAMETER	MAXIMUM HOLE DIAMETER	MINIMUM WASHER SIZE	MINIMUM WASHER THICKNESS
3/4"	1 5/16"	3"	3/8"
7/8"	1 9/16"	3"	3/8"
1"	1 13/16"	3"	3/8"
1 1/4"	2 1/16"	3"	1/2"
1 1/2"	2 5/16"	3 1/2"	1/2"
1 3/4"	2 3/4"	4"	5/8"
2"	3 1/4"	5"	3/4"

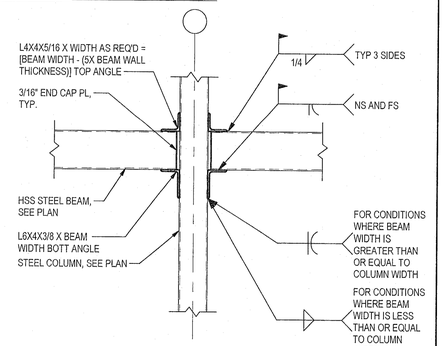
B3 TYP ANCHOR BOLT HOLE SIZES
1S-506 — 3/4" = 1'-0"



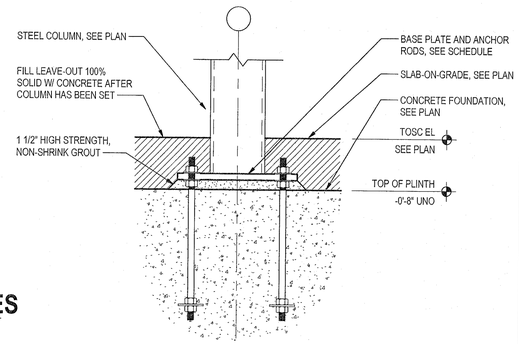
C4 CANOPY CONNECTION
1S-506 — 1/2" = 1'-0"



PLAN: TYPE "B"



B5 TYP HSS MISC BEAM TO HSS COLUMN
1S-506 — 3/4" = 1'-0"

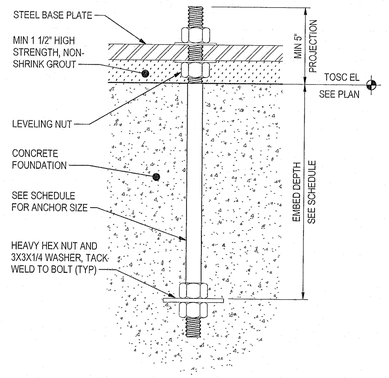


ELEVATION: TYPE "A" THRU "D"

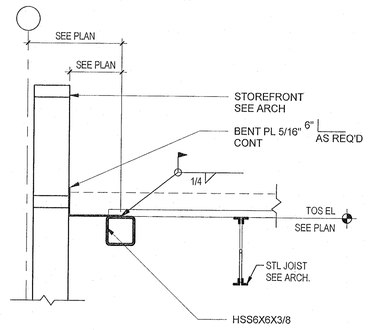
B4 TYP COLUMN BASE PLATE
1S-506 — NTS

COLUMN BASE PLATE SCHEDULE													
MARK	DETAIL TYPE	PLATE SIZE			HOLE SPACING		ANCHOR RODS			SHEAR LUG		NOTES
		A	B	T	C	D	QTY	DIA	EMBED	DEPTH	THICKNESS	
BP1	TYPE A	16"	16"	3/4"	6 1/2"	6 1/2"	4	3/4"	18"			1

NOTES:
1. ANCHOR BOLTS SHALL COMPLY WITH ASTM F1554 GRADE 55 UNO.



A3 BASE PLATE AND ANCHOR BOLT SCHEDULE
1S-506 — NTS



A2 CURTAIN WALL SUPPORT
1S-506 — 3/4" = 1'-0"

REVISION			
NO.	DATE	REVISION	APP.

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Houston, 77002-4916
Tel: (713) 548-5700

TBPE Firm Registration No. F-13678

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS — BRITNEY R. WEIDERT — 117968 — LICENSED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL STEEL DETAILS - I
1S-506

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 56 OF 255	

ACCEPTED NOTED — 80341 — CITY OF HOUSTON, TEXAS

PLOTTED: 12/12/2024 10:06:02 AM
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PLOT STYLE: COH.ctb
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NO.	DATE	REVISION	APP.

A1 / 1S-601 **WIND UPLIFT ZONES**
1/8" = 1'-0"

WIND DESIGN LOADS

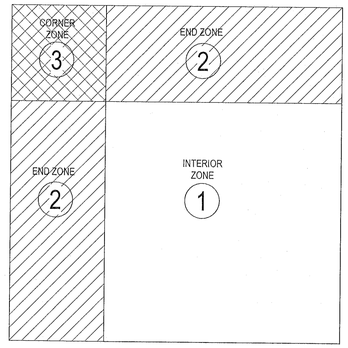
REFERENCE 1S-001 (WIND DESIGN DATA)

BASIC WIND SPEED.....150 MPH (THREE SECOND GUST)
EXPOSURE CATEGORY.....C
INTERNAL PRESSURE COEFF.....+/- 0.18
RISK CATEGORY.....III
ROOF DEAD LOAD.....10 PSF

WIND LOAD PRESSURE (PSF):

	(ROOF-1/-2/-3/+123)	(WALL-4/-5/+45)
EFFECTIVE AREA: 10SF		
16' MEAN ROOF HEIGHT	-43/-73/-110/+18	-43/-53/+40
22' MEAN ROOF HEIGHT	-47/-78/-118/+19	-47/-57/+43
EFFECTIVE AREA: 20SF		
16' MEAN ROOF HEIGHT	-43/-65/-91/+17	-42/-50/+38
22' MEAN ROOF HEIGHT	-46/-70/-98/+18	-45/-53/+41
EFFECTIVE AREA: 50SF		
16' MEAN ROOF HEIGHT	-41/-55/-66/+16	-39/-45/+36
22' MEAN ROOF HEIGHT	-44/-59/-71/+17	-42/-48/+39
EFFECTIVE AREA: 100SF		
16' MEAN ROOF HEIGHT	-40/-47/-47/+16	-38/-42/+34
22' MEAN ROOF HEIGHT	-43/-51/-71/+16	-40/-45/+39

A7 / 1S-601 **WIND PRESSURES**
1" = 1'-0"



1 / 1S-601 **TYP LOAD PATTERN DIAGRAM**
1/8" = 1'-0"

N

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TBPE Firm Registration No. F-13578

STATE OF TEXAS
BRITNEY R. WEIDERT
123906
LICENSED
PROFESSIONAL ENGINEER
12/12/2024

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION LOAD DIAGRAMS

1S-601

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 57 OF 255	

PUBLIC WORKS & ENGINEERING
ACCEPTED AS NOTED
80341
HOUSTON, TEXAS

PLOTTED: 12/12/2024 5:03:57 PM

PLOT STYLE: COH.ctb

FILE PATH: <Pick location in Project Information>

GENERAL NOTES

1. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ANCHORS, INSERTS, REGLETS AND EMBEDDED ITEMS NOT SHOWN ON STRUCTURAL DRAWINGS.
2. CONTRACTOR TO VERFIY ALL EXISTING DIMENSIONS, ELEVATIONS, CONCRETE THICKNESSES AND CONCRETE CONDITIONS PRIOR TO BEGINNING ANY CONSTRUCTION. IF CONSTRUCTED ELEMENTS PREVENT THE CONTRACTOR FROM PERFORMING WORK AS SHOWN IN THE CONSTRUCTION DOCUMENTS, THE ENGINEER OF RECORD SHALL BE NOTIFED (IN WRITING). NO WORK SHALL BE PERFORMED PRIOR TO THE ENGINEER OF RECORD'S REVIEW OF THE EXISTING CONDITION(S) AND ALLOWED THE OPPORTUNITY TO PROVIDE AN AGREED UPON SOLUTION. ANY WORK PERFORMED PRIOR TO THE ISSUANCE OF THE ENGINEERED SOLUTION WILL BE AT THE CONTRACTOR'S RISK AND IS SUBJECT TO REMOVAL AT THE EXPENSE OF THE CONTRACTOR.
3. CONTRACTOR IS TO VERIFY MECHANICAL LOADINGS AND LOCATIONS. NOTIFY ARCHITECT IF WEIGHTS AND LOCATIONS OF MECHANICAL UNITS DIFFER FROM THOSE SHOWN ON PLAN.
4. PRINCIPAL OPENINGS ARE INDICATED ON THE DRAWINGS. SEE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR SLEEVES, BLOCKOUTS AND CURBS.
5. CONCRETE TRUCKS, CRANES, OR OTHER CONSTRUCTION VEHICLES WITH A WHEEL LOAD GREATER THAN 1000 POUNDS ACTING ON AN AREA NOT LESS THAN 4.5 INCHES SQUARE SHALL NOT BE PERMITTED ON THE STRUCTURAL SLAB WITHOUT PRIOR WRITTEN AGREEMENT OF THE ARCHITECT/ENGINEER. EQUIPMENT EXCEEDING THE ABOVE REFERENCED LOADING SHALL BE EVALUATED ACCORDING TO NOTE 9 BELOW.
6. CONCURRENT USE OR STORAGE OF MORE THAN ONE VEHICLE ON THE STRUCTURAL SLAB SHALL NOT BE PERMITTED WITHOUT PRIOR WRITTEN AGREEMENT OF THE ARCHITECT/ENGINEER.
7. CONSTRUCTION EQUIPMENT WITH A TOTAL LOADED WEIGHT OF MORE THAN 3000 POUNDS IS NOT PERMITTED ON THE COMPOSITE FLOOR SLAB WITHOUT PRIOR WRITTEN AGREEMENT OF THE ARCHITECT/ENGINEER.
8. STATIONARY CONSTRUCTION EQUIPMENT AND MATERIALS ARE TO BE EVENLY DISTIBUTED IF PLACED ON STRUCTURAL FLOOR FRAMING/SLABS OR ROOF FRAMING/DECK. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT OBTAINED DESIGN STRENGTH.
9. SUBMISSIONS FOR PROPOSED CONSTRUCTION VEHICLES AND CONSTRUCTION PHASE EQUIPMENT SHALL BE PREPARED BY A THIRD PARTY ENGINEER (LICENSED IN THE STATE IN WHICH THE PROJECT IS BEING PERFORMED) INDICATING CODE COMPLIANCE OF THE CONSTRUCTION LOADS ACTING ON THE STRUCTURE, INCLUDING THE DESIGN OF CONSTRUCTION BRACING AND/OR SHORING AS REQUIRED. CALCULATIONS SHALL INCLUDE CONSIDERATION OF LOAD PATH, CONCENTRATED LOADS, MOVING LOADS, AND COMBINED LOAD EFFECTS ON THE STRUCTURE.
10. THERE SHALL BE NO DEVIATIONS FROM THESE CONSTRUCTION DOCUMENTS UNLESS APPROVED BY THE ENGINEER OF RECORD. ANY DEVIATION FROM, ADDITION TO, SUBSTITUTION FOR, OR MODIFICATION TO THE STRUCTURE OR ANY PART OF THE STRUCTURE SHOWN ON THESE DRAWINGS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER OF RECORD FOR REVIEW. SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW DO NOT CONSTITUTE "IN-WRITING" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING SUGGESTED.

CODES

1. BUILDING CODE: INTERNATIONAL BUILDING CODE 2015.
2. STRUCTURAL CONCRETE: BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, AMERICAN CONCRETE INSTITUTE ACI 318-11.
3. CONCRETE MASONRY: BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES, AMERICAN CONCRETE INSTITUTE, ACI 530/530.1-11/ASCE 5-11/TMS 402-11.
4. BRICK MASONRY: RECOMMENDED PRACTICE FOR ENGINEERED BRICK MASONRY, BRICK INSTITUTE OF AMERICA, 1969.
5. STRUCTURAL STEEL: AISC STEEL CONSTRUCTION MANUAL - FOURTEENTH EDITION.
6. STRUCTURAL LUMBER: AMERICAN WOOD COUNCIL NDS-2012.
7. COLD FORMED STEEL: NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS, AMERICAN IRON AND STEEL INSTITUTE, 2015 EDITION.

DESIGN LIVE LOADS

1. MINIMUM DESIGN LIVE LOADS ARE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE (IBC). DESIGN LOADS ARE (IN PSF) UNLESS NOTED OTHERWISE IN PLANS:

ROOF	20
GROUND LEVEL (UNO)	100
MECHANICAL AREAS	150
STORAGE AREAS	125
TOILET AREAS	60
HEAVY STORAGE	250

2. FLOOR LIVE LOADS HAVE BEEN REDUCED IN ACCORDANCE WITH THE METHOD PRESCRIBED IN THE ABOVE REFERENCED BUILDING CODE. ROOF LIVE LOADS HAVE NOT BEEN REDUCED.

SNOW DESIGN DATA

1. THE FOLLOWING SNOW LOAD DATA WAS USED IN THE DESIGN OF THE STRUCTURE:

GROUND SNOW LOAD (Pg)	5 PSF
FLAT ROOF SNOW LOAD (Pf)	6 PSF
SNOW EXPOSURE FACTOR (Ce)	1.00
THERMAL FACTOR (Ct)	1.00
IMPORTANCE FACTOR (Is)	1.10

SEISMIC DESIGN DATA

1. THE FOLLOWING SEISMIC DESIGN DATA WAS USED IN THE DESIGN OF THE STRUCTURE:

		ASCE 7-16
BUILDING RISK CATEGORY	III	(TABLE 1.5-1)
SEISMIC IMPORTANCE FACTOR (Ie)	1.25	(TABLE 1.5-2)
SPECTRAL RESPONSE ACCELERATION (Ss)	7.5% g	
SPECTRAL RESPONSE ACCELERATION (S1)	4.1% g	
SEISMIC SITE CLASS	D	(DEFAULT)
SPECTRAL RESPONSE COEFFICIENT (Sds)	8.0% g	
SPECTRAL RESPONSE COEFFICIENT (Sd1)	6.6% g	
SEISMIC DESIGN CATEGORY	A	(TABLE 11.6-2)

2. BASIC SEISMIC RESISTING FORCE SYSTEM: STRUCTURAL STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE

RESPONSE MODIFICATION FACTOR (R)	3
SEISMIC RESPONSE COEFFICIENT (Cs)	0.033
DESIGN BASE SHEAR	0.033w

ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE

WIND DESIGN DATA

1. THE FOLLOWING WIND LOAD DATA WAS USED IN THE DESIGN OF THE STRUCTURE:
   - BASIC WIND SPEED (3 SECOND GUST-ULTIMATE).....150 MPH
   - BASIC WIND SPEED (3 SECOND GUST-SERVICE).....110 MPH
   - EXPOSURE CATEGORY.....C
   - INTERNAL PRESSURE COEFFICIENT.....+/- 0.55
   - RISK CATEGORY.....III

FORMWORK

1. FORMWORK IS TO COMPLY WITH ACI 347R, "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK".
2. LOWER SOFFIT IS TO CARRY THRU WHERE BEAMS OF DIFFERENT DEPTHS INTERSECT.
3. ANCHOR BOLTS ARE TO BE SET WITH SECURELY FASTENED TEMPLATES.
4. PROVIDE CHAMFER STRIPS IN ALL FORMS AS NOTED BY ARCHITECTURE.

SLAB SUBGRADE PREPARATION

1. FOR SUBGRADE PREPARATION WITHIN THE BUILDING AREA, REFER TO THE ABOVE MENTIONED GEOTECHNICAL REPORT. THIS WORK IS TO BE PERFORMED AS DIRECTED BY THE OWNER'S SOILS TESTING LAB. OBSERVATION REPORTS AND TEST REPORTS OF THE SOIL COMPACTION ARE TO BE SUBMITTED TO THE ARCHITECT/ENGINEER TO VERIFY THE WORK IS IN GENERAL CONFORMANCE PRIOR TO PLACEMENT OF CONCRETE.
2. TOP SOIL AND VEGETATION IS TO BE STRIPPED TO DEPTHS ENCOUNTERED AND AS DIRECTED BY THE OWNER'S SOILS TESTING LAB PRIOR TO DRILLING PIERS, REFER TO SOIL REPORT FOR SITE PREPARATION.
3. PROVIDE VAPOR RETARDER UNDER STRUCTURAL BEAMS AND SLABS CAST ON GRADE, UNLESS OTHERWISE NOTED.
4. PROVIDE VAPOR SEAL BARRIER UNDER STRUCTURAL BEAMS AND SLABS CAST ON GRADE SUPPORTING WOOD FLOORS.

FOUNDATION

1. THE OWNER HAS OBTAINED A GEOTECHNICAL REPORT TITLED GEOTECHNICAL INVESTIGATION INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS WBS NO. R-000265-0117-3 HOUSTON, TEXAS, **REPORT NO. 1140253001 AND ADDENDUM NO. 1,** AND IT IS APPENDED AS PART OF THE BID DOCUMENTS FOR INFORMATION ONLY. NEITHER THE OWNER NOR THE CONSULTANTS WARRANT THE ACCURACY OR THE COMPLETENESS OF THE REPORT. IN SUBMITTING A TENDER, THE BIDDER ACKNOWLEDGES AND REPRESENTS THAT IT HAS REVIEWED THE REPORT AND HAS MADE ITS' OWN INDEPENDENT ASSESSMENT OF THE CONDITIONS OF THE SITE AND THE REQUIREMENTS OF THE WORK AND THAT IT IS SOLELY RESPONSIBLE FOR DECISIONS PERTAINING TO IMPLEMENTATION OF THE GEOTECHNICAL RECOMMENDATIONS.
2. REFER TO THE AFOREMENTIONED GEOTECHNICAL REPORT FOR FOUNDATION, PAVING AND SUBSURFACE DESIGN INFORMATION. THE CONTRACTOR SHALL REFERENCE THIS REPORT IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS FOR GUIDELINES AND RECOMMENDATIONS FOR FOUNDATION AND SUBSURFACE PREPARATION, EXCAVATION AND CONSTRUCTION
3. ESTABLIS THE BOTTOM OF FOUNDATIONS AT ELEVATIONS SHOWN ON PLANS. IF FIELD CONDITIONS REQUIRE CHANGES TO REACH DESIRED STRATUM, ADJUSTMENTS TO CONTRACT ARE TO BE MADE ON A UNIT PRICE BASIS.

MAT & SPREAD FOOTINGS

1. SPREAD FOOTING DESIGN IS BASED UPON FOLLOWING SOIL BEARING PRESSURE BELOW EXISTING NATURAL GRADE AT THE TIME THE GEOTECHNICAL REPORT WAS PREPARED:
   A. ALLOWABLE SUSTAINED PRESSURE..... 1,500 PSF
   B. ALLOWABLE TOTAL PRESSURE..... 2,200 PSF
2. MAT FOOTING DESIGN IS BASED UPON FOLLOWING SOIL BEARING PRESSURE AT THE TIME THE GEOTECHNICAL REPORT WAS PREPARED:
   A. ALLOWABLE SUSTAINED PRESSURE..... 1,600 PSF
   B. ALLOWABLE TOTAL PRESSURE..... 2,500 PSF
3. BEARING ELEVATION OF MAT & SPREAD FOOTINGS SHALL BE AS SHOWN IN THE TYPICAL CONCRETE DETAILS AND LOCATED WITH RESPECT TO FINISH FLOOR. MINIMUM DEPTH OF SPREAD FOOTINGS IS TO BE 5'-0" BELOW FINISH GRADE, AND MINIMUM DEPTH OF MAT FOOTINGS IS TO BE 4'-0" BELOW FINISH GRADE.
4. THE EXCAVATIONS FOR SPREAD & STRIP FOOTINGS SHALL BE FREE OF LOOSE MATERIAL AND HAVE A UNIFORM BEARING SURFACE. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL APPROVE THE BEARING SURFACE PRIOR TO CONCRETE PLACEMENT.
5. SPREAD & MAT FOOTINGS SHALL BE FOUNDED ON FIRM, UNDISTURBED NATIVE SOIL OR SELECT FILL (AS SPECIFIED IN THE GEOTECNICAL REPORT) OVERLYING NATIVE SOIL.

DRILLED PIERS - STRAIGHT SHAFT

1. STRAIGHT SHAFT PIER DESIGN IS BASED ON LOAD CURVES WITHIN THE AVAILABLE GEOTECHNICAL REPORT.
2. BEARING ELEVATION SHOWN ON PLAN IS BELOW EXISTING GRADE LEVEL.
3. ESTABLISH BOTTOM OF FOOTINGS/PIERS AT ELEVATIONS SHOWN ON PLANS. IF FIELD CONDITIONS REQUIRE CHANGES TO REACH THE DESIRED STRATUM, ADJUSTMENTS TO CONTRACT ARE TO BE MADE ON A UNIT PRICE BASIS. CONTRACTOR SHALL PROVIDE UNIT PRICE ADD AND DEDUCT FOR EACH PIER SIZE ON THE PROJECT.
4. DRILLED HOLES ARE TO BE EXCAVATED, CLEANED, REINFORCED, AND FILLED WITH CONCRETE DURING THE SAME DAY. NO HOLE IS TO BE LEFT OPEN OVERNIGHT. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS.
5. REINFORCING CAGE SHALL BE HELD SECURELY AWAY FROM EARTH AT SIDES AND BOTTOM BY SETS OF 3 OR MORE SPACERS AT A MAXIMUM SPACING OF 5 FEET ALONG THE LENGTH OF THE CAGE AND 1 FOOT FROM THE BOTTOM.
6. THE CONTRACTOR SHALL VERIFY DEPTHS OF PIERS BEFORE PIER STEEL IS CUT. PIER STEEL MAY BE DELIVERED TO THE JOBSITE IN STANDARD LENGTHS OF 40 OR 60 FEET AND CUT AS REQUIRED. PROVIDE 64 BAR DIAMETER LAPS IN ALL VERTICAL PIER REINFORCING.
7. TOP OF PIERS SHALL BE OF THE SPECIFIED DIAMETER, AND SHALL NOT BE ENLARGED TO FORM A MUSHROOM UNDER ANY CIRCUMSTANCE. FORM TOP OF PIER IF REQUIRED TO MAINTAIN THE SPECIFIED DIAMETER. ANY CONCRETE EXTENDING BEYOND THE SPECIFIED DIAMETER SHALL BE REMOVED.
8. TEMPORARY CASING MAY BE REQUIRED FOR THE UPPER EIGHT (8) FEET OF THE STRAIGHT SHAFT TO PREVENT UPPER SHAFT COLLAPSE OR SLOUGHING. PRIOR TO PLACEMENT OF CONCRETE, ANY SEEPAGE WATER SHALL BE REMOVED FROM THE PIER EXCAVATIONS. SPECIAL CONSTRUCTION PROCEDURES IN ACCORDANCE WITH ACI 336 AND SPECIFICATIONS SHALL BE FOLLOWED DURING EXTRACTION OF THE CASING AND DURING CONCRETE PLACEMENT.
   - CONTRACTOR SHALL PROVIDE AN ALLOWANCE FOR 100% CASING/SLURRY DRILLING OF DRILLED PIERS. CONTRACTOR SHALL ALSO PROVIDE UNIT PRICE FOR EACH SIZE OF CASING UTILIZED ON THE PROJECT. PAYMENT FOR CASING SHALL BE BASED UPON NET LENGTH OF CASING UTILIZED MULTIPLIED BY THE UNIT PRICE.

REINFORCING STEEL

1. DEFORMED BAR CONCRETE REINFORCEMENT FOR STRUCTURES IS TO CONFORM TO ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED.
2. ELECTRICALLY-WELDED WIRE FABRIC OF COLD-DRAWN WIRE SHALL CONFORM TO ASTM A1064 (70,000 PSI) UNLESS OTHERWISE NOTED.
3. REINFORCEMENT IS TO BE DESIGNED AND DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE CRSI "MANUAL OF STANDARD PRACTICE" AND THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES" (ACI 315).
4. ALL STEEL SHALL BE DOMESTICALLY (INCLUDING CANADA) MILLED AND FABRICATED. FOREIGN STEEL SHALL NOT BE UTILIZED WITHOUT PRIOR APPROVAL FROM THE STRUCTURAL ENGINEER. THE APPROVAL PROCESS SHALL TAKE PLACE DURING BIDDING TIME. ANY REQUEST TO UTILIZE FOREIGN STEEL MADE AFTER BIDDING SHALL BE REJECTED.
5. REINFORCEMENT BAR BENDS ARE TO BE MADE COLD.
6. WELDING OF REINFORCING STEEL IS NOT PERMITTED.
7. DEFORMED BAR ANCHORS (DBA'S) SHALL BE WELDED BY A METHOD IN WHICH THE CONNECTION CAN DEVELOP THE FULL TENSION AND SHEAR CAPACITY OF THE BAR.
8. REINFORCEMENT IS TO BE SUPPORTED ON CHAIRS PROVIDING THE FOLLOWING MINIMUM CONCRETE COVER:

CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3 IN
FORMED, EXPOSED TO EARTH OR WEATHER	
#6 THROUGH #18 BARS	2 IN
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1 1/2 IN
FORMED, NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
SLABS, WALLS, JOISTS	
#14 AND #18 BARS	1 1/2 IN
#11 BAR AND SMALLER	3/4 IN
BEAMS, GIRDERS, COLUMNS	
PRIMARY REINF, TIES, STIRRUPS, SPIRALS	1 1/2 IN
SHELLS, FOLDED PLATE MEMBERS	
#6 BAR AND LARGER	3/4 IN
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1/2 IN

8. CONTINUOUS REINFORCEMENT MAY BE USED IN PLACE OF SCHEDULED REINFORCEMENT AS LONG AS THE SCHEDULED SIZE AND SPACING IS SATISFIED. WHERE SPLICES ARE NECESSARY, THEY ARE TO BE MADE AT LOCATIONS SHOWN IN THE SCHEDULES.
9. UNLESS OTHERWISE DETAILED, HOOKS ARE TO BE ACI STANDARD 90-DEGREE HOOKS.
10. HOOK TOP AND SIDE REINFORCING BARS AT DISCONTINUOUS ENDS.
11. STIRRUPS OF THE SIZE AND SPACING DETAILED ARE TO PROVIDE THE COVER LISTED ABOVE. HOOKS ON STIRRUPS ARE TO BE 90 DEGREES AND ARE TO HAVE 4" MINIMUM EXTENSIONS UNLESS OTHERWISE NOTED.
12. MINIMUM LAP OF WELDED WIRE FABRIC IS TO BE 6" OR ONE MESH AND ONE-HALF, WHICHEVER IS GREATER.
13. UNLESS OTHERWISE SHOWN OR NOTED, CORNER BARS OF THE SAME SIZE AS MAIN TOP AND BOTTOM REINFORCEMENT ARE TO BE PROVIDED AT CORNERS OF BEAMS AND INTERSECTIONS OF BEAMS IN WHICH ONE MEMBER IS DISCONTINUOUS. SEE SHEET S301 AND DETAILS FOR TYPICAL GRADE BEAM CORNER BARS AND REINFORCEMENT LAP SPLICES.

CONCRETE

1. CAST IN PLACE CONCRETE SHALL MEET THE FOLLOWING REQUIREMENTS:

CLASS A: **PIERS**

a. 28 DAY STRENGTH	3,000 PSI
b. AGGREGATE TYPE	ASTM C33
c. AGGREGATE SIZE	1 INCH MAXIMUM
d. SLUMP	6-8 INCHES
e. WATER / CEMENTITIOUS RATIO	0.50
f. ALLOWABLE FLY ASH REPLACEMENT	40%
g. AIR ENTRAINMENT	3% - 6%
h. ACI 318 EXPOSURE CLASSES	F0, S0, P0, C1

CLASS B: **GRADE BEAMS, PLINTHS, PILASTERS**

a. 28 DAY STRENGTH	4,500 PSI
b. AGGREGATE TYPE	ASTM C33
c. AGGREGATE SIZE	1 INCH MAXIMUM
d. SLUMP	4-6 INCHES
e. WATER / CEMENTITIOUS RATIO	0.50
f. ALLOWABLE FLY ASH REPLACEMENT	30%
g. AIR ENTRAINMENT	3% - 6%
h. ACI 318 EXPOSURE CLASSES	F1, S0, P0, C1

CLASS C: **SLABS ON GROUND**

a. 28 DAY STRENGTH	4,000 PSI
b. AGGREGATE TYPE	ASTM C33
c. AGGREGATE SIZE	1 INCH MAXIMUM
d. SLUMP	4-6 INCHES
e. WATER / CEMENTITIOUS RATIO	0.45
f. ALLOWABLE FLY ASH REPLACEMENT	20%
g. AIR ENTRAINMENT	NONE
h. ACI 318 EXPOSURE CLASSES	F0, S0, P0, C0

2. HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS SHALL BE PERMITTED ONLY WHERE INDICATED ON THE DRAWINGS. ALL VERTICAL CONSTRUCTION JOINTS SHALL BE MADE AT THIRD POINTS IN ACCORDANCE WITH TYPICAL DETAILS. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS FOR CONSTRUCTION JOINTS NOT SHOWN ON DRAWINGS FOR REVIEW BY THE ARCHITECT AND STRUCTURAL ENGINEER. ADDITIONAL CONSTRUCTION JOINTS MAY REQUIRE ADDITIONAL REINFORCING AS SPECIFIED BY THE ENGINEER WHICH SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. ROUGHEN THE SURFACE OF ALL CONSTRUCTION JOINTS SO THAT THE AGGREGATE IS EXPOSED UNIFORMLY, LEAVING NO LAITANCE, LOOSENED PARTICLES, OR DAMAGED CONCRETE.
4. ALL CONCRETE SHALL BE DESIGNED, MIXED, TRANSPORTED, AND PLACED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS OF THE AMERICAN CONCRETE INSTITUTE.
5. SLEEVES OR OTHER PENETRATIONS CAN BE ALLOWED THROUGH STRUCTURAL MEMBERS ONLY WITH PRIOR WRITTEN AGREEMENT OF ARCHITECT/ENGINEER. REQUESTS FOR REVIEW ARE TO BE SUBMITTED IN WRITING A MINIMUM OF FIVE WORKING DAYS PRIOR TO THE CONCRETE POUR.
6. CONTINUOUS WATERSTOP ARE TO BE USED AT JOINTS WHERE DETAILED AND AT OTHER CONSTRUCTION JOINTS IN CONCRETE ELEMENTS BELOW FINISH GRADE.
7. EMBEDDED CONDUITS, PIPES, AND SLEEVES SHALL MEET THE REQUIREMENTS OF ACI 318-11 SECTION 6.3 (OR ACI 318-14 SECTION 20.7 AND 26.8), INCLUDING THE FOLLOWING:
   A. CONDUITS AND PIPES EMBEDDED WITHIN A SLAB, WALL, OR BEAM (OTHER THAN THOSE PASSING THROUGH) SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN 1/3 THE OVERALL THICKNESS OF THE SLAB, WALL, OR BEAM IN WHICH THEY ARE EMBEDDED.
   B. CONDUITS, PIPES AND SLEEVES SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS OR WIDTHS ON CENTER.

REINFORCED MASONRY

1. COMPRESSIVE STRENGTH OF MASONRY (F'm) = 2000 PSI.
2. HOLLOW LOAD BEARING UNITS SHALL CONFORM TO ASTM C90, LIGHTWEIGHT, GRADE N, TYPE I OR II, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI ON THE NET AREA.
3. MORTAR SHALL CONFORM TO ASTM C270, TYPE S.
4. COARSE MASONRY GROUT SHALL CONFORM TO ASTM C476 WITH A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS.
5. LOW LIFT CONSTRUCTION SHALL BE USED W/ A MAXIMUM GROUT POUR HEIGHT OF 4 FT.
6. REFER TO ARCHITECTURAL DRAWINGS FOR SURFACE AND HEIGHT OF UNITS, LAYING PATTERN AND JOINT TYPE. USE OPEN END UNITS FOR STACKED BOND PATTERN AND BOND BEAM UNITS AT HORIZONTAL REINFORCING.

STRUCTURAL - DRAWING INDEX

2S-001	DEWATERING GENERAL NOTES - I
2S-002	DEWATERING GENERAL NOTES - II
2S-003	DEWATERING GENERAL NOTES, ABBR AND SYMBOLS
2S-101	DEWATERING FOUNDATION FRAMING PLAN
2S-502	DEWATERING TYPICAL CONCRETE DETAILS
2S-503	DEWATERING TYPICAL FOUNDATION DETAILS - I
2S-504	DEWATERING TYPICAL FOUNDATION DETAILS - II
2S-505	DEWATERING TYPICAL FOUNDATION DETAILS - III

NO.	DATE	REVISION	APP.

Stantec

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STATE OF TEXAS — BRITNEY R. WEIDERT — 117968 — LICENSED PROFESSIONAL ENGINEER

12/12/24

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING GENERAL NOTES - I

2S-001

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1/4" = 1'-0"
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	58 OF 255

FOR CITY OF HOUSTON USE ONLY

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PRE-ENGINEERED METAL BUILDING

1. ALL STRUCTURAL STEEL USED FOR THE PRE-ENGINEERED METAL BUILDING COMPONENTS SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST STANDARDS OF THE AISC/AWS. THE DESIGN AND FABRICATION OF LIGHT-GAGE STEEL MEMBERS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISI.

2. THE DESIGN FOR ALL PRE-ENGINEERED BUILDING MEMBERS AND COMPONENTS SHALL BE THE RESPONSIBILITY OF THE PRE-ENGINEERED METAL BUILDING MANUFACTURER. THE DESIGN SHALL BE CARRIED OUT UNDER THE DIRECTION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS. THE DESIGN SHALL INCLUDE, BUT NOT BE LIMITED TO:

   - ANCHOR BOLTS (DIAMETER, EMBEDMENT INTO FOUNDATION, PROJECTION AND OVERALL LENGTH, "J" BOLTS ARE NOT ACCEPTABLE AS ANCHOR BOLTS.)
   - BUILDING FRAME (COLUMNS/BASE PLATES, PRIMARY FRAMING, SECONDARY FRAMING, WIND GIRTS, ETC.)

3. METAL BUILDING MANUFACTURER SHALL DESIGN BUILDING TO WITHSTAND LOADS AS SHOWN ON SHEET S001.

4. THE METAL BUILDING MANUFACTURER IS TO REFER TO MECHANICAL AND ELECTRICAL PLANS FOR LOCATIONS AND WEIGHTS OF EQUIPMENT TO BE SUSPENDED FROM THE ROOF STRUCTURE.

5. PRIOR TO DRILLING PIERS, CONTRACTOR IS TO FURNISH CALCULATED COLUMN LOADS TO STRUCTURAL ENGINEER FOR REVIEW. CONTRACTOR IS TO FORWARD PLAN SHOWING COLUMN BASE PLATE SIZES AND ANCHOR BOLT LOCATIONS TO STRUCTURAL ENGINEER FOR REVIEW OF WORK IN GENERAL CONFORMANCE PRIOR TO START OF GRADE BEAM AND PLINTH CONSTRUCTION.

6. METAL BUILDING MANUFACTURER IS TO PROVIDE DESIGN CALCULATIONS FOR REVIEW. CALCULATIONS ARE TO BE PREPARED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS AND IS TO BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND TO VERIFY THAT WORK IS IN GENERAL CONFORMANCE.

7. BUILDING DEFLECTION CRITERIA:

• RIGID FRAMES AND COLUMNS (DRIFT)	H/400 LATERAL
• WALL GIRTS AND EAVE STRUTS	L/360 LATERAL
• ROOF/WALL PANELS	L/60 (VERTICAL/LATERAL)
• RIGID FRAMES AND ROOF PURLINS WITH:	
DROP-IN CEILING OR NO CEILING	L/240 VERTICAL
PLASTER OR GYPSUM BOARD CEILING	L/240 VERTICAL
MEMBERS SUPPORTING BRICK	L/600 LATERAL

(WHERE "L" IS DEFINED AS A MEMBER'S LENGTH BETWEEN SUPPORTS AND "H" IS DEFINED AS A MEMBER'S HEIGHT MEASURED FROM BASE TO TOP OF MEMBER)

8. ALL DEFLECTION AND SIDESWAY LIMITS SHOWN ARE AT SERVICE LOADS UNLESS NOTED OTHERWISE.

9. LATERAL STABILITY OF THE PRE-ENGINEERED BUILDING SHALL BE PROVIDED IN THE STRUCTURAL FRAMING. WALLS AND OTHER BUILDING COMPONENTS SHALL NOT BE USED TO RESIST LATERAL LOADS UNLESS NOTED OTHERWISE IN THE CONSTRUCTION DOCUMENTS.

10. BASES OF COLUMNS SHALL BE DESIGNED AS PINNED CONNECTIONS.

11. REFER TO SPECIFICATIONS FOR OTHER REQUIREMENTS.

COLD FORMED METAL FRAMING

1. METAL FRAMING IS TO CONFORM TO ASTM A653. MINIMUM YIELD STRENGTH IS TO BE 50,000 PSI, WITH 1 5/8" MINIMUM FLANGE WIDTH.

2. MEMBERS ARE TO BE FABRICATED IN ACCORDANCE WITH AISI SPECIFICATIONS FOR THE DESIGN OF COLD-FORM STEEL STRUCTURAL MEMBERS, LATEST EDITION. MEMBERS ARE TO BE GALVANIZED.

3. CONNECTIONS ARE TO BE SCREWED OR WELDED, WITH A MINIMUM OF 2 - #12 TEK SCREWS OR 3/16 FILLET WELD AND USED AT EACH CONNECTION AS MINIMUM.

4. METAL FRAMING MEMBERS ARE TO BE CLOSED OFF AT BOTH ENDS WITH CONTINUOUS METAL TRACK OF EQUIVALENT GAGE OR GREATER THICKNESS THAN METAL GAGE MEMBERS.

5. METAL FRAMING SUPPLIER IS TO PROVIDE DESIGN CALCULATIONS FOR REVIEW. CALCULATIONS ARE TO BE PREPARED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS AND ARE TO BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND TO VERIFY THAT WORK IS IN GENERAL CONFORMANCE. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.

POST-INSTALLED ANCHORS

1. POST INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.

2. INSTALLER TRAINING: CONDUCT A THOROUGH TRAINING WITH THE MANUFACTURER OR THE MANUFACTURER'S REPRESENTATIVE FOR THE PROJECT WHICH POST-INSTALLED COMPONENTS ARE SPECIFIED/APPROVED. TRAINING IS TO CONSIST OF A REVIEW OF THE COMPLETE INSTALLATION PROCESS FOR DRILLED-IN-ANCHORS. COPIES OF TRAINING CERTIFICATES MUST BE SUBMITTED TO THE ENGINEER OF RECORD.

3. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER OF RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.

4. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR.

5. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. CONTACT MANUFACTURER'S REPRESENTATIVE FOR THE INITIAL TRAINING AND INSTALLATION OF ANCHORS AND FOR PRODUCT RELATED QUESTIONS AND AVAILABILITY.

6. PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL MECHANICAL AND ADHESIVE ANCHORS PER THE APPLICABLE BUILDING CODE.

7. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD.

8. CONCRETE ANCHORS:
   A. **MECHANICAL ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "TITEN-HD" & "TITEN-HD ROD HANGER"..... ICC-ES ESR-2713
      b. SIMPSON STRONG-TIE "STRONG-BOLT 2"..... ICC-ES ESR-3037
      c. SIMPSON STRONG-TIE "TORQ-CUT"..... ICC-ES ESR-2705
      d. DEWALT "POWER-STUD+ SD2"..... ICC-ES ESR-2502
      e. DEWALT "POWER-STUD+ SD1"..... ICC-ES ESR-2818
      f. DEWALT "POWER BOLT +"..... ICC-ES ESR-3260
      g. DEWALT "SCREW BOLT+"..... ICC-ES ESR-3889
      h. DEWALT "HANGER-MATE+"..... ICC-ES ESR-3889
      i. DEWALT "ATOMIC+ UNDERCUT"..... ICC-ES ESR-3067
      j. DEWALT "SNAKE+"..... ICC-ES ESR-2272
      k. HILTI "HDA"..... ICC-ES ESR-1546
      l. HILTI "HSL-3"..... ICC-ES ESR-1545
      m. HILTI "KWIK BOLT TZ"..... ICC-ES ESR-1917
      n. HILTI "KB-VTZ"..... ICC-ES ESR-3904
      o. HILTI "KWIK BOLT 3"..... ICC-ES ESR-2302
      p. HILTI "KWIK HUS-EZ & KH-EZ-1"..... ICC-ES ESR-3027
      q. RED HEAD "TRUBOLT"..... ICC-ES ESR-2251
   B. **ADHESIVE ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "SET-XP"..... ICC-ES ESR 2508
      b. DEWALT "PE1000+"..... ICC-ES ESR-2583
      c. DEWALT "AC100+ GOLD"..... ICC-ES ESR-2582
      d. DEWALT "AC200+"..... ICC-ES ESR-4027
      e. DEWALT "PURE 110+"..... ICC-ES ESR-3298
      f. HILTI "HIT-HY 200 SAFESET"..... ICC-ES ESR-3187
      g. HILTI "HIT RE 500 V3 SAFESET"..... ICC-ES ESR-3187
      h. HILTI "HIT HY 100 SAFESET"..... ICC-ES ESR-3574
      i. HILTI "HIT RE 100 SAFESET"..... ICC-ES ESR-3829
      j. RED HEAD "EPCON G5"..... ICC ES ESR-1137
   C. **POWDER ACTUATED FASTENERS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC70. PRE-APPROVED POWDER ACTUATED FASTENERS INCLUDE:
      a. SIMPSON STRONG-TIE "POWER-DRIVEN FASTENERS"..... ICC-ES ESR-2138
      b. DEWALT "POWER DRIVEN FASTENERS"..... ICC-ES ESR-2024
      c. DEWALT "TRAK-IT C5 FASTENERS"..... ICC-ES ESR-3275
      d. HILTI LOW-VELOCITY "X-U IS UNIVERSAL POWDER DRIVEN FASTENERS"..... ICC-ES ESR-2269
      e. HILTI LOW-VELOCITY "POWDER DRIVEN FASTENER"..... ICC-ES ESR-1689
      f. HILTI LOW-VELOCITY "POWDER DRIVEN FASTENER"..... ICC-ES ESR-1752

9. MASONRY ANCHORS-(SOLID GROUTED CONCRETE MASONRY):
   A. **MECHANICAL ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "TITEN-HD"..... ICC-ES ESR-1056
      b. SIMPSON STRONG-TIE "STRONG-BOLT 2"..... IAPMO-ES ER-0240
      c. SIMPSON STRONG-TIE "WEDGE-ALL"..... ICC-ES ESR-1396
      d. POWERS "POWER-STUD+ SD1"..... ICC-ES ESR-2966
      e. POWERS "SCREW BOLT+"..... ICC-ES ESR-4042
      f. HILTI "KWIK BOLT 3"..... ICC-ES ESR-1385
      g. HILTI "KWIK HUS-EZ (KH-EZ) CARBON STEEL SCREW ANCHOR"..... ICC-ES ESR-3056
   B. **ADHESIVE ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "SET"..... ICC-ES ESR-1772
      b. HILTI "HIT-HY 270"..... ICC-ES ESR-4143
      c. DEWALT "AC100+GOLD"..... ICC-ES ESR-3200

10. MASONRY ANCHORS-(HOLLOW CONCRETE MASONRY/UNREINFORCED CLAY BRICK MASONRY):
    A. **MECHANICAL ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC106. PRE-APPROVED SCREW ANCHORS INCLUDE:
       a. SIMPSON STRONG-TIE "TITEN-HD"..... ICC-ES ESR-1056
    B. **ADHESIVE ANCHORS** SHALL HAVE BEEN TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC58 OR AC60. THE APPROPRIATE SCREEN TUBE SHALL BE USED AS RECOMMENDED BY THE ADHESIVE MANUFACTURER. PRE-APPROVED ADHESIVE ANCHORS WITH SCREEN TUBES INCLUDE:
       a. SIMPSON STRONG-TIE "SET"..... ICC-ES ESR-1772
       b. DEWALT "AC100+GOLD"..... ICC-ES ESR-4105
       c. HILTI "HIT-HY 270"..... ICC-ES ESR-4144

STRUCTURAL TESTING AND INSPECTIONS

1. EARTHWORK:
   UNLESS NOTED OTHERWISE BY THE OWNER OR ARCHITECT, THE GENERAL CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER OR OTHER AUTHORIZED INSPECTOR DURING EARTHWORK OPERATIONS, AND KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT ON SITE DURING OPERATIONS. SERVICES PROVIDED SHALL INCLUDE:
   A. OBSERVE STRIPPING OPERATIONS AND EVALUATE THE REQUIRED STRIPPING DEPTH DURING THESE OPERATIONS.
   B. OBSERVE PROOFROLLING OPERATIONS AFTER SITE STRIPPING AND DETERMINE IF ANY SOFT SPOTS NEED TO BE UNDERCUT TO FIRM SOILS, REPLACED WITH SELECT FILL AND RECOMPACTED.
   C. VERIFY THAT THE SUBGRADE IS SCARIFIED, MOISTURE CONDITIONED, AND LIME STABILIZED (IF REQUIRED) PER THE EARTHWORK NOTES.
   D. THE SELECT FILL PAD MATERIAL SHALL BE TESTED FOR ACCEPTABILITY AND A MOISTURE DENSITY CURVE SHALL BE ESTABLISHED. SELECT FILL MATERIAL SHALL BE AS INDICATED ON THE EARTHWORK NOTES.
   E. VERIFY THAT THE SELECT FILL IS PLACED IN EIGHT INCH LOOSE LIFTS AND COMPACTED PER THE EARTHWORK NOTES.
   F. SELECT FILL MATERIAL SHALL BE TESTED DURING PLACEMENT OF EACH LIFT FOR THE ATTERBERG LIMITS IN ACCORDANCE WITH ASTM D4318-98 METHOD B "STANDARD TEST METHOD FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS" TO VERIFY THAT THE SELECT FILL MATERIAL IS IN ACCORDANCE WITH THE ORIGINALLY APPROVED SELECT FILL MATERIAL. PROVIDE TESTS PER THE EARTHWORK NOTES.
   G. PROVIDE FIELD MOISTURE TESTS FOR THE FULL DEPTH OF THE PAD PER THE EARTHWORK NOTES.
   H. OBSERVE THE EXCAVATION DAILY AND ENSURE THAT THE CONTRACTOR MAINTAINS A CLEAN EXCAVATION THAT IS FREE OF WATER 100% OF THE TIME. CONTRACTOR SHALL PROVIDE PUMPS AS REQUIRED TO REMOVE WATER AT ALL TIMES.
   I. OBSERVE GRADING OPERATIONS TO ENSURE THAT PROPER DRAINAGE AWAY FROM THE BUILDING PAD IS PROVIDED.

2. DRILLED PIERS:
   UNLESS NOTED OTHERWISE BY THE OWNER OR ARCHITECT, THE GENERAL CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER OR OTHER AUTHORIZED INSPECTOR DURING EARTHWORK OPERATIONS, AND KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT ON SITE DURING OPERATIONS. SERVICES PROVIDED SHALL INCLUDE:
   A. OBSERVING THE BOTTOM OF SHAFT FOR CLEANLINESS.
   B. PROPER BEARING MATERIAL SHALL BE VERIFIED BEFORE CONCRETE POURING OCCURS. THE BOTTOM ELEVATION OF PIERS IS SHOWN ON THE DRAWINGS. THE ACTUAL BEARING ELEVATION MAY VARY AS REQUIRED TO PROVIDE PROPER CAPACITY AS DETERMINED BY THE GEOTECHNICAL ENGINEER OF RECORD.
   C. CHECKING SHAFT FOR CONFORMANCE TO REQUIRED TOLERANCES. FOOTINGS SHALL BE WITHIN 3" OF THEIR REQUIRED LOCATIONS AND SHAFTS SHALL NOT BE OUT OF PLUMB BY MORE THAN 2 PERCENT OF THE SHAFT LENGTH.
   D. CHECK FOR CAVING OF THE SHAFT.
   E. NOTING DEPTH AND DIAMETER OF ALL FOOTINGS.
   F. VERIFY QUANTITY, SIZE AND LOCATION OF REINFORCEMENT.
   G. ENSURE THAT ALL SPOILS FROM THE DRILLED PIER EXCAVATIONS ARE REMOVED FROM THE BUILDING PAD AND THAT THE PAD IS MOISTURE CONDITIONED AND RECOMPACTED AS SPECIFIED.

3. CONCRETE:
   A. CONCRETE MIX DESIGNS SHALL BE SUBMITTED FOR ENGINEER AND OWNER'S TESTING LABORATORY REVIEW AND APPROVAL A MINIMUM OF 7 DAYS PRIOR TO THE START OF THE WORK, PRIOR TO THE PLACEMENT OF CONCRETE. MIX DESIGNS MUST INDICATE CONFORMANCE WITH ACI 318 (LATEST EDITION).
   B. AT THE POINT OF DISCHARGE SLUMP TESTS, CONFORMING TO ASTM C143, SHALL BE TAKEN. SEE CONCRETE NOTE NO. 3E BELOW FOR RATE OF TESTS.
   C. AIR CONTENT TESTS CONFORMING TO ASTM C173 (VOLUMETRIC METHOD FOR LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE; ASTM C231 PRESSURE METHOD FOR NORMAL WEIGHT CONCRETE) SHALL BE TAKEN FOR EACH DAY'S POUR FOR ALL TYPES OF AIR-ENTRAINED CONCRETE BEING USED.
   D. CONCRETE TEMPERATURE SHALL BE TESTED HOURLY WHEN THE AIR TEMPERATURE IS 40 DEG F AND BELOW, 80 DEG F AND ABOVE AND EACH TIME A SET OF COMPRESSION TEST SPECIMENS ARE MADE.
   E. ONE SET OF FOUR COMPRESSION TEST SPECIMENS CONFORMING TO ASTM C31 SHALL BE MOLDED AND STORED FOR LABORATORY-CURED SPECIMENS. COMPRESSIVE STRENGTH TESTS SHALL CONFORM TO ASTM C39 AND SHALL CONSIST OF ONE SET FOR EACH DAY'S POUR EXCEEDING 5 CU. YDS. PLUS ADDITIONAL SETS FOR EACH 50 CU. YDS. MORE THAN THE FIRST 25 CU. YDS OF EACH CONCRETE CLASS PLACED IN ANY ONE DAY. ONE SPECIMEN SHALL BE TESTED AT 7 DAYS, TWO SPECIMENS SHALL BE TESTED AT 28 DAYS, AND ONE SPECIMEN SHALL BE RETAINED FOR LATER TESTING AS REQUIRED.
   F. VERIFY THAT POST INSTALLED ANCHORS ARE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

4. STRUCTURAL STEEL:
   A. WELDERS SHALL BE AISC CERTIFIED FOR THE WELD TYPES ON THE PROJECT. CONDUCT INSPECTIONS AND,TESTS AS REQUIRED. DEFECTS, INCLUDING LOCATIONS, SHALL BE RECORDED ALONG WITH THE WORK REQUIRED TO CORRECT THE DEFECTS.
   B. 100% OF ALL FILLET WELDS SHALL BE VISUALLY INSPECTED.
   C. 100% OF ALL FULL PENETRATION WELDS SHALL BE VISUALLY INSPECTED. 30% OF ALL FULL PENETRATION WELDS SHALL BE TESTED BY ONE OF THE FOLLOWING METHODS: LIQUID PENETRANT INSPECTION (ASTM E165) MAGNETIC PARTICLE INSPECTION (ASTM E709; PERFORMED ON THE ROOT PASS AND ON THE FINISHED WELD; CRACKS AND ZONES OF INCOMPLETE FUSION OR PENETRATION IS NOT ACCEPTABLE) RADIOGRAPHIC INSPECTION (ASTM E94 AND ASTM E142; MINIMUM QUALITY LEVEL OF "2-2T") ULTRASONIC INSPECTION (ASTM E164) IF THE FAILURE RATE IS 20% OR GREATER, 100% OF THE WELDS SHALL BE TESTED AT THE CONTRACTOR'S EXPENSE UNTIL FAILURE RATE FALLS BELOW 20%.
   D. ANY WELDS THAT FAIL MUST BE REWELDED AND RETESTED UNTIL THEY PASS THE TEST. TWO ADDITIONAL WELDS SHALL BE TESTED, AT THE CONTRACTOR'S EXPENSE, FOR EVERY WELD THAT FAILS.
   E. VISUALLY INSPECT WELDS ON 100% OF ALL STUDS AND TEST 10% BY THE METHOD DESCRIBED BELOW IN COMPLIANCE WITH AWS D1.1: HEADED STUDS SHALL BE TESTED BY ALTERNATELY BENDING 30 DEG. IN OPPOSITE DIRECTIONS FROM ITS ORIGINAL AXIS BY EITHER STRIKING THE STUDS WITH A HAMMER ON THE UNWELDED END OR PLACING A PIPE OR OTHER SUITABLE HOLLOW DEVICE OVER THE STUD AND BENDING THE STUD. IF THE FAILURE RATE IS 10% OR GREATER, TEST 100% OF ALL STUDS AT CONTRACTOR'S EXPENSE UNTIL THE FAILURE RATE FALLS BELOW 10%. IF A VISUAL INSPECTION REVEALS ANY STUD THAT DOES NOT SHOW A FULL 360 DEGREE FLASH (AS DEFINED IN AWS D1.1) OR THAT HAS BEEN REPAIRED BY WELDING, SUCH STUD SHALL BE BENT TO AN ANGLE OF APPROXIMATELY 15 DEGREE FROM ITS ORIGINAL AXIS. THE DIRECTION OF BENDING FOR STUDS WITH LESS THAN 360 DEGREE FLASH SHALL BE OPPOSITE TO THE MISSING PORTION OF FLASH.
   F. ALL FULL PENETRATION WELDS AT MOMENT CONNECTIONS REQUIRING TESTING SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY USING NON-DESTRUCTIVE TESTING METHODS, AS DESCRIBED IN AWS D1.1. FOR SHOP WELDS, CERTIFICATION SHALL BE SUBMITTED PRIOR TO SHIPPING TO THE JOB SITE. FOR FIELD WELDS, CERTIFICATION SHALL BE SUBMITTED PRIOR FLOOR DECK INSTALLATION AND CONCRETE PLACEMENT AND PRIOR TO COVERING CONNECTIONS WITH FIREPROOFING OR ARCHITECTURAL FINISHES.
   G. BOLTS SHALL BE VISUALLY INSPECTED WHEN TWIST-OFF SPLINES ARE USED. OTHERWISE, BOLTS SHALL BE SNUG TIGHT. THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. AT BRACES AND MOMENT CONNECTIONS, BOLTS SHALL BE TIGHTENED AS REQUIRED BY THE LOAD INDICATING WASHERS OR TENSION BOLTS.

5. MASONRY:
   MASONRY TESTING SHALL CONSIST OF A QUALIFIED TESTING LABORATORY PROVIDING THE FOLLOWING SERVICES:
   A. OBSERVE THE INSTALLTION OF MASONRY UNITS.
   B. VERIFY THE QUANTITY, SIZE AND THE SPACING OF THE REQUIRED REINFORCING THAT IS SHOWN ON THE DRAWINGS.
   C. INSPECT THE GROUT SPACE PRIOR TO THE CLOSING OF CLEANOUTS AND ALL GROUTING OPERATIONS. VERIFY THAT THE SPECIFIED CELLS ARE FULLY GROUTED AS NOTED.
   D. MONITOR THE PROPORTIONING, MIXING AND CONSISTENCY OF MORTAR AND GROUT. PROVIDE 28 DAY COMPRESSIVE STRENGTH TESTS ON EACH GROUT MIX IN ACCORDANCE WITH ASTM C1019. PROVIDE COMPRESSION TESTS ON MASONRY PRISMS FOR EACH TYPE OF WALL CONSTRUCTION, IN ACCORDANCE WITH ASTM C1314. CONTRACTOR SHALL PREPARE ONE SET FOR TESTING AT 28 DAYS. TESTS ARE TO BE CONDUCTED FOR EACH 2000 SQUARE FEET OF WALL INSTALLED, BUT NOT LESS THAN TWO TESTS.

6. SPECIAL INSPECTIONS:
   SPECIAL INSPECTION WORK AND THE FINAL LETTER OF COMPLIANCE HAVE NOT BEEN INCLUDED IN THE STRUCTURAL ENGINEER'S SCOPE OF SERVICES. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING THE SERVICES OF THE SPECIAL INSPECTOR AND THE TESTING LABORATORY. SPECIAL INSPECTIONS CAN BE PROVIDED BY AN INDEPENDENT SPECIAL INSPECTOR WHO IS APPROVED BY THE BUILDING AUTHORITY OR THE ENGINEER OF RECORD. THE SPECIAL INSPECTION WORK DOES NOT INCLUDE THE TESTING LABORATORY SERVICES AS CALLED FOR ON THE DRAWINGS. ARRANGEMENTS FOR SPECIAL INSPECTIONS SHOULD BE MADE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE OWNER IF SPECIAL INSPECTIONS ARE REQUIRED ON THE APPROVED PERMIT DRAWINGS AND FOR NOTIFYING THE TESTING LABORATORY AND SPECIAL INSPECTOR IN A TIMELY MANNER BEFORE CONSTRUCTION OPERATIONS CONTINUE. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK REQUIRING INSPECTIONS WITHOUT THE TESTING LABORATORY'S OR SPECIAL INSPECTOR'S PRESENCE. PROCEEDING WITHOUT WRITTEN CONFIRMATION OF A PASSED INSPECTION BY THE AHJ AND/OR SPECIAL INSPECTOR MAY RESULT IN REWORK INCLUDING, BUT NOT LIMITED TO, REMOVAL AND REPLACEMENT OF NON-CONFORMING MATERIAL AT THE EXPENSE OF THE CONTRACTOR. THE STRUCTURAL ENGINEER WILL NOT PROVIDE A FINAL LETTER OF COMPLIANCE AFTER THE WORK IS COMPLETE UNLESS HE HAS REVIEWED ALL SPECIAL INSPECTIONS/TESTING LABORATORY TEST RESULTS.

CHAPTER 17 OF THE 2012 INTERNATIONAL BUILDING CODE, INCLUDING ANY LOCAL AMENDMENTS, REQUIRES SPECIAL INSPECTION ON THE FOLLOWING ITEMS:

- STEEL..... SECTION 1705.2 / TABLE 1705.2.2
- CONCRETE..... SECTION 1705.3 / TABLE 1705.3
- MASONRY..... SECTION 1705.4 / ASCE 5-11
- WOOD..... SECTION 1705.5
- SOILS..... SECTION 1705.6 / TABLE 1705.6
- PIER FOUNDATIONS..... SECTION 1705.8 / TABLE 1705.8
- WIND RESISTANCE..... SECTION 1705.10
- SEISMIC RESISTANCE..... SECTION 1705.11
- SPRAYED FIRE RESISTANT MATERIALS..... SECTION 1705.13
- INTUMESCENT FIRE RESISTANT MATERIALS... SECTION 1705.14

SUBMITTALS

1. THE GENERAL CONTRACTOR SHALL SUBMIT FOR ENGINEER REVIEW SHOP DRAWINGS FOR THE FOLLOWING ITEMS:

   CONCRETE MIX DESIGNS AND ACCESSORIES
   REINFORCING STEEL
   SLAB CONTRACTION JOINT LAYOUT
   PRE-ENGINEERED METAL BUILDING (*,#)

   ITEMS MARKED (*) SHALL HAVE SHOP DRAWINGS SEALED BY A REGISTERED ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED. ITEMS MARKED (#) SHALL BE SUBMITTED TO ENGINEER FOR OWNER'S RECORD ONLY AND WILL NOT HAVE ENGINEER'S SHOP DRAWING STAMP. ITEMS MARKED (^) SHALL HAVE SEALED STRUCTURAL CALCULATIONS SUBMITTED TO ENGINEER FOR OWNER'S RECORD. SEE DIFFERED SUBMITTALS FOR MORE INFO.

2. ALL SHOP DRAWINGS MUST BE REVIEWED AND SEALED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL.

3. CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES (E.G. PDFS) OF ALL SHOP DRAWINGS SPECIFIED TO BE RETURNED BY THE ENGINEER.

4. THE OMISSION FROM THE SHOP DRAWINGS OF ANY MATERIAL REQUIRED BY THE CONTRACT DOCUMENTS TO BE FURNISHED SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING AND INSTALLING SUCH MATERIALS, REGARDLESS OF WHETHER THE SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED.

5. SUBMIT TWO COPIES OF MANUFACTURER'S LITERATURE FOR ALL MATERIALS AND PRODUCTS USED IN CONSTRUCTION ON THE PROJECT.

6. THE USE OF REPRODUCTIONS OF THESE CONTRACT DOCUMENTS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREIN AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HEREIN.

DIFFERED SUBMITTALS

DIFFERED SUBMITTALS REQUIRED DRAWINGS TO BE SIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. REFERE TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. PRE-ENGINEERED METAL BUILDING
2. PRE-ENGINEERED EQUIPMENT ACCESS STRUCTURES

EQUIPMENT ACCESS STRUCTURES

1. CONTRACTOR TO PROVIDE DESIGN AND CONSTRUCT PREASSEMBLED STEEL STAIRS, INCLUDING GUARDRAILS, HANDRAILS, AND PLATFORMS.
2. PLATFORMS TO BE DESIGNED FOR A LIVE LOAD OF 100 PSF.
3. HANDRAILS TO BE DESIGNED FOR A LOADING IN GENERAL NOTES.
4. CONFORM TO OSHA RAILING GUIDELINES.

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TBPE Firm Registration No. F-13678

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
BRITNEY R. WEIDERT
122968
LICENSED
PROFESSIONAL ENGINEER
12/12/24

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING GENERAL NOTES - II

2S-002

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/4" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 59 OF 255	

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80341
TEXAS

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STRUCTURAL ABBREVIATIONS

&	AND
@	AT
AB	ANCHOR BOLT
ADDTL	ADDITIONAL
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
ALT	ALTERNATE
ARCH, ARCH'L	ARCHITECT, ARCHITECTURAL
BFF	BELOW FINISH FLOOR
BL	BRICKLEDGE
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOB	BOTTOM OF BEAM
BOD	BOTTOM OF DECK
BOS	BOTTOM OF STEEL
BOTT	BOTTOM
BRG	BEARING
BTWN	BETWEEN
CB	CASTELLATED BEAM
CFMF	COLD-FORMED METAL FRAMING
CJ	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLR	CLEAR
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
COND	CONDITION
CONNX	CONNECTION
CONT	CONTINUOUS
COORD	COORDINATE
CTR	CENTERED
CWI	CERTIFIED WELDING INSPECTOR
D, DIA	DIAMETER
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DEF	DEFORMED, DEFINITION
DEFL	DEFLECTION
DET, DTL	DETAIL
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DTL	DETAIL
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
ELEV	ELEVATOR
EOD	EDGE OF DECK
EOF	EDGE OF FOUNDATION
EOS	EDGE OF SLAB
EQ	EQUAL
EQ SPA	EQUAL SPACE
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FD	FLOOR DRAIN
FF EL	FINISH FLOOR ELEVATION
FND	FOUNDATION
FOA	FACE OF ANGLE
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FT	FEET
FTG	FOOTING
FV	FIELD VERIFY
Fy	YIELD STRESS
GA	GAGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GLULAM	GLUED-LAMINATED BEAM
H, HORIZ	HORIZONTAL
HC	HOLLOW CORE
HI	HIGH
HK	HOOK

STRUCTURAL ABBREVIATIONS

HORIZ	HORIZONTAL
HSS	HOLLOW STRUCTURAL SECTION
INFO	INFORMATION
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIP(S)
KB	KNEE BRACE
L	ANGLE, ANGLE SHAPE
LB	POUND, CELLULAR BEAM
LF	LINEAR FOOT
LG	LENGTH
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOW
LT WT	LIGHTWEIGHT
MAX	MAXIMUM
MC	MOMENT CONNECTION
MCJ	MASONRY CONTROL JOINT
MECH'L	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MEZZ	MEZZANINE
MFR	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTL	METAL
N	NORTH
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT CONCRETE
OC	ON CENTER
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
PC	PRECAST
PL	PLATE
PLYWD	PLYWOOD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
REF	REFER, REFERENCE
REINF	REINFORCED, REINFORCEMENT
REM	REMAINDER
REQD	REQUIRED
REQMTS	REQUIREMENTS
SC	SLIP CRITICAL
SCHED	SCHEDULE(D)
SCJ	SAWN CONTROL JOINT
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPA	SPACES
SPEC	SPECIFICATION(S)
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRUCT	STRUCTURE, STRUCTURAL
T&B	TOP AND BOTTOM
TEMP	TEMPERATURE, TEMPORARY
TL	TOTAL LOAD
TOB	TOP OF BLOCKING
TOC	TOP OF CURB, TOP OF CONCRETE
TOGB	TOP OF GRADE BEAM
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOSC	TOP OF STRUCTURAL CONCRETE
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V, VERT	VERTICAL
VER	VERIFY
W/	WITH
WB	WIND BRACE
WBBP	WIND BRACE BASEPLATE
WD	WOOD
WP	WORKING POINT
WT	WEIGHT
WWF	WELDED-WIRE FABRIC

STRUCTURAL PLAN SYMBOLS AND LEGEND

WALL OR FOOTING TYPE: WT10 | WF24

LATERAL BRACE:

KNEE BRACE: SEE PLAN FOR SIZE — DENOTES BOTT OF KNEE BRACE

SLAB DEPRESSION OVER 8":

SLAB DEPRESSION UNDER 8":

SLOPE UP:

SLOPE DOWN:

SLAB RECESS & SLOPE:

RIDGE:

VALLEY:

FOOTING TAG: F5.0 -2.0

MOMENT CONNECTION:

BEAM SPLICE:

SLOPE MARK: SLOPE

GRID BUBBLE: NEW A / EXISTING A

REVISION NUMBER: 1

SECTION MARK: A1 / S501

ELEVATION: A1 / S501

ELEVATION MARK:
SURFACE REFERENCED → TOS EL
ELEV OF SURFACE → VARIES, SEE PLAN

DECK SYMBOL:
DIRECTION OF DECK SPAN

SLAB LEGEND:
S1
SLAB MARK
DENOTES DIRECTION OF SCHEDULED MAIN REINFORCEMENT
DENOTES EXTENT OF SLAB

CMU LINTEL: WL1

670
INDICATES APPROXIMATE EXISTING GRADE BASED ON SURVEY BY CIVIL ENGINEER. CONTRACTOR TO FIELD VERIFY ACTUAL CONDITIONS PRIOR TO BEGINNING PIER CONSTRUCTION.

WF COLUMN LEGEND:
COLUMN SIZE — W10X49 — BP-1 — BASE PLATE TYPE

HOLLOW STRUCTURAL STEEL LEGEND:
HSS SIZE — HSS4X4X3/16 — BP-1 — BASE PLATE TYPE

OPEN- WEB STEEL JOIST KEY:
18KSPI
LOADING CONDITION, SEE GENERAL NOTES
JOIST SERIES
NOMINAL JOIST DEPTH

STEEL BEAM LEGEND:
HORIZONTAL REACTION AT END OF BEAM, (FACTORED)
A = ±20K — W16X26 (10) C=3/4" — R=30K
BEAM SIZE
HEADED STUD COUNT
CAMBER AT MIDSPAN
FACTORED VERTICAL REACTION AT BEAM END

PIER LEGEND:
PIER — SHAFT SIZE (INCHES)
DEPTH — PENETRATION INTO BEARING STRATA (FT)
DENOTES SHAFT DIAMETER (IN)
DENOTES BELL DIAMETER (IN)

PILE CAP LEGEND:
MARK — PILE CAP TYPE
DEPTH — TOP OF PILE CAP ELEV

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STATE OF TEXAS — BRITNEY R. WEIDERT — 117268 — LICENSED PROFESSIONAL ENGINEER — 12/12/24

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING GENERAL NOTES, ABBR AND SYMBOLS 2S-003

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1" = 1'-0"
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	60 OF 255

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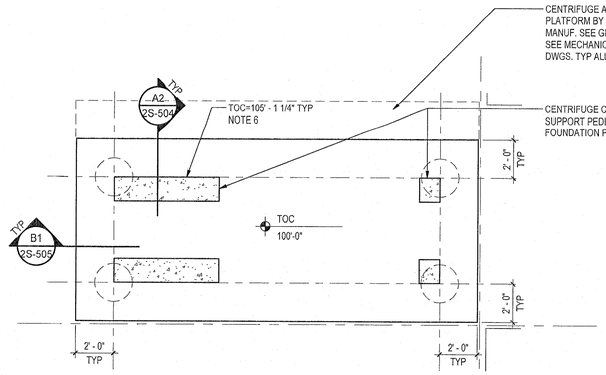
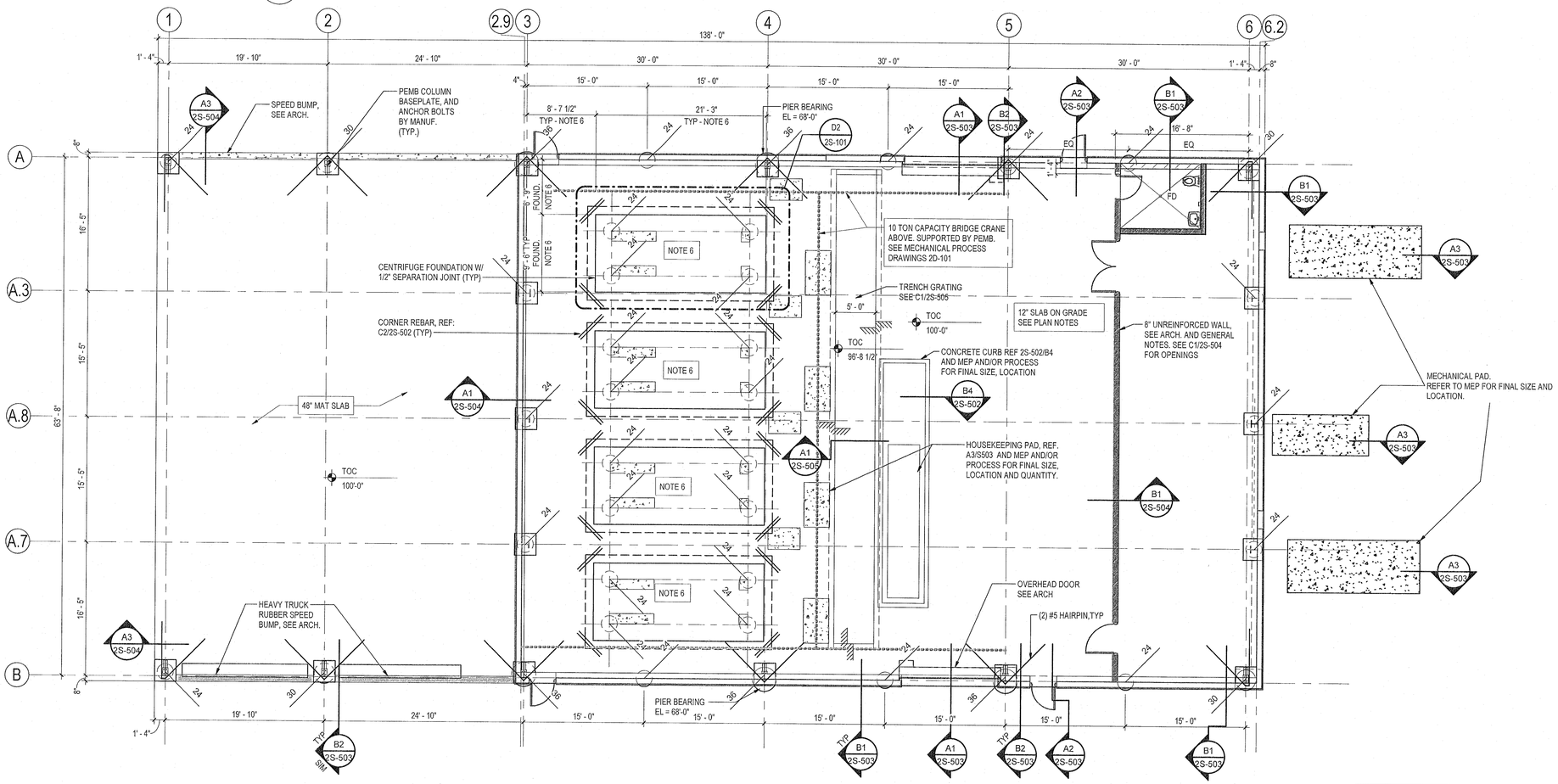


D2 / 2S-101 ENLARGED CENTRIFUGE FOUNDATION

1/4" = 1'-0"



A1 / 2S-101 FOUNDATION FRAMING PLAN

1/8" = 1'-0"

SLAB-ON-GRADE PLAN NOTES

1. TOP OF CONCRETE ELEVATION 100' - 0" EQUALS TRUE FINISH FLOOR ELEVATION OF 83.50 FT, UNO. SEE PLAN FOR TOP OF CONCRETE ELEVATION.
2. UNLESS OTHERWISE NOTED, SLAB-ON-GRADE SHALL BE TWELVE (12) INCHES THICK W/ #5 BARS AT 12" OC TOP & BOTT EACH WAY. CHAIR REBAR AT ONE THIRD THE DEPTH BELOW THE TOP OF SLAB, BUT NOT LESS THAN REQUIRED CLEAR COVER.
3. REFER TO B2/2S-502 FOR SLAB CONTROL JOINT REQUIREMENTS.
4. ALL DEPRESSIONS THAT ARE DIMENSIONED ON PLAN ARE FOR REFERENCE ONLY. DEPTH OF DEPRESSIONS ARE REFERENCED FROM FINISH FLOOR ELEVATION. VERIFY EXACT LOCATION OF ALL DEPRESSIONS WITH ARCHITECTURAL PLANS PRIOR TO CONSTRUCTION.
5. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF RAMPS, STAIRS, AND OTHER EDGE OF SLAB CONDITIONS NOT SHOWN IN STRUCTURAL DOCUMENTS.
6. SEE ARCHITECTURAL PLANS FOR LOCATION OF NON-STRUCTURAL MASONRY WALLS AND MASONRY OPENINGS. ALL MASONRY WALLS THAT ARE HATCHED ARE LOAD BEARING STRUCTURAL WALLS. STRUCTURAL MASONRY DETAILS APPLY TO STRUCTURAL MASONRY WALLS ONLY. WIDTH DIMENSIONS OF CMU STRUCTURAL WALLS INDICATED ARE NOMINAL.
7. SEE 2S-001THRU 2S-003 FOR GENERAL NOTES.
8. SEE 2S-502 THRU 2S-504 FOR TYPICAL CONCRETE DETAILS.
9. ▒▒▒ DENOTES ARCH'L MASONRY WALL, REFER TO ARCH'L FOR LAYOUT, SEE B1/2S-504.

FOUNDATION PLAN NOTES

1. CENTER DRILLED PIER BELOW GRADE BEAM, PLINTH OR STEEL COLUMN UNLESS NOTED OTHERWISE.
2. CENTER GRADE BEAMS AND THICKENED SLABS BELOW WALLS WHERE SHOWN UNLESS NOTED OTHERWISE.
3. SLEEVES OR OTHER PENETRATIONS SHALL BE ALLOWED THRU STRUCTURAL MEMBERS ONLY WITH PRIOR APPROVAL OF ARCHITECT/ENGINEER. REQUESTS FOR APPROVAL SHALL BE SUBMITTED IN WRITING A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE CONCRETE POUR.
4. SEE 2S-001 THRU 2S-003 FOR GENERAL NOTES
5. SEE 2S-502 THRU 2S-504 FOR TYPICAL CONCRETE DETAILS.
6. CENTRIFUGE FOUNDATION 48" THICK PILE CAP W/ #8 @ 9" O.C. EW TOP OF BOTTOM. VERIFY REQUIRED DIMENSIONS, LOADING, AND LAYOUT WITH PURCHASED CENTRIFUGE PRIOR TO CONSTRUCTION.

PEMB BUILDING NOTES:

1. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.
2. EQUIPMENT, DUCTS, PIPING, AND ANY OTHER ITEMS TO BE SUPPORTED BY THE PEMB STRUCTURE AND ROOF TO BE SHOWN BY ARCH/ MECHANICAL/PROCESS.
3. CRANE TO BE SUPPORTED BY PEMB. SEE ARCH. LOADING AND ANY REQUIRED ADDITIONAL SUPPORTS TO BE COORDINATED PRIOR TO FABRICATION AND CONSTRUCTION.

NO.	DATE	REVISION	APP.

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STATE OF TEXAS — BRITNEY R. WEIDERT — 117095 — LICENSED PROFESSIONAL ENGINEER — 12/12/24

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING FOUNDATION FRAMING PLAN 2S-101

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
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SHEET NO. 61 OF 255	

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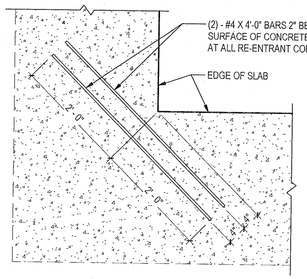
TENSION DEVELOPMENT AND LAP SPLICE LENGTHS (INCHES)

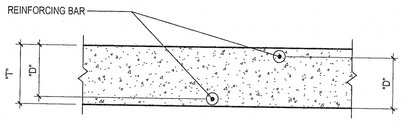
CONCRETE STRENGTH (PSI)	SPLICE CLASS	BAR SIZE								
		#3	#4	#5	#6	#7	#8	#9	#10	#11
3000	CLASS A (1.0 Ld)	17	22	28	33	48	55	62	70	78
	CLASS B (1.3 Ld)	22	29	36	43	63	72	81	91	101
4000	CLASS A (1.0 Ld)	15	19	24	29	42	48	54	61	67
	CLASS B (1.3 Ld)	19	25	31	37	54	62	70	79	87
5000	CLASS A (1.0 Ld)	13	17	22	26	38	43	48	54	60
	CLASS B (1.3 Ld)	17	23	28	34	49	56	63	71	78
6000	CLASS A (1.0 Ld)	12	16	20	24	34	39	44	50	55
	CLASS B (1.3 Ld)	16	21	26	31	45	51	57	64	71

NOTES:
1. DEVELOPMENT LENGTHS AND LAP SPLICES APPLY TO BEAMS, JOISTS, COLUMNS, WALLS, AND SLABS.
2. TABLE IS BASED ON A 3" BAR SPACING WITH A MINIMUM 1 1/2" COVER.
3. LAP SPLICE LENGTHS ARE BASED ON THE LARGER BAR DIAMETER WHEN DIFFERENT SIZES ARE SPLICED.
4. FOR TOP BARS, MULTIPLY LENGTHS BY 1.3. TOP BARS ARE DEFINED AS ANY HORIZONTAL REINFORCEMENT WITH 12" OR MORE OF CONCRETE CAST MONOLITHICALLY BELOW THE REINFORCEMENT.
5. WHEN LIGHT WEIGHT CONCRETE IS USED, MULTIPLY BAR LENGTHS BY A FACTOR OF 1.33.

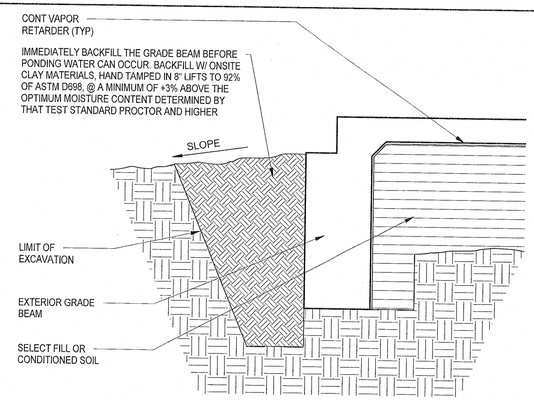
NOTE:
PROVIDE RE-ENTRANT BARS AT ALL SUCH SLAB CONDITIONS INCLUDING RE-ENTRANT CORNERS, OPENINGS, ISOLATION JOINTS AND POUR JOINTS, AS WELL AS WALL OPENINGS.



PLAN VIEW



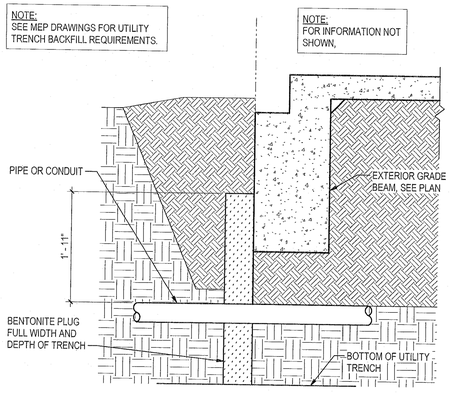
UNLESS OTHERWISE NOTED, REINFORCING SHALL BE PLACED AS SHOWN ON THE DRAWINGS WITH THE FOLLOWING TOLERANCES:	
DEPTH "D" IN SLABS, JOISTS, BEAMS, WALLS, COLUMNS AND SIMILAR ELEMENTS WHERE "D" IS 24" OR LESS	+/- 1/4"
WHERE "D" IS MORE THAN 24"	+/- 1/2"
LONGITUDINAL LOCATION OF BENDS AND ENDS OF BARS	+/- 2"
FABRICATED DIMENSIONS OF TIES, STIRRUPS AND SPIRALS	+/- 1/4"
OFFSET DIMENSIONS IN BENT BARS	+/- 1/2"
DIMENSION FROM FACE OF SUPPORT TO LOCATION OF TIE OR STIRRUP	+/- 1"
EXCEPT THAT SPECIFIED CONCRETE COVER AT ENDS OF MEMBERS SHALL NOT BE REDUCED.	



C1 2S-502 SPLICE LENGTHS
3/4" = 1'-0"

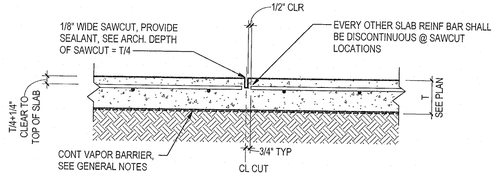
NOTE:
SEE MEP DRAWINGS FOR UTILITY TRENCH BACKFILL REQUIREMENTS.

NOTE:
FOR INFORMATION NOT SHOWN,

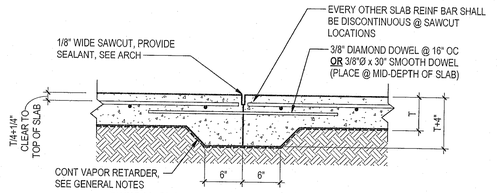


B1 2S-502 UTILITY TRENCH @ GRADE BEAM
3/4" = 1'-0"

C2 2S-502 TYPICAL CORNER DETAIL
3/4" = 1'-0"



TYPICAL SLAB-ON-GRADE CONTROL JOINT



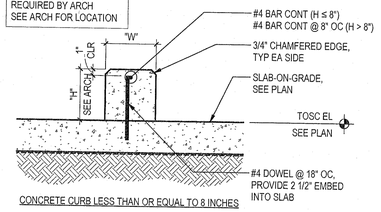
TYPICAL SLAB-ON-GRADE CONSTRUCTION JOINT

SAWCUT NOTES:
1. SAWCUT SLAB BETWEEN 6-8 HOURS AFTER FINISH (2-4 HOURS FOR EARLY-ENTRY DRY-CUT SAWS).
2. SAWCUT DEPTH SHALL BE 1/4 THE SLAB THICKNESS "T" BUT NOT LESS THAN 1" (WHICHEVER IS GREATER). SAWCUT DEPTH SHALL BE ONE (1) INCH MINIMUM FOR EARLY-ENTRY DRY-CUT SAWS.
3. JOINTS SHALL BE PROTECTED FROM HARD-WHEELED EQUIPMENT TRAFFIC OR WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
4. SPACING OF CONSTRUCTION/CONTROL JOINTS SHALL BE NO FURTHER THAN 18'-0" APART. ALIGN WITH COLUMN CENTERLINE OR WALL FACE WHERE POSSIBLE.

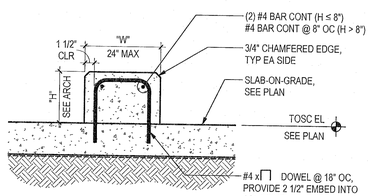
B2 2S-502 TYP SLAB JOINT DETAILS
1" = 1'-0"

C3 2S-502 TOLERANCES FOR PLACEMENT AND FABRICATION OF REINFORCING BARS
3/4" = 1'-0"

NOTE:
CURB WIDTH "W" SHALL BE 6" MIN (8" MAX) OR AS REQUIRED BY ARCH SEE ARCH FOR LOCATION

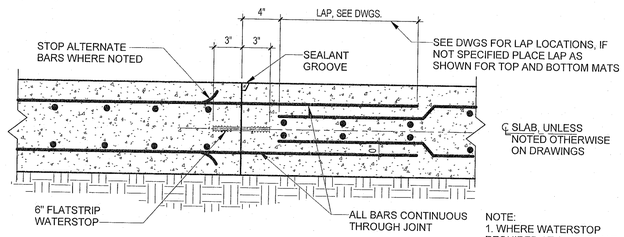


CONCRETE CURB LESS THAN OR EQUAL TO 8 INCHES



CONCRETE CURB GREATER THAN 8 INCHES

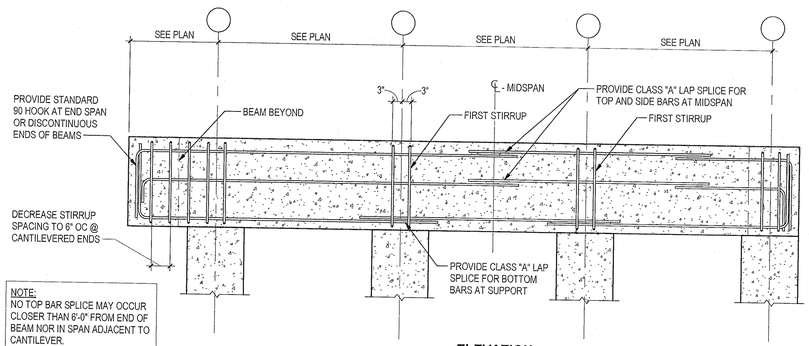
B4 2S-502 TYP SECTION @ CONCRETE CURB
1" = 1'-0"



NOTE:
1. WHERE WATERSTOP REQUIRED AT SINGLE MAT SLAB REINFORCEMENT, PLACE WATERSTOP AT WATER SIDE OF SLAB

WITH WATERSTOP AND SEALANT GROOVE

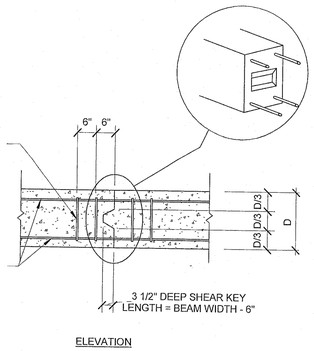
B3 2S-502 DOUBLE MAT REINFORCEMENT
1 1/2" = 1'-0"



NOTE:
NO TOP BAR SPLICE MAY OCCUR CLOSER THAN 6'-0" FROM END OF BEAM NOR IN SPAN ADJACENT TO CANTILEVER.

ELEVATION

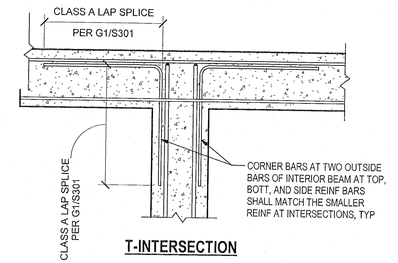
C4 2S-502 EXTERIOR BEAM BACKFILL DETAIL
3/4" = 1'-0"



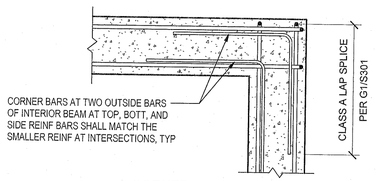
ELEVATION

NOTE: CONSTRUCTION JOINT SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN BETWEEN SUPPORTS - DO NOT LOCATE A BEAM CONSTRUCTION JOINT IN THE END SPAN

B5 2S-502 TYPICAL BM CONSTRUCTION JOINT
1/2" = 1'-0"

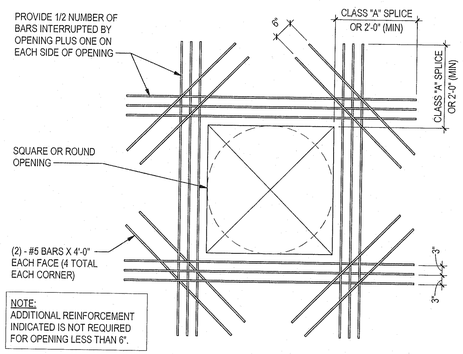


T-INTERSECTION



CORNER

A1 2S-502 TYP GRADE BM CORNER BAR DETAIL
3/4" = 1'-0"



NOTE:
ADDITIONAL REINFORCEMENT INDICATED IS NOT REQUIRED FOR OPENING LESS THAN 6".

A2 2S-502 TYP STRUCTURAL SLAB OR WALL OPENING
1/2" = 1'-0"

A3 2S-502 TYPICAL REINFORCING SPLICE DETAIL
1/2" = 1'-0"

NO.	DATE	REVISION	APP.

Stantec

Stantec Architecture Inc.
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Tel: (713) 548-5700

TBPE Firm Registration No. F-13678

BRITNEY R. WEIDERT
117268
LICENSED PROFESSIONAL ENGINEER
12/12/24

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING TYPICAL CONCRETE DETAILS 2S-502

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 62 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS FILED
80341
CITY ENGINEER
HOUSTON, TEXAS

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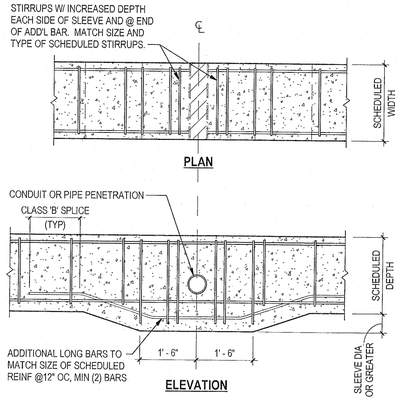
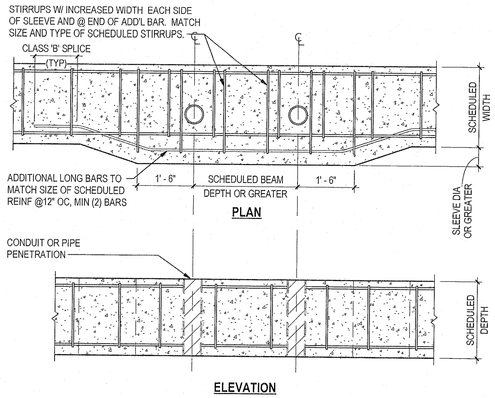
FILE PATH: <Pick location in Project information>

PLOTTED: 12/12/2024 5:03:59 PM
PLOT STYLE: COH.ctb
FILE PATH: <Pick location in Project Information>



HORIZONTAL PIPE PENETRATION

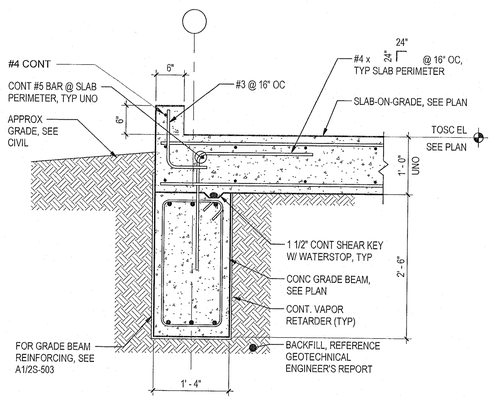


VERTICAL PIPE PENETRATION

NOTE:
1. SLEEVE SHALL OCCUR IN MIDDLE 1/3 OF GRADE BEAM SPAN AND WITHIN THE MIDDLE 1/3 OF THE GRADE BEAM DEPTH UNLESS PRIOR APPROVAL IS RECEIVED FROM THE ENGINEER OF RECORD.
2. MAXIMUM 5" DIAMETER SLEEVE FOR A 4" DIAMETER PIPE.
3. FOR PIPE PENETRATIONS OUTSIDE THE MIDDLE 1/3 OF THE BEAM, CONTACT EOR.

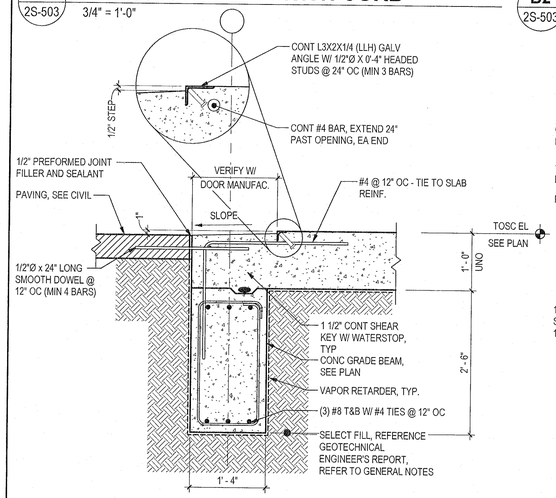
C1 2S-503 TYP BEAM W/ PENETRATION

1/2" = 1'-0"



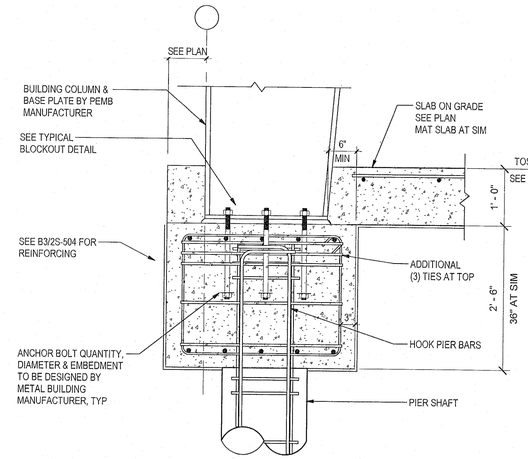
B1 2S-503 EXT GRADE BEAM WITH CURB

3/4" = 1'-0"



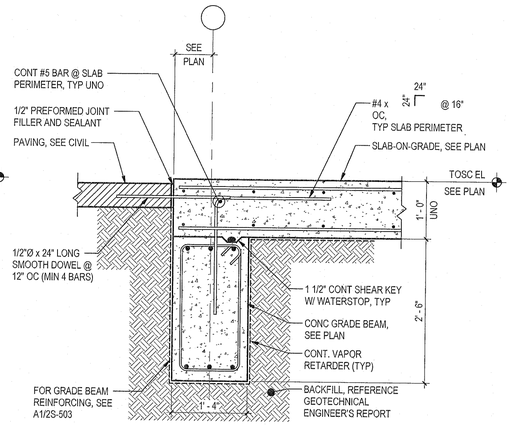
A1 2S-503 TYP GRADE BEAM @ OH DOOR

3/4" = 1'-0"



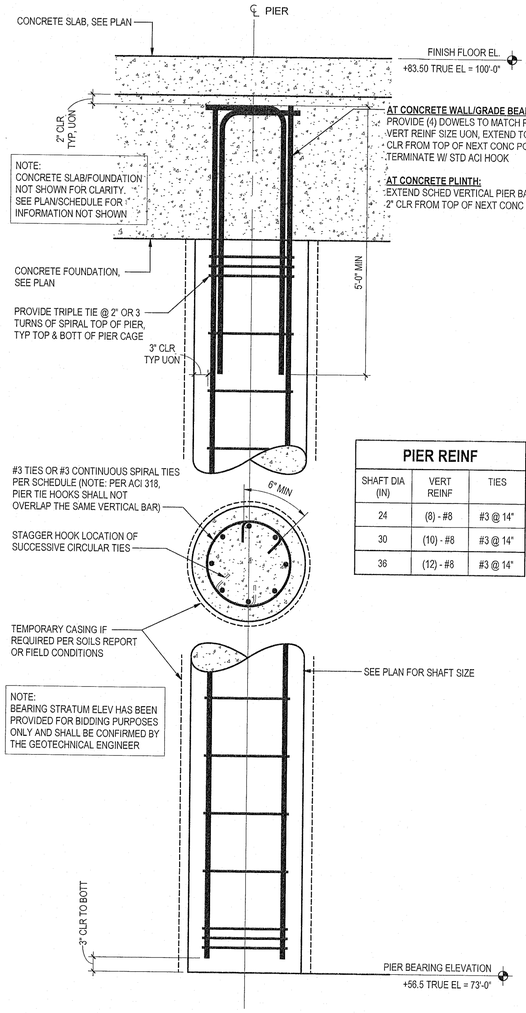
B2 2S-503 PEMB COLUMN

3/4" = 1'-0"



A2 2S-503 EXT GRADE BEAM AT DOORS

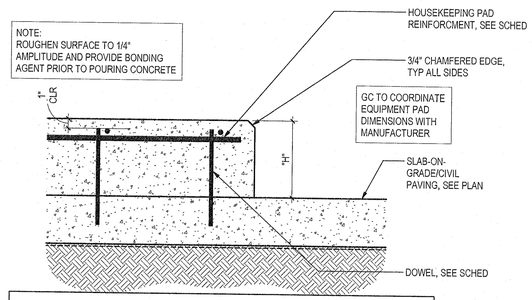
3/4" = 1'-0"



PIER REINF		
SHAFT DIA (IN)	VERT REINF	TIES
24	(8) - #8	#3 @ 14"
30	(10) - #8	#3 @ 14"
36	(12) - #8	#3 @ 14"

B3 2S-503 TYPICAL STRAIGHT SHAFT PIER DETAIL

3/4" = 1'-0"



HOUSEKEEPING PAD REINFORCEMENT SCHEDULE		
PAD THICKNESS "H"	PAD REINFORCEMENT	
	VERTICAL DOWEL	HORIZONTAL REINFORCEMENT
≤ 5 IN	#3 @ 12" OC EW	#3 @ 12" OC EW
≤ 12 IN	#3 @ 12" OC EW	#4 @ 12" OC EW

NOTE: VERTICAL DOWELS SHALL HAVE 2 1/2" EMBEDMENT INTO ADHESIVE. SEE 2S-002 FOR ALLOWABLE ADHESIVES

A3 2S-503 TYP SECTION @ HOUSEKEEPING PAD

1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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TBPE Firm Registration No. F-13678

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
BRITNEY R. WEIDERT
117968
LICENSED PROFESSIONAL ENGINEER
12/12/24

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING TYPICAL FOUNDATION DETAILS - I 2S-503

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	As indicated
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	63 OF 255

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80341
HOUSTON, TEXAS

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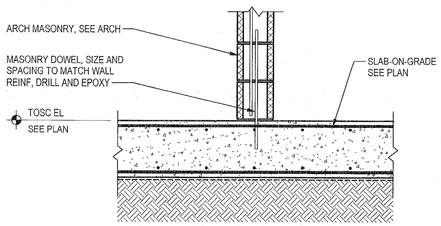
UNSCHEDULED MASONRY LINTEL TABLE

CLEAR OPENING	8" CMU
UP TO 4'-0"	8" DEEP BOND BEAM W/ (2) - #4
UP TO 6'-0"	8" DEEP BOND BEAM W/ (2) - #4
UP TO 8'-0"	#4 @ 24" 16" DEEP BOND BEAM W/ (2) - #4
UP TO 10'-0"	#4 @ 24" 24" DEEP BOND BEAM W/ (2) - #6
UP TO 12'-0"	#4 @ 24" 32" DEEP BOND BEAM W/ (2) - #6

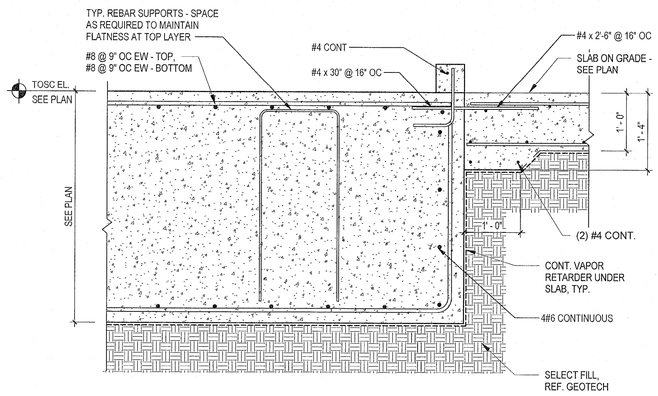
NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF OPENINGS.
2. FOR UNSCHEDULED OPENING GREATER THAN 10'-0", CONSULT THE STRUCTURAL ENGINEER.
3. PROVIDE SOLID BOTTOM MASONRY LINTEL FOR HEAD CONDITION OF ALL CMU OPENINGS. SOLID GROUTED KNOCK-OUT CMU CORES **SHALL NOT** BE ALLOWED AND WILL BE REQUIRED TO BE REPLACED AT THE CONTRACTOR'S EXPENSE IF USED.
4. PROVIDE BLOCK LINTELS FOR ALL OPENINGS AT INTERIOR/EXTERIOR WALLS FOR WHICH A STEEL LINTEL IS NOT SCHEDULED.
5. PROVIDE 1" OF BEARING @ EACH JAMB FOR EACH FOOT OF CLEAR-SPAN, BUT NOT LESS THAN 8". REINFORCING SHALL EXTEND A MINIMUM OF 6" ONTO THE BEARING.
6. PROVIDE (2) - #5 VERTICALS IN FULLY GROUTED CELLS AT EACH JAMB.
7. DETAIL ASSUMES NO CONTROL JOINTS WITHIN LENGTH OF OPENING DIVIDED BY 2 FROM EDGE OF OPENING.

C1 / 2S-504 — **UNSCHEDULED MASONRY LINTEL TABLE**
3/4" = 1'-0"

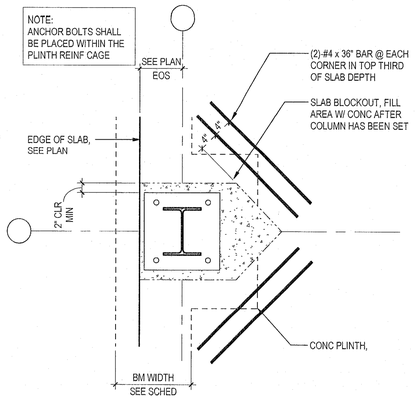


NOTES:
1. PROVIDE THIS DETAIL BENEATH ALL ARCHITECTURAL CMU WALL PARTITIONS NOT BEARING ON CONTINUOUS GRADE BEAMS.
2. CMU WALL SHOWN FOR REPRESENTATION ONLY **DO NOT SCALE.**
3. SEE ARCHITECTURAL PLANS FOR LOCATION OF INTERIOR CMU WALLS.

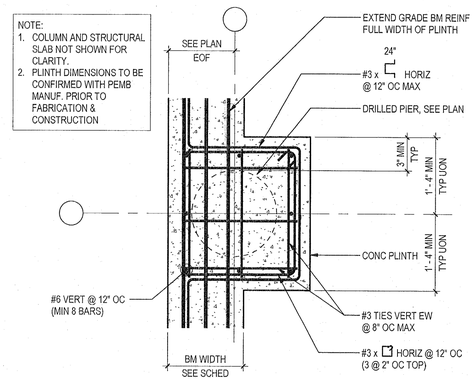
B1 / 2S-504 — **TYP DETAIL ARCH CMU WALL @ INTERIOR SLAB**
3/4" = 1'-0"



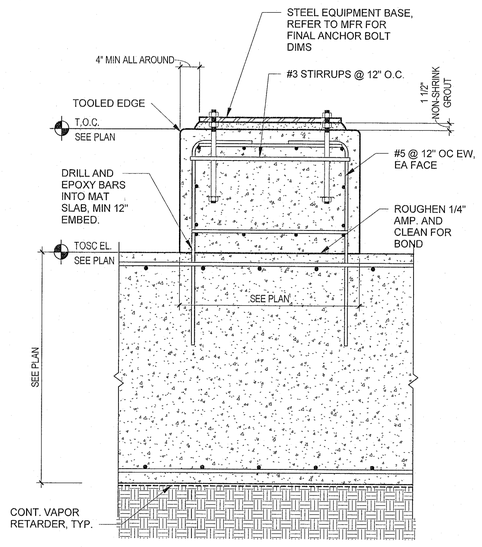
A1 / 2S-504 — **MAT SLAB EDGE AT SLAB ON GRADE TRANSITION**
3/4" = 1'-0"



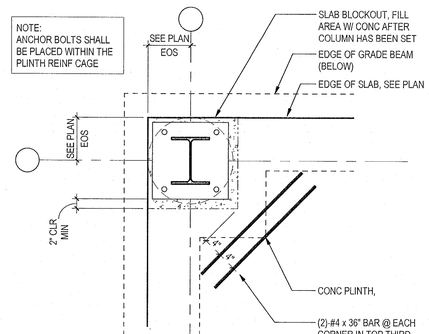
C3 / 2S-504 — **TYP EXTERIOR BLOCKOUT PLAN**
3/4" = 1'-0"



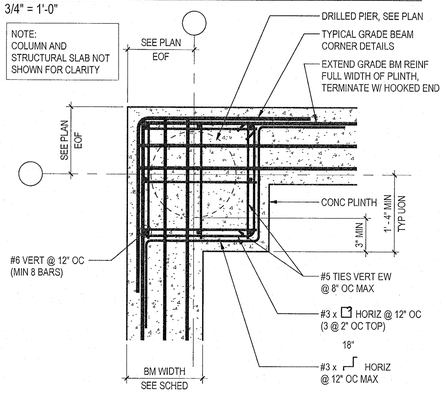
B3 / 2S-504 — **TYP EXTERIOR PLINTH REINF.**
3/4" = 1'-0"



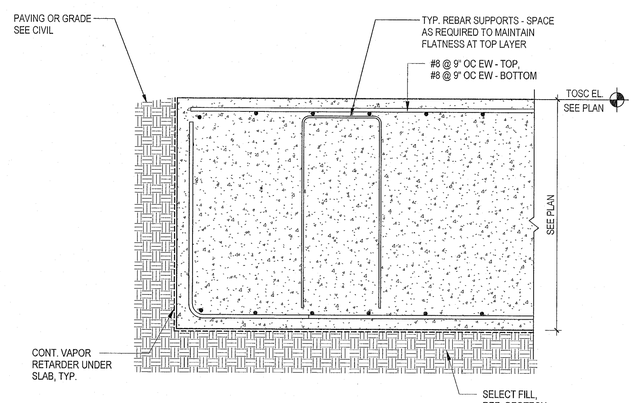
A2 / 2S-504 — **CENTRIFUGE PLINTH AND FOUNDATION**
3/4" = 1'-0"



B4 / 2S-504 — **TYP OUTSIDE CORNER BLOCKOUT PLAN**
3/4" = 1'-0"



B4 / 2S-504 — **TYP OUTSIDE CORNER PLINTH REINF.**
3/4" = 1'-0"



A3 / 2S-504 — **MAT SLAB EDGE**
3/4" = 1'-0"

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

TBPE Firm Registration No. F-13678

STATE OF TEXAS — BRITNEY R. WEIDERT — 117068 — LICENSED PROFESSIONAL ENGINEER — 12/12/24

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING TYPICAL FOUNDATION DETAILS - II
2S-504

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	3/4" = 1'-0"
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
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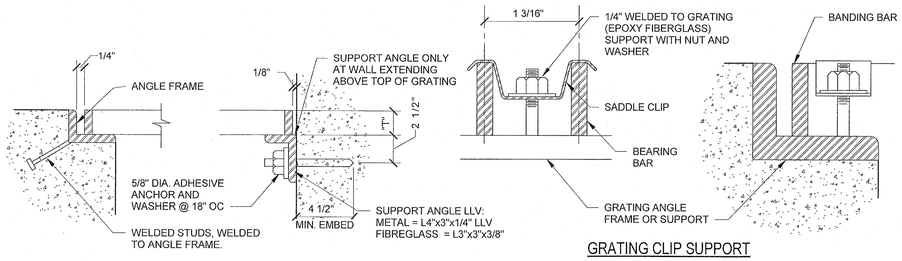


GRATING CLIP SUPPORT

GRATING FRAME TABLE SIZED TO MATCH GRATING (FOR FIBREGLASS USE CONTINUOUS PULTRUDED FIBERGLASS SEAT AND ANCHOR			
GRATING DEPTH "T"	ANGLE FRAME	GRATING DEPTH "T"	ANGLE FRAME
1"	1 3/4"x1 1/4"x1/4" (1 1/2"x1 1/2"x1/4"	2"	*2 1/2"x2 1/2"x1/2"
1 1/4"	2"x1 1/2"x1/4" (1 1/2"x1 1/2"x1/4"	2 1/4"	*2 1/2"x2 1/2"x1/4"
1 1/2"	1 3/4"x1 3/4"x1/4"	2 1/2"	3"x3"x1/2"
1 3/4"	2"x2"x1/4"		

NOTES:

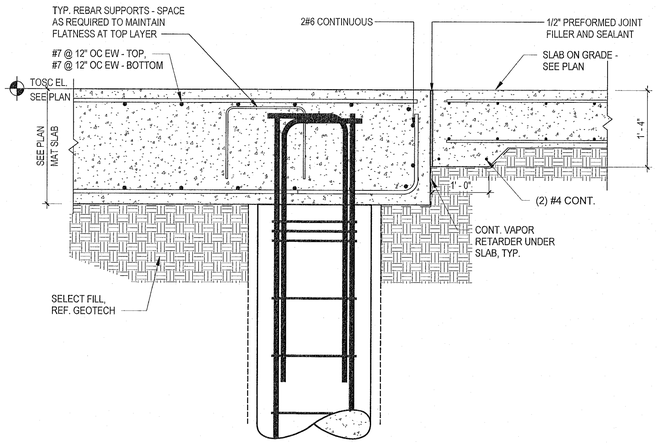
1. UNLESS INDICATED OTHERWISE, ALL GRATING SHALL BE ALUMINUM.
2. GRATING DEPTH TO BE DETERMINED BY MANUFACTURER AND APPROVED BY ENGINEER (UNO).
3. ALL ENDS AND OPENINGS SHALL BE BANDED.
4. WEIGHT OF GRATING SECTION SHALL NOT EXCEED 80 LBS.
5. METAL BEARING BARS SHALL BE DEPTH Tx3/16" @1 3/16" OC CROSS BARS SHALL BE @ 4" OC.
6. PROVIDE A MINIMUM OF 4 CLIPS PER GRATING PANEL, APPROX 4" FROM PANEL CORNERS. MAXIMUM CLIP SPACING AT 36" OC.
7. MATERIALS:

GRATING MATERIAL	SUPPORT ANGLE	ANGLE FRAME	WELDED STUDS	GRATING CLIPS AND STUDS	ADHESIVE ANCHORS
ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM PER S-504	ALUMINUM	TYPE 316 SS
GALV. STEEL	GALV. STEEL	GALV. STEEL	GALV. STEEL 1/2" DIA x 4" @ 12" OC MAX.	GALV. STEEL	ASTM F1554 GR. 36, GALV.
STAINLESS STEEL	TYPE 316L SS	TYPE 316L SS	TYPE 316L SS, 1/2" DIA x 4" @ 12" OC MAX.	TYPE 316L SS	TYPE 316L SS
FIBERGLASS	FIBERGLASS	FIBERGLASS	FIBERGLASS	FIBERGLASS	FIBERGLASS

8. ALL GALVANIZED MATERIAL TO BE GALVANIZED AFTER FABRICATION.
9. ALUMINUM IN CONTACT WITH CONCRETE SHALL BE COATED PER THE PROTECTIVE COATING SPECIFICATIONS.
10. FIBERGLASS GRATING - ALL CUT EDGES SHALL BE SEALED WITH RESIN. FOR BONDING, USE AN EPOXY ADHESIVE BONDING AGENT.
11. NOT ALL MATERIAL TYPES MAY BE USED ON A SINGLE PROJECT.
12. PROVIDE ANGLE FRAME OR SUPPORT ANGLES AT ALL SIDES OF OPENINGS (UNO).

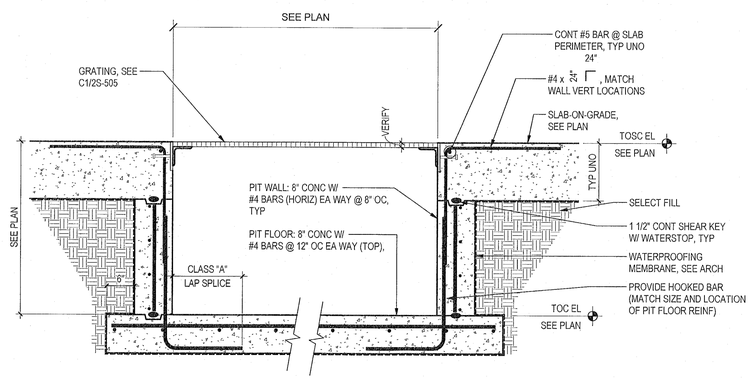
C1 / 2S-505 TYPICAL GRATING DETAILS

6" = 1'-0"



B1 / 2S-505 DEWATERING FOUNDATION/PIER CAP

3/4" = 1'-0"



A1 / 2S-505 TYPICAL SECTION AT TRENCH

3/4" = 1'-0"

NO.	DATE	REVISION	APP.

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Stantec Architecture Inc.
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Houston, 77002-4916
Tel: (713) 548-5700

TBPE Firm Registration No. F-13678

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS — BRITNEY R. WEIDERT — 127068 — LICENSED PROFESSIONAL ENGINEER — 12/12/24

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING TYPICAL FOUNDATION DETAILS - III 2S-505

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 65 OF 255	

ACCEPTED AS NOTED — 80341 — HOUSTON, TEXAS

PLOTTED: 12/12/2024 5:04:01 PM
PLOT STYLE: COH.ctb
FILE PATH: <Pick location in Project Information>

#	NUMBER, POUNDS
%	PERCENT
&	AND
'	FOOT, FEET
"	INCH
@	AT
Ø	DIAMETER
℄	CENTER LINE
A	
ACC	ACCESSIBLE
ACT	ACOUSTICAL TILE
ADD	ADDENDUM
ADJ	ADJUSTABLE, ADJACENT
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
AP	ACCESS PANEL
APC	ACOUSTICAL PANEL CEILING
APPROX	APPROXIMATELY, APPROXIMATE
ARCH	ARCHITECT, ARCHITECTURAL
ASC	ABOVE SUSPENDED CEILING
ASSY	ASSEMBLY
ATTEN	ATTENUATION
AUTH	AUTHORIZED
AUTO	AUTOMATIC
AUX	AUXILARY
AVG	AVERAGE
AWI	ARCHITECTURAL WOODWORK INSTITUTE
AWP	ACOUSTICAL WALL PANEL
AX	AXIS
B	
BC	BACK OF CURB
BET	BETWEEN
BHD	BULKHEAD
BIT	BITUMINOUS
BLDG	BUILDING
BLT	BORROWED LITE
BO	BOTTOM OF
BOT	BOTTOM
BRD	BOARD
BS	BOTH SIDES
BUR	BUILT-UP ROOF
BW	BOTH WAYS
C	
C/C	CENTER TO CENTER
CAB	CABINET
CBB	CEMENTITIOUS BACKER BOARD
CD	CONTRACT DOCUMENTS
CEM	CEMENT
CFMF	COLD-FORMED METAL FRAMING
CG	CORNER GUARD
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECT, CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUE, CONTINUOUS
COORD	COORDINATE
CPT	CARPET
CS	CAST STONE
CT	CERAMIC TILE
CW	CURTAIN WALL
D	
D	DEPTH, DEEP
DBL	DOUBLE
DEMO	DEMOLISH
DIA	DIAMETER
DIAG	DIAGRAM
DIM	DIMENSION
DISP	DISPENSER
DIST	DISTANCE
DIV	DIVISION, DIVIDE
DL	DEAD LOAD
DMPF	DAMPPROFING
DN	DOWN
DO	DOOR OPENING
DR	DOOR
DRWG	DRAWING(S)
DS	DOWNSPOUT
DTL	DETAIL
E	
E	EAST
EA	EACH
EC	EXPOSED CONSTRUCTION
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
ENC	ENCLOSURE
EQ	EQUAL
EQ SP	EQUALLY SPACED
EQUIP	EQUIPMENT
ETC	EC CETERA
EW	EACH WAY
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	
FAB	FABRICATE
FD	FLOOR DRAIN
FDN	FOUNDATION
FEC	FIRE EXTINGUISHER CABINET
FF EL	FINISH FLOOR ELEVATION
FF&E	FURNITURE, FIXTURE & EQUIPMENT
FIG	FIGURE
FIN	FINISH
FIN GR	FINISH GRADE
FIXT	FIXTURE
FLASH	FLASHING
FLR	FLOOR
FO	FACE OF FINISH OPENING
FRP	FIBER REINFORCED PLASTIC
FRTW	FIRE-RETARDANT TREATED WOOD
FT	FEET
FURG	FURRING
G	
GA	GAGE, GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GEN	GENERAL
GL	GLASS
GLZ	GLAZING, GLAZED
GRD	GRADE
GYP	GYPSUM
H	
H	HIGH, HEIGHT
HB	HOSE BIBB
HC	HOLLOW CORE
HDR	HEADER
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR, HOURS
HRDW	HARDWARE
HVAC	HEATING, VENTING & COOLING
HWD	HARD WOOD
I	
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIMENSION, INSIDE DIAMETER
IN	INCH, INCHES
INC	INCLUDED
INFO	INFORMATION
INSUL	INSULATION, INSULATING
INT	INTERIOR
J	
JNT	JOINT
K	
KOP	KNOCK OUT PANEL
L	
L	LOW
LAM	LAMINATE
LAV	LAVATORY
LBS	POUNDS
LF	LINEAR FOOT
LH	LEFT HAND
LKR	LOCKER
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LT	LIGHT
LTWT	LIGHTWEIGHT
LVR	LOUVER
M	
MAINT	MAINTENANCE
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MFR	MANUFACTURER
MFR REC	REC MANUFACTURER'S RECOMMENDATIONS
MGR	MANAGER
MID	MIDDLE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MM	MILLIMITER
MO	MASONRY OPENING, MOTOR OPERATED
MOD	MODIFY
MOD BIT	MODIFIED BITUMEN
MPH	MILES PER HOUR
MTD	MOUNTED, MOUNTING
MTL	METAL
MTLR	METAL ROOFING
MULL	MULLION
MWK	MILLWORK
N	
N	NORTH
NA	NON APPLICABLE
NEG	NEGATIVE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NUMBER(S)
NOM	NOMINAL
NRCA	NATIONAL ROOFING CONTRACTORS ASSOCIATION
NTC	NOT TO SCALE
O	
OC	ON CENTER
OD	OUTSIDE DIAMETER/DIMENSION
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFD	OVERFLOW DRAIN
OH	OPPOSITE HAND
OPG	OPENING
OPP	OPPOSITE
OPR	OPERABLE
P	
PAR	PARALLEL
PBRD	PARTICLEBOARD
PCP	PORTLAND CEMENT PLASTER
PERP	PERPENDICULAR
PLAM	PLASTIC LAMINATE
PLAS	PLASTIC
PLUMB	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
PNT	PAINT, PAINTED
PORC	PORCELAIN
POS	POSITIVE
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PRT	PRESERVATIVE TREATED, PRESSURE TREATED
PRTN	PARTITION
PTD	PAPER TOWEL DISPENSER
PVC	POLYVINYL CHLORIDE
Q	
QA	QUALITY ASSURANCE
QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
R	
R	RADIUS, RISER
RB	RESILIENT BASE, RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RE:	REFER
REBAR	REINFORCING BAR
REF	REFRIGERATOR
REINF	REINFORCED, REINFORCEMENT
REQD	REQUIRED
REV	REVISION(S)
RH	RIGHT HAND, ROOF HATCH
RO	ROUGH OPENING
RTG	RATING
RTU	ROOF TOP UNIT
RV	ROOF VENT
S	
S	SOUTH
SALV	SALVAGE
SB	SPLASH BLOCK
SC	SOLID CORE
SCHED	SCHEDULE
SCWD	SOLID CORE WOOD DOOR
SECT	SECTION
SEP	SEPARATE, SEPARATION
SF	SQUARE FEET, STOREFRONT
SGD	SLIDING GLASS DOOR
SGL	SINGLE
SHT	SHEET
SIM	SIMILAR
SK	SINK
SND	SANITARY NAPKIN DISPENSER
SNDU	SANITARY NAPKIN DISPOSAL UNIT
SPF	SPRAYED-FOAM
SQ	SQUARE
SS	STAINLESS STEEL
SSK	SERVICE SINK
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STRUC	STRUCTURE, STRUCTURAL
SUSP	SUSPENDED
SV	SHEET VINYL
SYM	SYMMETRICAL
T	
T	TREAD
T&B	TOP AND BOTTOM
T&G	TOUNGE & GROVE
TB	TACKBOARD
TECHNICAL	TECH
TER	TERRAZO
THK	THICK
THRU	THROUGH
TO	TOP OF
TPD	TOILET PAPER DISPENSER
TYP	TYPICAL
U	
UL	UNDERWRITER'S LABORATORY
UNEXC	UNEXCAVATED
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UR	URINAL
UTIL	UTILITY
V	
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VOL	VOLUME
VR	VAPOR RETARDER
VWC	VINYL WALL COVERING
W	
W	WIDTH, WEST
W	WITH
WO	WITHOUT
WD	WOOD
WL	WIND LOAD
WP	WORKING POINT
WPF	WEATHERPROOF, WATERPROOF
WS	WEATHER-STRIP
WT	WEIGHT
WWF	WELDED-WIRE FABRIC

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REGISTERED ARCHITECT DANIELLE DINH 28299 STATE OF TEXAS

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ABBREVIATIONS

1A-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 66 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED AS NOTED 80341 CITY OF HOUSTON, TEXAS

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PLOT STYLE: COH.ctb

FILE PATH:

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PLOT STYLE: COH.ctb

FILE PATH:

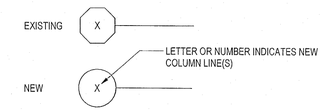
DRAWING SYMBOLS

DOOR SWING INDICATOR

WALL INDICATION (RE: WALL TYPES FOR WALL CONSTRUCTION)

REFERENCE SYMBOLS

COLUMN LINES



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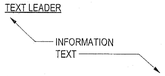
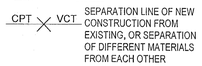
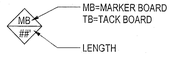


SEPARATION SYMBOL



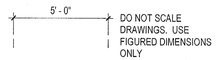
VISUAL DISPLAY / SURFACE INDICATION



GLAZING TAG

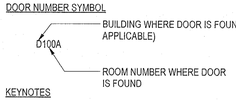
RE: SPECIFICATIONS FOR GLAZING TYPES

DIMENSION LINE



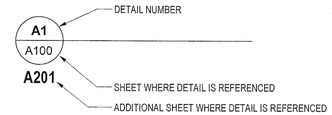
PARTITION TAG

DOOR NUMBER SYMBOL



KEYNOTES

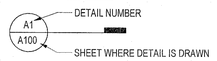
DRAWING/ DETAIL TITLE



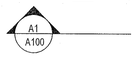
NOTE:
DRAWING TITLE MAY NOT APPEAR ON LARGE SCALE DETAIL DRAWINGS

SECTION / DETAIL CUT SYMBOL

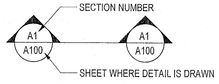
ELEVATION



PLAN

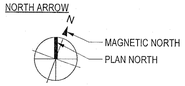


BUILDING SECTION CUT SYMBOL

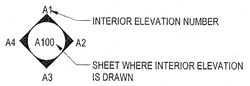


ENLARGED PLAN DETAIL

NORTH ARROW

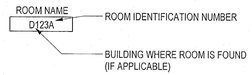


INTERIOR ELEVATION LOCATION SYMBOL



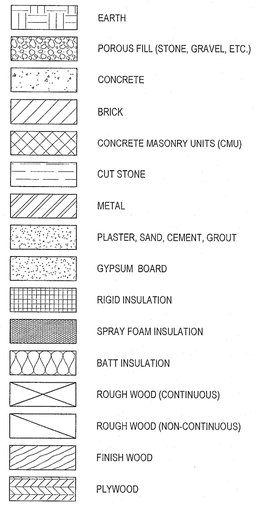
ELEVATION DATUM SYMBOL

ROOM NAME AND NUMBER



WINDOW SYMBOL

MATERIAL LEGEND



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Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

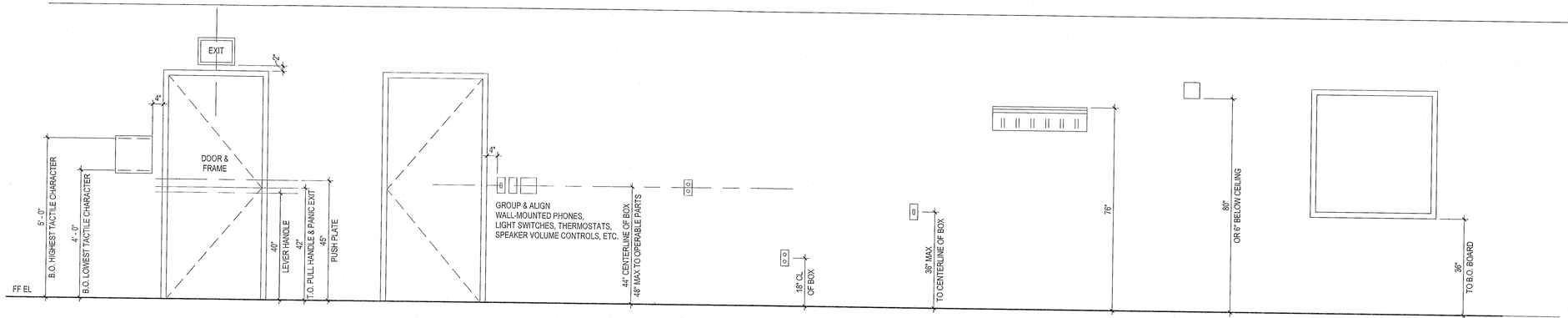
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

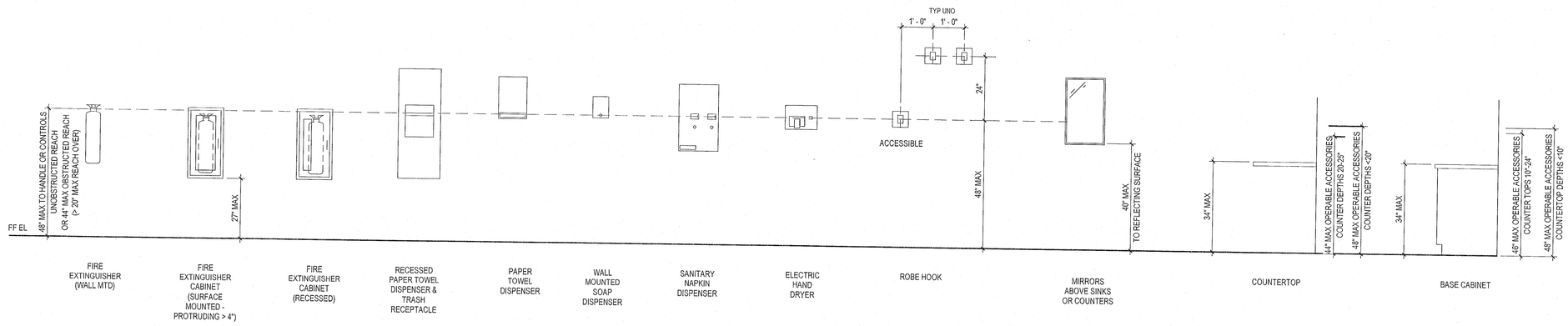
ADMINISTRATION MATERIAL LEGEND & SYMBOLS 1A-002

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 67 OF 255	

ACCEPTED AS NOTED 80341 DATE SIGNATURE HOUSTON, TEXAS

TYPICAL MOUNTING HEIGHTS





NOTES: COORDINATE ALL ELECTRICAL ITEMS W/ CASEWORK, DISPLAY BOARDS, MIRRORS & ACOUSTICAL MATERIAL AS INDICATED ON THE PLANS, CASEWORK ELEVATIONS & INTERIOR ELEVATIONS (TYP).

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28298
STATE OF TEXAS

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL MOUNTING HEIGHTS 1A-003

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
1/2" = 1'-0"
CITY OF HOUSTON PM
SH SHAHIDUR RAHMAN, P.E.
SHEET NO. 68 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING
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80341
HOUSTON, TEXAS

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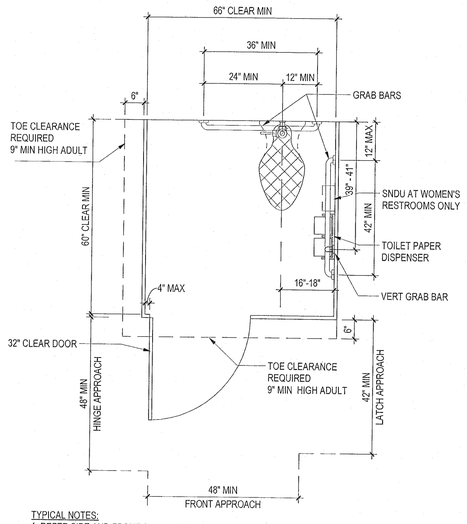
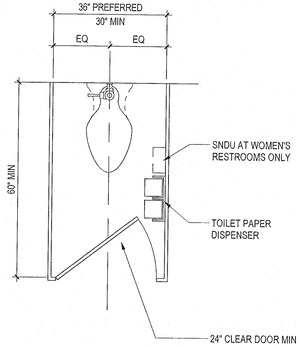
FILE PATH:

TYPICAL TOILET ROOM LAYOUTS

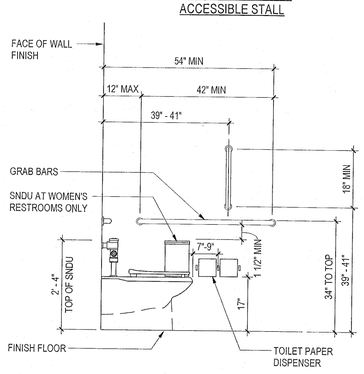


TYPICAL END OF ROW ACCESSIBLE STALL

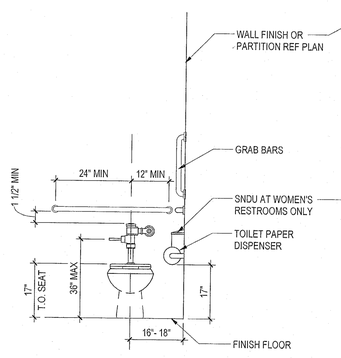


TYPICAL STANDARD STALL

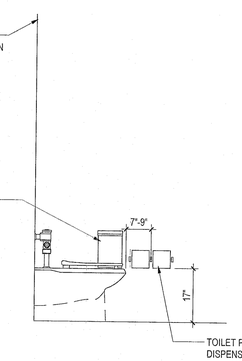
TYPICAL NOTES:
1. REFER SIDE AND FRONT ELEVATIONS.
2. REFER TO PLUMBING DRAWINGS FOR LOCATION OF FLUSH VALVE PIPING.
3. FLUSH VALVE CONTROLS ON WIDE SIDE OF TOILET AREA.
4. PARTITION BOTTOM SHALL BE 9" MIN AFF.



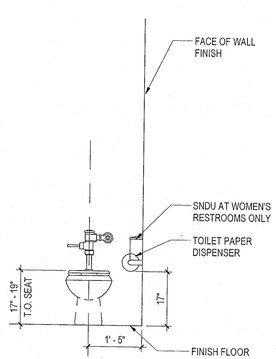
TYPICAL SIDE WALL ELEVATION AT ACCESSIBLE TOILET



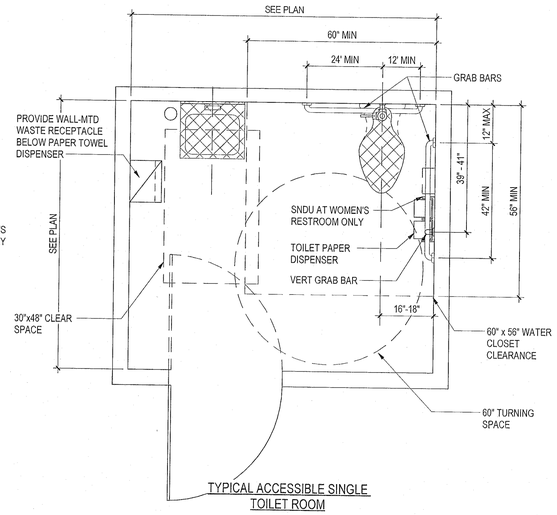
TYPICAL ELEVATION AT ACCESSIBLE TOILET



TYPICAL SIDE WALL ELEVATION AT STANDARD TOILET



TYPICAL ELEVATION AT STANDARD TOILET



TYPICAL ACCESSIBLE SINGLE TOILET ROOM

TYPICAL NOTES:
1. GRAB BARS ARE PERMITTED TO BE MOUNTED 33"-36" TO TOP OF BAR WHEN REQUIRED TO ACCOMODATE ACCESSORY CONFLICTS.
2. TOILET PAPER DISPENSER PERMITTED TO BE MOUNTED 15"-48" TO POINT OF OUTLET WHEN REQUIRED TO MAINTAIN 1 1/2" GRAB BAR CLEARANCES.

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REGISTERED ARCHITECT DANIELLE QUINN 28295 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL TOILET LAYOUT 1A-004

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/2" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 69 OF 255	

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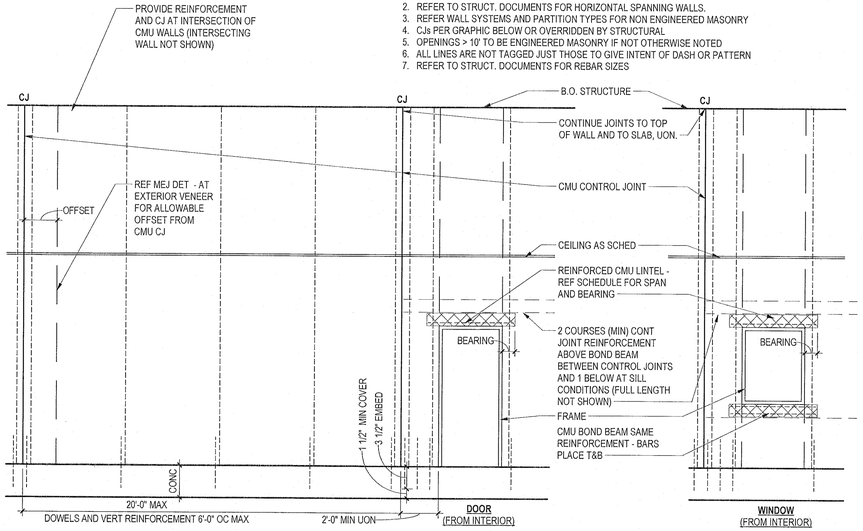
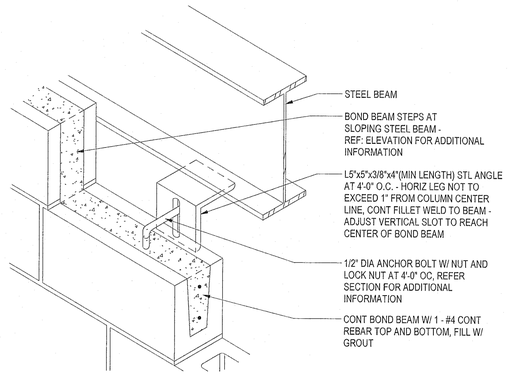
EXTERIOR CMU CONSTRUCTION NOTES:

1. BRACE EXTERIOR CMU WALLS TO STRUCTURE PER A3/1A-006, ALLOWING FOR DEFLECTION OF STRUCTURE. PROVIDE SLOTTED DEFLECTION ANCHORS PER A4/1A-006.
2. REINFORCE EXTERIOR LOAD BEARING AND NON-LOAD BEARING CMU WALLS PER STRUCTURAL DRAWINGS.
3. INSTALL REINFORCING AT OPENINGS IN EXTERIOR CMU WALLS PER B1/1A-006 "CMU WALL OPENINGS / CJs / DOWEL", UON.
4. EXTEND JOINT REINFORCING THROUGH WALL INTERSECTIONS PER "CMU WALL INTERSECTION" DETAIL.
5. INSTALL CONTROL JOINTS AT OPENINGS IN EXTERIOR CMU WALLS PER "CMU CONTROL JOINT DETAIL", REF: DETAIL A2/1A-006.

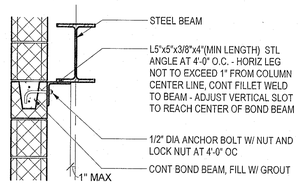
NOTE:
1. DETAIL IS FOR VERTICAL SPANNING NON-LOADBEARING WALLS CMU WALLS ONLY. VERIFY WITH STRUCTURAL
2. REFER TO STRUCT. DOCUMENTS FOR HORIZONTAL SPANNING WALLS.
3. REFER WALL SYSTEMS AND PARTITION TYPES FOR NON ENGINEERED MASONRY
4. CJs PER GRAPHIC BELOW OR OVERRIDDEN BY STRUCTURAL
5. OPENINGS > 10' TO BE ENGINEERED MASONRY IF NOT OTHERWISE NOTED
6. ALL LINES ARE NOT TAGGED JUST THOSE TO GIVE INTENT OF DASH OR PATTERN
7. REFER TO STRUCT. DOCUMENTS FOR REBAR SIZES



B1 / 1A-006 — **CMU WALL OPENINGS / CJs / DOWEL**
1" = 1'-0"



AXONOMETRIC VIEW



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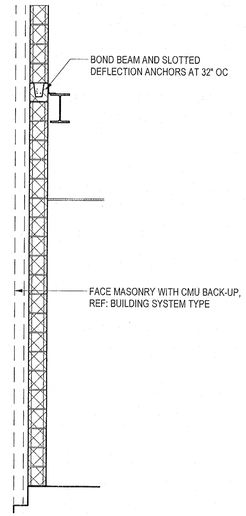
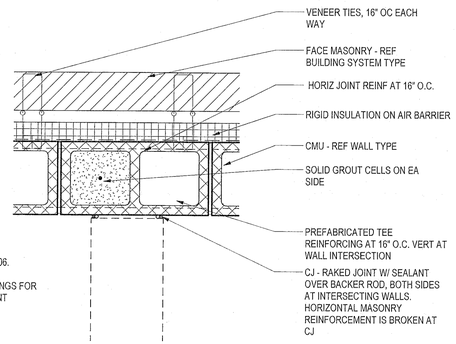


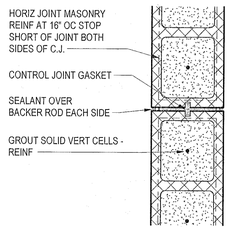
ROOF WITH PARAPET

A4 / 1A-006 — **TYP. CMU SPAN**
3/8" = 1'-0"



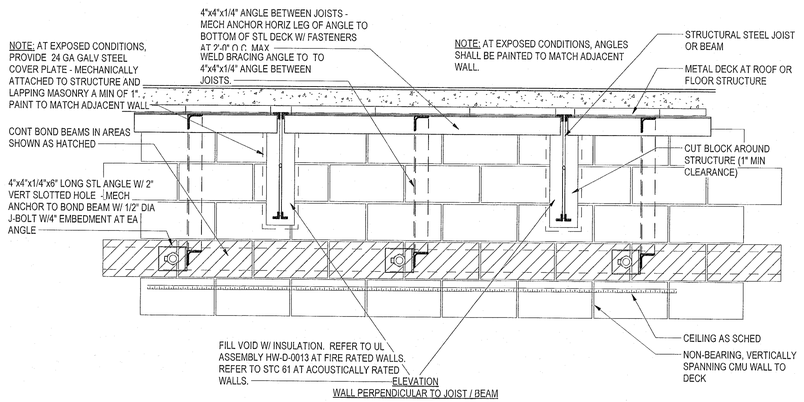
NOTE:
REFER CJ DETS SHEET 1A-006.

REFER STRUCTURAL DRAWINGS FOR ADDITIONAL REINFORCEMENT REQUIREMENTS



A1 / 1A-006 — **CMU (CJ) CONTROL JOINT - WALL INTERSECTION**
1 1/2" = 1'-0"

A2 / 1A-006 — **TYP. CMU CONTROL JOINT**
1 1/2" = 1'-0"



A3 / 1A-006 — **CMU TO BEAM**
3/4" = 1'-0"

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION TYPICAL WALL DETAILS - EXTERIOR CMU 1A-006

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 70 OF 255	

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MISCELLANEOUS STEEL BRACING SCHEDULE

BRACE SIZE	MAX LENGTH	BRACE SIZE	MAX LENGTH
1" x 1" x 3/16"	3'-3"	3 1/2" x 3 1/2" x 1/4"	9'-8"
1 1/2" x 1 1/2" x 3/16"	4'-10"	4" x 4" x 1/4"	11'-0"
2" x 2" x 3/16"	5'-8"	WT 4 x 9 OR 4 x 9	15'-10"
2 1/2" x 2 1/2" x 3/16"	6'-10"	WT 5 x 11	18'-6"
3" x 3" x 3/16"	8'-3"	WT 6 x 13	20'-0"

NOTES:

1. MEMBER SIZES INDICATED WITHIN THIS TABLE SHALL ONLY SUPPLEMENT INFORMATION FOUND ELSEWHERE IN THIS SET OF PLANS AND SHALL NOT SUPERSEDE MEMBER SIZES EXPLICITLY NOTED ON SECTIONS OR DETAILS OF STRUCTURAL DRAWINGS.

2. PROVIDE 3/16" FILLET WELD AT ALL TOP CONNECTIONS (WELD ENTIRE PERIMETER). LOWER CONNECTIONS AS PER DETAIL.

NOTES:

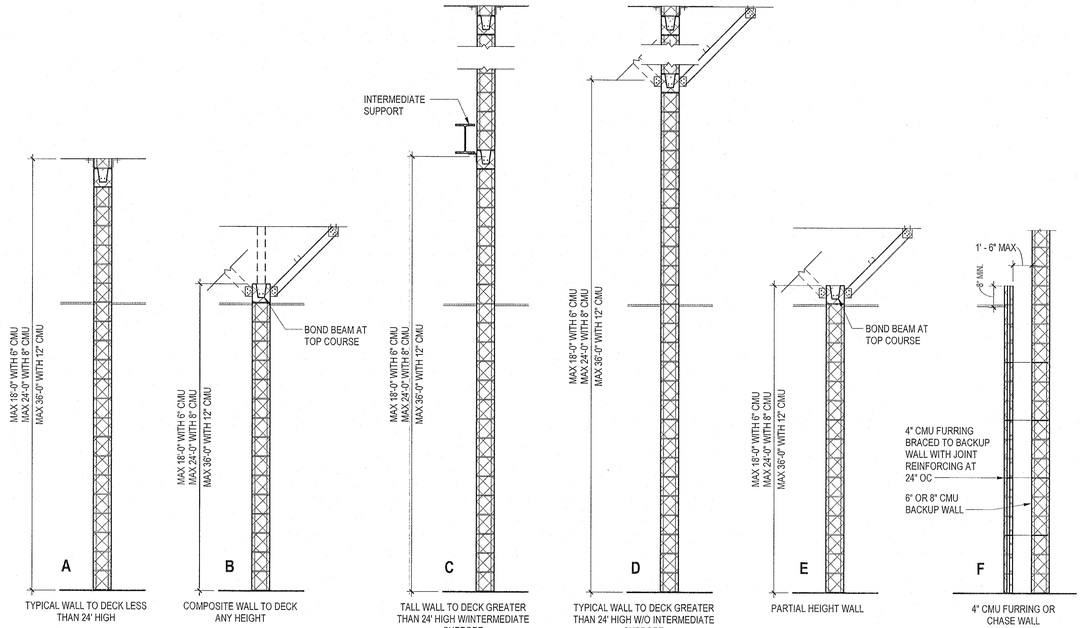
1. PROVIDE INTERMEDIATE BRACING FOR FULL-HEIGHT INTERIOR CMU WALLS EXCEEDING MAX VERTICAL SPAN HEIGHT AS INDICATED IN WALL SPAN DIAGRAMS.

2. PROVIDE DEFLECTION CONNECTION AT TOPS OF ALL CMU WALLS. FIRESTOP FIRE-RATED WALLS AND INSTALL ACOUSTICAL SEALANT AT ACOUSTICAL WALLS.

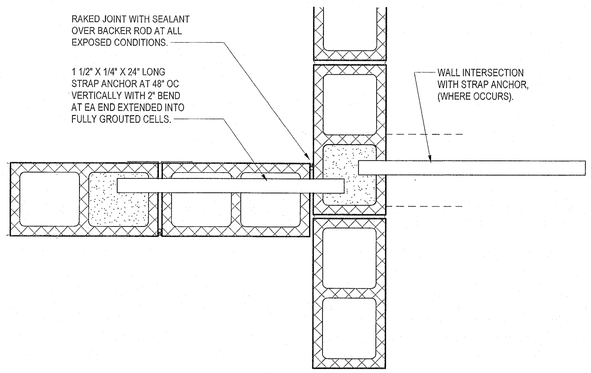
3. PROVIDE CJ'S AS REQUIRED SO THAT DISTANCE BETWEEN JOINTS DOES NOT EXCEED 25' - 0". SEE FLOOR PLANS AND ELEVATIONS FOR LOCATIONS. COORDINATE ADDITIONAL LOCATIONS WITH ARCHITECT.

4. ALL MASONRY WALLS ARE ASSUMED TO SPAN VERTICALLY.

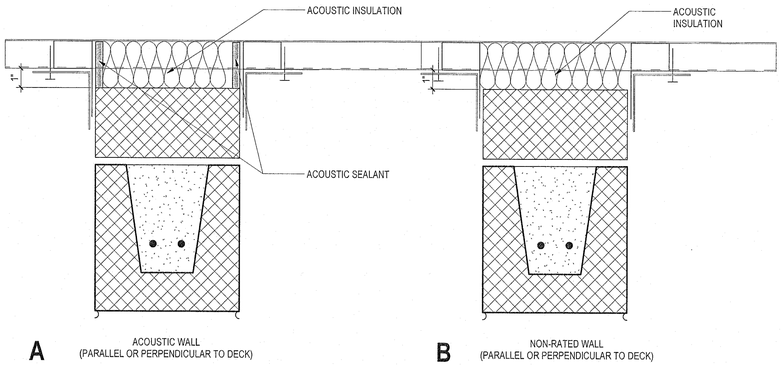
5. REFER DOWEL SPACING ON CJ



C3 / 1A-007 CMU WALL SPANS
3/8" = 1'-0"



A1 / 1A-007 CMU PERPENDICULAR JOINT
1 1/2" = 1'-0"



A3 / 1A-007 W_Walls_Head-CMU
3" = 1'-0"

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Houston, TX 77002

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REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION WALL TO DECK DETAILS - CMU 1A-007

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R-000265-0117-4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 71 OF 255	

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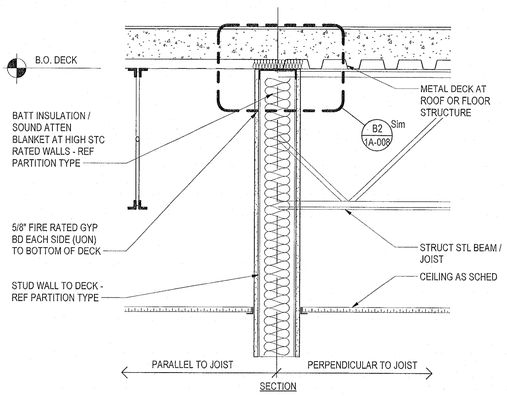
INTERIOR STUD CONSTRUCTION & WALL SPAN NOTES:

1. UL ASSEMBLIES INDICATED ESTABLISH A BASIS OF PERFORMANCE. OTHER ASSEMBLIES MAY BE CONSIDERED AT THE SOLE DISCRETION OF THE ARCHITECT IF EQUIVALENT PERFORMANCE IS PROVIDED.
2. SUBSTITUTION PROPOSALS SHALL INCLUDE CHANGES REQUIRED TO ALL COMPONENTS OF THE ASSEMBLY.
3. ASSEMBLIES INDICATED PROVIDE ASSEMBLY RATING UNDER FLOOR DECK.
4. NOT ALL REQUIREMENTS OF UL ASSEMBLY SHOWN.
5. PROVIDE INTERMEDIATE BRACING FOR FULL-HEIGHT INTERIOR STUD WALLS EXCEEDING MAX UNBRACED HEIGHT. REFER TO DTL A2 "INTERIOR STUD WALLS" ON THIS SHEET, DETAILS B AND C.
6. PROVIDE DEFLECTION CONNECTION AT TOPS OF ALL STUD WALLS. FIRESTOP FIRE-RATED WALLS AND INSTALL ACOUSTICAL SEALANT AT ACOUSTICAL WALLS.
7. FURNISH MULTIPLE STUDS AT JAMBS OF ALL OPENINGS PER DOOR AND WINDOW JAMB STUD FRAMING SCHEDULE ON SHEET A004.
8. INSTALL CONTROL JOINTS AT OPENINGS IN INTERIOR STUD WALLS PER F1 THIS SHEET. INSTALL ADDITIONAL CONTROL JOINTS SO THAT JOINT SPACING DOES NOT EXCEED 30'-0".
9. REFER TO SHEET A007 FOR TYPICAL CFMF / STUD WALL TO DECK DETAILS NOT INDICATED ON THIS SHEET.
10. ALL WALLS IN ENTIRE PROJECT ARE TO DECK, UNLESS NOTED OTHERWISE, REFER TO RCP (A600s) FOR MORE INFO.



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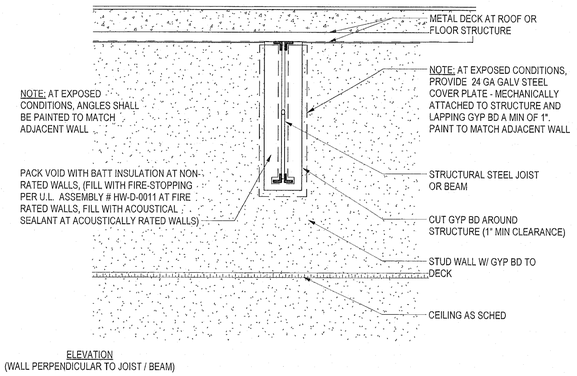
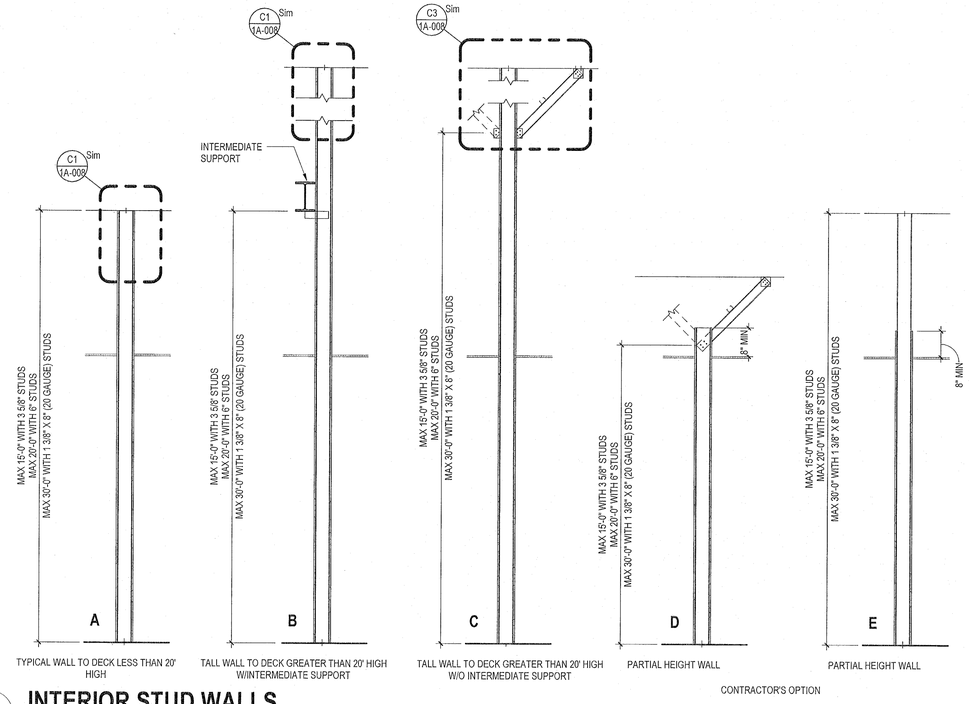


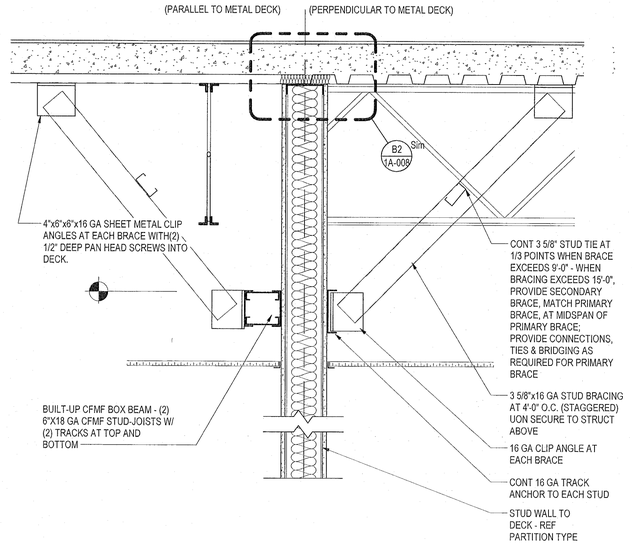
ELEVATION
(WALL PERPENDICULAR TO JOIST / BEAM)

C1 1A-008 WALL TO DECK STL STUD
1" = 1'-0"



TYPICAL WALL TO DECK LESS THAN 20' HIGH | TALL WALL TO DECK GREATER THAN 20' HIGH W/INTERMEDIATE SUPPORT | TALL WALL TO DECK GREATER THAN 20' HIGH W/O INTERMEDIATE SUPPORT | PARTIAL HEIGHT WALL | PARTIAL HEIGHT WALL
CONTRACTOR'S OPTION

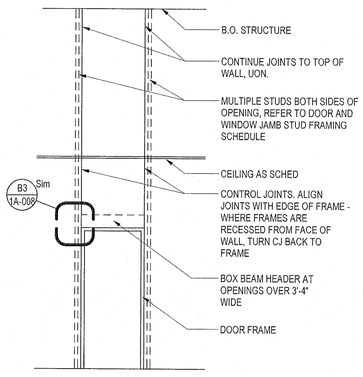
A1 1A-008 INTERIOR STUD WALLS
3/8" = 1'-0"



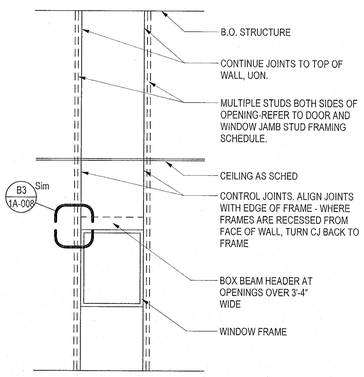
C3 1A-008 WALL TO DECK STL SUD
1" = 1'-0"

B3 1A-008 CFMF BOX BEAM HEADER
1 1/2" = 1'-0"

B2 1A-008 HEAD CONDITIONS
3" = 1'-0"



DOOR
(VIEW FROM INTERIOR)



WINDOW
(VIEW FROM INTERIOR)

A3 1A-008 OPENINGS IN STUD/CFMF WALLS
1" = 1'-0"

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12/12/2024

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION WALL TO DECK DETAILS - CFMF 1A-008

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
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SHEET NO. 72 OF 255	

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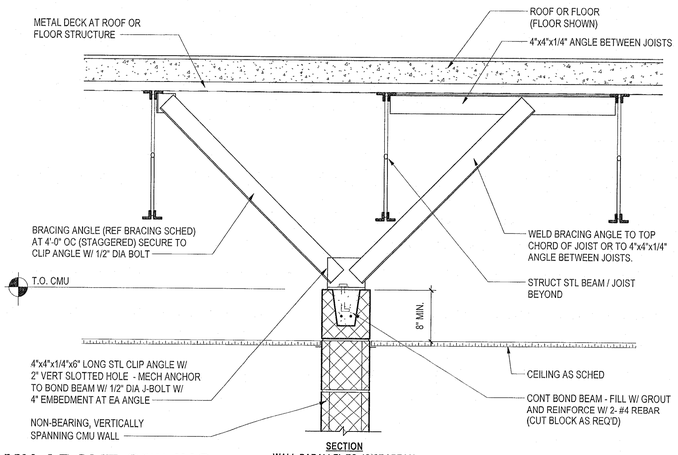
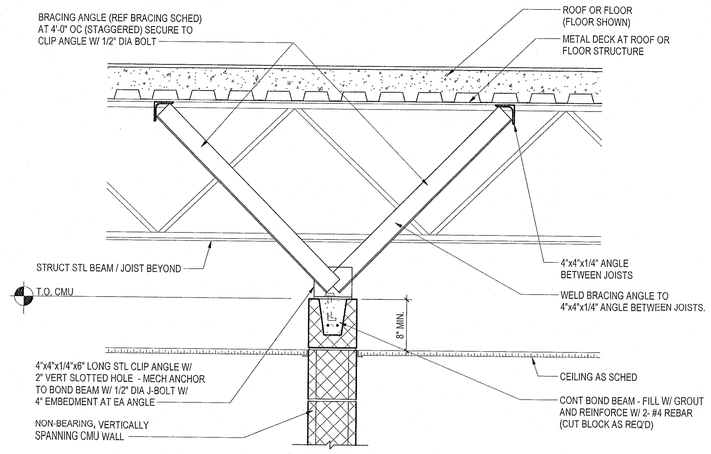
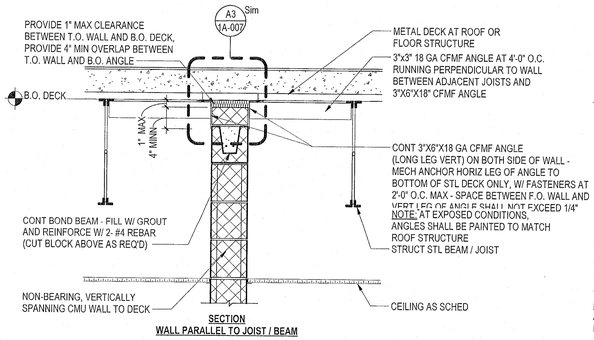
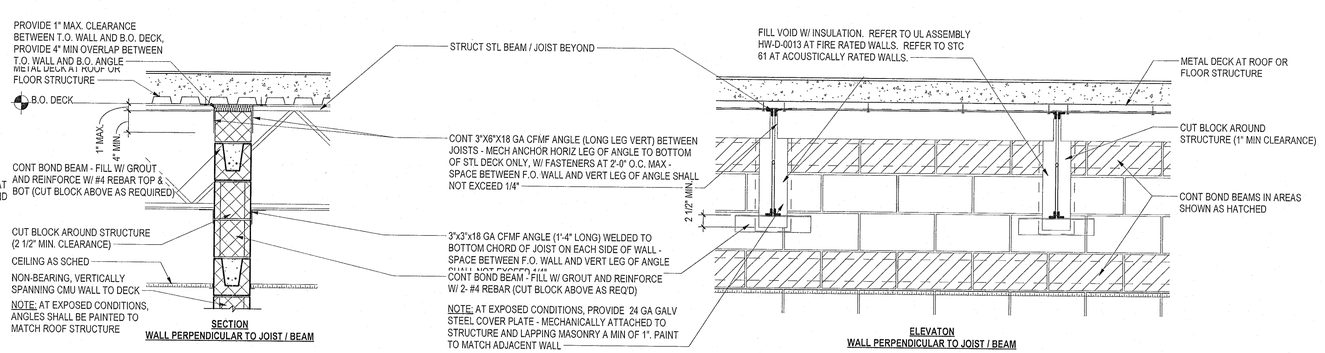




A3 / 1A-009 CMU ABOVE CEILING

1" = 1'-0"





A1 / 1A-009 TYP CMU WALL TO DECK

3/4" = 1'-0"

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12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION WALL TO DECK DETAILS

1A-009

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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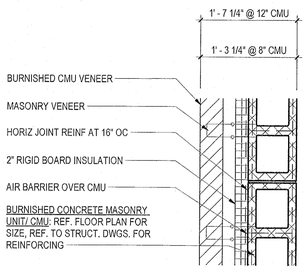
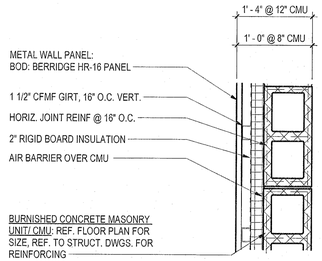
EXTERIOR WALL TYPES



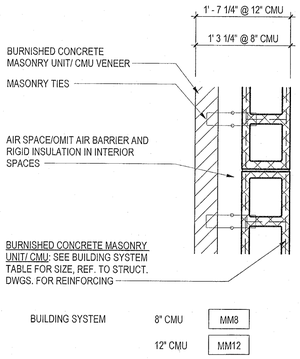
BUILDING SYSTEM		
	8" CMU	XMM8
	8" CMU	XMM10 *
	12" CMU	XMM12



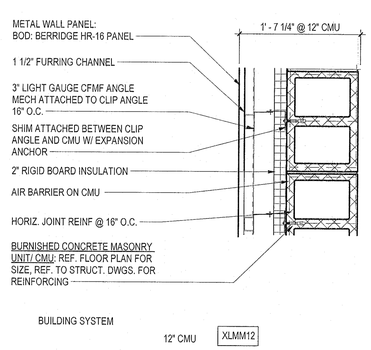
BUILDING SYSTEM		
	8" CMU	XLM8
	12" CMU	XLM12

*NOTE: XMM10 IS A UL U905 1 HR RATED ASSEMBLY, ALL PENETRATIONS MUST BE SEALED.

INTERIOR WALL TYPES

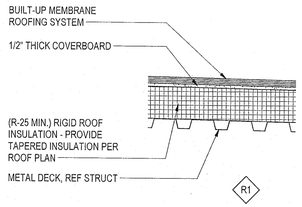


BUILDING SYSTEM		
	8" CMU	MM8
	12" CMU	MM12



BUILDING SYSTEM		
	12" CMU	XLMM12

ROOF TYPES



GENERAL WALL SECTION NOTES:

GENERAL
1. THE SECTIONS DO NOT INDICATE ALL INSTANCES OF MASONRY BANDING, CORBELLING, AND OTHER VENEER CONDITIONS. REFER TO SECTION DETAILS AND EXTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.

ROOF / FLASHING AND MISC CONSTR
1. MULTI-PLY ROOF WORK NOT SPECIFICALLY DETAILED SHALL BE DESIGNED AND EXECUTED IN ACCORDANCE WITH 'NRCA' MANUAL REQUIREMENTS.

2. SHEET METAL WORK NOT SPECIFICALLY DETAILED SHALL BE DESIGNED AND EXECUTED IN ACCORDANCE WITH 'SMACNA' MANUAL REQUIREMENTS.

3. WHERE 'SMACNA' MANUAL IS REFERENCED, THESE DOCUMENTS REFER TO THE 7TH EDITION, 2012.

4. JOINTS FOR COPINGS, ROOF EDGES AND EXPOSED FLASHING SHALL BE PER 'SMACNA', TABLE 3-1. PROVIDE JOINT J5 FOR PREFINISHED MATERIAL FOR COPING (24 GA UP TO 18" WIDE AND 22 GA UP TO 18" WIDE) AND JOINT J8 FOR GALVALUM AND GALV MATERIAL TOP BACK OF PARAPET.

5. THROUGH-WALL COUNTERFLASHINGS SHALL BE TWO-PIECE PREFIN STAINLESS STL IAW 'SMACNA' MANUAL FIG 4-4C, W/ HOLD-DOWN CLIPS 32" OC UON.

6. WEEPS SHALL BE AT 32" OC AT CMU.

7. PROVIDE CONT WATERSTOPS AT ALL EXTERIOR WALLS THAT DO NOT HAVE A BRICK LEDGE. WATERSTOP SHALL BE CONT EMBEDDED SST FLASHING W/ 1" MIN EMBED INTO CONC SLAB AND SHALL LAP 6" MIN OVER EXT GYP SHEATHING/UNDER VAPOR PERMEABLE AIR BARRIER - OR- SHALL LAP 6" MIN OVER CMU BACKUP/UNDER RIGID INSUL AND VAPOR PERMEABLE AIR BARRIER. ALIGN WATERSTOP W/ OUTSIDE FACE OF EXT GYP SHEATHING OR CMU BACKUP.

8. REFER TO 'LOOSE STEEL ANGLE LINTEL FOR MASONRY VENEER' SCHEDULE, SHEET 1A-006 FOR UNDESIGNATED, UNBRACED VENEER, PER SPAN, AT WALL OPENINGS.

9. REFER TO 'MISC STEEL BRACING' SCHEDULE AT SHEET 1A-A007 FOR UNDESIGNATED MISC STL BRACING FOR WALLS.

10. REFER TO STRUCT DOCS FOR EXACT LOCATIONS AND TYPES OF STRUCT MEMBERS FOR JOIST BEARING , TOP OF STEEL/BOTTOM OF DECK ELEVATIONS, AND FOR COMPLETE DETAILS OF ALL STRUCT CONNECTIONS. INDICATIONS IN WALL SECTIONS ARE FOR COORDINATION PURPOSES ONLY. NOTIFY ARCHITECT OF ANY DISCREPANCIES

11. REFER TO ELEVATIONS AND STRUCT DOCS FOR MASONRY VENEER PATTERNS, BRICK LEDGES AND STEPS IN PARAPETS.

12. REFER TO FLOOR PLANS FOR EXACT PLACEMENT OF WINDOWS.

13. REFER TO CODE SHEETS 1A-101 & 1A-102 FOR FIRE ASSEMBLY REQUIREMENTS AND EXTENTS.

CFMF, STL STUD AND GYP BD SYSTEM CONSTR
1. METAL FRAMING FOR EXTERIOR WALLS SHALL BE CFMF AND INTERIOR METAL FRAMING SHALL BE STL STUDS, UON.

2. UNDESIGNATED CFMF SHALL BE 16GA MIN W/ 1 5/8" MIN WIDE FLANGES AT 16"OC MIN (12"OC MAX FOR 10'-0" EA SIDE AT OUTSIDE CORNERS). REFER TO BUILDING SYSTEM TYPES AND DETAILS FOR MEMBER DEPTHS. CFMF SYSTEMS SUPPORTING MASONRY VENEER SHALL RESIST CODE REQUIRED WIND PRESSURES AT DEFLECTION LESS THAN OR EQUAL TO L/600. CFMF SYSTEMS NOT SUPPORTING MASONRY VENEER SHALL RESIST CODE REQUIRED WIND PRESSURES AT DEFLECTION LESS THAN OR EQUAL TO L/360. NOTIFY ARCHITECT OF ANY DISCREPANCIES BETWEEN THESE CRITERIA AND INDICATED CFMF MEMBER SIZES AND SPACINGS.

3. CFMF AND STUD MEMBERS SHALL HAVE BOTH FLANGES BRACED - WHERE THERE IS NO SHEATHING OR FINISH MATERIAL CALLED OUT, PROVIDE V-BAR BRACING OR BRIDGING AT 24"OC MAX.

4. CFMF BRIDGING SHALL BE 6"x18GA CFMF AT 24"OC, UON.

5. WHERE CFMF ARE 12"OC, VENEER TIES SHALL BE 16"OC VERT AND 12"OC HORIZONTAL

6. PROVIDE CONT SPECIFIED VAPOR PERMEABLE AIR BARRIER ON OUTSIDE FACE OF GYP SHEATHING OR OUTSIDE FACE OF CMU BACK-UP AS REQUIRED BY BUILDING SYSTEM TYPE.

7. AT RADIUSED SURFACES IN GYP BD BULKHEADS USE APPROPRIATE THICKNESS OF GYP BOARD TO ACHIEVE INDICATED RADIUS. USE APPROPRIATE NUMBER OF LAYERS OF GYP BD TO MAINTAIN THICKNESS OF WALLBOARD INDICATED IN DETAILS AND PARTITION TYPES. PREVENT FLAT AREAS BETWEEN FRAMING BY SPACING STUDS CLOSER THAN NORMAL. WORK SHALL BE PERFORMED IN ACCORDANCE WITH GYPSUM ASSOCIATION PUBLICATION GA-226.

8. CFMF SHALL BE BRACED AS REQUIRED TO MAINTAIN STUD SPANS PER MFR HEIGHT LIMITING TABLES. STUD BRACING SHALL OCCUR ABOVE CEILINGS ONLY. WHEN THIS IS NOT POSSIBLE PROVIDE STUDS OF AN APPROPRIATE GAUGE OR DEPTH FOR THE CONDITION.

9. REFER TO 'DOOR AND WINDOW JAMB SCHEDULE' ON SHEET 1A-501 FOR NUMBER OF STUDS AT JAMBS IN CFMF AND STL STUD AND GYP BD CONSTR.

CMU CONSTR
1. CMU/MASONRY MULTI-WYTHE CAVITY WALLS SHALL HAVE HORIZ REINF AT 16" OC. REFER TO SPECS FOR TYPE.

2. ALL INTERIOR SINGLE WYTHE CMU WALLS SHALL HAVE HORIZ REINF AT 16" OC. REFER TO SPECS FOR TYPE.

3. REFER STRUCT DOCS FOR DESIGN OF LOAD-BEARING WALL AND EXTERIOR NON-LOADBEARING WALLS.

4. UNDESIGNATED CMU BOND BEAMS SHALL HAVE CONT #5 BARS AT TOP AND BOTTOM AND SHALL BE GROUTED SOLID.

5. PROVIDE CONT BOND BEAMS AT TOPS OF ALL CMU WALLS UNLESS OTHERWISE INDICATED. PROVIDE STEPS AS REQUIRED FOR SLOPES.

6. WHERE A BOND BEAM IS INTERRUPTED BY A WALL OPENING, THE BOND BEAM SHALL CONTINUE ABOVE THE OPENING AND SHALL BE ANCHORED TO CONT GROUTED AND VERT REINFORCED JAMB CELLS AT EA SIDE ON HORIZONTAL SPANNING WALLS.

7. REFER TO 'UNSCHEDULED MASONRY LINTEL TABLE' ON SHEET 1S-504 FOR UNDESIGNATED LINTELS, PER SPAN AT CMU WALL OPENINGS.

8. NON LOAD-BEARING MASONRY WALL PARAPETS SHALL BE REINF W/ No 5 BARS AT 32" OC VERT IN FULLY GROUTED CELLS, EXTENDING BELOW BRACE POINT EQUAL DISTANCE TO PARAPET ABOVE BRACE POINT

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28296 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

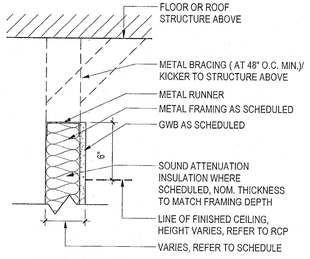
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

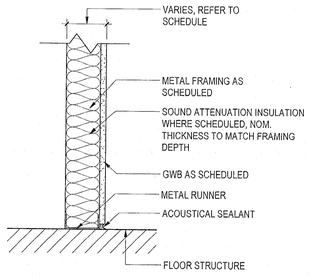
ADMINISTRATION WALL & BUILDING SYSTEM TYPES 1A-010

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 74 OF 255	

PUBLIC WORKS & ENGINEERING ACCEPTED 80341 HOUSTON, TEXAS

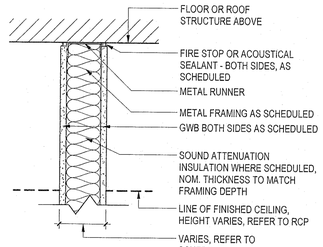


TOP TB2

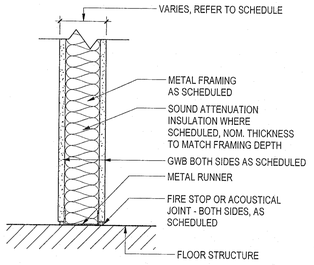


BASE BB1

Group B

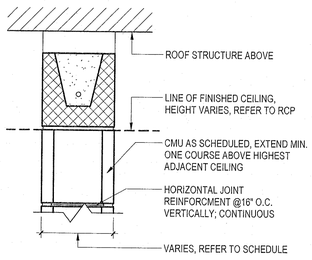


TOP TC1

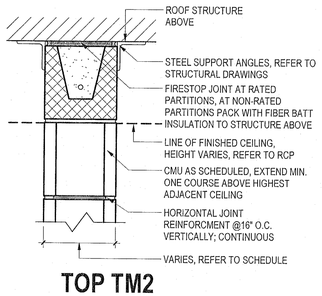


BASE BC1

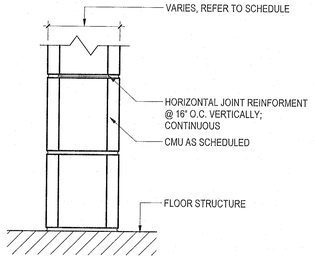
Group C



TOP TM1



TOP TM2



BASE BM1

Group M

WALL TYPE SCHEDULE

TYPE	CONSTRUCTION DATA: OVERALL PARTITION DEPTH	FRAMING SIZE	DETAIL AT TOP	DETAIL AT BASE	TOP TERMINATION: STUDS TO STRUCTURE	TOP TERMINATION: GWB TO STRUCTURE	TOP TERMINATION: INSULATION TO STRUCTURE	FIRE PARTITIONS: FIRE RATING (HRS)	FIRE PARTITIONS: FIRE TEST	ACOUSTICAL PERFORMANCE: SOUND INSULATION	ACOUSTICAL PERFORMANCE: STC RATING	ACOUSTICAL PERFORMANCE: STC TEST	NOTES
Group B - Material, Stud													
B13	4 1/4"	3 5/8"	TB1	BB1	•	•	-	0		-	0		
B14	4 1/4"	3 5/8"	TB1	BB1	•	•	•	0		•	0		
B18	4 1/4"	3 5/8"	TB2	BB1	-	-	-	0		-	0		
Group C - Material, Stud, Material													
C10	4 7/8"	3 5/8"	TC1	BC1	•	•	-	0		-	40	RAL-TL11-125	
C11	4 7/8"	3 5/8"	TC1	BC1	•	•	•	0		•	49	SA-870/17	
C18	4 7/8"	3 5/8"	TC1	BC1	-	-	-	0		-	0		
C20	7 1/4"	6"	TC1	BC1	•	•	-	0		-	40	RAL-TL11-125	
C21	7 1/4"	6"	TC1	BC1	•	•	•	0		•	49	SA-870/17	
C25	7 1/4"	6"	TC1	BC1	•	•	•	1	UL U419	•	49	SA-870/17	FIRE STOP
Group M - CMU													
M08	7 5/8"	8" NOM.	TM2	BM1	-	-	-	0		-	45	KAL-359-3-66	
M12	11 5/8"	12" NOM.	TM2	BM1	-	-	-	0		-	45	KAL-359-3-66	
M14	11 5/8"	12" NOM.	TM2	BM1	-	-	-	1	UL U905	-	45	KAL-359-3-66	FIRE STOP
Group N - Material, Furring, CMU													
N06	13 1/8"	12" NOM. / 7/8"	TN1	BN1	•	-	-	0		-	0		

GENERAL NOTES - PARTITIONS:

1. NOT ALL PARTITION GROUPS OR TYPES HAVE BEEN UTILIZED - RESULTING TYPE NUMBERS MAY NOT BE SEQUENTIAL. REFER TO PARTITION SCHEDULES FOR TYPES UTILIZED IN THIS PROJECT.
2. FOR ALL PARTITION SYSTEMS THAT ARE INDICATED TO EXTEND FROM FLOOR SLAB TO UNDERSIDE OF STRUCTURE OR FLOOR SLAB ABOVE, INCLUDING ALL FIRE RATED PARTITIONS AND ALL PARTITIONS INDICATED TO HAVE A SOUND TRANSMISSION CLASS (STC), PROVIDE ASSEMBLY AT HEAD OF PARTITION THAT WILL ACCOMODATE A MINIMUM DEFLECTION OF THE STRUCTURE ABOVE THE PARTITION AS INDICATED ON THE STRUCTURAL DRAWING, BUT NOT LESS THAN L/360 (WHERE L = SPAN OF THE STRUCTURE) WITHOUT TRANSFERRING LOADS RESULTANT FROM THAT DEFLECTION TO THE PARTITION ASSEMBLY.
3. PROVIDE ASSEMBLY THAT WILL TRANSFER LATERAL LOADS APPLIED NORMAL TO THE FACE OF THE PARTITION SYSTEM INTO THE STRUCTURE OR FLOOR SLAB ABOVE. WHERE FIRE-RATED PARTITIONS OCCUR, PROVIDE A UL-LISTED AND APPROVED HEAD ASSEMBLY FOR THAT PARTITION THAT HAS BEEN TESTED AND DETERMINED TO PROVIDE A FIRE RATING EQUIVALENT TO THAT OF THE FIRE RATED PARTITION. WHERE PARTITIONS INDICATED TO HAVE A SOUND TRANSMISSION CLASS OCCURS, PROVIDE A HEAD ASSEMBLY FOR THAT PARTITION THAT HAS BEEN TESTED AND DETERMINED TO PROVIDE A SOUND TRANSMISSION CLASS EQUIVALENT TO THAT OF THE SOUND RATED PARTITION. ALL HEAD ASSEMBLIES SHALL BE INSTALLED IN STRICT CONFORMANCE TO MANUFACTURER'S RECOMMENDATIONS.
4. REFER TO 1A-010 FOR EXTERIOR WALL BUILDING ASSEMBLIES.
5. REFER TO CODE REVIEW IN 1A-101 & 1A-102 SERIES FOR LOCATION & EXTENT OF WALL ASSEMBLIES.

INTERIOR STUD CONSTRUCTION NOTES:

1. GYP BD TO BE 5/8" (UON).
2. PROVIDE CONT ACOUSTICAL SEALANT ON BOTH SIDES AT ADJACENT WALLS AND AT TOP AND BOTTOM OF GYPSUM BOARD ASSEMBLY WALLS TO FLOOR/ROOF DECK AND FLOOR.
3. PROVIDE 1/2" CEMENTITIOUS TILE BACKER BOARD BEHIND TILE AT WET WALLS AND SHOWER ENCLOSURES. PROVIDE 5/8" WR GYP BD BEHIND TILE AT NON-WET WALLS, AND AT NON-TILED WET WALLS.

INTERIOR CMU CONSTRUCTION NOTES:

1. PROVIDE A CONT BOND BEAM AT THE BOTTOM OF CMU WALLS AT THE FIRST COURSE ABOVE THE FLOOR LEVEL - DISCONTINUE BOND BEAMS INTO REINFORCED JAMBS AT OPENINGS IN WALLS.
2. PROVIDE A CONT BOND BEAM AT 8'-0" O.C. MAX VERTICALLY (ALIGN WITH DOOR HEAD LINTELS WHERE POSSIBLE) FOR RUNNING BOND CMU - AND - AT 4'-0" O.C. MAX VERTICALLY (ALIGN WITH DOOR HEAD LINTELS WHERE POSSIBLE) FOR STACK BOND CMU. FOR SPACING ABOVE DOOR HEADS, START MEASURING FROM THE CENTER LINE OF LINTELS. DISCONTINUE BOND BEAMS INTO REINFORCED JAMBS AT OPENINGS IN WALLS OR INTO OTHER BOND BEAMS WHERE TOP OF WALL SLOPES.
3. ALL INTERIOR SINGLE WYTHE CMU WALLS SHALL HAVE TRUSS DESIGN HORIZ REINF AT 16" OC.

ACOUSTIC PARTITION CONSTRUCTION NOTES:

1. PROVIDE CONTINUOUS ACOUSTICAL SEALANT (BOTH SIDES) AT ALL NON-RATED PARTITION HEAD, BASE & JAMB TERMINATION JOINTS. FILL HEAD DEFLECTION VOID AND DECK FLUTES WITH 10 PDC GLASS FIBER INSULATION.
2. PROVIDE SOUND ATTENUATING BLANKET INSULATION AT ALL PARTITIONS (INDICATED OR NOT) WITHIN AND SURROUNDING SOUND SENSITIVE AREAS *(OFFICES, BATHROOMS, CONFERENCE ROOMS)*
3. PENETRATIONS THROUGH SOUND ISOLATING WALLS TO BE FULLY SEALED AROUND ENTIRE PERIMETER. PENETRATING ELEMENTS TO BE CENTERED WITHIN OPENING SO THAT THEY NEITHER TOUCH NOR BEAR ON SURROUNDING CONSTRUCTION AND FULLY SEALED.
4. ALL ELECTRICAL AND TELECOMMUNICATIONS BOXES WITHIN SOUND ISOLATING WALLS SHALL BE INSTALLED IN ALTERNATING SOUND BAYS TO MINIMIZE FLANKING SOUND PATHS. SEAL DEVICE TO DRYWALL CUT-OUTS WITH MOLDABLE PUTTY PAD - BASIS OF DESIGN TO BE 3M FIRE BARRIER MOLDABLE PUTTY PAD.
5. ALL ELECTRICAL AND TELECOMMUNICATION OUTLET BOXES IN FIRE RATED BARRIER PARTITIONS TO RECEIVE FIRE RATED MOLDABLE PUTTY PAD - BASIS OF DESIGN TO BE 3M FIRE BARRIER MOLDABLE PUTTY PAD.

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT — DANIELLE DUPUY — 28298 — STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION INTERIOR PARTITION TYPES 1A-011

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 75 OF 255	

PUBLIC WORKS — ENGINEERING DIVISION — ACCEPTED AS NOTED — 80341 — CITY ENGINEER — HOUSTON, TEXAS

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FILE PATH:

WALL TO DECK RATING LEGEND

NON-RATED WALL TO DECK

1 HR RATED WALL ASSEMBLY

NOTES:

1. ALL WALLS ARE NON-RATED WALLS TO BOTTOM OF DECK (UON).
2. ALL NON-LOADBEARING CMU WALLS SPAN VERTICALLY (UON).
3. ALL COLUMN ENCLOSURES SHALL BE THE SAME HEIGHT AS THE ADJACENT WALL (UON).
4. BRACE ALL WALLS TO STRUC ABOVE AS NOTED IN WALL BRACING NOTES AND WALL TERMINATION DETAILS ON SHEET 1A-008 & 1A-009.
5. REFER TO PARTITION TYPES, SHEET A001 &WALL CONSTRUCTION AND RATED ASSEMBLY UL NOS., SHEET 1A-005, TYP.

NOTES:

1. PROVIDE DAMPERS AND LIGHT FIXTURE PROTECTION AS REQUIRED BY UL ASSEMBLIES.
2. UL ASSEMBLIES INDICATED ESTABLISH A PERFORMANCE BASIS. OTHER ASSEMBLIES MAY BE CONSIDERED AT THE DISCRETION OF THE ARCHITECT IF EQUIVALENT PERFORMANCE IS PROVIDED. SUBSTITUTION PROPOSALS SHALL INCLUDE CHANGES REQUIRED TO ALL COMPONENTS OF THE ASSEMBLY.

PARKING ANALYSIS

PARKING REQ'D	2.5 SPACES PER 1000 GSF
	9,962 SF
	2.5 SPACES
	24.9 SPACES REQ'D
PARKING PROVIDED	47 SPACES PER
ADA SPACES REQ'D	2 SPACES
ADA SPACES PROVIDED	4 SPACES PER

PROJECT GENERAL INFORMATION:

PROJECT	IAH WASTE WATER TREATMENT PLANT ADMINISTRATION BUILDING
LOCATION	2450 RANKIN ROAD, HOUSTON, TEXAS 77032
BUILDING HEIGHT	ONE STORY, 18 FT HIGH
FLOOR AREA SUMMARY	LEVEL 1: 9, 962 SF
JURISDICTION	CITY OF HOUSTON

CODE REVIEW: IBC 2015, IFC 2015, 2015 UMC, 2015 UPC, 202 NEC, 2015 IECC W/ CITY OF HOUSTON AMENDMENTS

OCCUPANCY (SEC. 508)	BUSINESS
PRIMARY OCCUPANCY (SEC. 302)	BUSINESS GROUP "B"
SECONDARY OCCUPANCY (SEC. 302)	ASSEMBLY (A-3) LOCKER ROOM STORAGE/MECHANICAL
AUTOMATIC SPRINKLER SYSTEM	YES
TYPE OF CONSTRUCTION (TAB. 601)	TYPE II B
BUILDING AREA AND HEIGHT LIMITATIONS (SEC. 503-506) FOR GROUP "B" OCCUPANCY	92,000 AREA / 75 FT HEIGHT / 4 STORIES
FIRE SUPPRESSION THROUGHOUT	YES

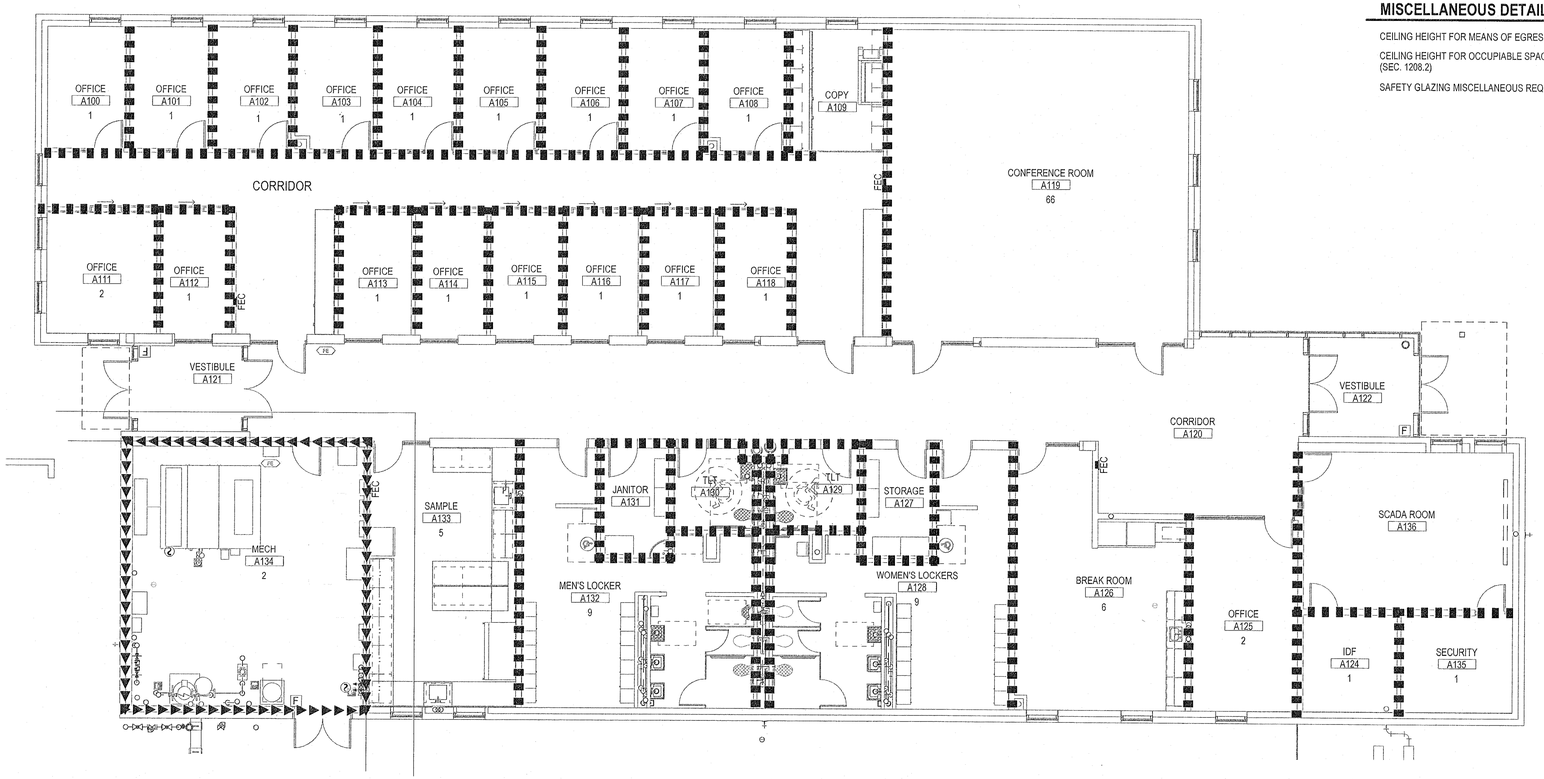
FIRE-RESISTANCE REQUIREMENTS

FOR GENERAL BUILDING ELEMENTS:	(TAB. 601 AND 602)	DOOR RATING (TAB. 716.5)
STRUCTURAL FRAME	0 HR	
BEARING WALLS:		
EXTERIOR	0 HR	
INTERIOR	0 HR	
NONBEARING WALLS:		
EXTERIOR LESS THAN 5'	1 HR	45 MIN
5' OR LESS THAN 10'	1 HR	45 MIN
10' OR LESS THAN 30'	0 HR	
GREATER THAN 30'	0 HR	
INTERIOR	0 HR	
FLOOR CONSTRUCTION (INCL. SUPPORT BEAMS/JOISTS)	0 HR	
ROOF CONSTRUCTION (INCL. SUPPORT BEAMS/JOISTS)	0 HR	
FOR SPECIFIC BUILDING ELEMENTS:		
CORRIDORS (TAB. 1018.1)	0 HR	

OCCUPANCY SEPARATIONS: NOT REQUIRED - NONSEPARATED USE (SEC 302.3.1)
INCIDENTAL USE SEPARATIONS (TABLE 509):

MISCELLANEOUS DETAILED REQUIREMENTS

CEILING HEIGHT FOR MEANS OF EGRESS (SEC. 1003.2)	MIN. 7'-6"
CEILING HEIGHT FOR OCCUPIABLE SPACES AND CORRIDORS (SEC. 1208.2)	MIN. 7'-6"
SAFETY GLAZING MISCELLANEOUS REQUIREMENT	SEC 2406



A1 / 1A-101 **FIRST LEVEL CODE REVIEW PLAN**
1/8" = 1'-0"

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNLAP 28298 STATE OF TEXAS
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION CODE REVIEW

1A-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	As indicated
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	76 OF 255

FOR CITY OF HOUSTON USE ONLY
ACCEPTED NOTED
80341

PLOTTED: 6/3/2025 12:40:41 PM
PLOT STYLE: COH.ctb
FILE PATH:

OCCUPANCY / EGRESS LEGEND:

INTERIOR AND EXTERIOR DOOR EGRESS (IBC SECTION 1005.1)

(1) PAIR 3'-0" DOOR (64" CLR) AT .2"/OCCUPANT = 320 OCCUPANTS

PLUMBING FIXTURE COUNT

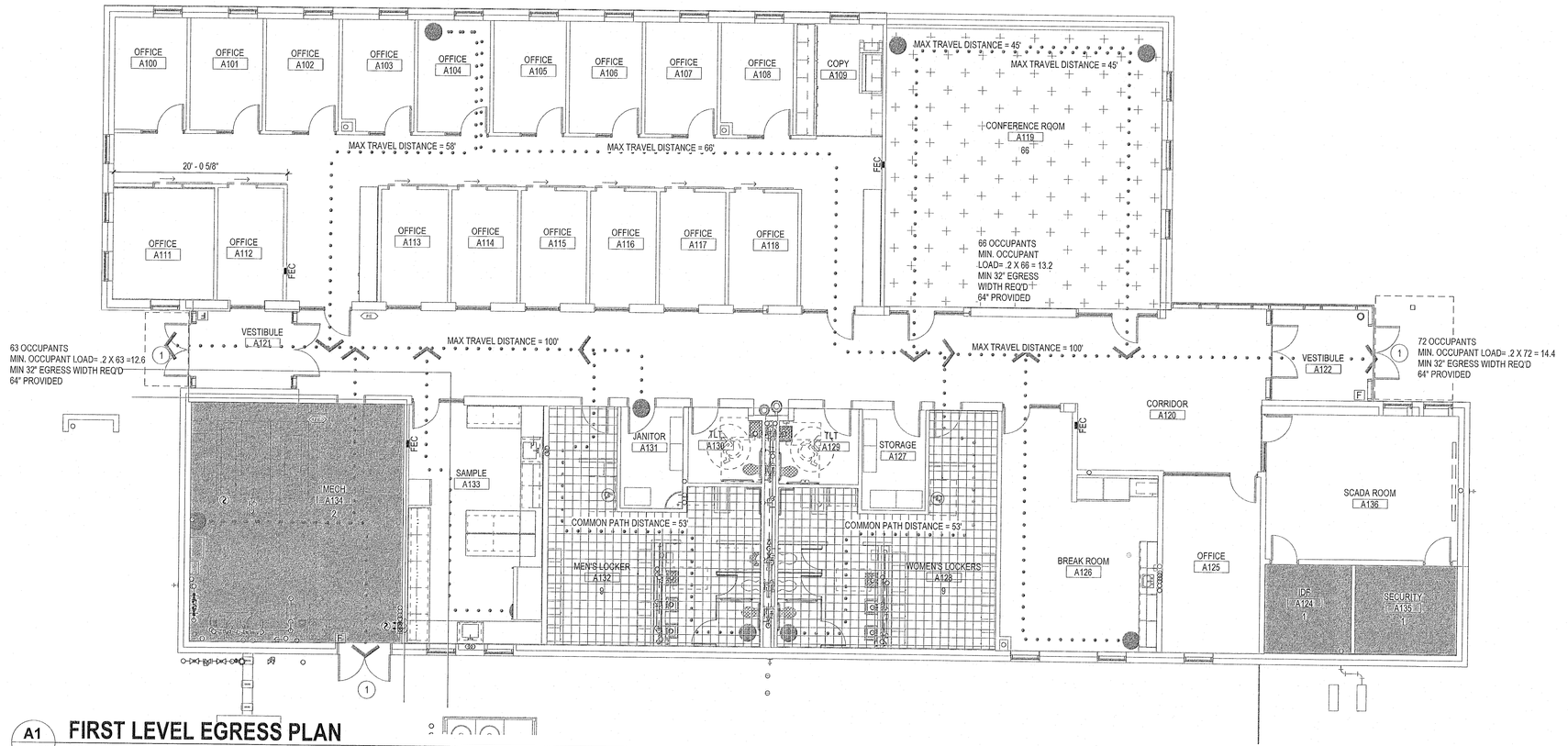
2015 INTERNATIONAL BUILDING CODE (TABLE 2902.1)/ 2015 UNIFORM PLUMBING CODE

TYPE OF OCCUPANCY:	BUSINESS W/ ASSEMBLY , STORAGE, MECHANICAL AND LOCKER ROOMS		
MAXIMUM CAPACITY:	152		
FIXTURE COUNTS MALE (76)			
		REQ'D	PROV'D
TOILETS	1 PER 25 X<50; 1 PER 50 X>50	3	2
URINALS	X< 1/2 TOTAL TOILETS REQ'D	X	1
LAVATORIES	1 PER 40 IF X<80; THEN 1 PER 80 IF X>80	3	3
FIXTURE COUNTS FEMALE (76)			
		REQ'D	PROV'D
TOILETS	1 PER 25 X<50; 1 PER 50 X>50	3	3
LAVATORIES	1 PER 40 IF X<80; THEN 1 PER 80 IF X>80	3	3
UNISEX RESTROOMS			
		REQ'D	PROV'D
TOILETS		X	1
LAVATORIES		X	1
EWC	1 PER 100	1	2

EGRESS OCCUPANCY SUMMARY

- OFFICES + COPY+ SAMPLE LAB+ SCADA ROOM+ VESTIBULES+BREAK ROOM+JANITOR+STORAGE+ CORRIDORS (6,234 SF GROSS) @ 100 SF PER OCCUPANT = **62 OCCUPANTS**
- CONFERENCE ROOM (1000 SF NET) @ 15 SF PER OCCUPANT = **67 OCCUPANTS**
- STORAGE + MECHANICAL + IDF + SECURITY+ (884 SF GROSS) @ 300 GROSS SF PER OCCUPANT = **3 OCCUPANTS**
- LOCKER ROOMS(982 SF GROSS) @ 50 GROSS SF PER OCCUPANT = **20 OCCUPANTS**

TOTAL OCCUPANCY = **152 OCCUPANTS**



A1 / 1A-102 **FIRST LEVEL EGRESS PLAN**

1/8" = 1'-0"

EGRESS REQUIREMENTS: IBC 2015

OCCUPANCT LOADS: **(TAB. 1004.1.2)**

FUNCTION OF SPACE:	SQ. FT PER OCCUPANT:
ACCESSORY STORAGE AREAS, MECH. EQUIPMENT ROOMS	300 GROSS
ASSEMBLY W/OUT FIXED SEATS:	
CONCENTRATED (CHAIRS ONLY)	7 NET
STANDING SPACE	5 NET
UNCONCENTRATED (TABLES AND CHAIRS)	15 NET
BUSINESS AREAS	100 GROSS
LOCKER ROOMS	50 GROSS

REQUIRED EGRESS WIDTH:

MINIMUM CORRIDOR WIDTH (TAB. 1005.3.2) → 44" MIN OR .2" PER OCCUPANT

NUMBER OF EXITS REQUIRED (TAB. 1006.3.1 / TAB. 1006.3.2(2)

51-500 OCCUPANTS → 2

NUMBER OF ACTUAL OCCUPANTS → 150

NUMBER OF PROVIDED EXITS → 3

MAXIMUM TRAVEL DISTANCE TO AN EXIT (TAB. 1017.2) → 250'

MAXIMUM LENGTH OF DEAD END CORRIDORS (1020.4) → 50' OR UNLIMITED LENGTH WHEN MIN. WIDTH < 2.5 TIMES THE WIDTH OF THE DEAD END CORRIDOR

COMMON PATH OF TRAVEL (1014.3) →

ALL OTHER OCCUPANCIES
< 30 OCC SERVED = 75'-0" TO CHOICE OF 2 EXIT PATHS
>30 OCC SERVED = 75'-0" TO CHOICE OF 2 EXIT PATHS

BUSINESS OCCUPANCY
< 30 OCC SERVED = 75'-0" TO CHOICE OF 2 EXIT PATHS
>30 OCC SERVED = 75'-0" TO CHOICE OF 2 EXIT PATHS

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION EGRESS PLAN

1A-102

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 77 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED 80341

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FILE PATH:

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FILE PATH:

PARKING ANALYSIS	
PARKING REQ'D	2.5 SPACES PER 1000 GSF 9,962 SF 2.5 SPACES 24.9 SPACES REQ'D
PARKING PROVIDED	47 SPACES PER
ADA SPACES REQ'D	2 SPACES
ADA SPACES PROVIDED	4 SPACES PER

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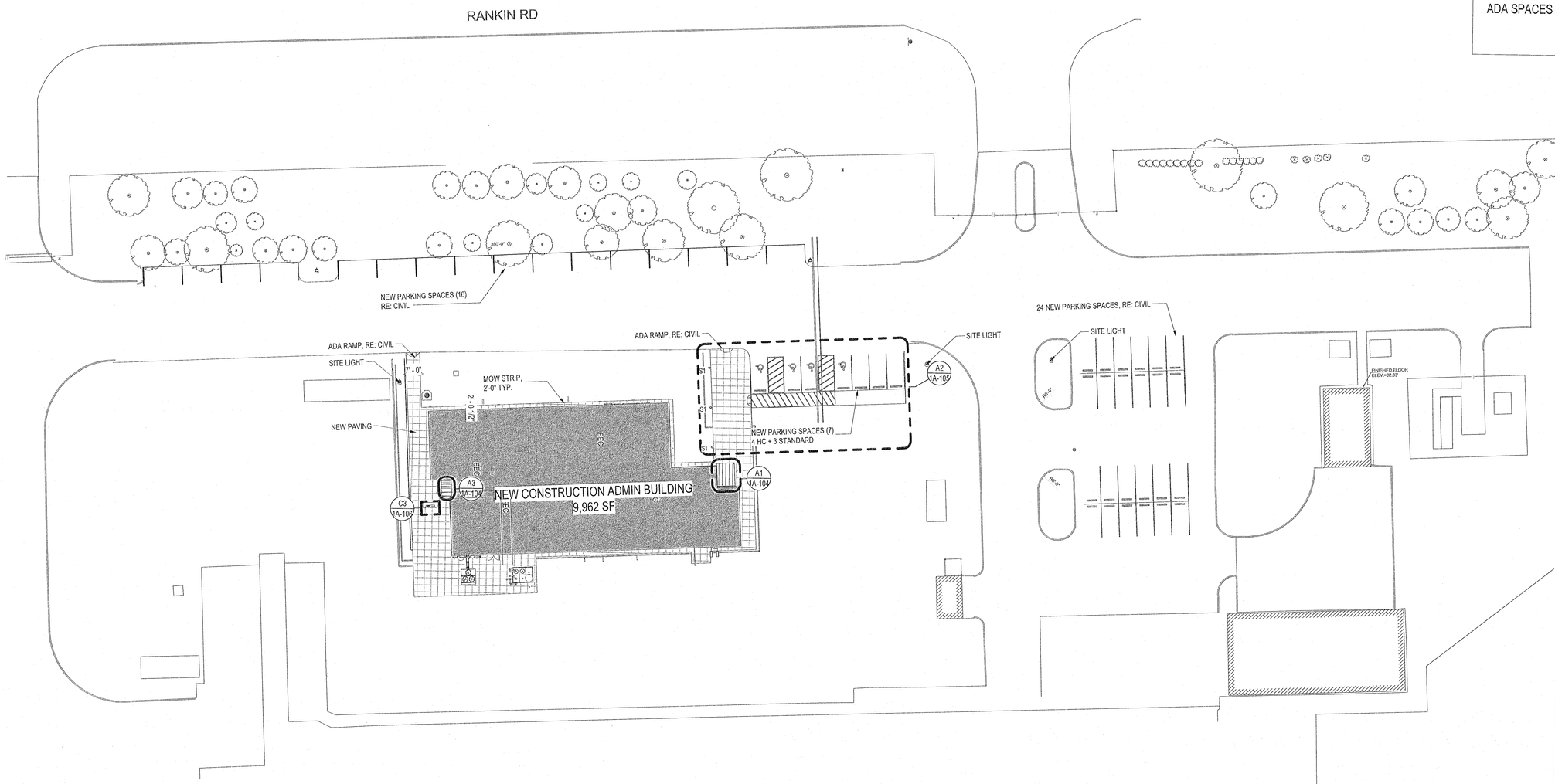

A1 / 1A-103 **OVERALL ARCHITECTURAL SITE PLAN**

1" = 30'-0"

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12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ARCHITECTURAL SITE PLAN 1A-103

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
As indicated
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
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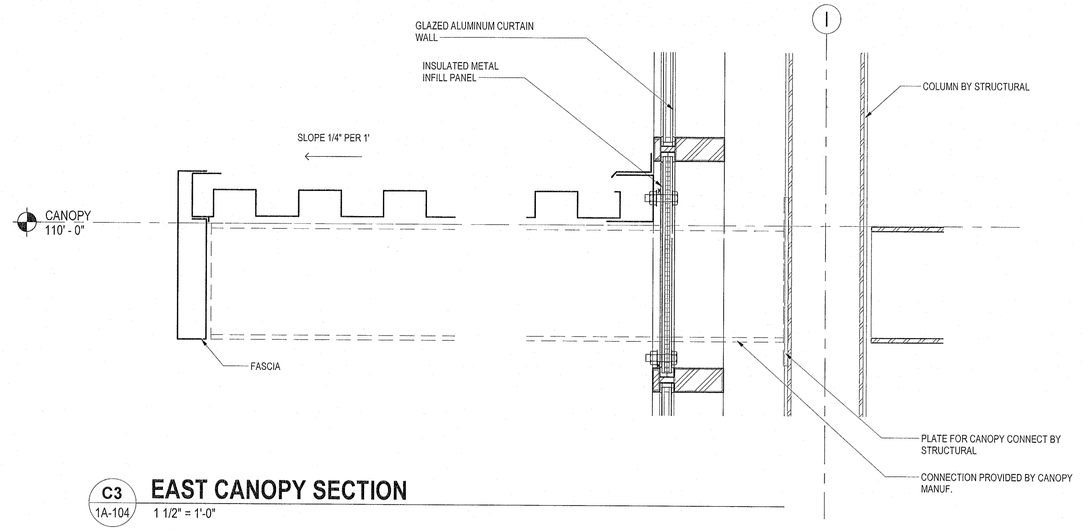
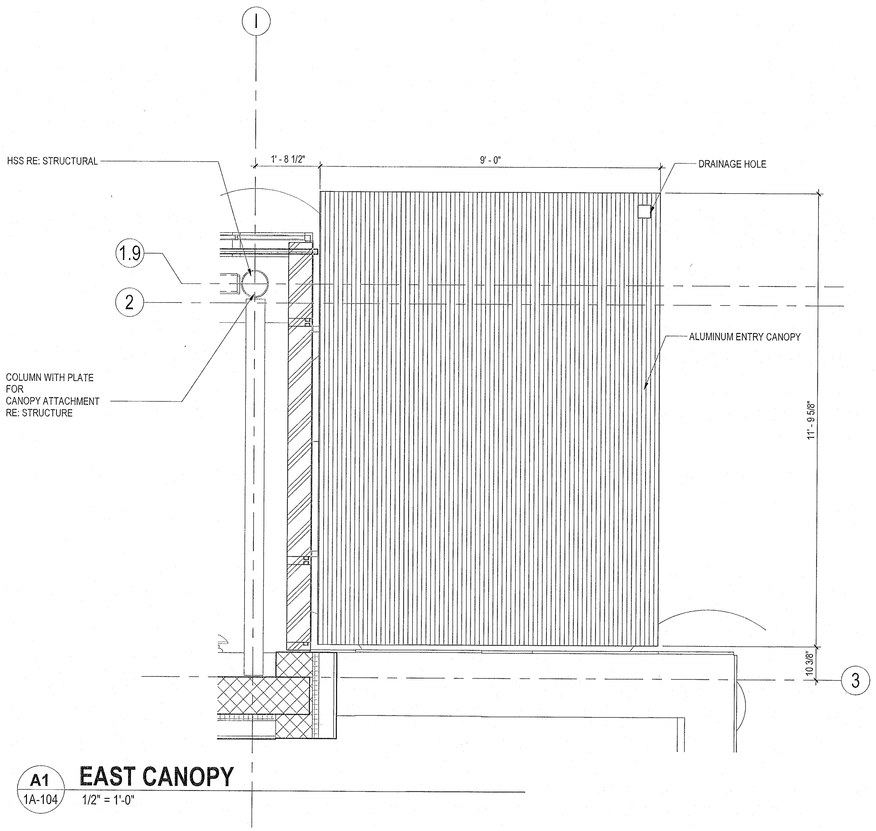
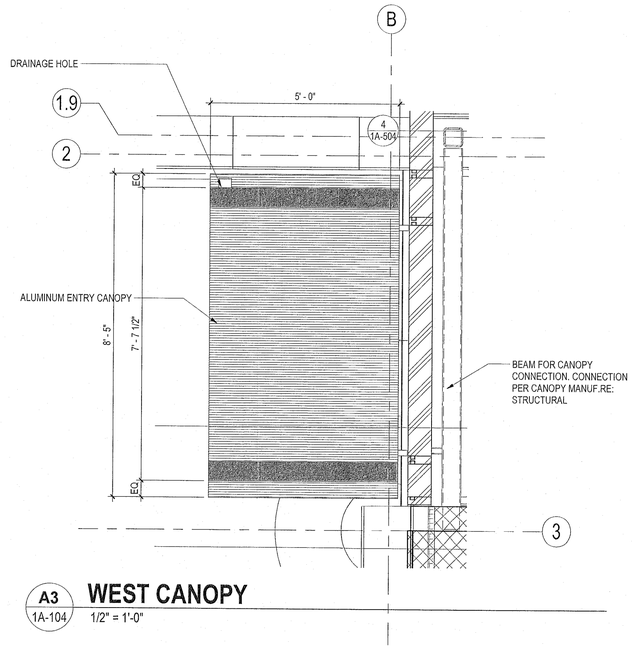


C3 / 1A-104 EAST CANOPY SECTION
1 1/2" = 1'-0"



A1 / 1A-104 EAST CANOPY
1/2" = 1'-0"



A3 / 1A-104 WEST CANOPY
1/2" = 1'-0"

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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION SITE PLAN DETAILS I

1A-104

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As indicated	
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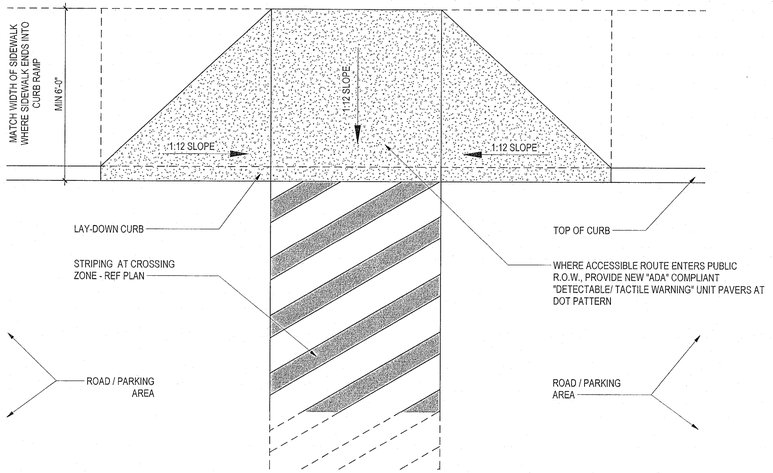
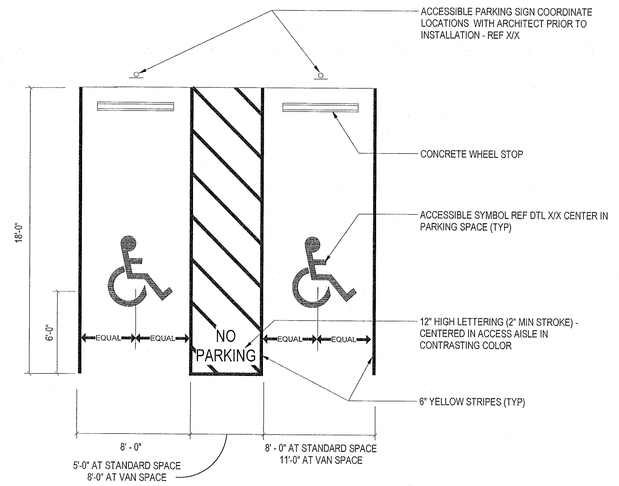
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 79 OF 255	



C1 SITE PARKING_CURB RAMP

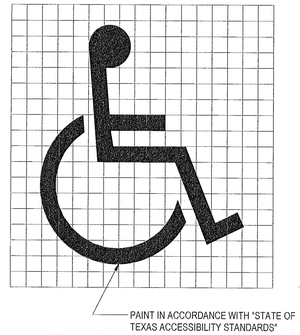
1A-105 — 3/4" = 1'-0"



ACCESSIBLE PARKING SPACE DETAIL

C3 AS51_SITE_PARKING_STD PARKING SPACE

1A-105 — 3/4" = 1'-0"



NOTE: GRID FOR LAYOUT PURPOSES ONLY.

C5 ACCESSIBLE SYMBOL

1A-105 — 3/4" = 1'-0"

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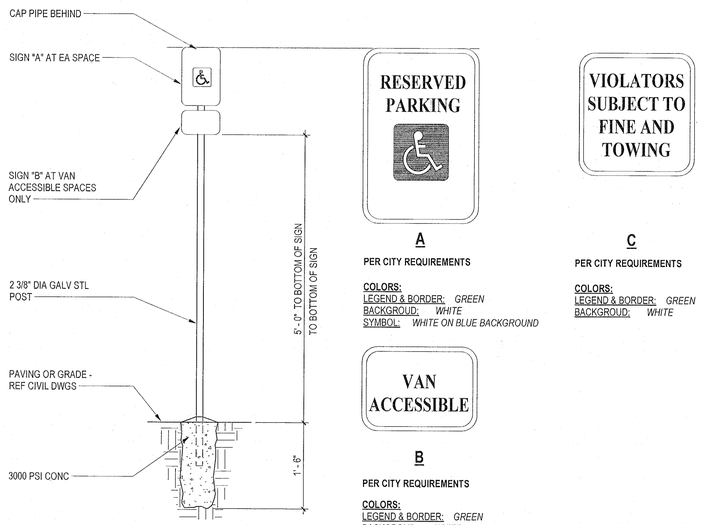
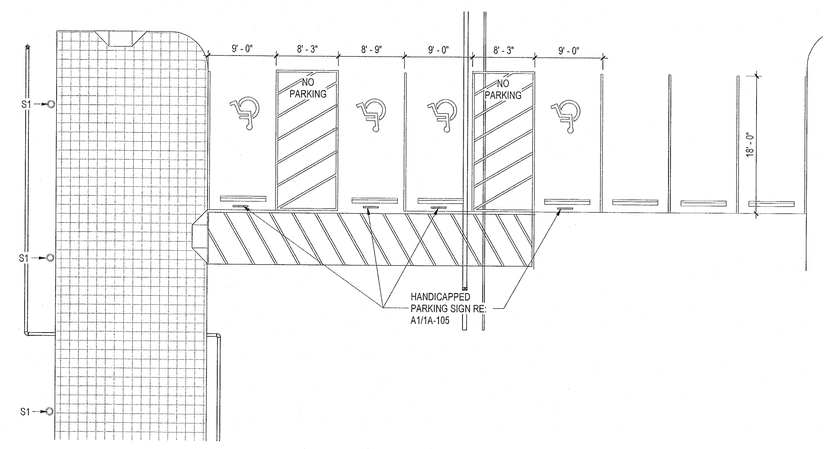


A1 ACCESSIBLE PARKING SIGN

1A-105 — 3/4" = 1'-0"



A2 ENLARGED PARKING

1A-105 — 1" = 10'-0"

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CITY OF HOUSTON

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION SITE PLAN DETAILS II

1A-105

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
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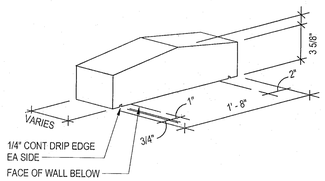
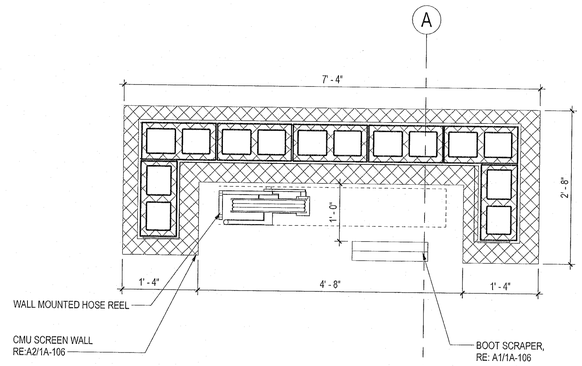
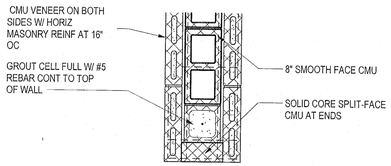


CAST STONE CAP

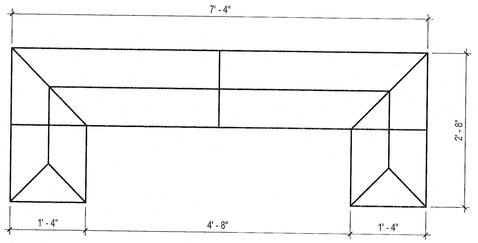
D2 CAST STONE CAP
1A-106 — 1 1/2" = 1'-0"



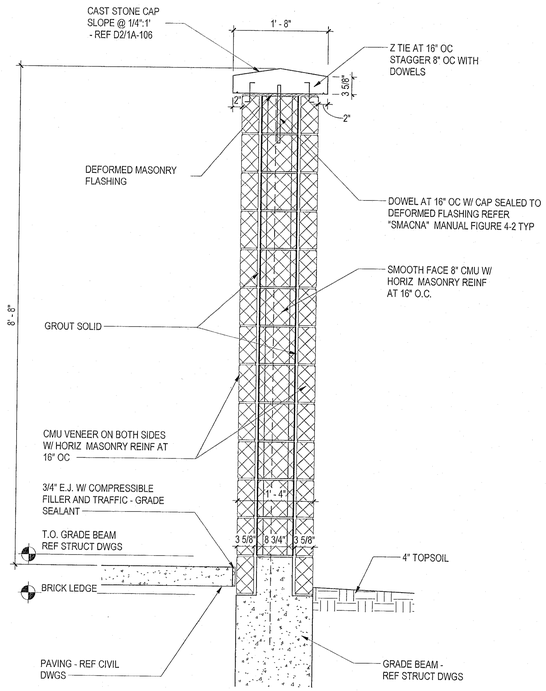
C3 SITE SCREEN WALL
1A-106 — 3/4" = 1'-0"



PLAN DETAIL

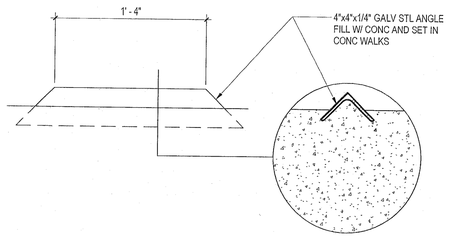


C2 WALL CAP PLAN
1A-106 — 3/4" = 1'-0"



SECTION

A2 SCREEN WALL
1A-106 — 3/4" = 1'-0"



A1 BOOT SCRAPER
1A-106 — 1 1/2" = 1'-0"

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REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION SITE PLAN DETAILS III

1A-106

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 81 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED AND FILED 80341 CITY SECRETARY HOUSTON, TEXAS

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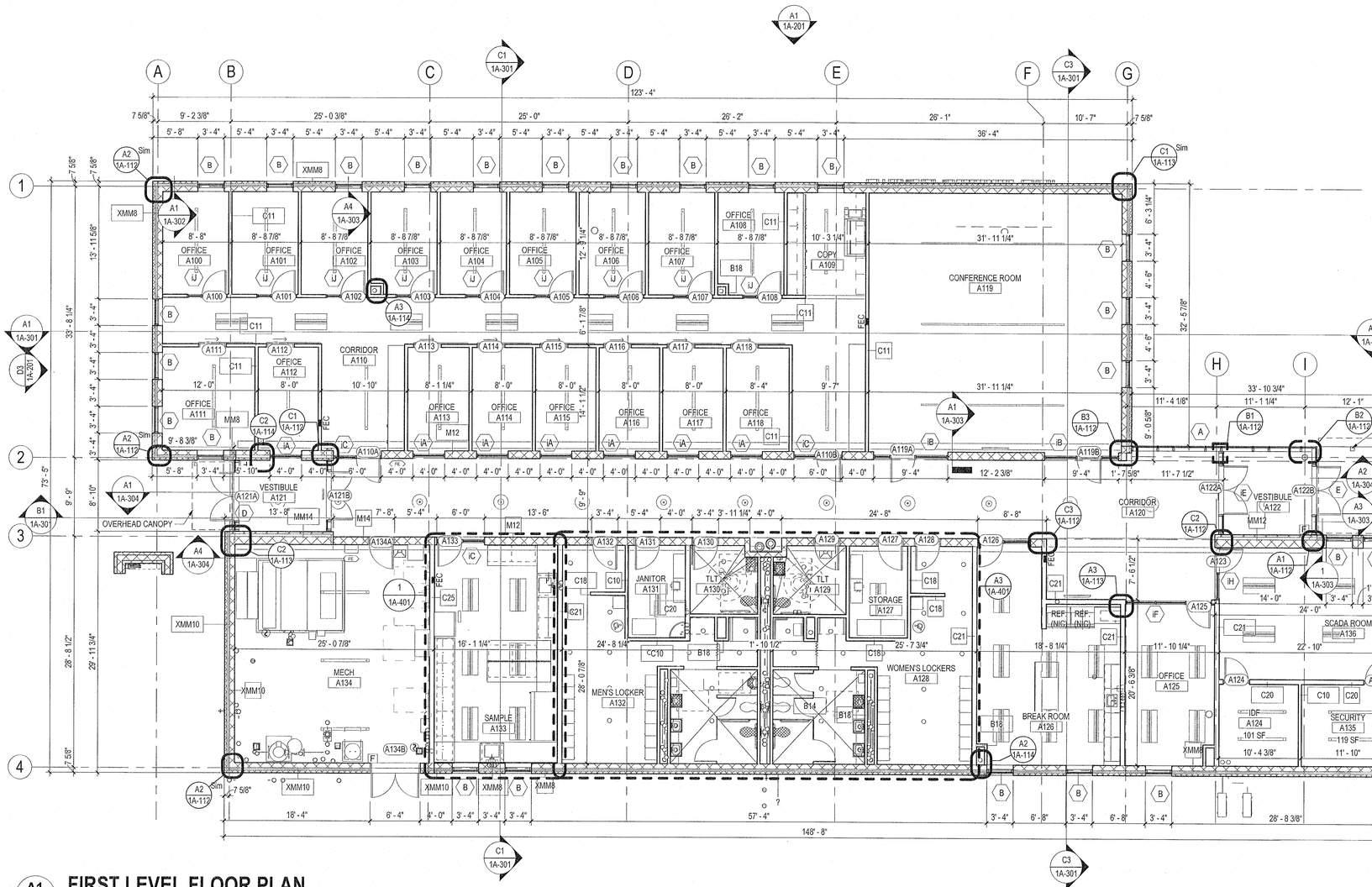

A1 1A-107 **FIRST LEVEL FLOOR PLAN**

1/8" = 1'-0"

GENERAL FLOOR PLAN NOTES:

1. ON THIS PLAN, PARTITION TYPE 'C11' IS TYPICAL AT INTERIOR WALLS, U.O.N. PARTITION TYPE 'XMM8' IS TYPICAL AT EXTERIOR WALLS, U.O.N.
2. REFER TO SHEET 1A-010 FOR WALL TYPE CONSTRUCTION INFORMATION.
3. ALL WALLS SHALL EXTEND TO B.O. DECK / STRUCTURE ABOVE, U.O.N. REFER TO SHEETS 1A-006/1A-011 FOR INFORMATION REGARDING WALLS TO DECK, FLOOR / CEILING, AND ROOF ASSEMBLY INFORMATION, LOCATIONS, AND EXTENTS.
4. REFER TO SHEET 1A- 501 FOR DOOR SCHEDULE, DOOR TYPES, REMARKS, AND NOTES.
5. REFER TO SHEET 1A- 502 AND 1A -503 FOR WINDOW FRAME ELEVATIONS AND GENERAL WINDOW / GLAZING NOTES.
6. REFER TO SHEET 1A-601/1A-602 FOR MATERIAL / COLOR SCHEDULE, GENERAL FINISH NOTES, AND REMARKS.
7. REFER TO SHEET 1A- 602 FOR ROOM FINISH SCHEDULE, REMARKS AND NOTES.
8. REFER TO FLOOR FINISH PLANS 1A-702 FOR FLOOR MATERIAL TRANSITIONS NOT OCCURING AT DOORS AND FOR FLOOR PATTERNS, TYP.
9. REFER TO 1A-004, 1A-401, 1A-402 FOR TOILET ROOM LEGEND AND ENLARGED PLANS.
10. DIMENSIONS (INTERIOR) ARE TO FACE OF STUD OR FACE OF CMU, (U.O.N.)
11. DIMENSIONS (EXTERIOR) ARE TO EXTERIOR FACE OF WALL, (U.O.N.)
12. WHERE ALL WALL TYPES WITH GYP BD FINISH AND DIFFERENT THICKNESS ADJOIN IN SAME PLANE, ALIGN FACE OF GYP BD, TYP.
13. WHERE GYP BD WALLS ABUT MASONRY WALLS PROVIDE GYP BD CASING BEAD AND SEALANT, TYP.
14. REFER TO SHEET 1A-011 FOR ALL INTERIOR PARTITIONS / WALL TYPES TO RECEIVE SOUND ATTENUATION BATT INSULATION.
15. PROVIDE CJ'S AT 30'-0" OC MAX AT DOORS AND WINDOWS
17. REFER TO SHEET 1A-006 FOR TYPICAL SINGLE WYTHE CMU CONTROL JOINT DETAILS. PROVIDE AT PERPENDICULAR INTERSECTIONS OF NON-LOAD BEARING WALLS WITH EXTERIOR WALLS, AT DOOR AND WINDOWS. REFER TO 1A-907 FOR CONTROL JOINTS AT 30'-0" OC IN NON LOAD-BEARING INTERIOR CMU WALLS, AND AT 20'-0" OC IN NON LOAD-BEARING EXTERIOR WALLS, U.O.N. REFER TO STRUCTURAL DOCUMENTS FOR LOCATIONS OF MEJ'S IN LOAD BEARING MASONRY WALLS, TYP.
18. REFER TO 1A-006 FOR TYP MASONRY CONTROL JOINT (CJ) DETAILS, TYP AT INTERSECTING MASONRY WALLS. ALSO REFER TO WALL SPANNING SHEET 1A-007 FOR MAX HEIGHTS AND BRACING INFORMATION.
19. REFER TO GENERAL WALL SECTION NOTES ON SHEET 1A-010 FOR ADDITIONAL TYPICAL CONSTRUCTION INFORMATION, INCLUDING TYP GYP BD BULKHEAD CONSTRUCTION, TYP.
21. PROVIDE WALL-TO-WALL EXPANSION JOINT (EJ) COVERS AT ALL EXPOSED INTERIOR EJ'S AND AT EXPOSED INTERIOR SIDE OF EJ'S AT EXTERIOR WALLS, TYP. PROVIDE WALL-TO-FLOOR AND FLOOR-TO-FLOOR EJ COVERS AT EJ'S IN THE FLOOR, TYP. REFER TO STRUCTURAL DOCUMENTS AND PLAN SHEETS FOR BUILDING EXPANSION JOINT LOCATIONS.
22. REFER TO 1A-702 FOR ALL HORIZONTAL LOUVER BLIND AND SHADE LOCATIONS.
23. REFER TO 1A-702 FOR CORNER GUARD LOCATIONS
24. APPLY BITUMINOUS COATING TO ALL CONCEALED STRUCTURAL MEMBERS AT EXTERIOR CANOPY CONSTRUCTION, TYP.

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FLOOR PLAN

1A-107

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1/8" = 1'-0"
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	82 OF 255

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ACCEPTED NOTED

80341

HOUSTON, TEXAS

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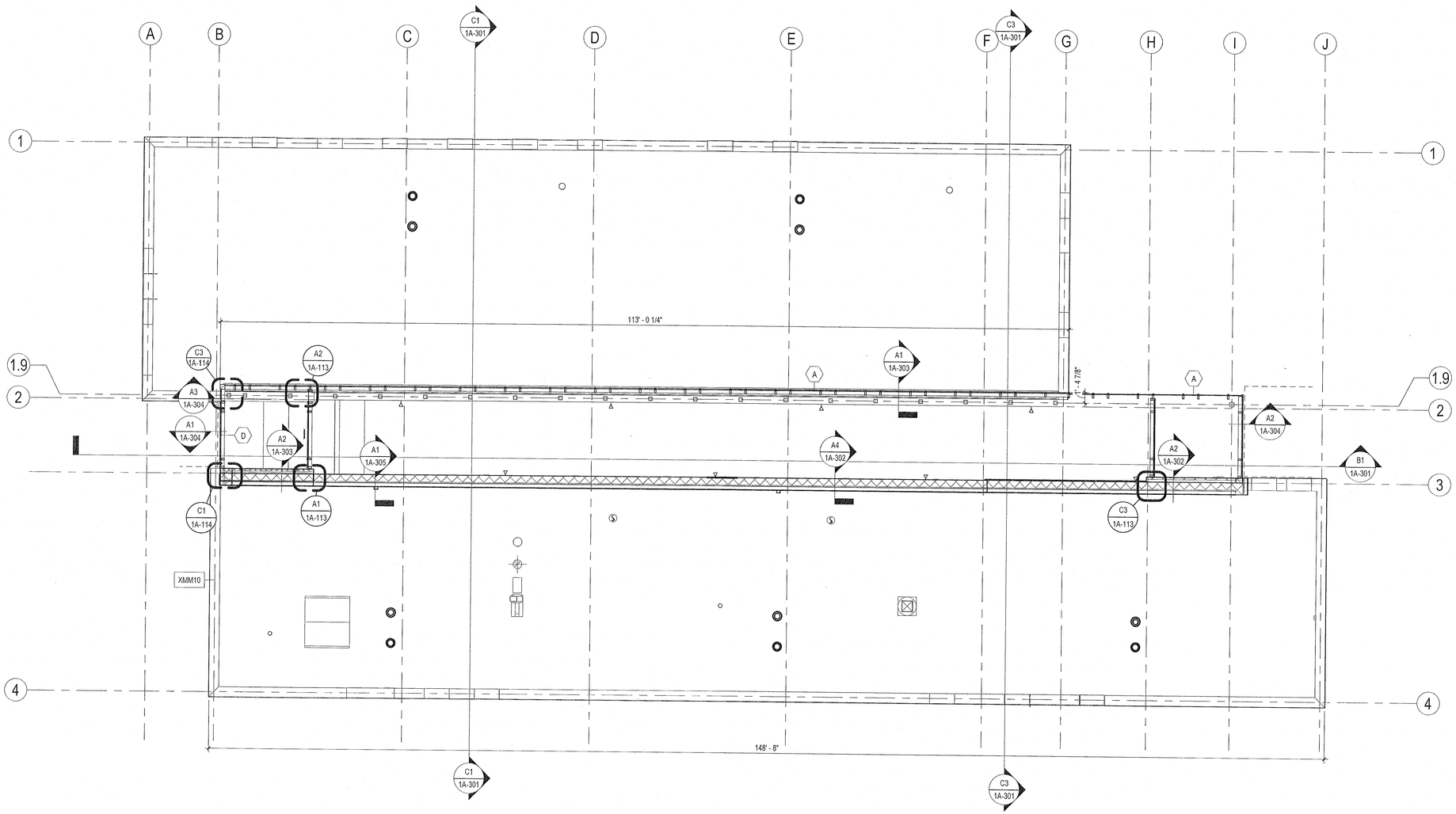

A1 / 1A-108 CLERESTORY PLAN

1/8" = 1'-0"

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12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION CLERESTORY PLAN

1A-108

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/8" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 83 OF 255	

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PLOT STYLE: COH.ctb

FILE PATH:

CEILING PLAN LEGEND

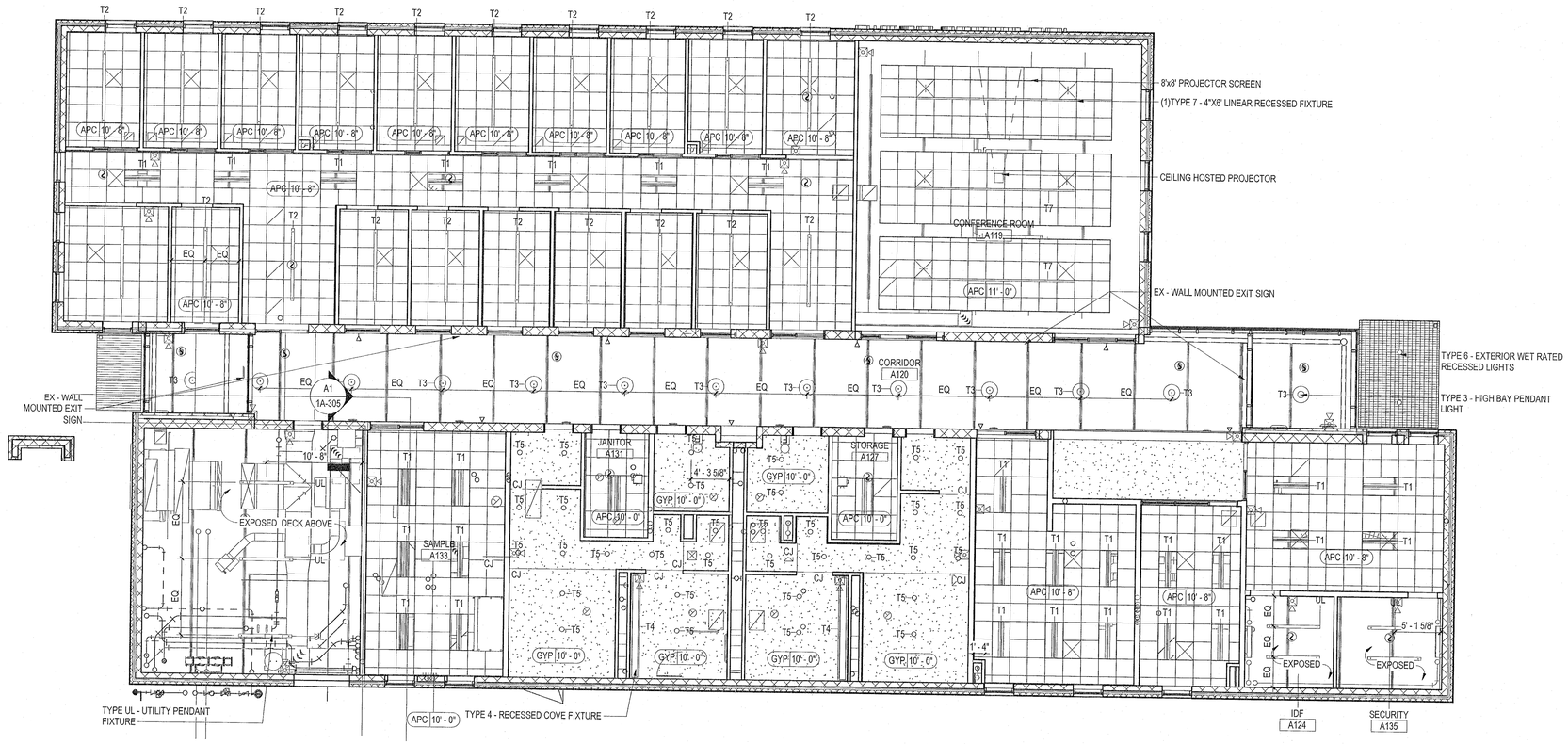
- APC-1 - 2X2 ACOUSTIC PANEL CEILING
- APC-2 - 2X2 VINYL FACED GYPSUM BOARD PANEL LAY IN CEILING
- GYP - GYPSUM BOARD BULKHEAD - PAINTED
- MP-2 - METAL SOFFIT PANEL
- EXPOSED TO STRUCTURE ABOVE (PAINTED)

CEILING PLAN GENERAL NOTES

1. GRIDS SHOWN ON THIS SHEET ARE FOR DESIGN INTENT ONLY. FOR GRID PATTERNS, REFER TO ELECTRICAL DRAWINGS.
2. REFER TO ROOM FINISH SCHEDULE ON SHEET 1A-602 FOR CEILING HEIGHTS NOT SHOWN.
4. FIELD VERIFY ALL BULKHEAD DIMENSIONS PRIOR TO CONSTRUCTION.
5. PROVIDE CJ'S AT 30'-0" O.C. MAX AT AL GYP BD BULKHEADS AND CEILINGS(UON).
6. CENTER ALL LIGHT FIXTURES IN CEILING TILES.(UON)
7. ALL BULKHEADS SHALL BE CONSTRUCTED AS FOLLOWS:

5/8" GYP BD OVER 3 5/8" STL STUD FRAMING AT 16" OC W/ 3 5/8" STL STUD BRACES, STAGGERED, AT 48"OC, UON. ANCHOR FRAMING TO STRUCT ABOVE W/ CONT 18GA RUNNER TRACK MECH ATTACHED TO 3"x3"x3/16" BENT PLATE, WHICH IS MECH ATTACHED TO STL STRUCTURE, TYP. PROVIDE CONT 3"x3"x18GA SHT MTL CORNER ANGLES AT ALL EXPOSED OUTSIDE CORNERS AND CONT STL STUDS AT FRAMING INTERSECTIONS, TYP. CONT 5/8" GYP BD 8" ABOVE ADJACENT APC, WHERE OCCURS, AND CONT BULKHEAD 4" BELOW APC, WHERE OCCURS, UON.

8. ALL VERTICAL SIDES OF GYP BD BULKHEADS SHALL BE OFFSET BACK 2" FROM ADJACENT, PERPENDICULAR SURFACE EDGES AT CMU AND TO ALIGN WITH ADJ GYP BD WALLS, UON.
9. ALL GYP BD BULKHEAD WIDTHS SHALL BE NO LESS THAN 12" WIDE, UON.
10. ALL GYP BD BULKHEAD BOTTOM ELEVATIONS SHALL BE NO LESS THAN 4" BELOW SCHEDULED APC ELEVATIONS, UON.
11. REFER TO MEP DOCUMENTS AND COORDINATE THE LOCATIONS OF LIGHTS, DIFFUSERS, ETC. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT.
12. IN SQUARE OR RECTANGULAR ROOMS, CENTER APC BOTH WAYS, TYP.
13. REFER TO SECTIONS, PLANS, AND SHEET 1A-109 FOR LOCATIONS OF BULKHEADS. THIS DRAWING IS FOR DESIGN INTENT ONLY.
14. BULKHEAD AND CEILING ELEVATIONS ARE TO FACE OF STUD, NOT TO FINISH MATERIAL.



A1 / 1A-109 **FIRST FLOOR REFLECTED CEILING PLAN**

1/8" = 1'-0"

NO.	DATE	REVISION	APP

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Stantec Architecture Inc
910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION REFLECTED CEILING PLAN 1A-109

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	As indicated
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	84 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING ACCEPTED NOTICE 80341 HOUSTON, TEXAS

PLOTTED: 6/5/2025 3:37:42 PM
PLOT STYLE: COH.ctb
FILE PATH:

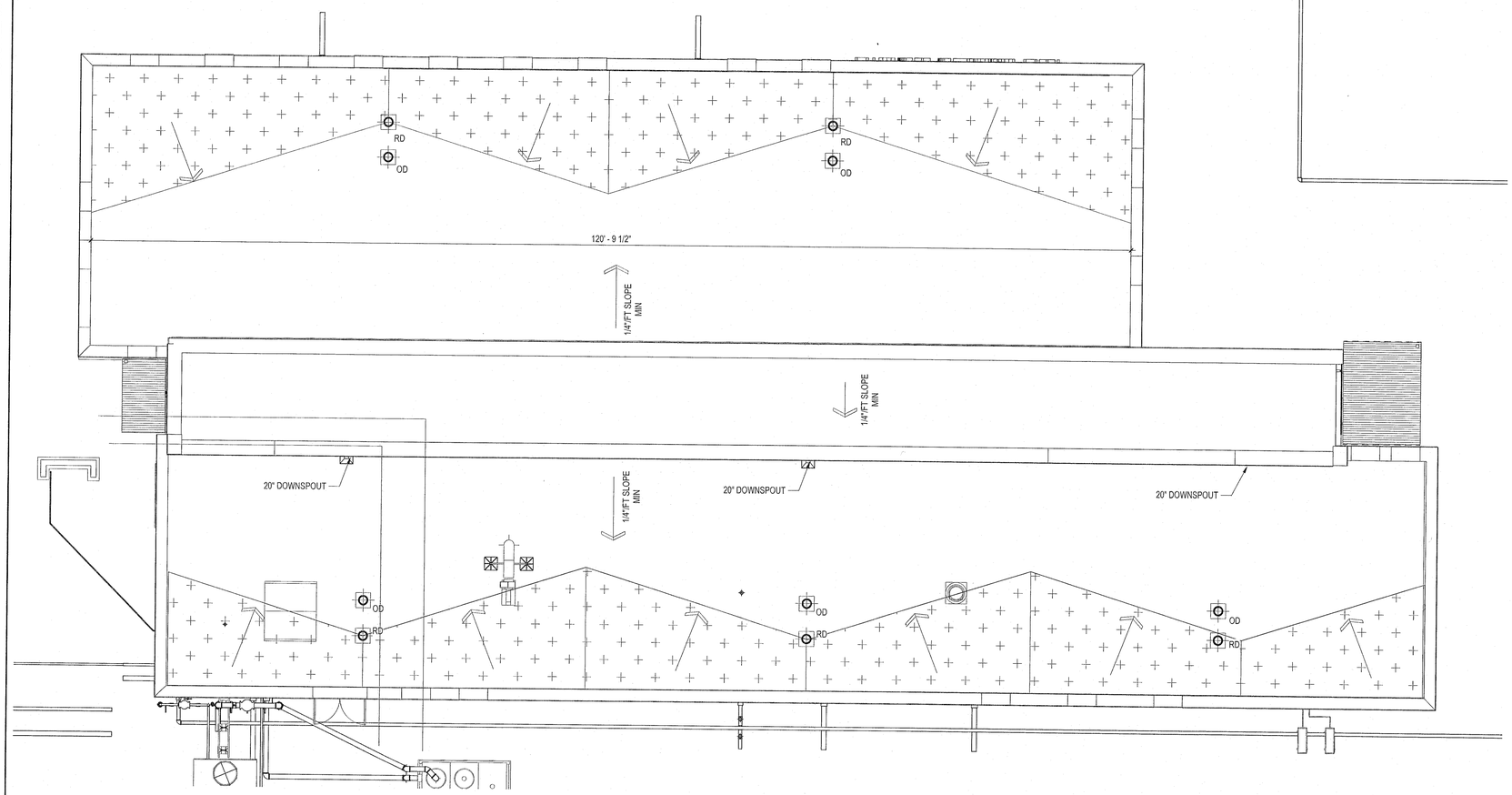
ROOFING LEGEND

- BUILT UP INSULATION SLOPED TO DRAIN
- MODIFIED BITUMEN ROOF

BASIS OF DESIGN: SOPREMA 'SOPRALENE FLAM 250 FR+ GR' SG MODIFIED BITUMEN MEMBRANE W/ INITIAL SRI OF .70 & THERMAL EMITTANCE OF .75

- ROOF DRAIN/ OVERFLOW DRAIN
- DOWNSPOUT

NO.	DATE	REVISION	APP.



A1 / 1A-110 **FIRST LEVEL ROOF PLAN**
1/8" = 1'-0"

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REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ROOF PLAN

1A-110

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 85 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED NOTED 80341 CITY PERMIT NUMBER HOUSTON, TEXAS

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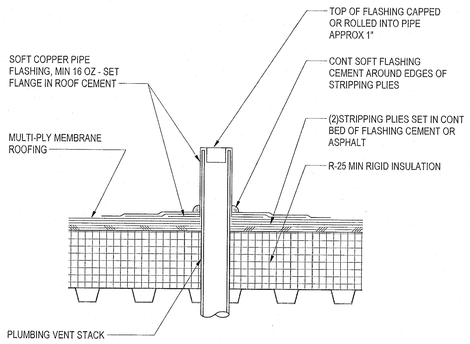
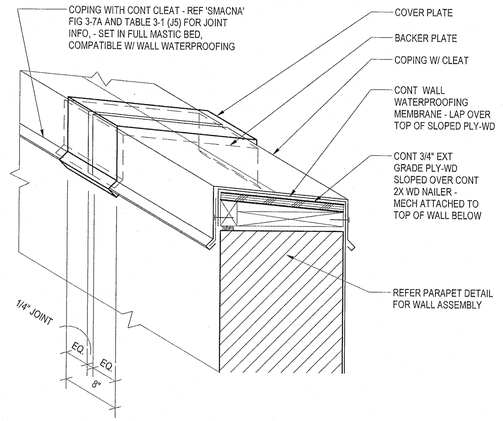
PLOT STYLE: COH.ctb
FILE PATH:

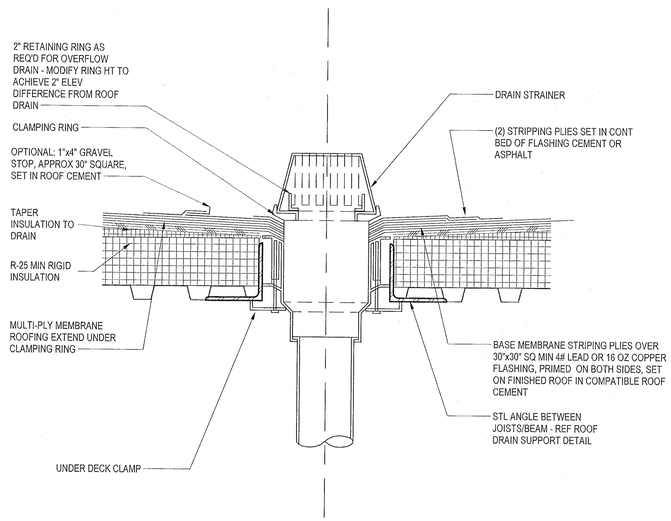
NO.	DATE	REVISION	APP.



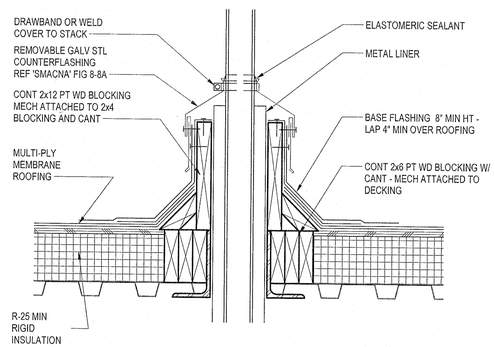
C1 / 1A-111 — **ROOF_VENT STACK**
1 1/2" = 1'-0"



C3 / 1A-111 — **COPING DETAIL**
1 1/2" = 1'-0"



A1 / 1A-111 — **ROOF DRAIN DETAIL**
1 1/2" = 1'-0"



A3 / 1A-111 — **ROOF_INSULATED STACK**
1 1/2" = 1'-0"

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REGISTERED ARCHITECT · DANIELLE DUNN · 28298 · STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ROOF DETAILS

1A-111

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
1 1/2" = 1'-0"
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 86 OF 255

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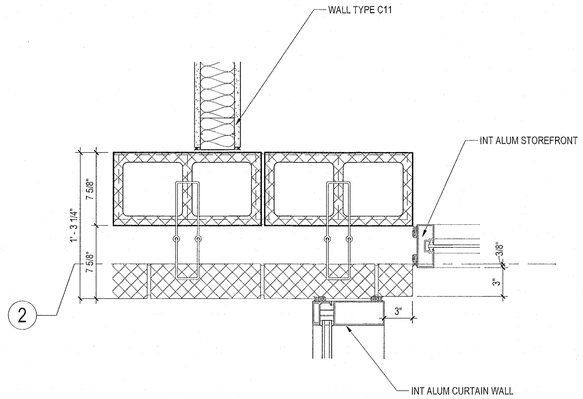
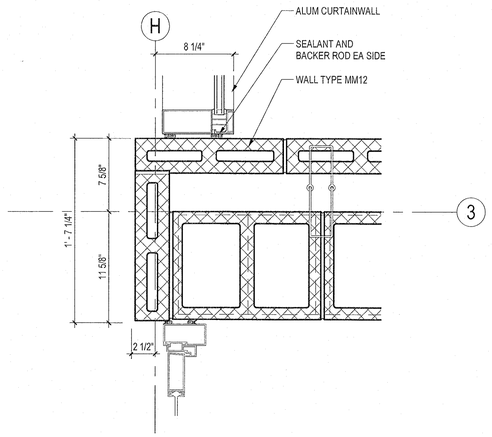
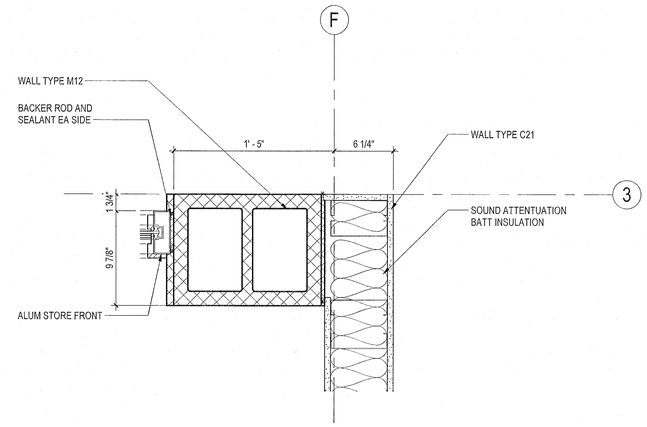


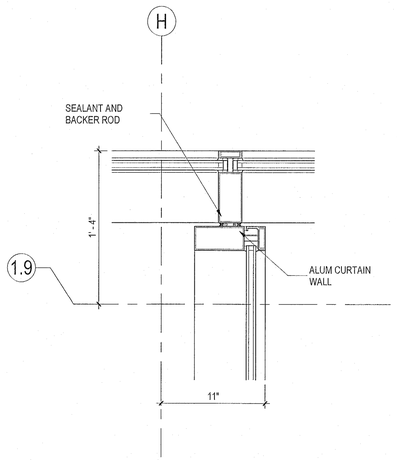
C1 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



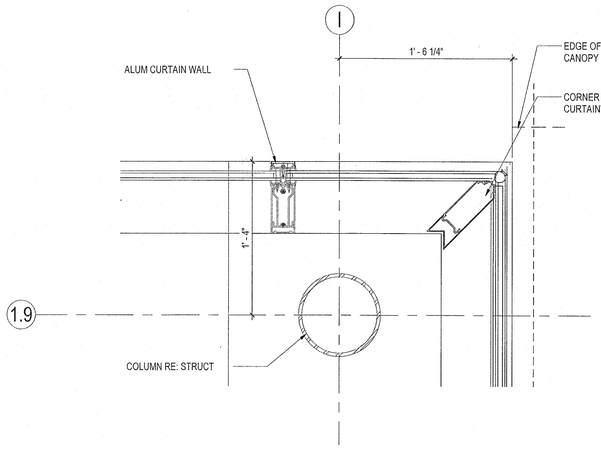
C2 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



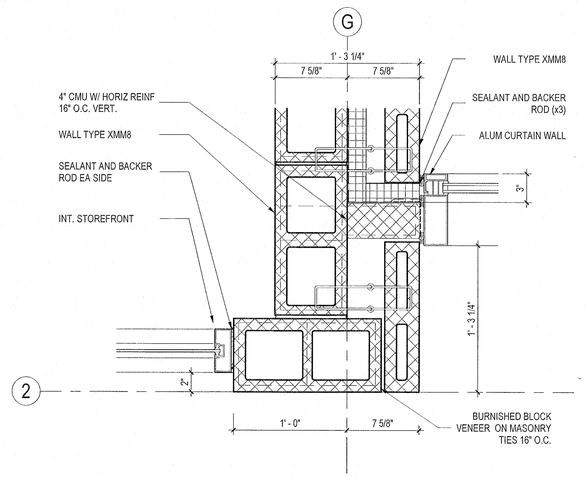
C3 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



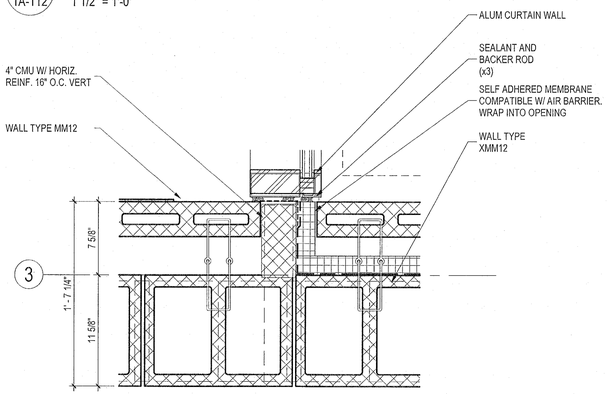
B1 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



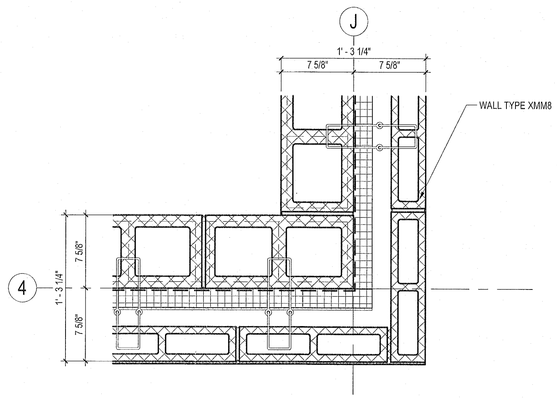
B2 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



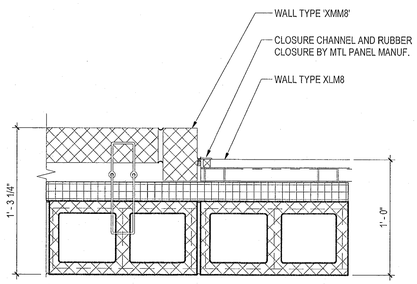
B3 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



A1 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



A2 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"



A3 PLAN DETAIL
1A-112 — 1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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FB NO. P-6232

REGISTERED ARCHITECT
DANIELLE DUNN
98298
STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION PLAN DETAILS I

1A-112

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1 1/2" = 1'-0"	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 87 OF 255	

ACCEPTED AND FILED
80341
HOUSTON, TEXAS

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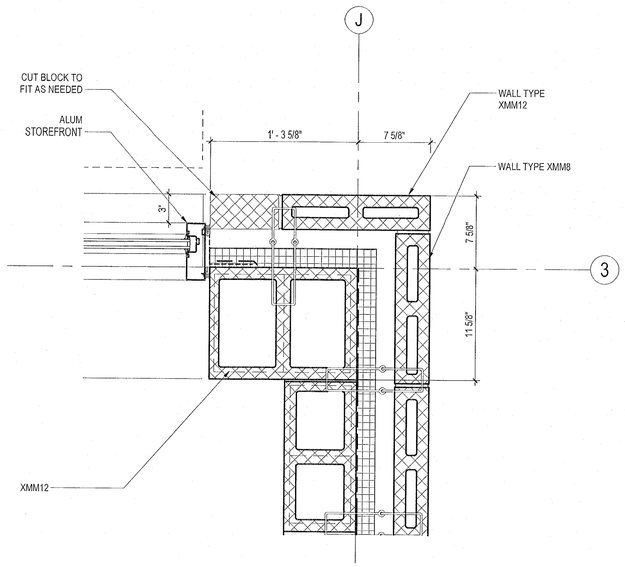
FILE PATH:



C1 1A-113 **PLAN DETAIL**
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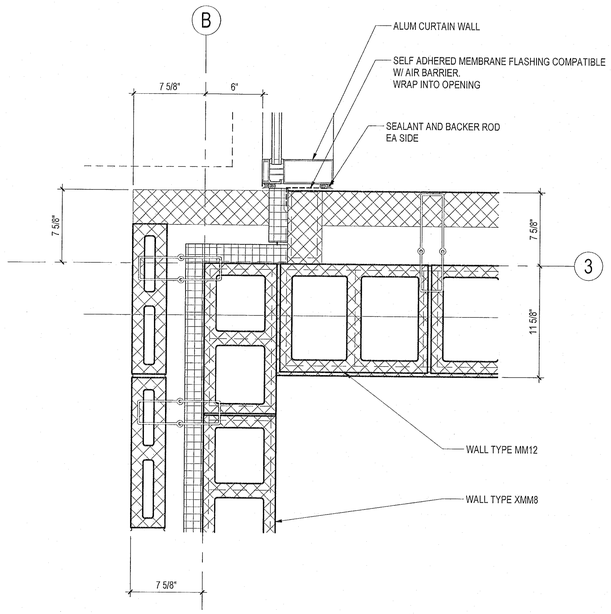
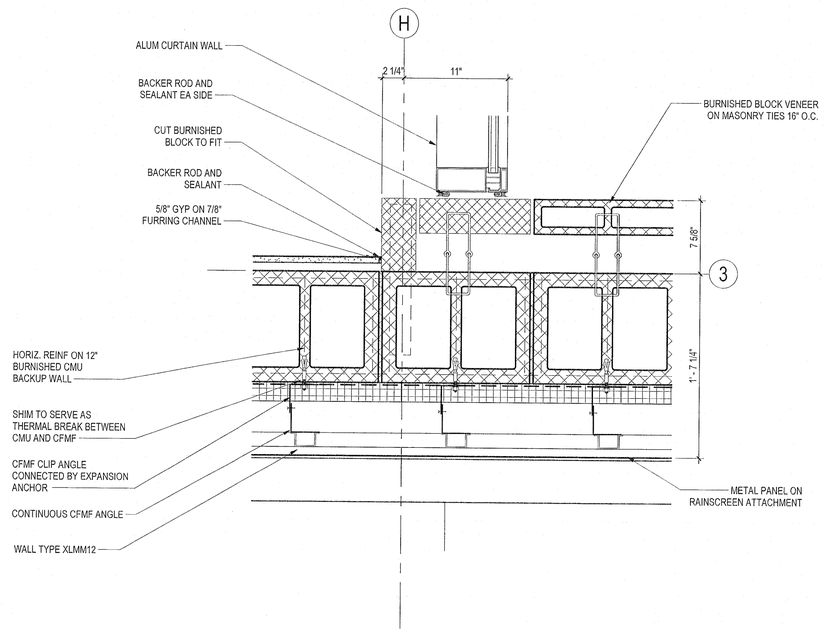
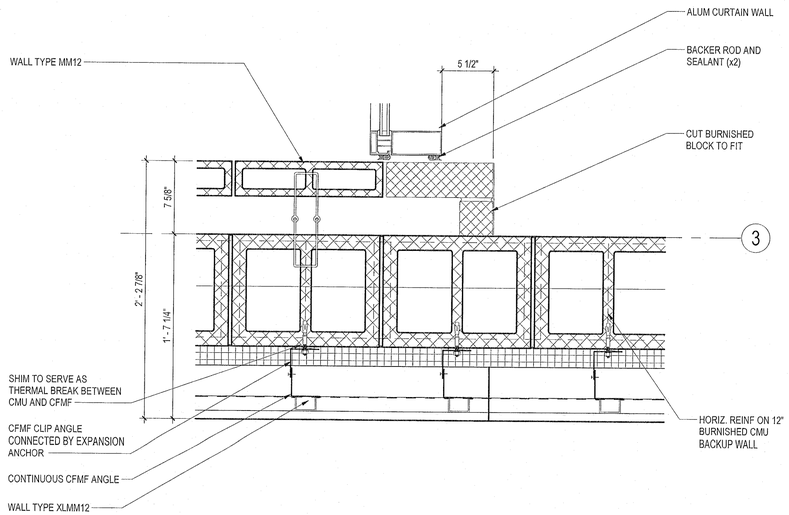


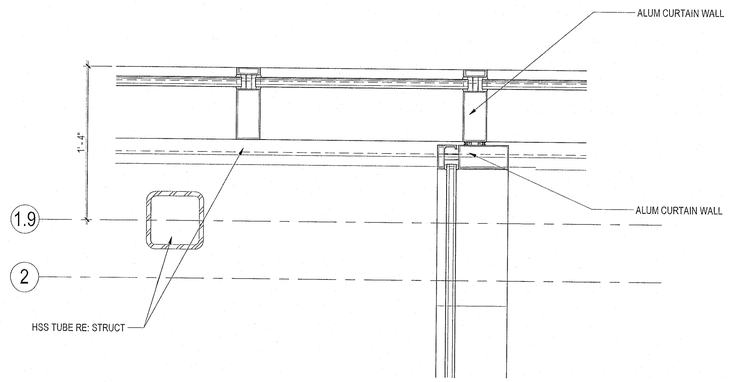
C2 1A-113 **PLAN DETAIL**
1 1/2" = 1'-0"



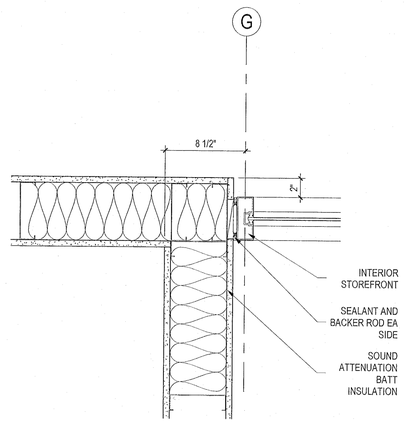
C3 1A-113 **PLAN DETAIL**
1 1/2" = 1'-0"



A1 1A-113 **PLAN DETAIL**
1 1/2" = 1'-0"



A2 1A-113 **PLAN DETAIL**
1 1/2" = 1'-0"



A3 1A-113 **PLAN DETAIL**
1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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Houston, TX 77002

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION PLAN DETAILS II

1A-113

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1 1/2" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 88 OF 255	

ACCEPTED NOTED PUBLIC WORKS & ENGINEERING 80341 HOUSTON, TEXAS

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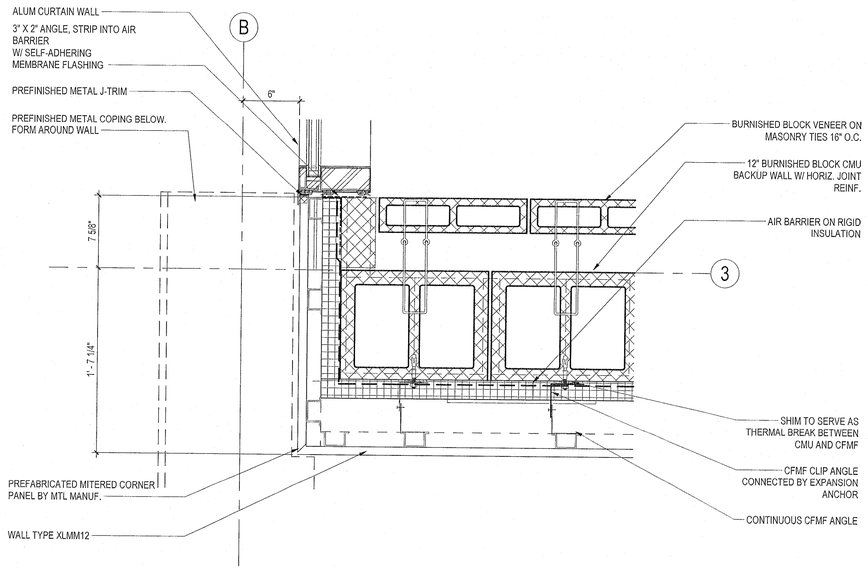
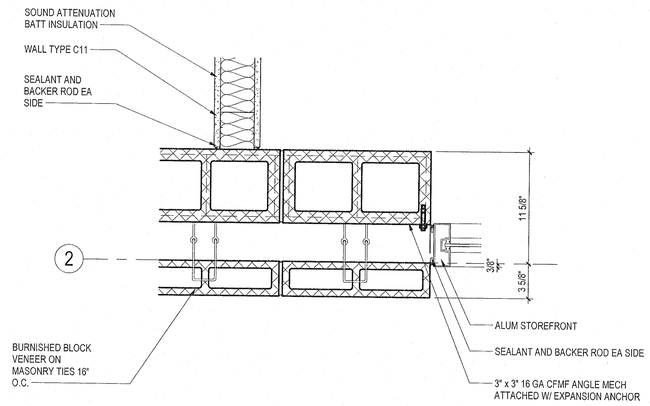
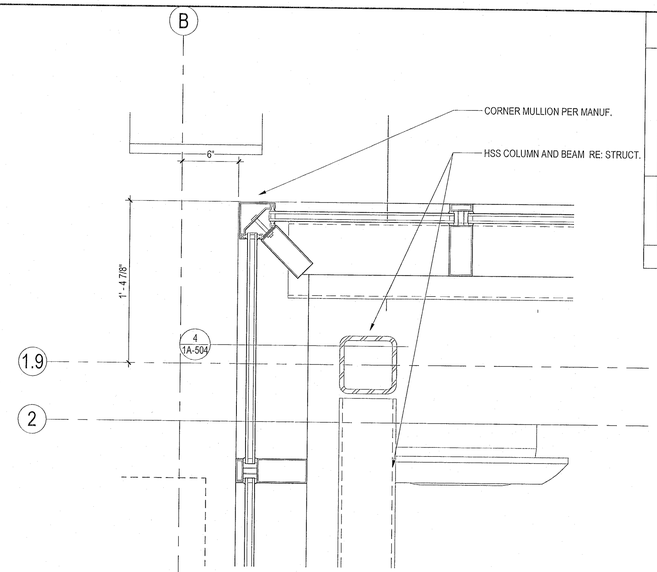
FILE PATH:



C1 / 1A-114 — PLAN DETAIL
1 1/2" = 1'-0"

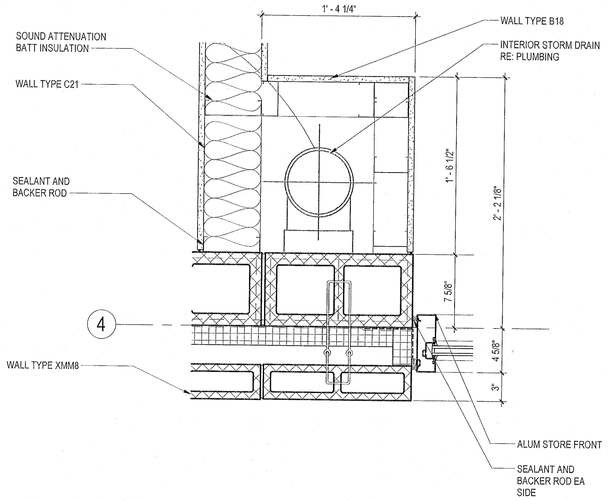


C2 / 1A-114 — PLAN DETAIL
1 1/2" = 1'-0"

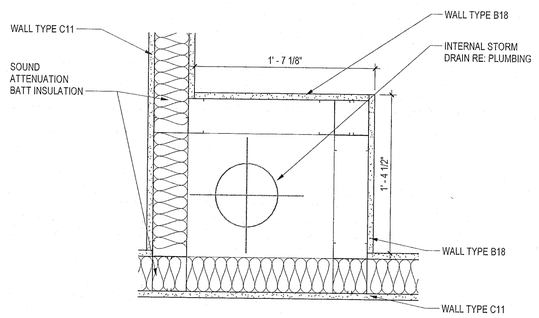


C3 / 1A-114 — PLAN DETAIL
1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.



A2 / 1A-114 — PLAN DETAIL
1 1/2" = 1'-0"



A3 / 1A-114 — PLAN DETAIL
1 1/2" = 1'-0"

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Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUMAS 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION PLAN DETAILS III

1A-114

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1 1/2" = 1'-0"	
CITY OF HOUSTON PM	
S/e SHAHIDUR RAHMAN, P.E.	
SHEET NO. 89 OF 255	

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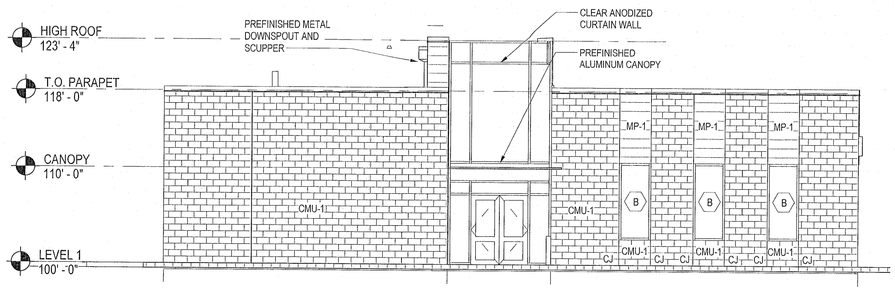
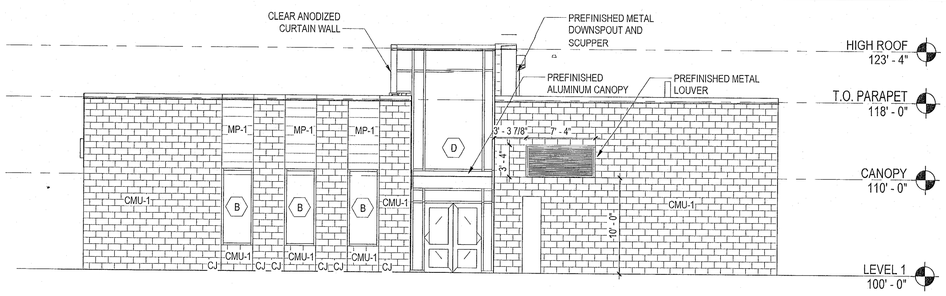
FILE PATH:



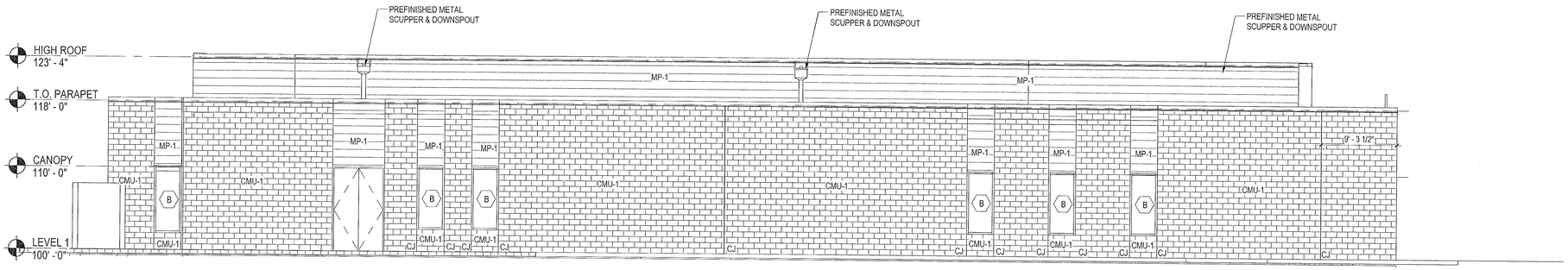
D1 1A-201 **EAST ELEVATION**

1/8" = 1'-0"



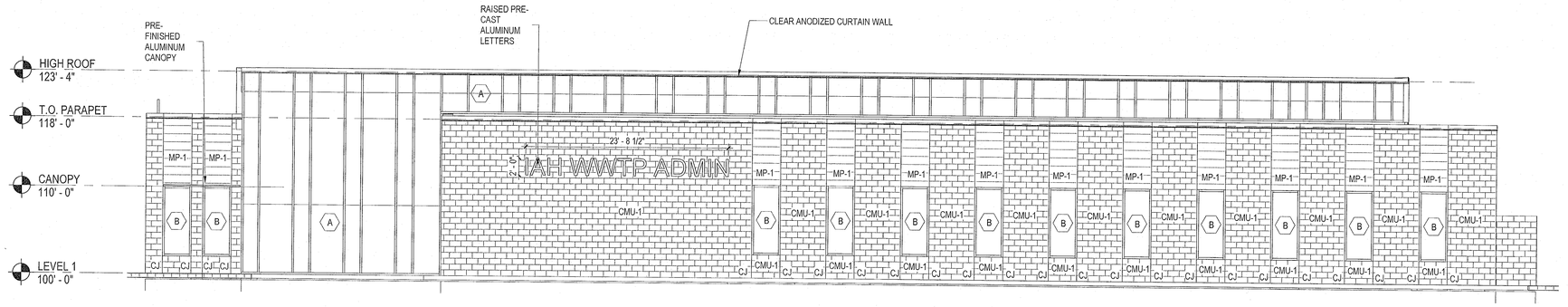
D3 1A-201 **WEST ELEVATION**

1/8" = 1'-0"



B1 1A-201 **SOUTH ELEVATION**

1/8" = 1'-0"



A1 1A-201 **NORTH ELEVATION**

1/8" = 1'-0"

NO.	DATE	REVISION	APP.

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Houston, TX 77002

REGISTERED ARCHITECT DANIELLE DUPUIS 28298 STATE OF TEXAS

12/12/2024

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION BUILDING ELEVATIONS

1A-201

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/8" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 90 OF 255	

ACCEPTED AND FILED PUBLIC WORKS & ENGINEERING 80341 CITY OF HOUSTON, TEXAS

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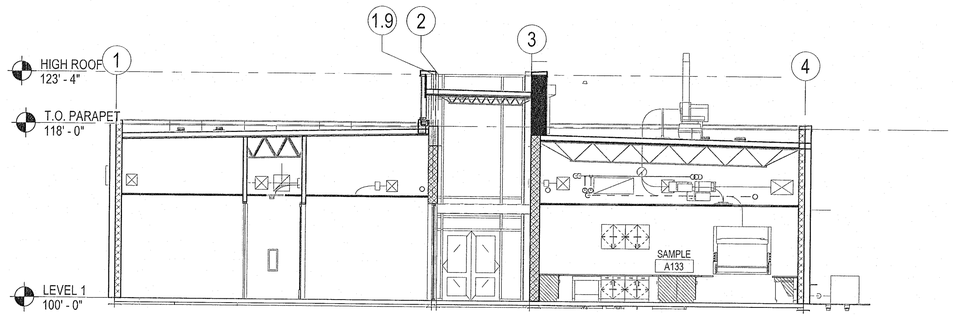
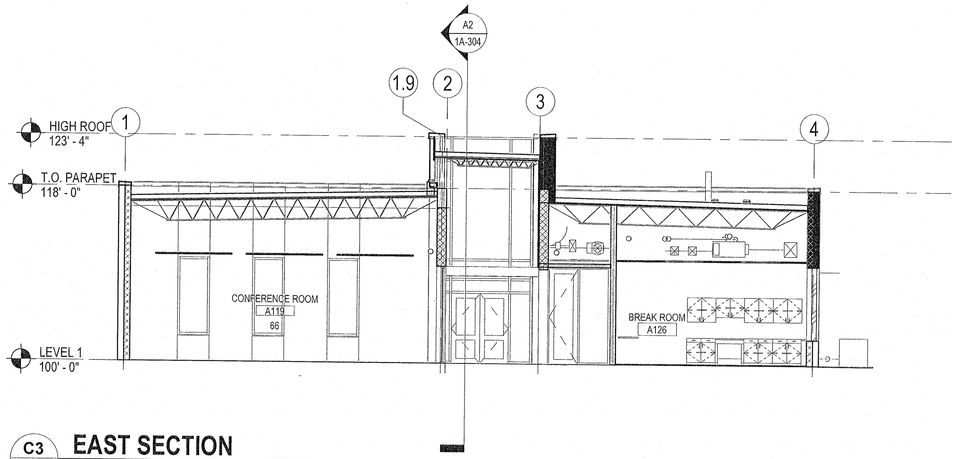
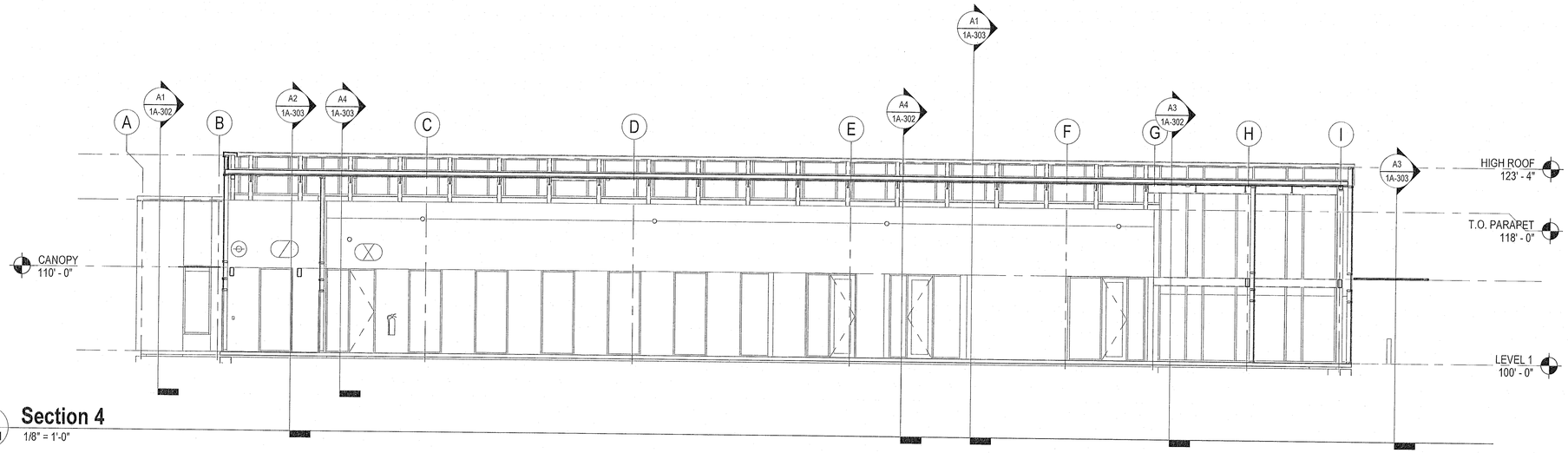


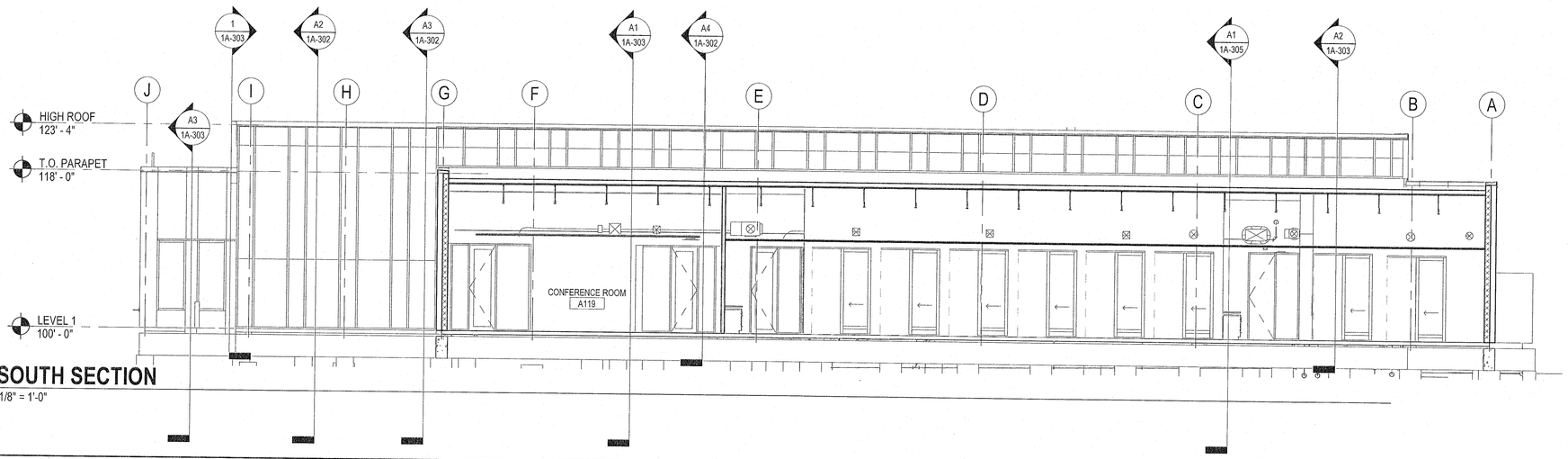
C1 1A-301 **WEST SECTION**
1/8" = 1'-0"



C3 1A-301 **EAST SECTION**
1/8" = 1'-0"



B1 1A-301 **Section 4**
1/8" = 1'-0"



A1 1A-301 **SOUTH SECTION**
1/8" = 1'-0"

NO.	DATE	REVISION	APP.

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PLOT STYLE: COH.ctb

FILE PATH:

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

REGISTERED ARCHITECT
DANIELLE DUNN
28298
STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION BUILDING SECTIONS

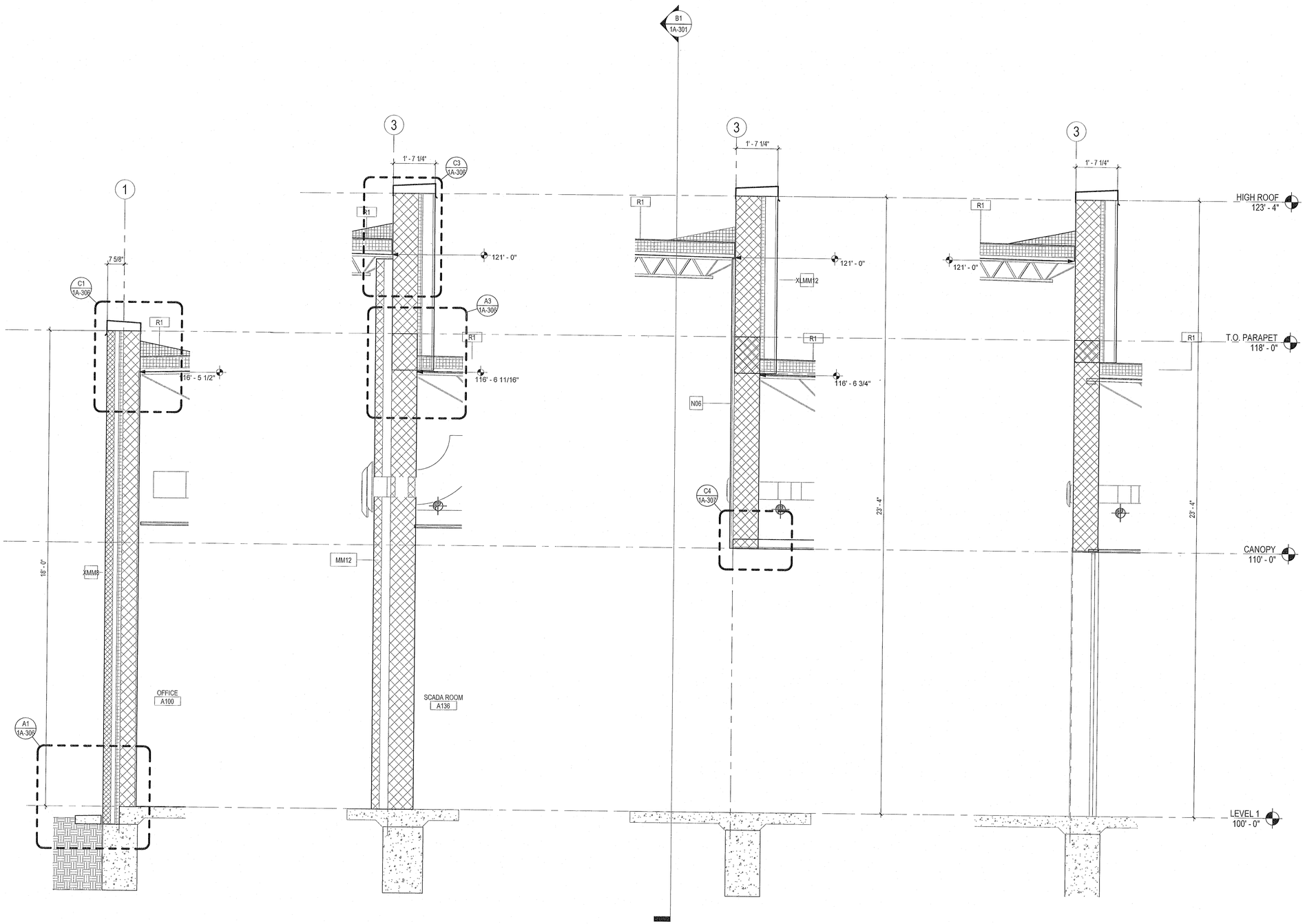
1A-301

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/8" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 91 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS NOTED
80341
CITY OF HOUSTON, TEXAS

PLOTTED: 6/3/2025 12:41:02 PM
PLOT STYLE: COH.ctb
FILE PATH:

NO.	DATE	REVISION	APP.



A1 1A-302 WALL SECTION 1/2" = 1'-0"

A2 1A-302 WALL SECTION 1/2" = 1'-0"

A3 1A-302 WALL SECTION 1/2" = 1'-0"

A4 1A-302 WALL SECTION 1/2" = 1'-0"

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Houston, TX 77002

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28296 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

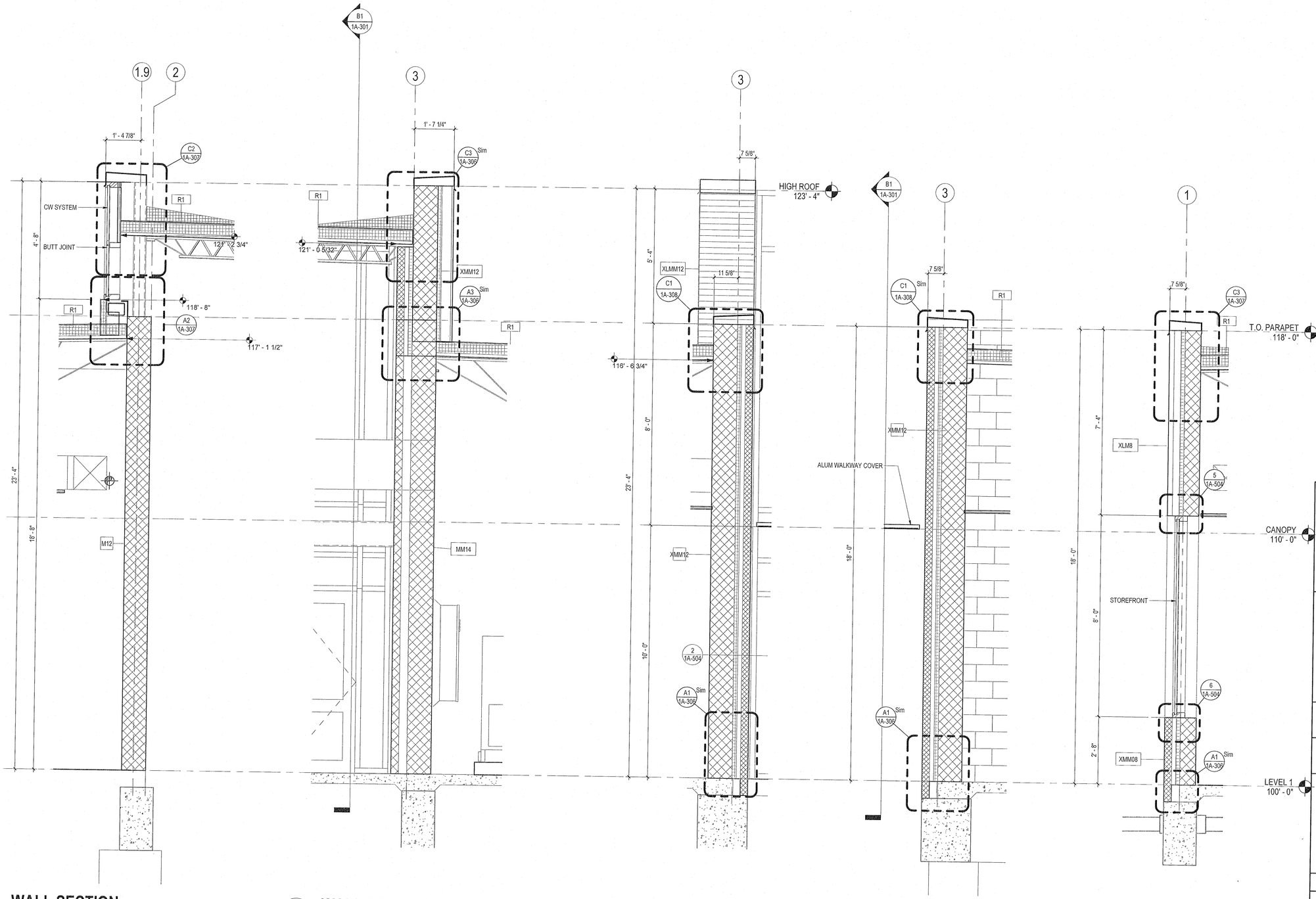
ADMINISTRATION EXTERIOR WALL SECTION & DETAILS I 1A-302

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/2" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 92 OF 255	

ACCEPTED AS NOTED 80341 CITY ENGINEER HOUSTON, TEXAS

PLOTTED: 6/3/2025 12:41:03 PM
PLOT STYLE: COH.ctb
FILE PATH:

NO.	DATE	REVISION	APP.



A1 / 1A-303 WALL SECTION 1/2" = 1'-0"

A2 / 1A-303 WALL SECTION 1/2" = 1'-0"

1 / 1A-303 WALL SECTION 1/2" = 1'-0"

A3 / 1A-303 WALL SECTION 1/2" = 1'-0"

A4 / 1A-303 WALL SECTION 1/2" = 1'-0"

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12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

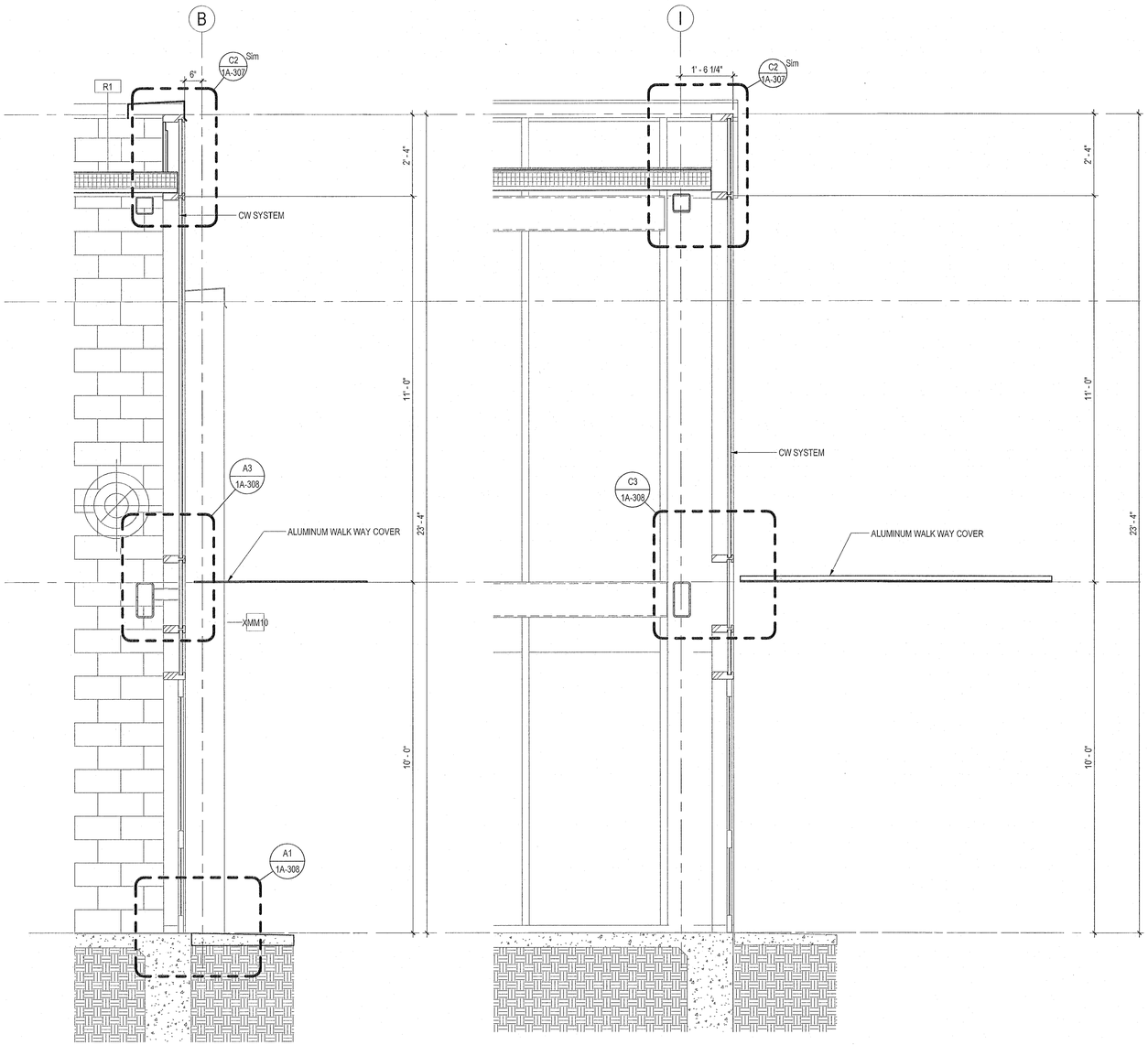
ADMINISTRATION EXTERIOR WALL SECTIONS & DETAILS II 1A-303

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/2" = 1'-0"	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 93 OF 255	

PROFESSIONAL ENGINEER 80341 CITY OF HOUSTON

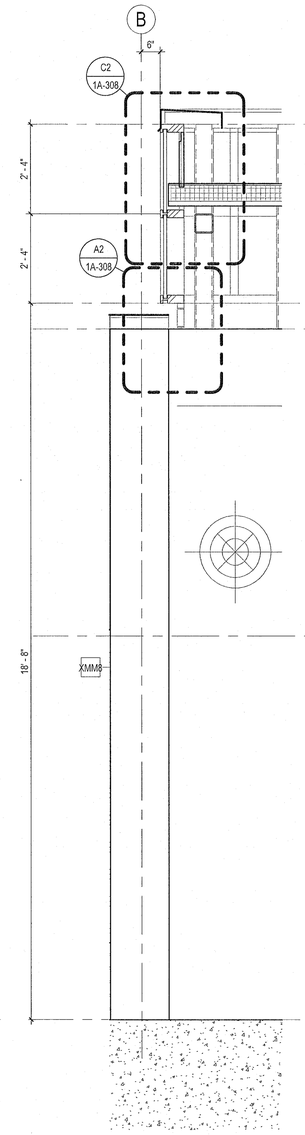
PLOTTED: 6/3/2025 12:41:04 PM
PLOT STYLE: COH.ctb
FILE PATH:

NO.	DATE	REVISION	APP.

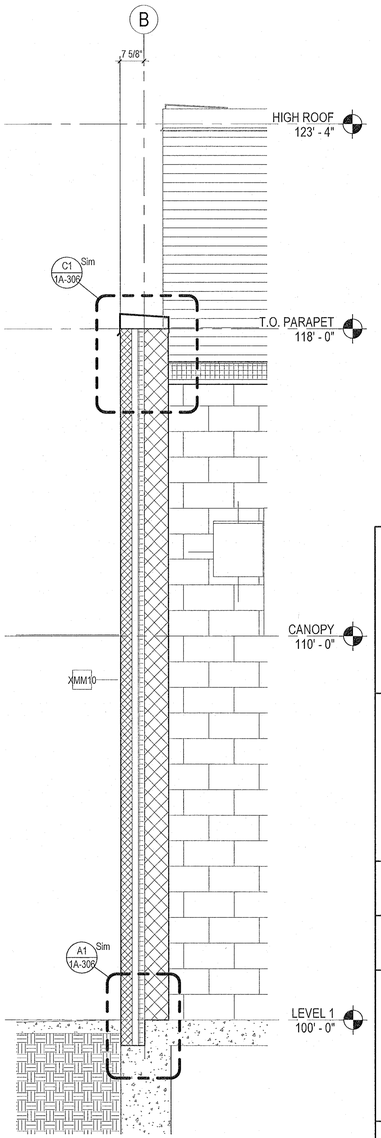


A1 WALL SECTION
1A-304 1/2" = 1'-0"

A2 WALL SECTION
1A-304 1/2" = 1'-0"



A3 WALL SECTION
1A-304 1/2" = 1'-0"



A4 WALL SECTION
1A-304 1/2" = 1'-0"

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12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

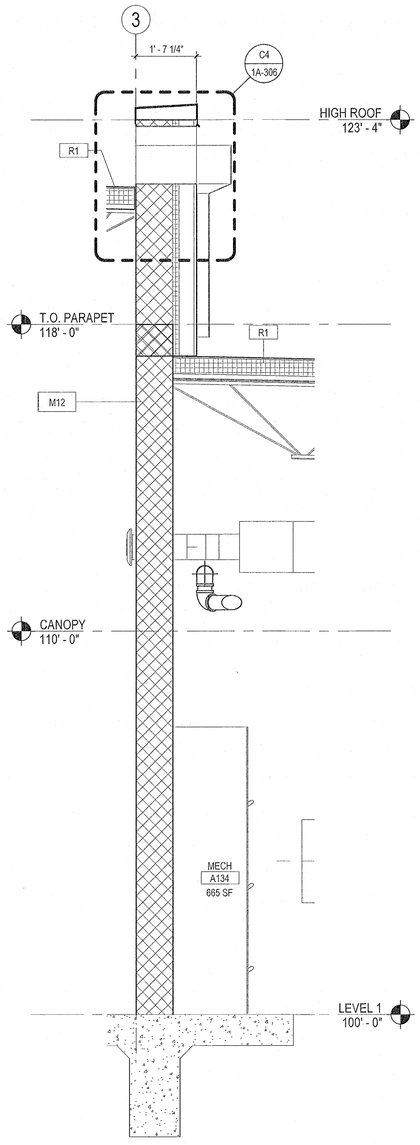
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION EXTERIOR WALL SECTIONS & DETAILS III
1A-304

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
1/2" = 1'-0"
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 94 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS & ENGINEERING ACCEPTED AND FILED 80341 CITY SECRETARY HOUSTON, TEXAS



A1 / 1A-305 **WALL SECTION**

1/2" = 1'-0"

NO.	DATE	REVISION	APP.

Stantec

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12/12/2024

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION EXTERIOR WALL SECTIONS & DETAILS IV 1A-305

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
1/2" = 1'-0"
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 95 OF 255

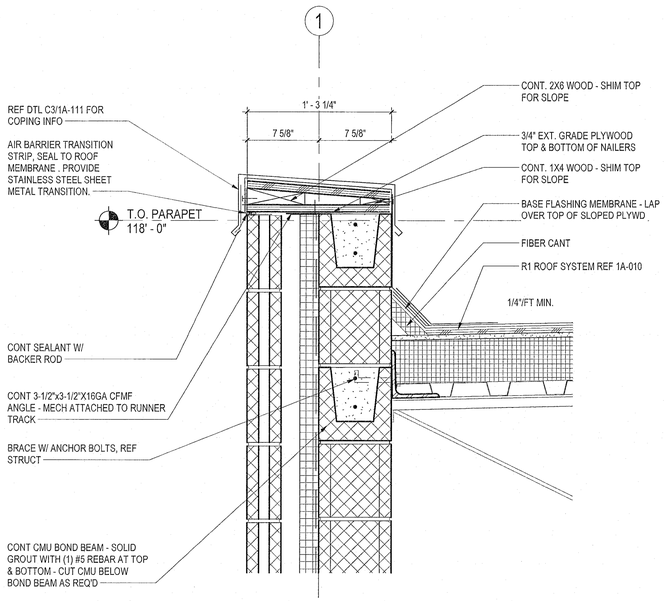
FOR CITY OF HOUSTON USE ONLY

ACCEPTED HOTLES 80341 HOUSTON, TEXAS

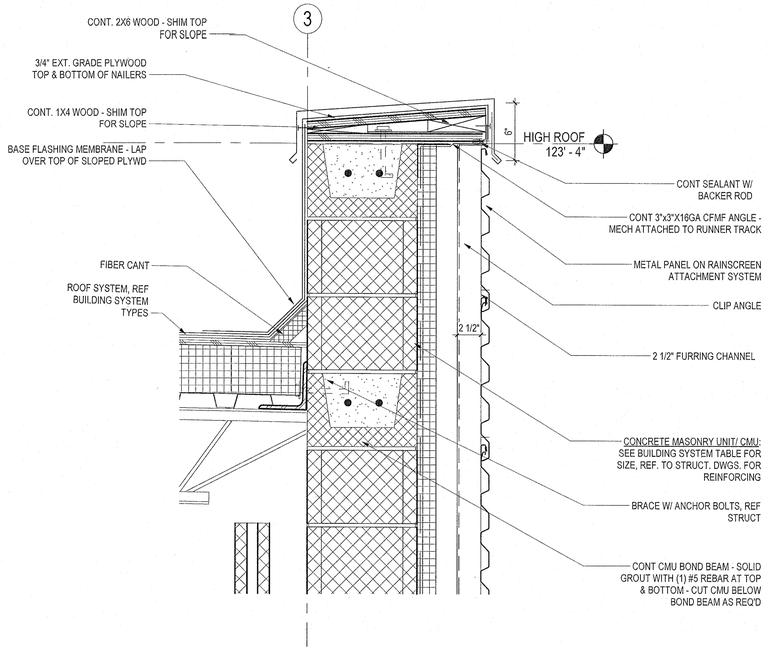
PLOTTED: 6/3/2025 12:41:05 PM

PLOT STYLE: COH.ctb

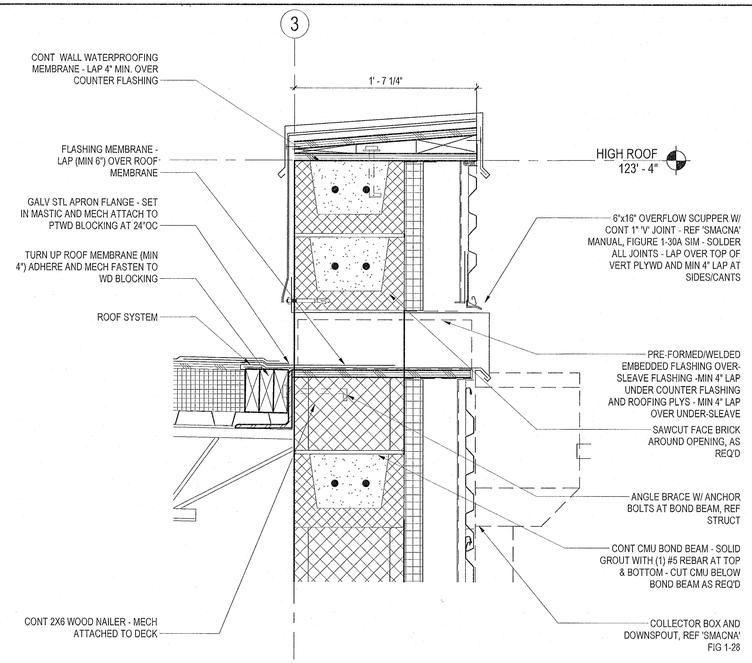
FILE PATH:



C1 1A-306 **SECTION DETAIL**
1 1/2" = 1'-0"



C3 1A-306 **SECTION DETAIL**
1 1/2" = 1'-0"



C4 1A-306 **SECTION DETAIL**
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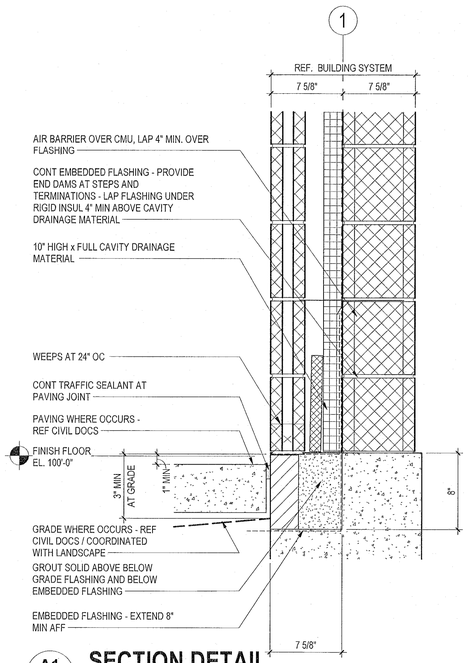
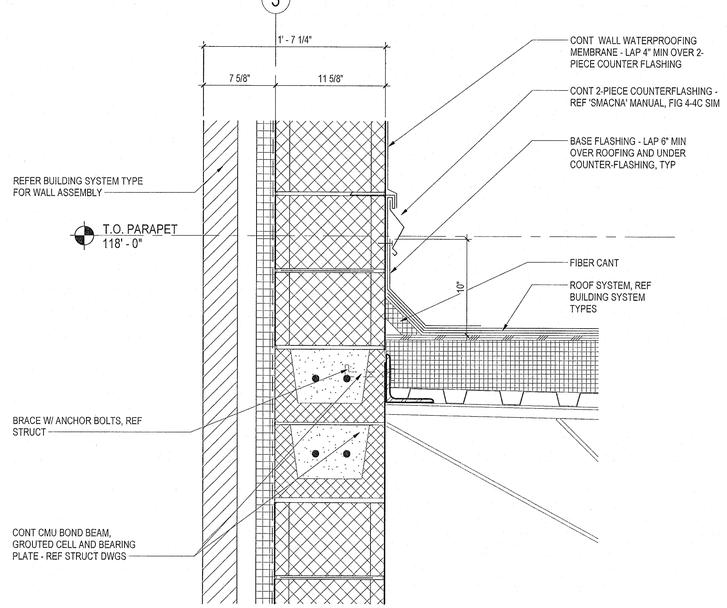


A1 1A-306 **SECTION DETAIL**
1 1/2" = 1'-0"



A3 1A-306 **SECTION DETAIL**
1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 38298 STATE OF TEXAS
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

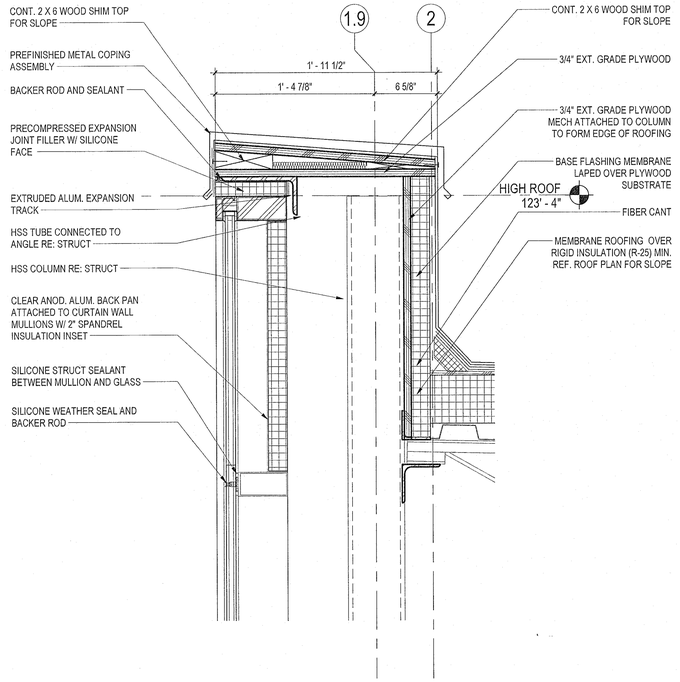
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION EXTERIOR WALL SECTIONS & DETAILS V 1A-306

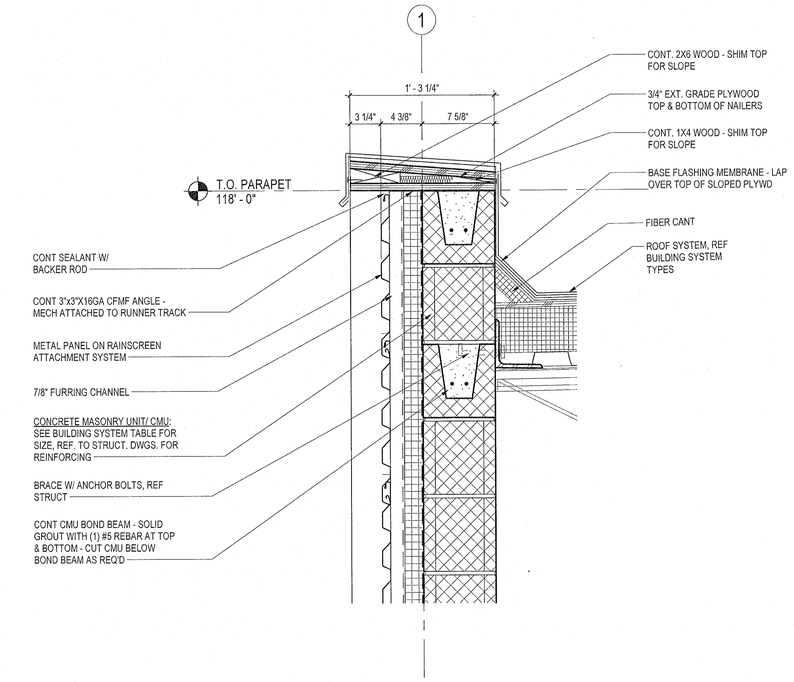
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1 1/2" = 1'-0"	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 96 OF 255	

ACCEPTED NOTED
80341
CITY OF HOUSTON, TEXAS

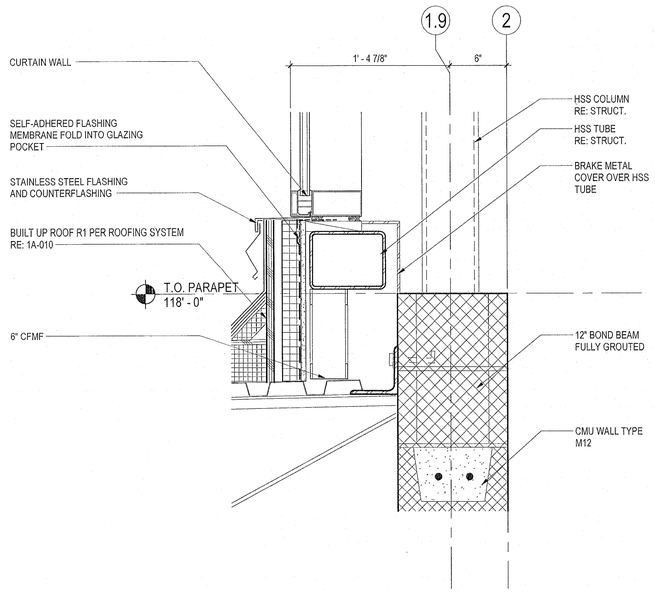
PLOTTED: 6/3/2025 12:41:06 PM
PLOT STYLE: COH.ctb
FILE PATH:



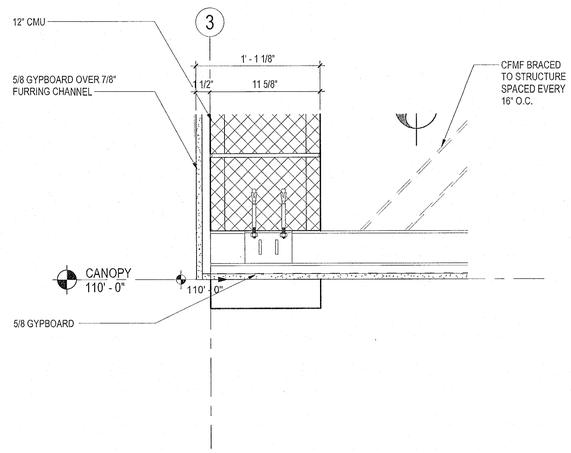
C2 / 1A-307 SECTION DETAIL
1 1/2" = 1'-0"



C3 / 1A-307 SECTION DETAIL
1 1/2" = 1'-0"



A2 / 1A-307 SECTION DETAIL
1 1/2" = 1'-0"



C4 / 1A-307 SECTION DETAIL
1 1/2" = 1'-0"

NO.	DATE	REVISION	APP

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28296 STATE OF TEXAS
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

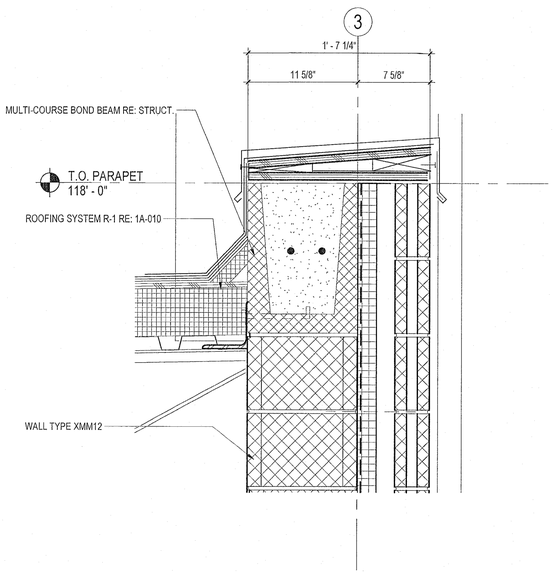
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION EXTERIOR WALL SECTIONS & DETAILS VI
1A-307

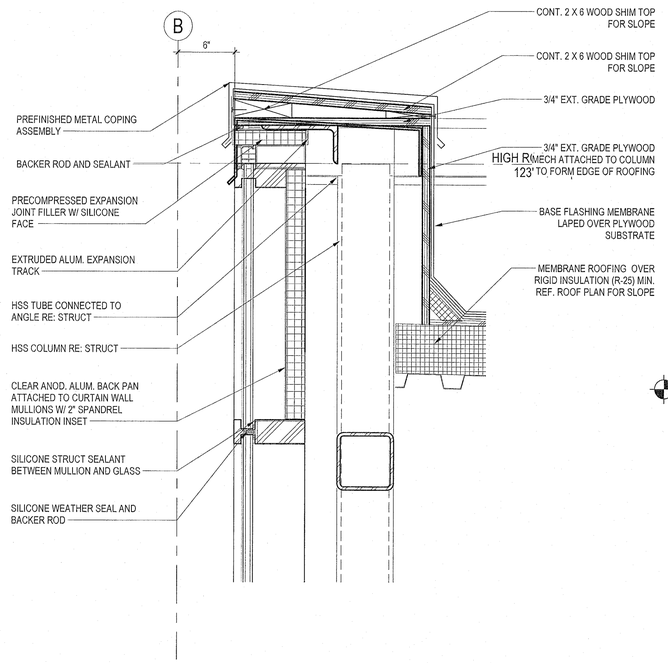
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1 1/2" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 97 OF 255	

ACCEPTED AS NOTED — 80341 — CITY DRAWING NUMBER — HOUSTON, TEXAS

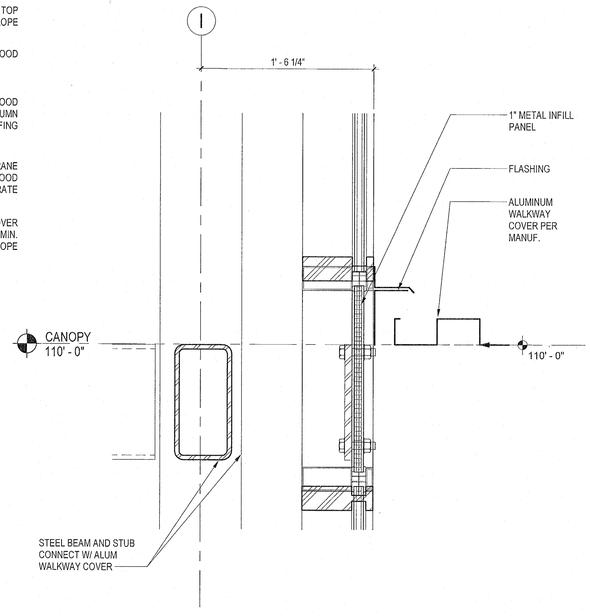
PLOTTED: 6/3/2025 12:41:07 PM
PLOT STYLE: COH.ctb
FILE PATH:



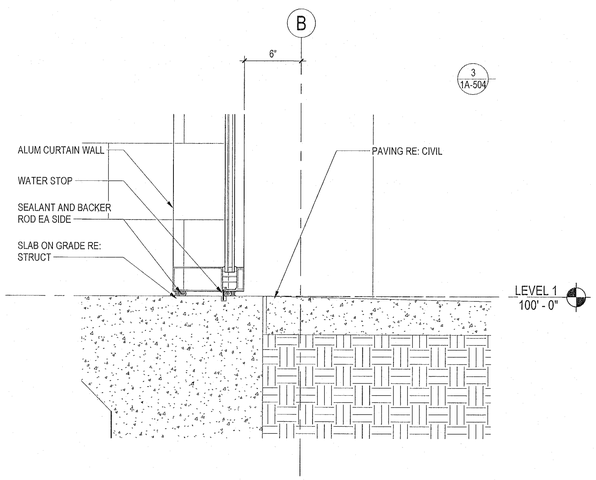
C1 / 1A-308 SECTION DETAIL
1 1/2" = 1'-0"



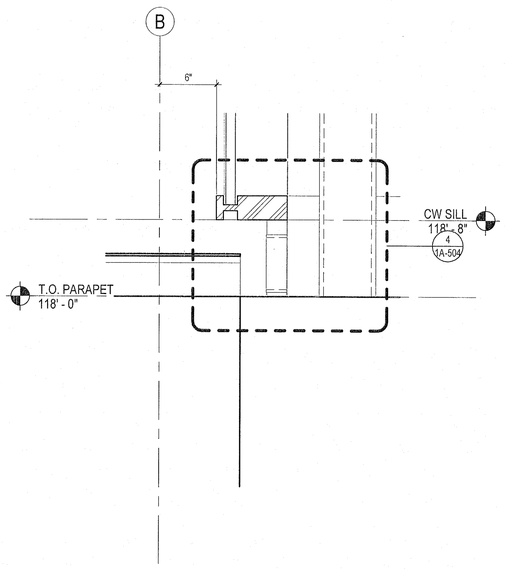
C2 / 1A-308 SECTION DETAIL
1 1/2" = 1'-0"



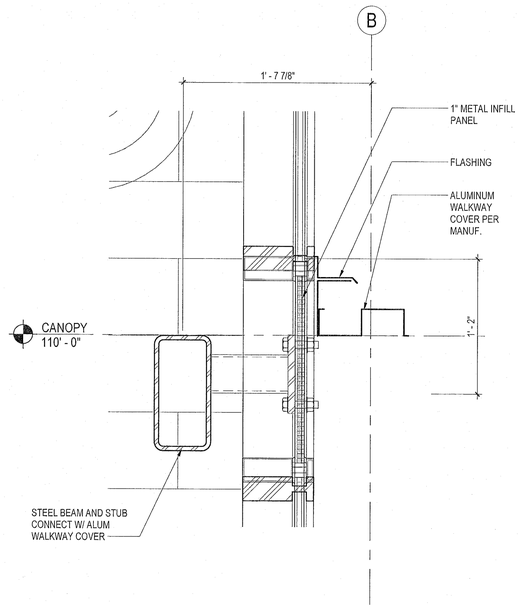
C3 / 1A-308 SECTION DETAIL
1 1/2" = 1'-0"



A1 / 1A-308 SECTION DETAIL
1 1/2" = 1'-0"



A2 / 1A-308 SECTION DETAIL
1 1/2" = 1'-0"



A3 / 1A-308 SECTION DETAIL
1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

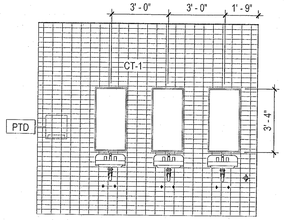
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION EXTERIOR WALL SECTIONS & DETAILS VII 1A-308

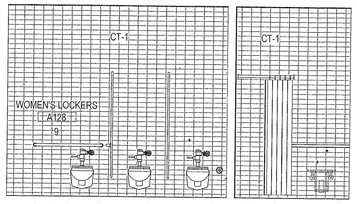
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1 1/2" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 98 OF 255	

ACCEPTED NOTED 80341 CITY OF HOUSTON ENGINEER HOUSTON, TEXAS

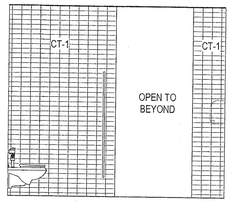
PLOTTED: 6/3/2025 12:41:08 PM
PLOT STYLE: COH.ctb
FILE PATH:



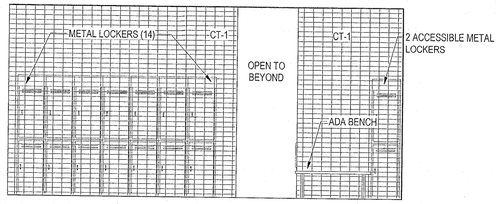
D1 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



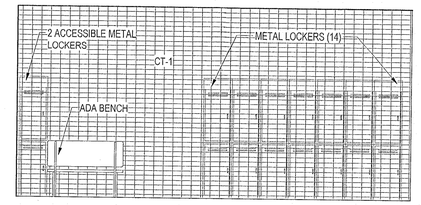
D2 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



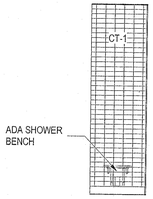
D3 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



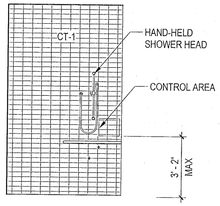
D4 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



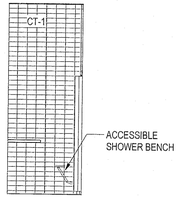
D5 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



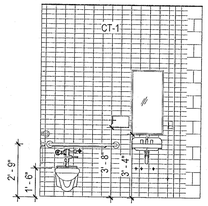
C1 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



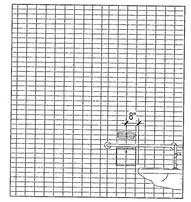
C2 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



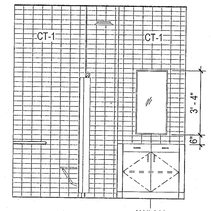
C3 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



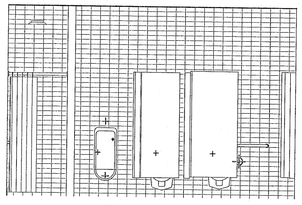
C4 / 1A-401 — TYP RR WEST-ELEVATION -
1/4" = 1'-0"



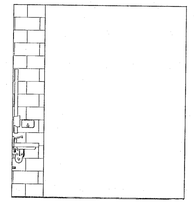
C5 / 1A-401 — TYP RR ELEVATION - EAST
1/4" = 1'-0"



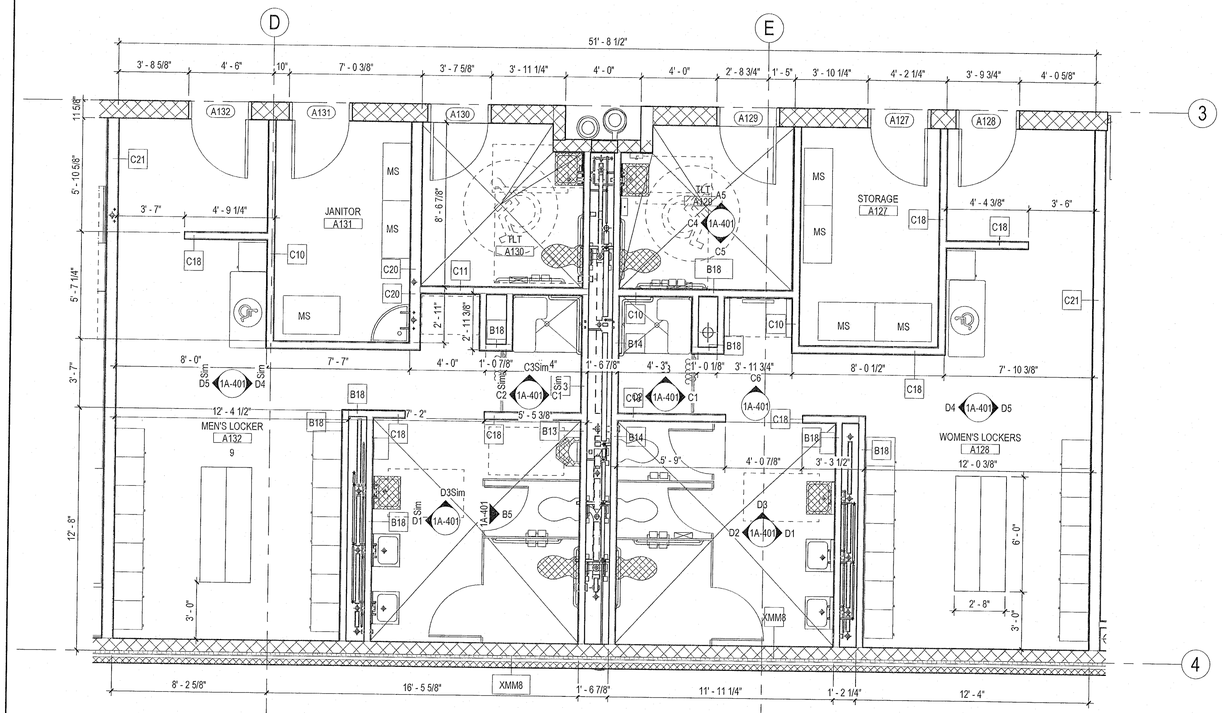
C6 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



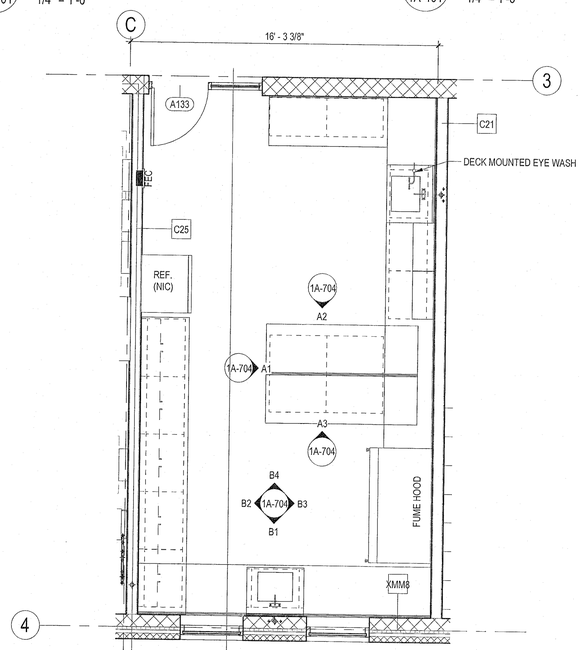
B5 / 1A-401 — RR ELEVATION
1/4" = 1'-0"



A5 / 1A-401 — TYP RR NORTH
1/4" = 1'-0"



A3 / 1A-401 — LOCKER ROOMS ENLARGED PLAN
1/4" = 1'-0"



1 / 1A-401 — SAMPLE ROOM ENLARGED PLAN
1/4" = 1'-0"

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

REGISTERED ARCHITECT — DANIELLE DUNN — 28296 — STATE OF TEXAS
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ENLARGED TOILET & LOCKER ROOM PLANS 1A-401

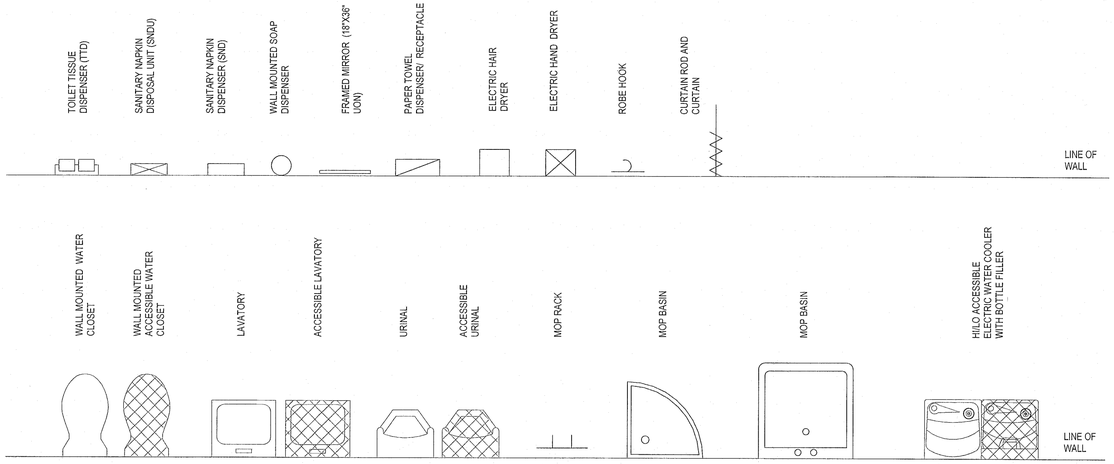
WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1/4" = 1'-0"
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	99 OF 255

FOR CITY OF HOUSTON USE ONLY
ACCEPTED AS NOTED
80341
CITY DRAINAGE ENGINEER
HOUSTON, TEXAS

NO.	DATE	REVISION	APP.

PLOTTED: 6/3/2025 12:41:12 PM
PLOT STYLE: COH.ctb
FILE PATH:

TOILET ROOM ACCESSORY LEGEND



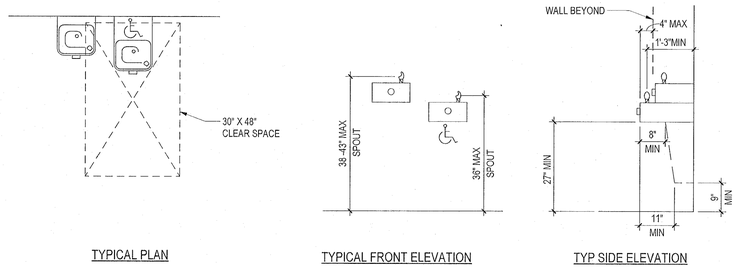
GENERAL TOILET PLAN NOTES:

1. REFER TO 1A-010 FOR WALL TYPES.
2. REFER TO 1A-107 FOR ADDITIONAL GENERAL PLAN NOTES.
3. ALL TOILET ROOM WALLS TO GO TO DECK UNO.
4. PROVIDE ACOUSTICAL BATT INSULATION IN STUD CONSTRUCTION WALLS SURROUNDING TOILET ROOMS.
5. PROVIDE WALL MOUNTED DOOR STOPS IN RESTROOMS.
6. REFER TO 1A-601 FOR INTERIOR FINISHES.
7. PROVIDE 90 DEGREE OUTSIDE CMU CORNERS BEHIND TILE WRAPPING AROUND OUTSIDE CORNERS.
8. TERMINATE TILE 2" SHORT OF CMU BULLNOSE CORNERS WHERE TILE FINISH STOPS AT OUTSIDE CORNERS.
9. EXTEND CERAMIC TILE UP TO AND AROUND MIRRORS ON WALLS WITH CERAMIC TILE WAINSCOT.

ACCESSORIES

1. REFER TO SHEET 1A-003/1A-004 FOR TYPICAL TOILET ROOM ACCESSORIES AND FIXTURE / ACCESSORY MOUNTING HEIGHT INFO.
2. PROVIDE FIXTURES AND ACCESSORIES AT ALL SINGLE ACCESSIBLE TOILET ROOMS AND ALL TOILET STALLS AS INDICATED ON THE 'TYPICAL TOILET ROOM LAYOUTS' ON SHEET 1A-003.
3. COORDINATE INSTALLATION OF REQ'D BLOCKING AND STABILIZING FOR FIXTURES.
4. THE STRUCTURAL STRENGTH OF GRAB BARS AT ACCESSIBLE WATER CLOSETS SHALL COMPLY WITH ADA/TAS 609.8.
5. MIRRORS MOUNTED WITHOUT SINKS OR CABINETS BELOW THEM SHALL BE FULL HEIGHT MIRRORS UON. LOCATE THE TOPS OF THESE MIRRORS (MEASURED FROM FLOOR TO TOP MOST EDGE) AT 74" AFF AND THE BOTTOMS OF MIRRORS AT 24" AFF (MEASURED FROM FLOOR TO BOTTOM OF REFLECTING SURFACE).
6. SHOWER CURTAIN RODS TO BE MOUNTED AT 80" AFF (MIN. - MEASURED TO BOTTOM OF ROD), UON.

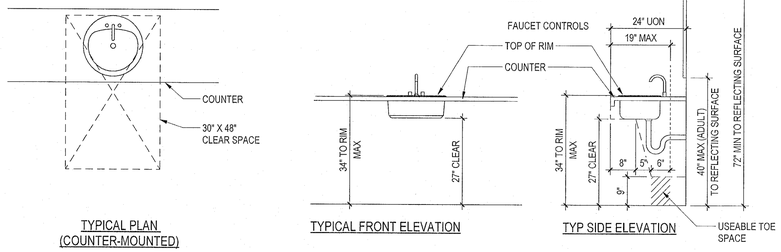
TYPICAL DRINKING FOUNTAINS



TYPICAL PLAN | TYPICAL FRONT ELEVATION | TYP SIDE ELEVATION

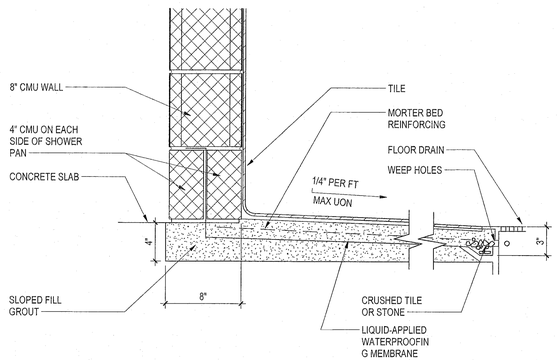
B1 / 1A-402 TYPICAL DRINKING FOUNTAINS
1/2" = 1'-0"

TYPICAL ACCESSIBLE LAVATORY



TYPICAL PLAN (COUNTER-MOUNTED) | TYPICAL FRONT ELEVATION | TYP SIDE ELEVATION

B3 / 1A-402 TYPICAL LAVATORY
1/2" = 1'-0"



A1 / 1A-402 CMU SHOWER DETAIL
1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ENLARGED TOILET & LOCKER ROOM DETAILS 1A-402

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 100 OF 255	

ACCEPTED AS NOTED PUBLIC WORKS 80341 CITY DRAWING NUMBER HOUSTON, TEXAS

PLOTTED: 6/3/2025 12:41:13 PM
PLOT STYLE: COH.ctb
FILE PATH:

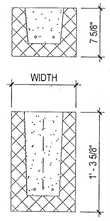
DOOR SCHEDULE

No.	Door Clear Dim. Width	Door Clear Dim. Height	Door Type	Frame Type	Door HDWR Set	Material	Frame Details Head	Frame Details Jamb	Frame Details Sill	Door Remarks
Level 1										
A100	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A101	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A102	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A103	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A104	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A105	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A106	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A107	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A108	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A110A	3' - 0"	9' - 10"	FG	A1	5.0	ALUM				2
A110B	3' - 0"	9' - 10"	FG	A1	5.0	ALUM				2
A111	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A112	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A113	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A114	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A115	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A116	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A117	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A118	3' - 6"	9' - 10"	SG	SEE DOOR TYPE	13.0	ALUM				
A119A	3' - 0"	9' - 10"	FG	A1	4.0	ALUM				10
A119B	3' - 0"	9' - 10"	FG	A1	4.0	ALUM				10
A121A	6' - 0"	7' - 2 3/4"	FGIR	A2	1.0	ALUM				1, 2, 7
A121B	6' - 0"	7' - 2 3/4"	FGIR	A2		ALUM				
A122A	6' - 0"	7' - 2 3/4"	FGIR	A2	3.0	ALUM				1
A122B	6' - 0"	7' - 2 3/4"	FGIR	A2	1.0	ALUM				1, 2, 7, 10, 11, 12
A123	3' - 0"	9' - 10"	FG	A1	5.0	ALUM				2
A124	3' - 0"	10' - 0"	F	A1	8.0	WD				2
A125	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A126	3' - 0"	9' - 10"	FG	A1	10.0	ALUM				10
A127	3' - 0"	10' - 0"	F	S1	8.0	WD				6, 10
A128	3' - 0"	10' - 0"	F	S1	12.0	WD				6, 10
A129	3' - 0"	10' - 0"	F	S1	11.0	WD				6, 9, 10
A130	3' - 0"	10' - 0"	F	S1	11.0	WD				6, 9, 10
A131	3' - 0"	10' - 0"	F	S1	9.0	WD				6, 10
A132	3' - 0"	10' - 0"	F	S1	12.0	WD				6, 10
A133	3' - 0"	9' - 10"	FG	A1	7.0	ALUM				10
A134A	3' - 0"	10' - 0"	F	S1	6.0	WD				2, 8, 13
A134B	6' - 0"	10' - 0"	F	S2	2.0	STL				1, 2, 3, 7, 8, 13
A135	3' - 0"	10' - 0"	F	A1	6.0	WD				2, 6

CONCRETE "U" BLOCK LINTELS

CLEAR OPENING	6" CMU	8" CMU	12" CMU
UP TO 4'-0"	8" DEEP BOND BEAM W/ (1) #4	8" DEEP BOND BEAM W/ (2) #4	8" DEEP BOND BEAM W/ (2) #4
UP TO 6'-0"	8" DEEP BOND BEAM W/ (1) #4	8" DEEP BOND BEAM W/ (2) #4	8" DEEP BOND BEAM W/ (2) #4
UP TO 8'-0"	16" DEEP BOND BEAM W/ (1) #4 CONT HORIZ (1) #4 VERT AT 24" OC	16" DEEP BOND BEAM W/ (2) #4 CONT HORIZ (1) #4 VERT AT 24" OC	16" DEEP BOND BEAM W/ (2) #4 CONT HORIZ (1) #4 VERT AT 24" OC
UP TO 10'-0"	16" DEEP BOND BEAM W/ (1) #4 CONT HORIZ (1) #4 VERT AT 24" OC	16" DEEP BOND BEAM W/ (2) #4 CONT HORIZ (1) #4 VERT AT 24" OC	16" DEEP BOND BEAM W/ (2) #4 CONT HORIZ (1) #4 VERT AT 24" OC

LINTEL SECTIONS



1. THIS SCHEDULE IS FOR USE ON LINTELS IN NONLOAD-BEARING INTERIOR CMU WALLS AND IN NONLOAD-BEARING EXTERIOR WALLS AS NOTED.
2. THIS TYPE OF LINTEL IS USED TO CARRY CONCRETE BLOCK OR LIGHTER WALL CONSTRUCTION ONLY. THESE LINTELS WILL NOT CARRY ANY FLOOR OR ROOF LOADS. REFER TO STRUCTURAL DOCS FOR LOCATIONS OF LOAD-BEARING LINTELS AND FOR LOAD-BEARING LINTEL DESIGNS.
3. LINTEL DESIGN IS BASED ON A MAXIMUM WALL HEIGHT OF 12'-0". WALL OPENINGS IN EXCESS OF 12'-0"-INTERIOR, 8'-0"-EXTERIOR, SHOULD BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AT LEAST TWO WEEKS PRIOR TO CONSTRUCTION TO PREVENT DELAYS.
4. 8" MINIMUM BEARING REQUIRED AT EACH END FOR ALL LINTELS. REINFORCE LINTELS THAT SUPPORT CMU AT EACH END W/1-#5 VERT, FROM FOUNDATION TO BOTTOM OF LINTEL AND GROUT CELL FULL.
5. FOR 4" CONCRETE BLOCK WALLS A 3-5/8" x 7-5/8" PRECAST CONCRETE LINTEL REINFORCED WITH 1-#4 TOP AND BOTTOM CAN BE USED FOR CLEAR SPANS OF 7'-0" AND LESS.
6. PROVIDE CONTROL JOINTS AND BOND BREAKS AT CMU LINTELS IN ACCORDANCE WITH THE "NATIONAL CONCRETE MASONRY ASSOCIATION" TEK NOTE #3 (1972).

GENERAL SIGNAGE NOTES:

1. REVIEW ALL SIGNAGE WITH A.H.J.
2. CONFIRM NOTES AND DETAILS MEET CURRENT CODE REQUIREMENTS. REFER TO TAS 216 & 703 AND ICC A117.1
   A. ALL COPY TO BE HELVETICA REGULAR (UON)
   B. ALL COPY SHALL BE RAISED 1/32" MIN.
   C. COPY STROKE WIDTH TO BE 3/16" WIDE MIN.
   D. SIZE OF COPY MAY BE ADJUSTED; HOWEVER, LETTERS MAY NOT BE LESS THAN 5/8" HIGH
3. SIGN FACE & BACK SHALL BE AS SPECIFIED
4. SECTION 109.2.4 OF THE IFC STATES THAT "SIGNS, TAGS OR SEALS POSTED OR AFFIXED BY THE FIRE CODE OFFICIAL ARE NOT TO BE MUTILATED, DESTROYED OR TAMPERED WITH OR REMOVED WITHOUT AUTHORIZATION FROM THE FIRE CODE OFFICIAL."
5. SECTION 2703.6 OF THE IFC STATES THAT SIGNS AND MARKINGS ARE NOT TO BE OBSCURED OR REMOVED, SHALL BE IN ENGLISH AS A PRIMARY LANGUAGE OR IN SYMBOLS ALLOWED BY THIS CODE, SHALL BE DURABLE, AND THE SIZE, COLOR, AND LETTERING SHALL BE APPROVED.

SPECIFIC DOOR SCHEDULE REMARKS

1. PROVIDE REMOVABLE MULLION.
2. REFER TO ELECTRICAL DOCUMENTS FOR POWER FOR CARD KEY ACCESS. AT DOUBLE DOORS PROVIDE ELECTRIC STRIKE AT REMOVABLE MULLION.
3. PROVIDE DRIP AT HEAD OF DOOR
4. MANUAL OPERATED, TYPICAL.
5. MOTOR OPERATED, TYPICAL. REFER TO MEP DOC.
6. PROVIDE PLAM COLOR AS SCHEDULED ON SHEET 1A-601.
7. PROVIDE 2" WIDE ADA COMPLIANT THRESHOLD WITH CHAMFERED EDGES AT ENTRY DOOR.
8. PROVIDE LOUVER IN DOOR. REF MEP DOCS FOR SIZE
9. PROVIDE OCCUPANCY INDICATOR
10. PROVIDE KEY LOCKS WITH 1 MASTER
11. PROVIDE REMOTE RELEASE AT TWO LOCATIONS.
12. PROVIDE CONNECTION FOR AUDIOVISUAL INTERCOM, RE: AV/IT DOCS
13. PROVIDE 45 MINUTE RATED DOOR ASSEMBLY

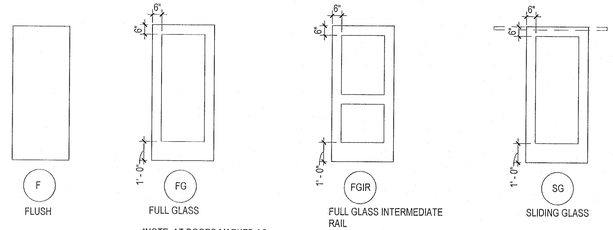
GENERAL DOOR AND WINDOW NOTES:

1. REFER TO SHEETS 1A-501 FOR DOOR SCHEDULE.
2. REFER TO SHEET 1A-501 FOR LINTEL SCHEDULES AND DOOR AND WINDOW JAMB STUD FRAMING SCHEDULE.
3. ALL DOORS TO BE 1 3/4" THICK (UON)
4. ALL STL FRAMES TO HAVE A 2" FACE DIMENSION UON, W/ 5/8" STOP. 3/4" STOP REQUIRED FOR FIRE RATED FRAMES.
5. STEEL FRAME DEPTHS INDICATED IN THE DETAILS ARE NOMINAL. PROVIDE STANDARD WIDTH FRAME WITH THROAT OPENING APPROPRIATE TO PARTITION TYPE.
6. COORDINATE WITH MECH DOCUMENTS FOR DOOR UNDERCUTS AND DOOR LOUVERS, IF ANY.
7. ALL LIGHTS IN DOORS TO HAVE SAFETY GLAZING (UON).
8. EXTERIOR DOORS TO HAVE TINTED GLAZING (UON) AND INTERIOR DOORS TO HAVE CLEAR GLAZING.
9. FIELD VERIFY DIMENSIONS PRIOR TO FABRICATING FRAMES.
10. PROVIDE WD BLKG IN GYP BD WALLS BEHIND DOORS SCHEDULED TO HAVE WALL MOUNTED DOOR STOPS. (REFER HARDWARE SETS).
11. REFER 1A-005/1A-006 FOR TYP WINDOW AND DOOR CONTROL JOINTS IN MASONRY WALLS. REFER DTLS B6/A004 FOR TYP WINDOW AND DOOR CONTROL JOINTS IN STEEL STUD FRAMED WALLS.
12. FLOOR MATERIAL CHANGES BETWEEN ROOMS TO OCCUR UNDER DOOR.

FRAME TYPE LEGEND

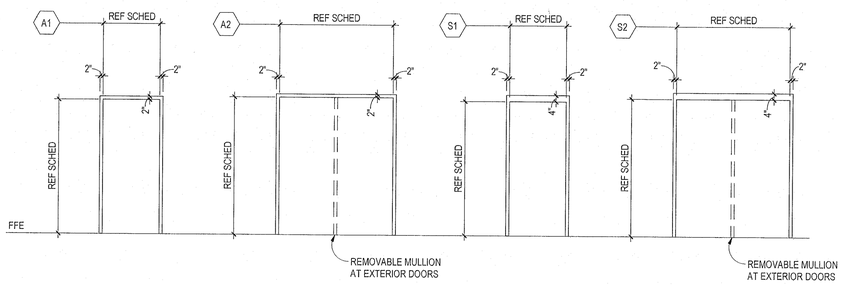
S# STEEL (HM) FRAME TYPE

A# ALUMINUM (STOREFRONT) FRAME TYPE

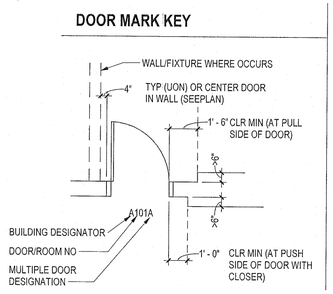


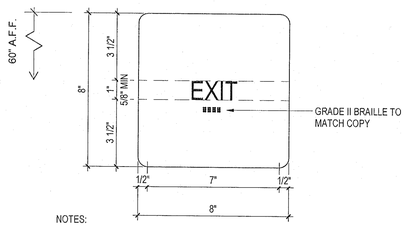
*NOTE: AT DOORS MARKED AS ACOUSTICAL DOORS, PROVIDE SOUND SEALS FOR AN EQUIVALENT STC 47 DOOR

B1 1A-501 DOOR TYPES
1/4" = 1'-0"

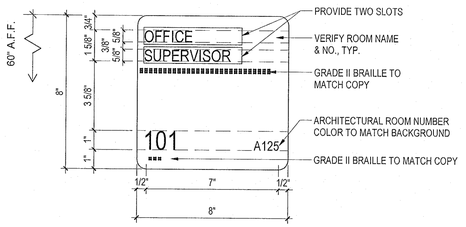


A1 1A-501 DOOR FRAME TYPES
1/4" = 1'-0"

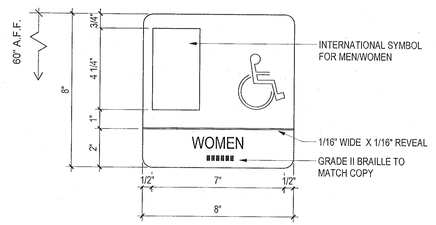




A3 1A-501 TYPICAL INTERIOR EXIT SIGN
3" = 1'-0"



B4 1A-501 TYPICAL INTERIOR ROOM SIGN
3" = 1'-0"



A4 1A-501 TYPICAL RESTROOM SIGN
3" = 1'-0"

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DOOR SCHEDULE, INFO, AND FRAME TYPES 1A-501

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	As indicated
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	101 OF 255

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PUBLIC WORKS APPROVED ACCEPTED AND FILED 80341 CITY SECRETARY HOUSTON, TEXAS

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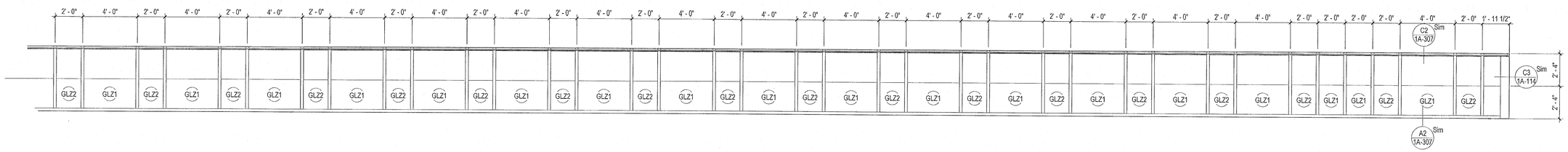
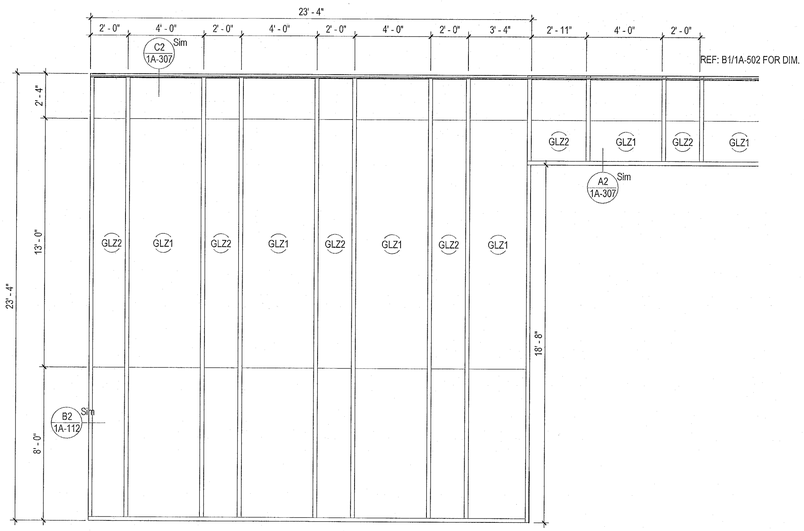
PLOT STYLE: COH.ctb

FILE PATH:



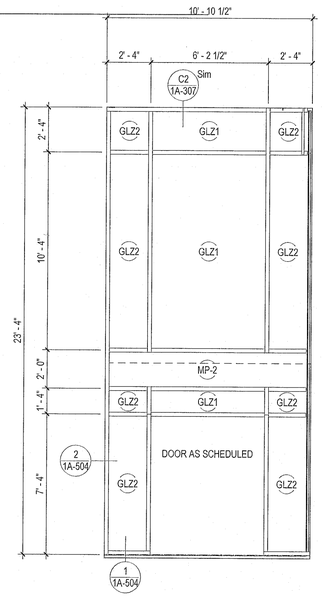
B1 FRAME TYPE A (CONT.)

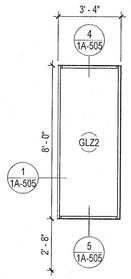
1A-502 1/4" = 1'-0"



C1 FRAME TYPE A

1A-502 1/4" = 1'-0"



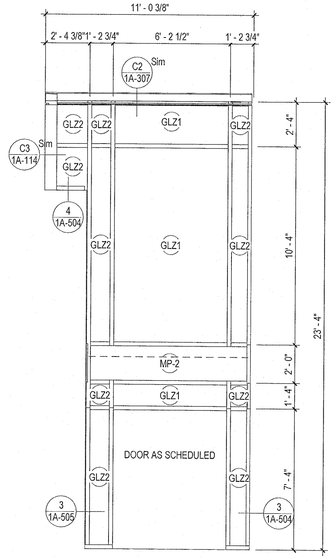


A1 FRAME TYPE B

1A-502 1/4" = 1'-0"

A2 FRAME TYPE C

1A-502 1/4" = 1'-0"



A3 FRAME TYPE D

1A-502 1/4" = 1'-0"

GLAZING KEY

NAME	DESCRIPTION
GLZ 1	CLEAR INSUL GLASS
GLZ 2	TINTED INSUL GLASS
GLZ 3	OPAQUE SPANDREL GLASS
GLZ 4	CLEAR TEMPERED GLASS
MP-2	INSULATED METAL PANEL

*NOTES: FRAMES IN FRAME TYPE A ARE TRIFAB 601T/ 601UTCG013

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FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FRAME TYPES I

1A-502

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 102 OF 255	

LICENSED PROFESSIONAL ENGINEER 80341 CITY OF HOUSTON HOUSTON, TEXAS

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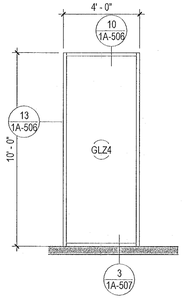
PLOT STYLE: COH.ctb

FILE PATH:

GLAZING KEY

NAME	DESCRIPTION
GLZ 1	CLEAR INSUL GLASS
GLZ 2	TINTED INSUL GLASS
GLZ 3	OPAQUE SPANDREL GLASS
GLZ 4	CLEAR TEMPERED GLASS
MP-2	INSULATED METAL PANEL

NO.	DATE	REVISION	APP



C1 1A-503 **FRAME TYPE iA**
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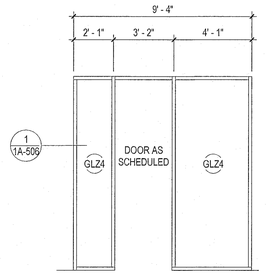
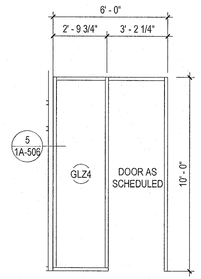
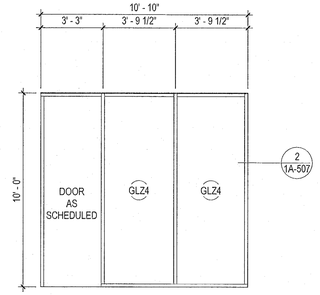


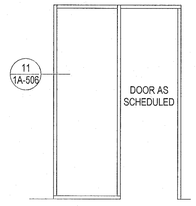
C2 1A-503 **FRAME TYPE iB**
1/4" = 1'-0"



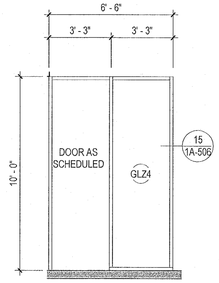
C3 1A-503 **FRAME TYPE iC**
1/4" = 1'-0"



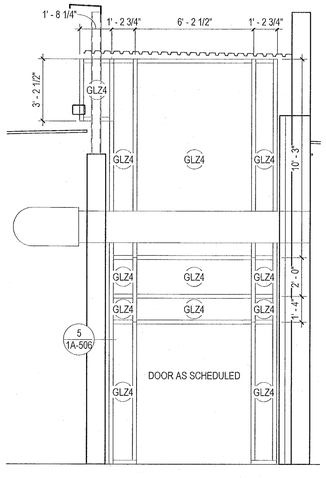
C4 1A-503 **FRAME TYPE iF**
1/4" = 1'-0"



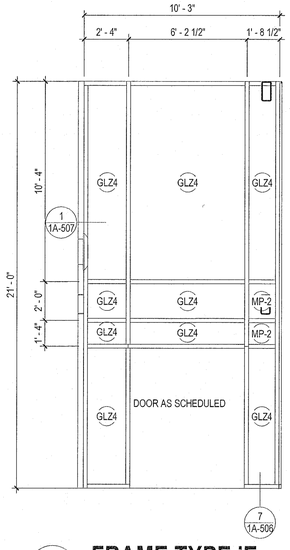
C5 1A-503 **FRAME TYPE iG**
1/4" = 1'-0"



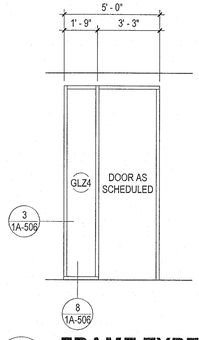
C6 1A-503 **FRAME TYPE iH**
1/4" = 1'-0"



A1 1A-503 **FRAME TYPE iD**
1/4" = 1'-0"



A2 1A-503 **FRAME TYPE iE**
1/4" = 1'-0"



A3 1A-503 **FRAME TYPE iJ**
1/4" = 1'-0"

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REGISTERED ARCHITECT DANIELLE DUNN 38298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

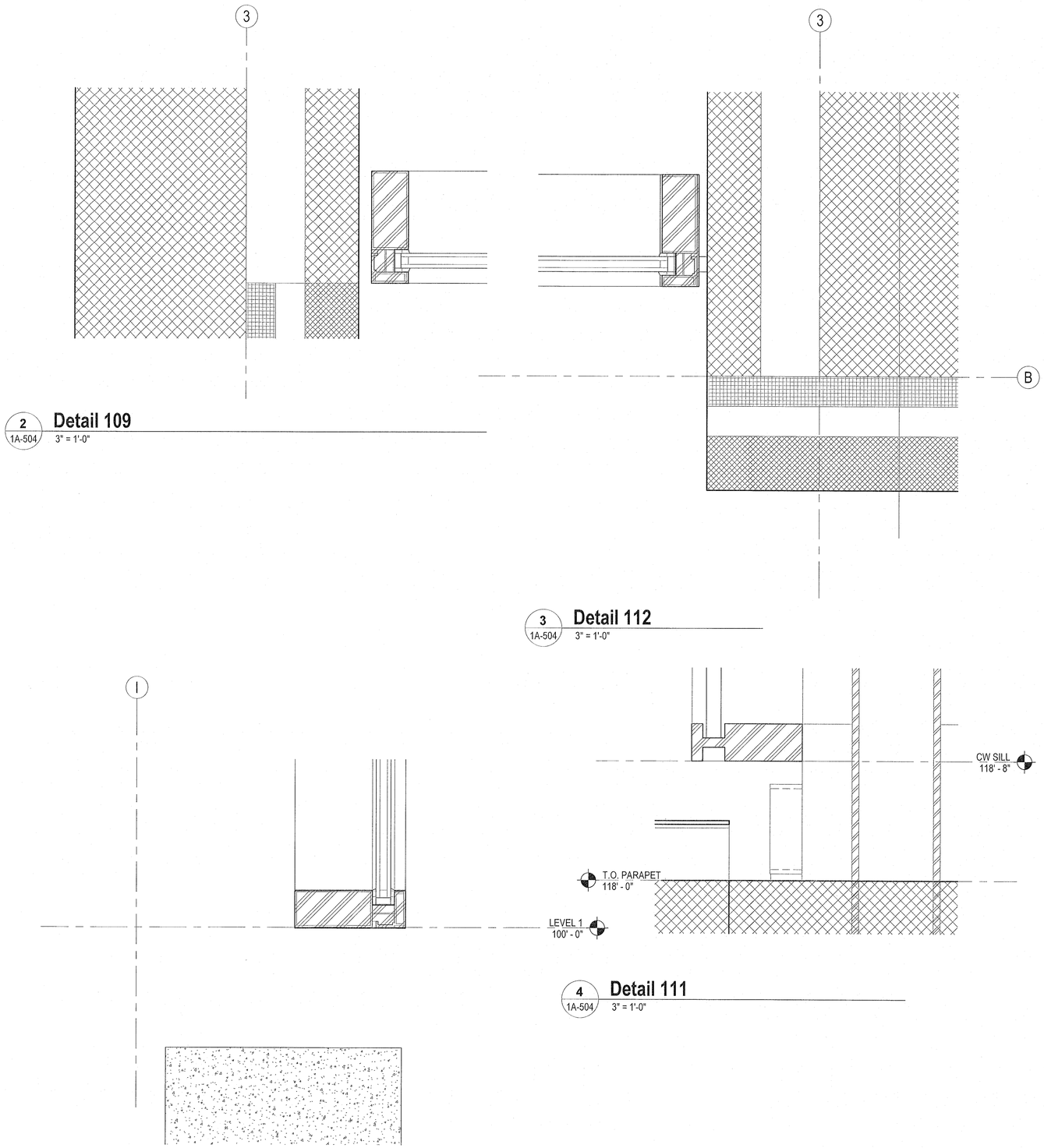
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FRAME TYPES II

1A-503

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 103 OF 255	

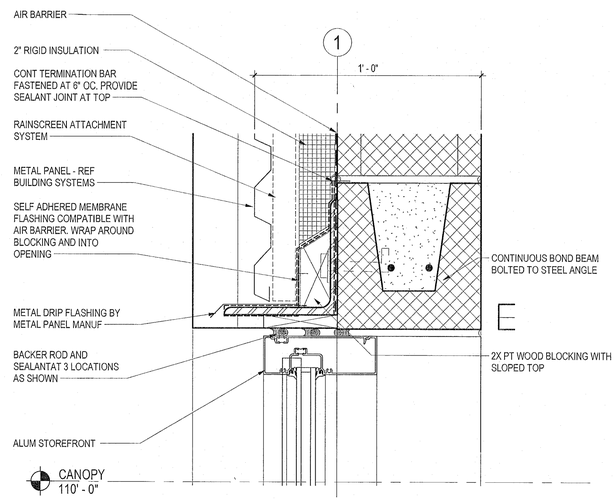
ACCEPTED AS NOTED
80341



2 1A-504 **Detail 109**
3" = 1'-0"

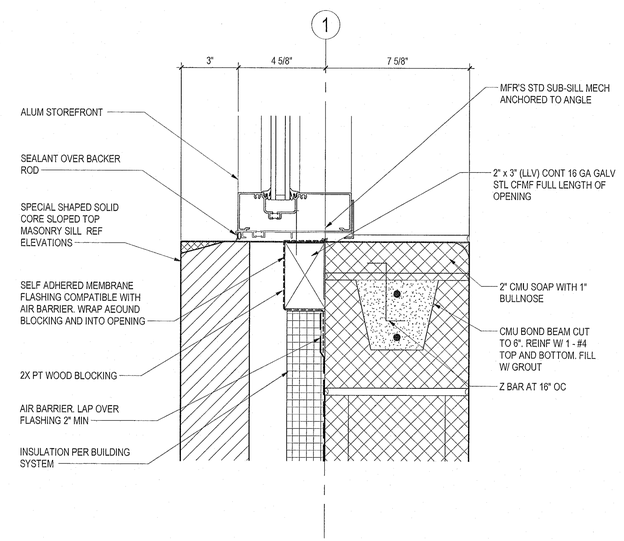
3 1A-504 **Detail 112**
3" = 1'-0"

4 1A-504 **Detail 111**
3" = 1'-0"



5 1A-504 **HEAD DETAIL @ METAL PANEL**
3" = 1'-0"

1 1A-504 **Detail 70**
3" = 1'-0"



6 1A-504 **SILL DETAIL @ XMM8**
3" = 1'-0"

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION HEAD JAMB SILL DETAILS I 1A-504

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
3" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
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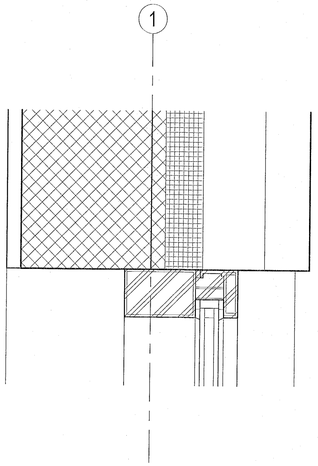
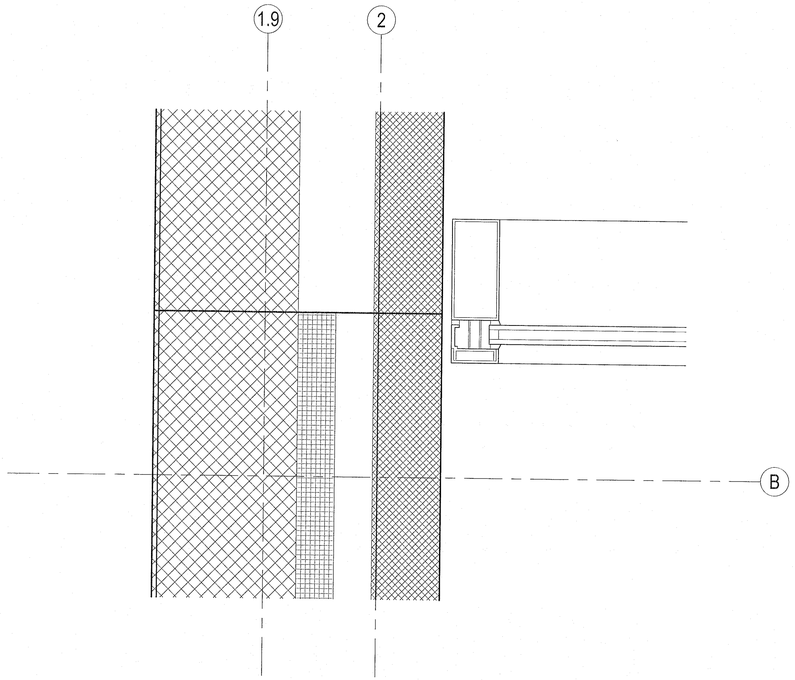
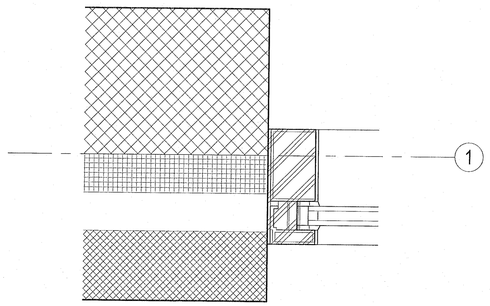
PLOT STYLE: COH.ctb
FILE PATH:



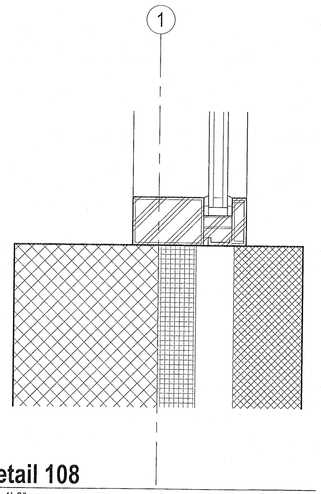
4 1A-505 **Detail 38**
3" = 1'-0"



3 1A-505 **Detail 73**
3" = 1'-0"



1 1A-505 **Detail 68**
3" = 1'-0"



5 1A-505 **Detail 108**
3" = 1'-0"

NO.	DATE	REVISION	APP.

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REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

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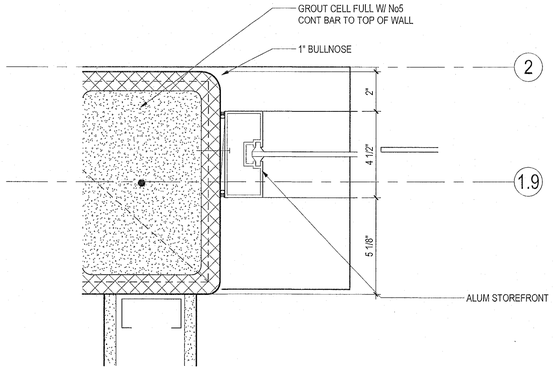
HOUSTON PUBLIC WORKS

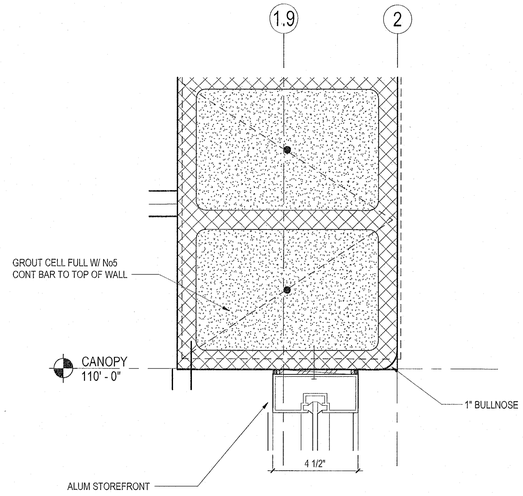
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION HEAD JAMB SILL DETAILS II 1A-505

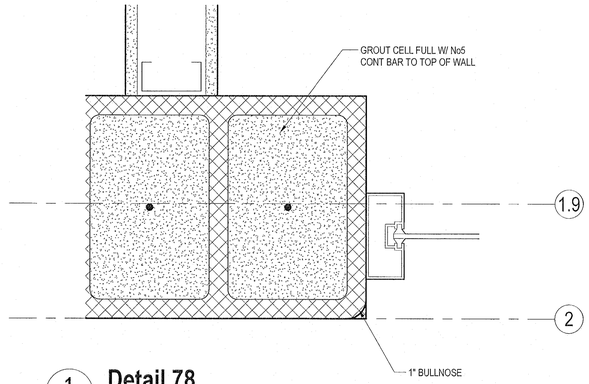
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	PUBLIC WORKS CITY ADMIN. APPROVED 80341 CITY DRAWING CONTROL HOUSTON, TEXAS
DRAWING SCALE	
3" = 1'-0"	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 105 OF 255	



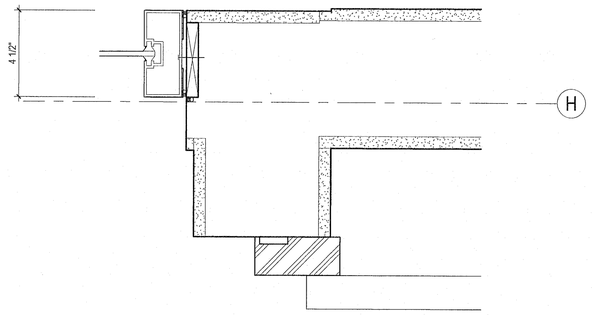
13 / 1A-506 **Detail 76**
3" = 1'-0"

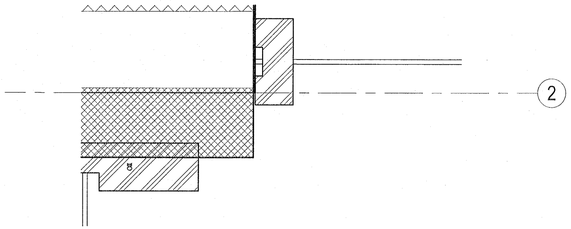


10 / 1A-506 **Detail 41**
3" = 1'-0"

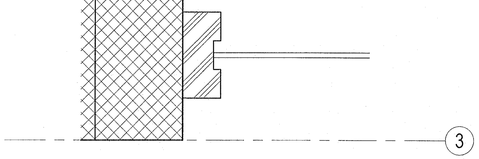


1 / 1A-506 **Detail 78**
3" = 1'-0"



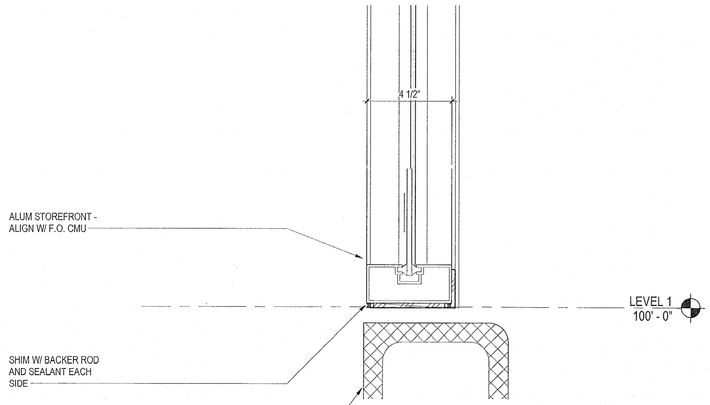


11 / 1A-506 **Detail 85**
3" = 1'-0"

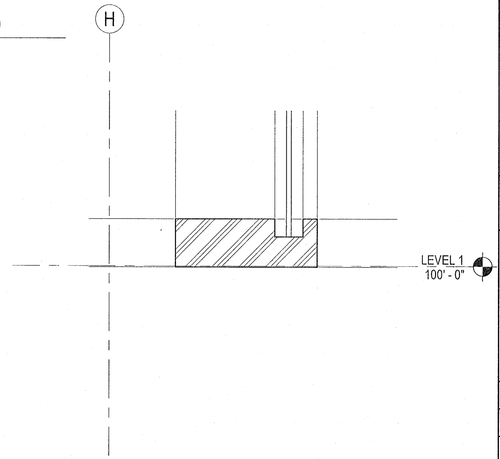


5 / 1A-506 **Detail 81**
3" = 1'-0"

3 / 1A-506 **Detail 91**
3" = 1'-0"



8 / 1A-506 **Detail 90**
3" = 1'-0"



15 / 1A-506 **Detail 60**
3" = 1'-0"

7 / 1A-506 **Detail 89**
3" = 1'-0"

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FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION HEAD JAMB SILL DETAILS III 1A-506

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SHAHIDUR RAHMAN, P.E.	
SHEET NO. 106 OF 255	

ACCEPTED AS NOTED 80341 CITY ENGINEER HOUSTON, TEXAS

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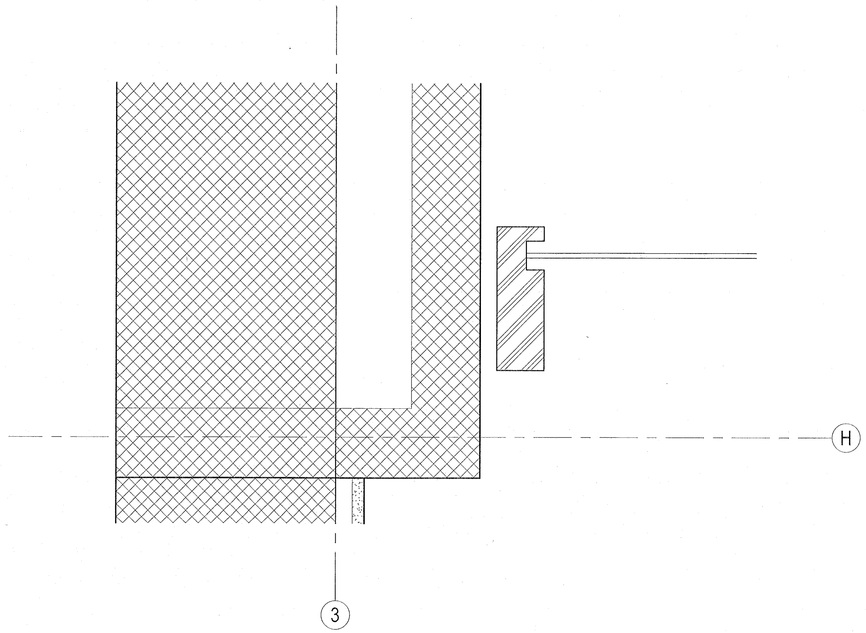
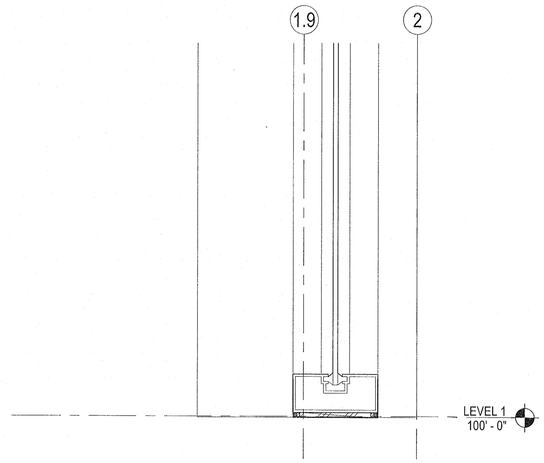
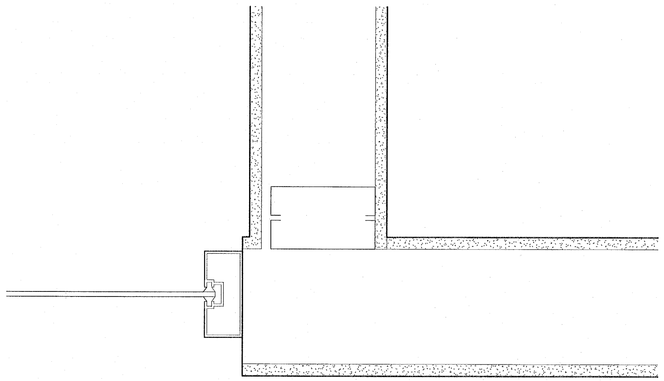
FILE PATH:



1 / 1A-507 **Detail 87**
3" = 1'-0"



3 / 1A-507 **Detail 75**
3" = 1'-0"



2 / 1A-507 **Detail 58**
3" = 1'-0"

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12/12/2024

CITY OF HOUSTON

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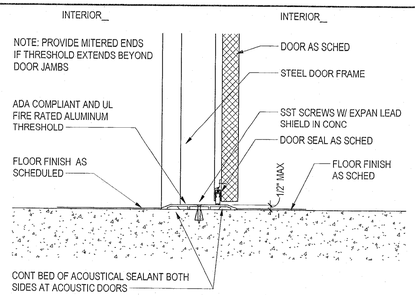
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

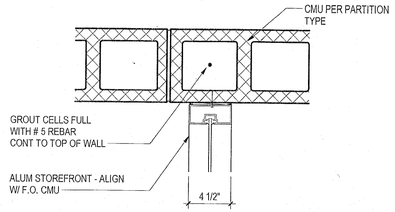
HEAD, JAMB, SILL DETAILS V 1A-507

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
3" = 1'-0"	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 107 OF 255	

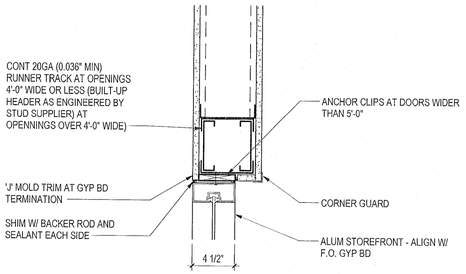
PLOTTED: 6/3/2025 12:41:22 PM
PLOT STYLE: COH.ctb
FILE PATH:



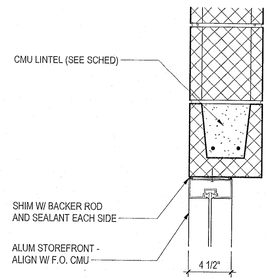
D1 / 1A-508 — **DOOR THRESHOLD**
1 1/2" = 1'-0"



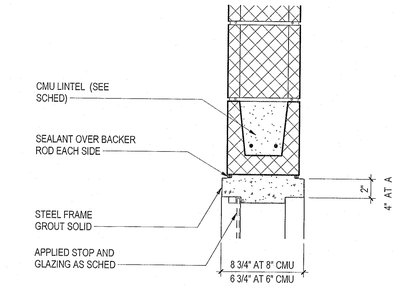
D2 / 1A-508 — **JAMB DETAIL_CMU**
1 1/2" = 1'-0"



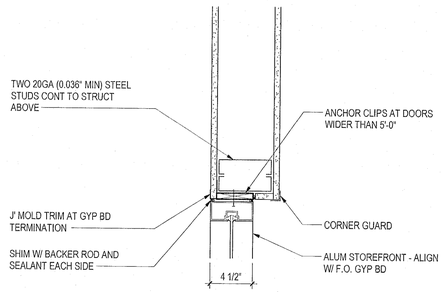
C1 / 1A-508 — **HEAD DETAIL_CFMF**
1 1/2" = 1'-0"



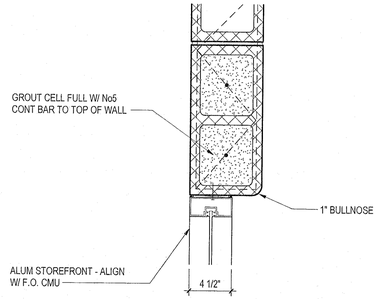
C2 / 1A-508 — **HEAD DETAIL_CMU**
1 1/2" = 1'-0"



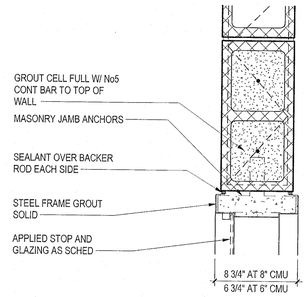
C3 / 1A-508 — **HEAD DETAIL_HM CMU**
1 1/2" = 1'-0"



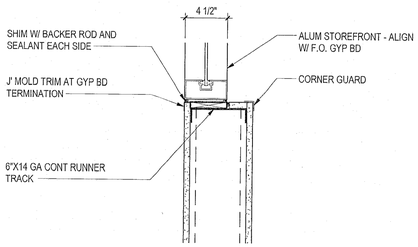
B1 / 1A-508 — **JAMB DETAIL_CFMF**
1 1/2" = 1'-0"



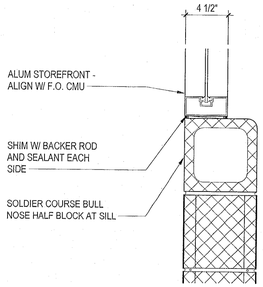
B2 / 1A-508 — **JAMB DETAIL_CMU**
1 1/2" = 1'-0"



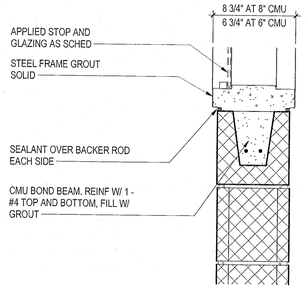
B3 / 1A-508 — **JAMB DETAIL_HM CMU**
1 1/2" = 1'-0"



A1 / 1A-508 — **SILL DETAIL_CFMF**
1 1/2" = 1'-0"



A2 / 1A-508 — **SILL DETAIL_CMU**
1 1/2" = 1'-0"



A3 / 1A-508 — **SILL DETAIL_HM CMU**
1 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28296 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION HEAD, JAMB, SILL DETAILS IV 1A-508

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1 1/2" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 108 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED APPROVED 80341 CITY OF HOUSTON, TEXAS

IAH WWTP ADMIN COLOR SCHEDULE

		MRK	MATERIAL	MANUFACTURER	STYLE	MFR NO.	COLOR	COMMENTS	CLASS
INTERIOR	WALLS	PNT-1	PAINT (FIELD)	SHERWIN WILLIAMS		SW 7006	EXTRA WHITE		CLASS A
		PNT-2	PAINT	SHERWIN WILLIAMS		SW 7648	BIG CHILL		CLASS A
		PNT-3	PAINT (ACCENT)	SHERWIN WILLIAMS		SW 9149	INKY BLUE		CLASS A
		E PNT- 1	PAINT	SHERWIN WILLIAMS				EPOXY VERSION OF PNT-1 TO BE APPLIED IN WET AREAS	CLASS A
		E PNT- 2	PAINT	SHERWIN WILLIAMS				EPOXY VERSION OF PNT-2 TO BE APPLIED IN WET AREAS	CLASS A
	FLOOR	PT-1	PORCELAIN TILE	DALTILE	CASTLE ROCK/ STRAIGHT JOINT		2X2	LOCKER ROOM FLOORS AND WALLS	CLASS I
		WOC	WALK OFF CARPET	MILLIKEN	OBEX TILE	CUT X/ FIZZ	FZX118-119 DARK GREY		CLASS I
		CPT-1	CARPET TILE	MILLIKEN	JOURNAL	INSCRIPTION	INS157 SCROLL LEAD W/ GRAPHITE		CLASS I
		P CONC	POLISHED CONCRETE	CTS CEMENT	TRUPC			TOPPING TO BE PLACED ON CONCRETE AND POLISHED	
		S CONC	SEALED CONCRETE						
	ACCESSORIES	WD-1	WOOD VENEER	FORMICA	NATURELLE FINISH	MILLENIUM OAK		CASEWORK	
		QTZ -1	QUARTZ COUNTERTOP	WILSONART	TRAIL RIDGE	Q4042			
		EP -1	EPOXY COUNTERTOP	DUPONT		CHARCOAL			
		RBR - 1	RUBBER BASE	ALLSTATE		A113			
		TP	TOILET PARTITIONS						
		RS	ROLLER SHADES	MECHO	SOHO COLLECTION	1616 SPRING	3% OPEN		
		SC	SHOWER CURTAIN					ALUMINUM TRIM AT TERMINATING EDGES OF TILE	
		AT	ALUMINUM TRIM	SCHLUTER					
	CEILINGS	APC-1	ACOUSTICAL CEILING TILE	ARMSTRONG	2X2	CALLA	SQUARE LAY-IN		
		EXP	EXPOSED ACOUSTICAL DECK	EPIC METALS					CLASS A
EXTERIOR		MP-1	METAL PANEL	BERRIDGE	HR-16		CITYSCAPE		
		MP-2	METAL PANEL				CLEAR ANOD. ALUM. TO MATCH CW FRAMES		
		CMU-1	BURNISHED CMU BLOCK (GRAY)						
		CMU-2	BURNISHED CMU BLOCK (WHITE)						
		GLZ-1	GLAZING	VITRO	SOLARBAN 90		CLEAR + CLEAR		
		GLZ-2	GLAZING	VITRO	SOLARBAN 70		CLEAR + SOLARGRAY		

GENERAL COLOR SCHEDULE NOTES

1. MANUFACTURERS NAMES AND IDENTIFICATION NUMBERS ARE LISTED AS A MEANS OF ESTABLISHING A STANDARD OF TYPE, FUNCTION, COLOR, AND QUALITY. REFER TO PROJECT MANUAL FOR ADDITIONAL MANUFACTURERS & PROCEDURES.
2. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT A SAMPLE OF ALL FINISH MATERIALS FOR APPROVAL BEFORE MATERIALS ARE APPLIED ON THE JOB.
3. VERIFY ALL GRAPHICS WITH THE ARCHITECT BEFORE PAINTING. GRAPHICS MAY NEED TO BE ADJUSTED AFTER ENLARGING TO REFLECT THE SAME COMPOSITION AS ON THE DRAWINGS.
4. TERMINATE ALL ACCENT PAINTS & VINYL WALL COVERING ON INSIDE CORNERS ONLY UNLESS OTHERWISE INDICATED.
5. PAINT ALL INTERIOR & EXTERIOR EXPOSED PIPING. VERIFY COLOR W/ ARCHITECT.

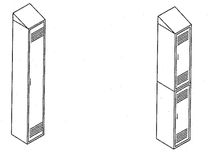
INTERIOR

1. UNDESIGNATED PAINTED GYPSUM BOARD WALLS TO BE MARK "PNT-1".
2. UNDESIGNATED PAINTED CMU WALLS TO BE MARK "PNT-1".
3. ALL INTERIOR HOLLOW METAL DOOR AND WINDOW FRAMES SHALL BE PAINTED TO MATCH MARK "PNT-4" (U.O.N.). ALL VISION PANEL FRAMES IN INTERIOR DOORS TO MATCH MARK "PNT-4".
4. ALL INTERIOR HOLLOW METAL DOORS SHALL BE PAINTED TO MATCH MARK "PNT-4".
5. ALL BASE CABINETS, WALL CABINETS, AND MISC. CASE WORK SHALL BE MARK "PL1".
6. ALL COUNTERTOPS SHALL BE MARK "SS1", (U.O.N.)
7. ALL METAL LOCKERS SHALL BE FINISHED TO MATCH MARK "PNT-2".
8. ALL EXPOSED STRUCTURAL STEEL INCLUDING ROOF DECK, JOISTS, GIRDERS, BEAMS AND ANY MISC. STEEL SHALL BE PAINTED MARK "PNT-2". DUCTS, DIFFUSERS AND AIR HANDLING UNITS SHALL BE GALVANIZED METAL.
9. LOW PROFILE TRANSITION STRIPS TO BE PLACED AT ANY FLOORING MATERIAL CHANGE.
10. METAL LOW PROFILE TRANSITION STRIPS TO BE PLACED AT ANY FLOORING MATERIAL CHANGE ADJACENT TO CT.
11. REFER TO FINISH SCHEDULE FOR CT GROUT TYPE IN ALL BATHROOM AND KITCHEN AREAS.
12. CERAMIC WALL/FLOOR TILE GROUT SHALL BE GT1.

EXTERIOR

1. ALL EXTERIOR STEEL LINTELS SHALL BE PAINTED TO MATCH ADJACENT BRICK.
3. ALL ALUM. WINDOWS & DOOR FRAMES SHALL BE CLEAR ANODIZED; EXTERIOR GLAZING
4. ALL EXTERIOR METAL SHALL BE FINISHED AS FOLLOWS:

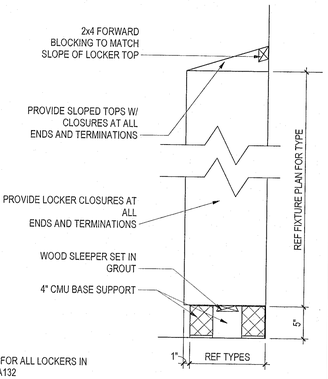
CLEAR ANOD. - ALUMINUM STOREFRONT, ALUMINUM WINDOWS
PM - COPING, AND FLASHING NOTED ON THE DRAWINGS.
PM - ALL UNDESIGNATED PRE-FINISHED METAL
PM - PRE-FINISHED LOUVERS
GUTTERS, DOWNSPOUTS, BRACKETS & D.S. BOOTS
MATCH ADJ. WALL - HOLLOW METAL DOORS, FRAMES AND STEEL HANDRAILS.
MATCH ADJ. WALL - ALL EXPOSED COUNTER FLASHING, PIPE SUPPORTS AND OTHER MISC. FLASHING (U.O.N.).
PM - ALL METAL BUILDING SIGNAGE.



TYPE 1
SINGLE TIER
STUDENT LOCKER
(1) 12"x60"x12"

TYPE 2
DOUBLE TIER
STUDENT LOCKER
(2) 12"x36"x12"

A3 / 1A-601 **LOCKER TYPES** 1/4" = 1'-0"



LOCKER BASE FOR ALL LOCKERS IN ROOM A128 & A132

A4 / 1A-601 **LOCKER_SECTION** 1" = 1'-0"

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FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FINISH SCHEDULES

1A-601

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 109 OF 255	

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CITY OF HOUSTON
HOUSTON, TEXAS

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FINISH SCHEDULE-ROOM DATA

NUMBER	NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	COMMENTS
A100	OFFICE	CPT	RBR	PNT/CMU	APC	
A101	OFFICE	CPT	RBR	PNT/CMU	APC	
A102	OFFICE	CPT	RBR	PNT/CMU	APC	
A103	OFFICE	CPT	RBR	PNT/CMU	APC	
A104	OFFICE	CPT	RBR	PNT	APC	
A105	OFFICE	CPT	RBR	PNT/CMU	APC	
A106	OFFICE	CPT	RBR	PNT	APC	
A107	OFFICE	CPT	RBR	PNT/CMU	APC	
A108	OFFICE	CPT	RBR	PNT/CMU	APC	
A109	COPY	CPT	RBR	PNT/CMU	APC	
A110	CORRIDOR	P CONC	-	PNT/CMU	EXP	
A111	OFFICE	CPT	RBR	PNT	APC	
A112	OFFICE	CPT	RBR	PNT	APC	
A113	OFFICE	CPT	RBR	PNT	APC	
A114	OFFICE	CPT	RBR	PNT	APC	
A115	OFFICE	CPT	RBR	PNT	APC	
A116	OFFICE	CPT	RBR	PNT	APC	
A117	OFFICE	CPT	RBR	PNT	APC	
A118	OFFICE	CPT	RBR	PNT	APC	
A119	CONFERENCE ROOM	CPT	RBR	PNT/CMU	APC/EXP	
A120	CORRIDOR	P CONC	RBR	PNT/CMU	EXP.	
A121	VESTIBULE	WOC	-	CMU	EXP	
A122	VESTIBULE					
A124	IDF	S CONC	RBR	PNT/PLYWD	EXP	
A125	OFFICE	CPT	RBR	PNT/CMU	APC	
A126	BREAK ROOM	PT	PT	PNT/CMU	APC	
A127	STORAGE	S CONC	RBR	PNT	APC	
A128	WOMEN'S LOCKERS	PT	PT	PT	GYP	
A129	TLT	PT	PT	PT	GYP	
A130	TLT	PT	PT	PT	GYP	
A131	JANITOR	S CONC	RBR	E PNT	APC	
A132	MEN'S LOCKER	PT	PT	PT	GYP	
A133	SAMPLE	S CONC	RBR	PNT	APC	
A134	MECH	S CONC	RBR	PNT	EXP	
A135	SECURITY	S CONC		PNT/PLYWD	EXP.	
A136	SCADA ROOM	CPT	RBR	PNT/CMU	APC	

FURNISHING AND EQUIP. ACCESSORY GENERAL NOTES

THE FOLLOWING FIXTURE ACCESSORIES ARE TO BE TYPICALLY PROVIDED IN SCIENCE AREAS, U.O.N. - REF. TO FIXT. SCHED., MECH., ELEC., & PLUMB. DOCS. FOR MORE INFORMATION TO PROVIDE COMPLETE OR ADDITIONAL ASSEMBLIES, (TYP.).

a. SINKS: - PROVIDE VACUUM BREAKERS, LEAD PLUGS & SEDIMENT TRAPS AT ALL SINKS, (TYP.)

- ALL SINKS TO BE STAINLESS STEEL TYP. (U.O.N.)

- AT FIXTURE UNITS #12, #13 & #14 -- USE CAB. MFR'S. SUGGESTED SINK (EPOXY RESIN)

- AT FIXTURE UNIT #28 -- PROVIDE A SPECIAL STAINLESS STEEL SINK (5" DEEP) TO BE MOUNTED UNDER A 1" THICK COUNTERTOP FOR A TOTAL DEPTH OF 6".

b. FAUCETS: - PROVIDE FAUCET (SHELDON #80100), HOT/COLD WATER MIXING GOOSENECK AT EA. SINK, (U.O.N.)

- AT FIXTURE UNITS #12, #13 & #14 -- USE CAB. MFR'S. SUGGESTED FAUCETS.

c. ROD ASSEMBLIES: PROVIDE ROD ASSEMBLIES AS FOLLOWS:

- AT FIXTURE UNITS #13 & #14 -- USE CAB. MFR'S. SUGGESTED ROD ASSEMBLY.

- AT FIXTURE UNIT #12 -- PROVIDE FOUR (4) ROD ASSEMBLIES (SHELDON #86385).

e. ELECTRIC OUTLETS: PROVIDE ELECTRICAL OUTLETS AS FOLLOWS: (REF. ELEC. DOCS. FOR ADDITIONAL INFO.)

- AT FIXTURE UNITS #12, #13 & #14 -- USE CAB. MFR'S. SUGGESTED ELECTRICAL OUTLETS.

f. EYE/FACE WASH: PROVIDE EYE/FACE WASH AS FOLLOWS:

AT ROOM A133, -- PROVIDE EYE/FACE WASH (TAYLOR #EW-1020-RA) AT DEMONSTRATION TABLE.

g. MASTER EMERGENCY UTILITY CUT-OFF (GAS, ELEC., & WATER): PROVIDE MASTER KEY, CUT-OUT FOR UTILITIES, AND PLAQUE ON SINK CABINET DOOR WITH 1"TALL RED LETTERS ON A WHITE BACKGROUND WHICH READS "EMERGENCY UTILITIES CUT-OFF INSIDE SINK CABINET". REFER TO ELECTRICAL & PLUMBING DOCUMENTS FOR ADDITIONAL INFORMATION & LOCATIONS, (TYP).

h. VENTILATION LOUVERS: -PROVIDE 8"LONG VENTILATION LOUVER (CR-9942) IN TOE SPACE OF ALL CASEWORK.

FURNISHING AND EQUIPMENT GENERAL NOTES

1. MODEL NUMBERS/MFR'S ARE LISTED ON CASEWORK ELEVATIONS SO THAT A MINIMUM DESIGN BASIS MAY BE ESTABLISHED. THE DIMENSIONS SHOWN (WXHXD) MAY DIFFER FROM THE SELECTED MFR'S STANDARD DIMENSIONS FOR THE LISTED MODEL NUMBERS.
2. PROVIDE SIDE, TOP, AND BOTTOM FILLER PIECES AS REQ'D TO COMPLETE CASEWORK INDICATED ON PLANS.
3. ALL FLOOR MOUNTED FIXTURES ARE TO HAVE THE SAME FINISH FACE MATERIAL AS THE ROOM IN WHICH THEY ARE LOCATED.
4. BLIND CABINETS, AT CORNERS, ARE TO BE LEFT OR RIGHT HAND AS REQ'D PER PLAN.
5. ALL CABINETS TO HAVE PLASTIC LAMINATE THROUGHOUT, INCLUDING ALL EXPOSED SUFACES INSIDE AND OUT.
6. PROVIDE PLASTIC LAMINATE FINISHED END PANELS AT EXPOSED CABINET ENDS INCLUDING KNEESPACES (TYP).
7. FIELD VERIFY DIMENSIONS PRIOR TO FABRICATION AND INSTALLATION OF ANY FIXTURES.
8. BOOKCASES AND SHELVES TO HAVE FRONT FACING SURFACE OF BACK PANEL TO MATCH FINISH OF REMAINDER OF BOOKCASE.
9. COUNTERTOPS TO HAVE SOLID SURFACE W/ 4" HIGH BACKSPLASH TYP, UON.
10. PROVIDE KEYED LOCKS AT CABINET DOORS AND DRAWERS, WHERE INDICATED.
11. KNEESPACE UNITS NOT RECEIVING SINKS SHALL RECEIVE GROMMETS CENTERED ON THE UNIT, 3" FROM THE BACK EDGE OF THE KNEESPACE UNIT (UON).
12. PROVIDE CORNER GUARDS FROM TOP OF BASE TO TOP OF DOOR FRAME: PROVIDE FIRE RATED CORNER GUARD AT RATED WALLS (MODEL NUMBERS ARE NON RATED) MFR'S BY IN-PRO CORP, (DESIGN BASIS).
    RECESS STYLE:
    STAINLESS STEEL:
    ALL OUTSIDE CORNERS OF GYPSUM BOARD CONST 2X2X16 GA (TYPE 304) (RECESS)
13. SHELVES SHALL BE ADJUSTABLE (UON). SHELVES OVER 36" IN LENGTH SHALL BE 1" THICK.
14. PROVIDE 7/8" WORK TOPS WITH PLASTIC LAMINATE FINISH AT CASEWORK SHELVING UNITS UNDER 48".
15. PROVIDE BUILT-IN RECESSED COMBINATION LOCKS AT LOCKERS (UON).
16. PROVIDE ROLLER SHADES AT ALL INTERIOR WINDOWS (UON).
17. PROVIDE ROLLER SHADES AT ALL EXTERIOR WINDOWS, EXCEPT WINDOWS SHARING A FRAME WITH A DOOR (UON).

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REGISTERED ARCHITECT DANIELLE DUNN 28295 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ROOM FINISH SCHEDULES 1A-602

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
As indicated
CITY OF HOUSTON PM
SR SHAHIDUR RAHMAN, P.E.
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HOUSTON, TEXAS

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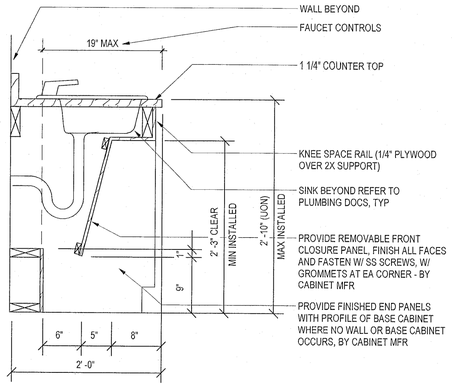
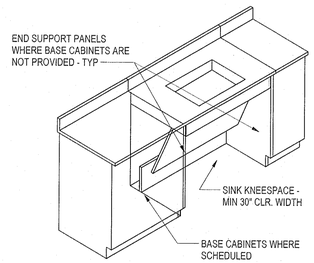


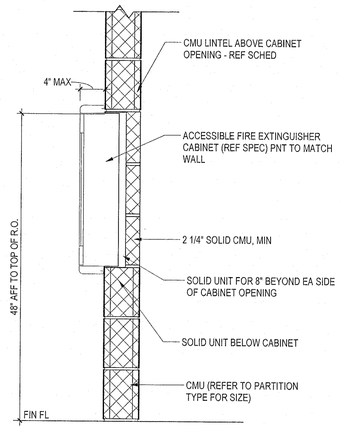
ACCESSIBLE KNEESPACE DETAIL

C1 / 1A-701 — **ACCESSIBLE KNEE SPACE CABINET**
1" = 1'-0"

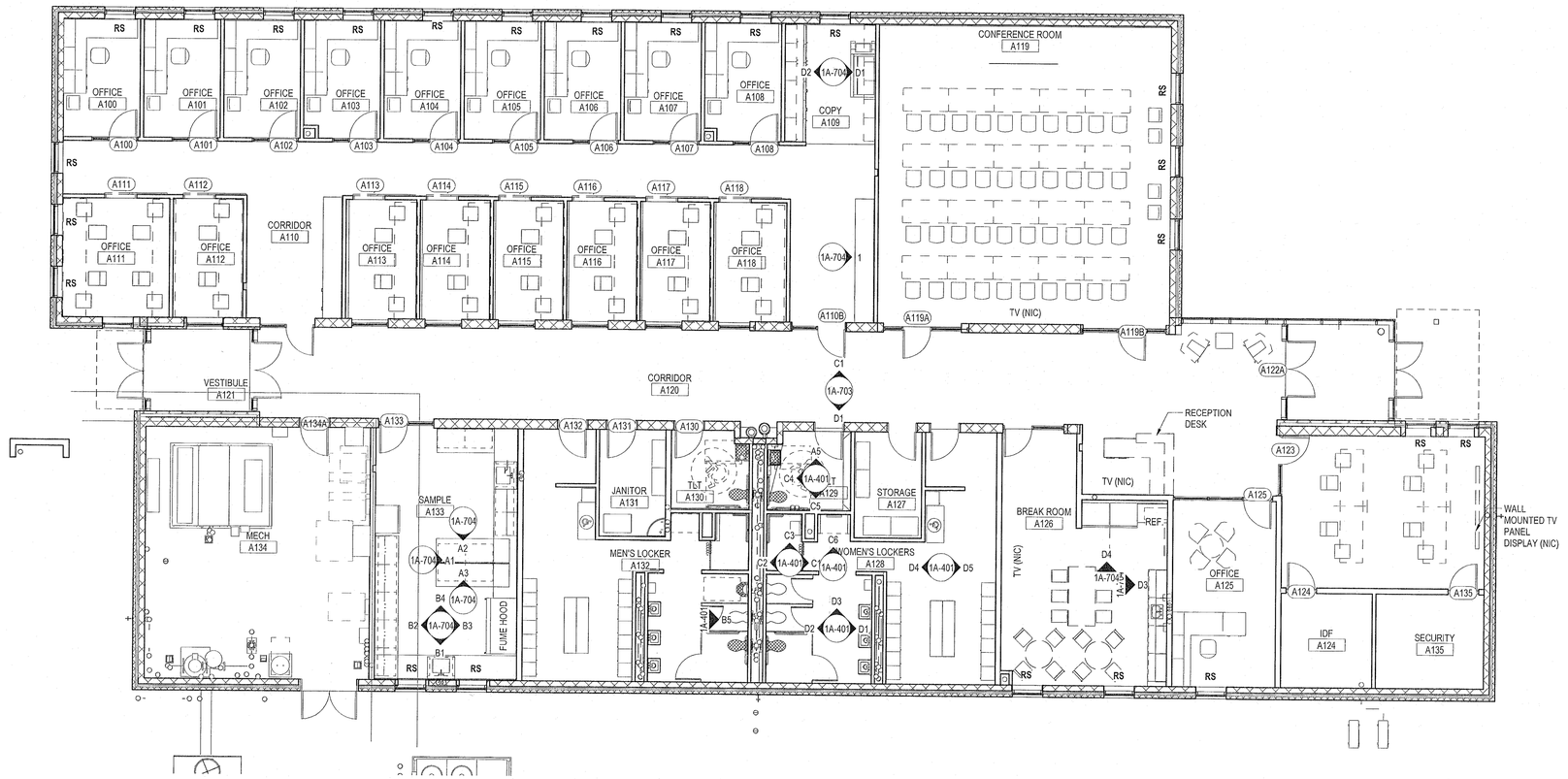


ISOMETRIC
NTS

C2 / 1A-701 — **ACCESSIBLE KNEE ISOMETRIC**
1" = 1'-0"



C3 / 1A-701 — **Fire Extinguisher Cabinet DETAILS**
1" = 1'-0"



A1 / 1A-701 — **FIRST LEVEL FIXTURES, FURNITURE & EQUIPMENT PLAN**
1/8" = 1'-0"

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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FURNISHING, FIXTURES & EQUIPMENT PLAN 1A-701

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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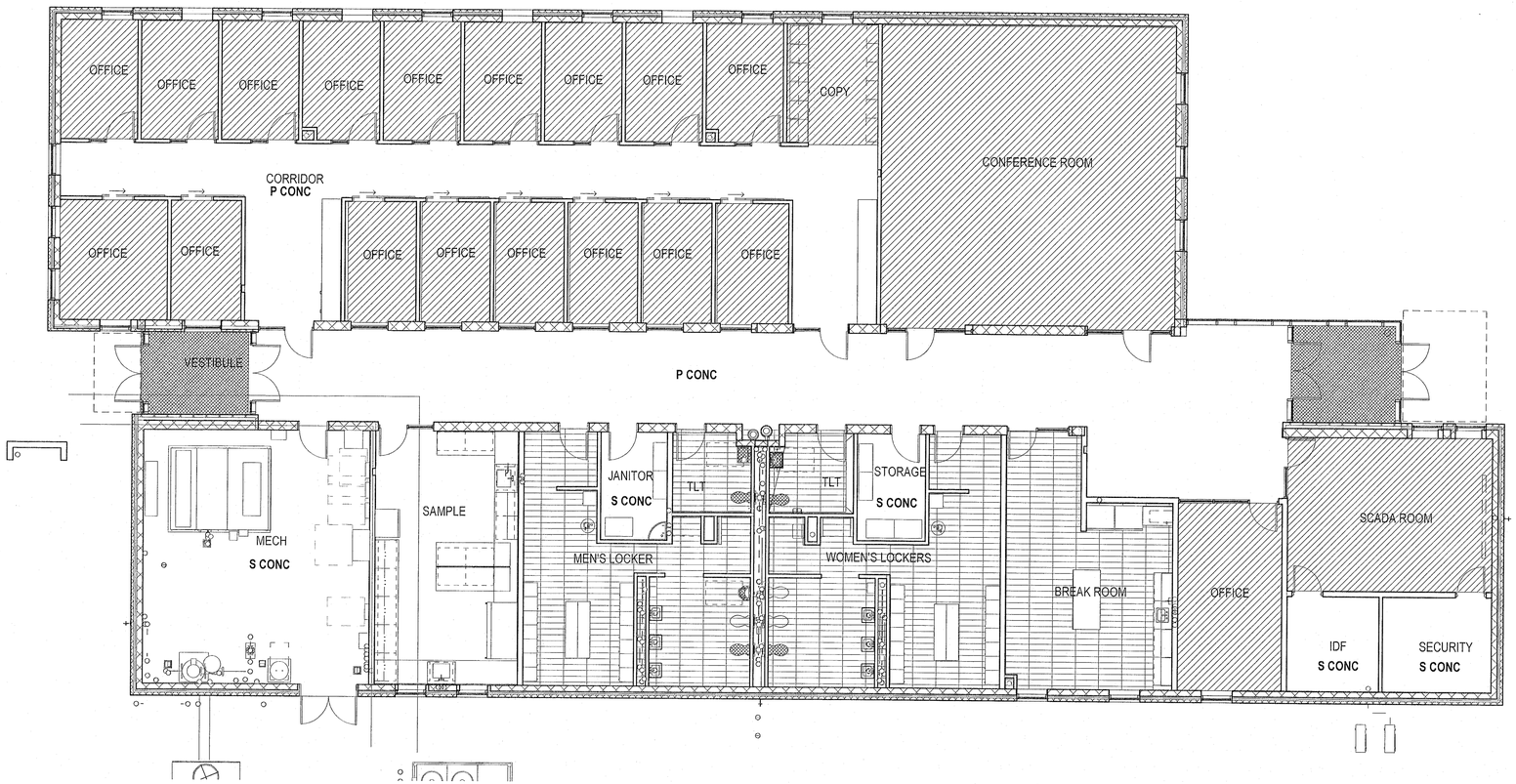
PLOT STYLE: COH.ctb

FILE PATH:

FLOOR FINISH LEGEND

- CARPET 1
- TILE
- WALK OFF CARPET
- POLISHED CONCRETE

NO.	DATE	REVISION	APP.



A1 / 1A-702 **FIRST LEVEL FLOOR FINISHES**

1/8" = 1'-0"

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910 Louisiana Street
Houston, TX 77002

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

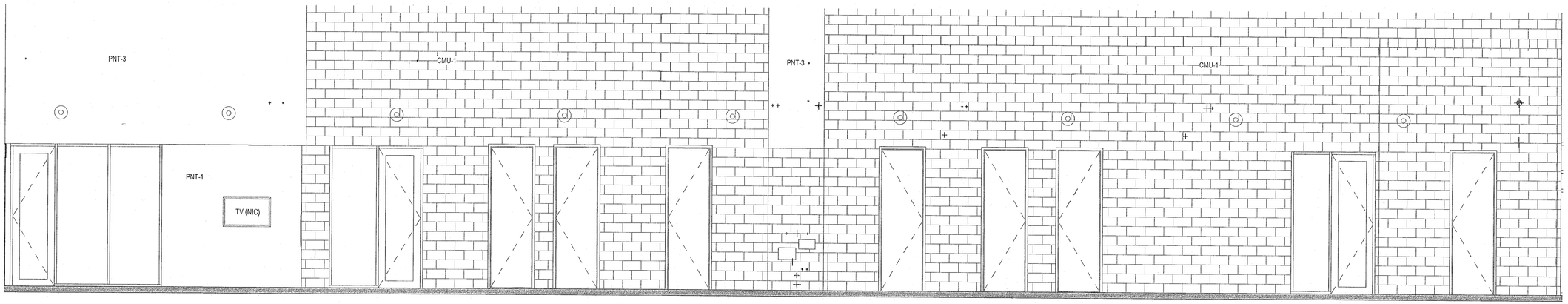
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FLOOR FINISHES

1A-702

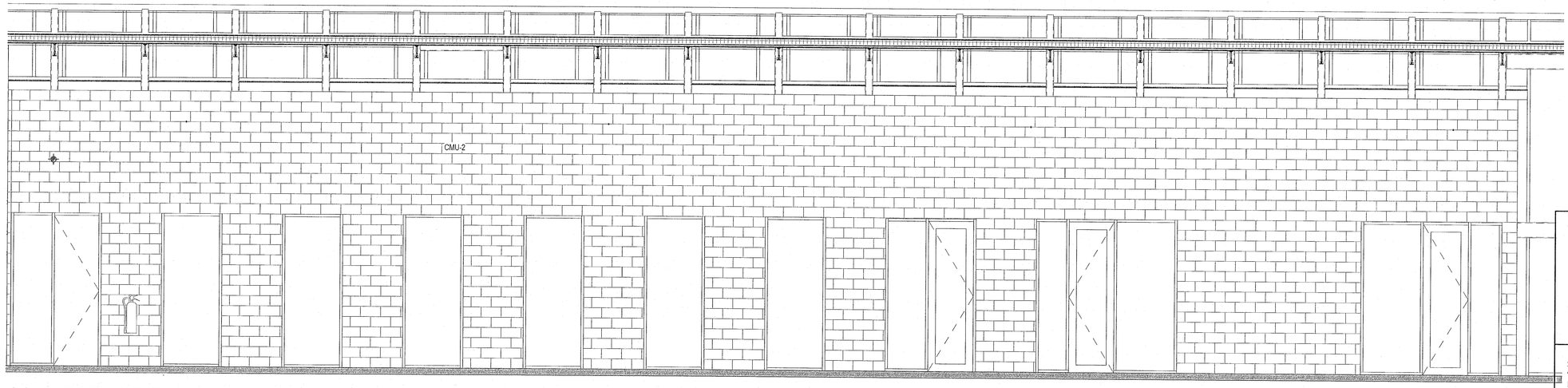
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 112 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED 80341 HOUSTON, TEXAS



D1 / 1A-703 **CORRIDOR SOUTH**

1/4" = 1'-0"



C1 / 1A-703 **CORRIDOR NORTH**

1/4" = 1'-0"

NO.	DATE	REVISION	APP.

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910 Louisiana Street
Houston, TX 77002

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FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 28295 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION INTERIOR ELEVATIONS

1A-703

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
1/4" = 1'-0"
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 113 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING ACCEPTED AND FILED 80341 CITY SECRETARY HOUSTON, TEXAS

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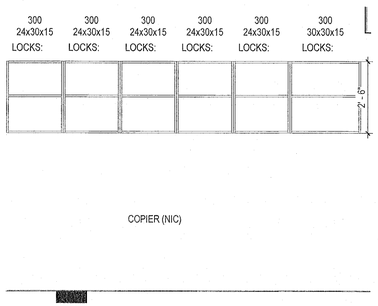
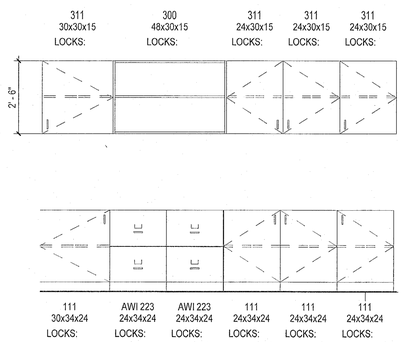
PLOT STYLE: COH.ctb

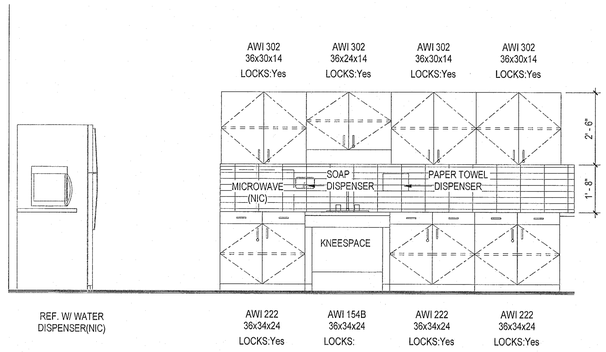
FILE PATH:



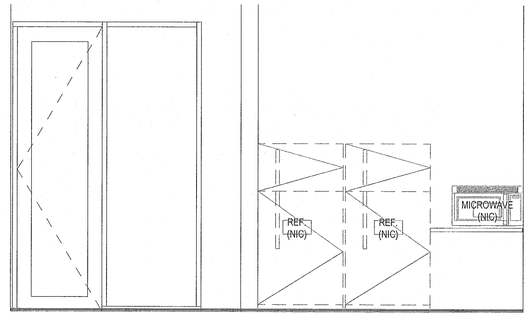
D1 A109 COPY EAST
1A-704 — 3/8" = 1'-0"



D2 A109 COPY WEST
1A-704 — 3/8" = 1'-0"

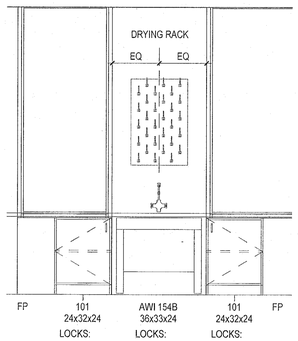


D3 A126 BREAKROOM
1A-704 — 3/8" = 1'-0"

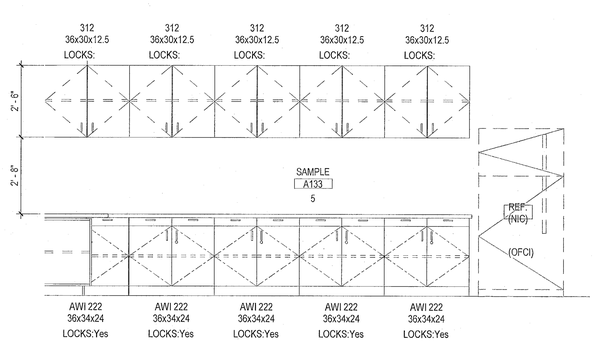


D4 A126 BREAKROOM
1A-704 — 3/8" = 1'-0"

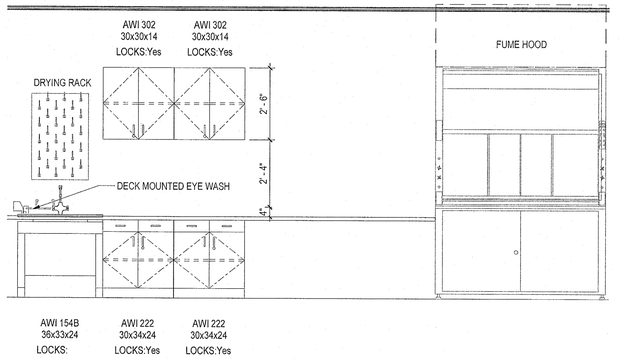
NO.	DATE	REVISION	APP.



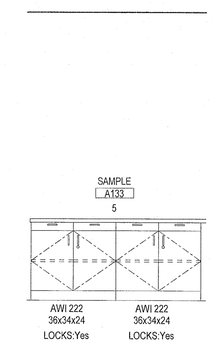
B1 A133 SAMPLE SOUTH
1A-704 — 3/8" = 1'-0"



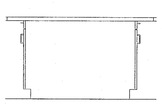
B2 A133 SAMPLE WEST
1A-704 — 3/8" = 1'-0"



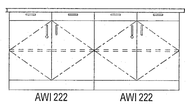
B3 A133 SAMPLE EAST
1A-704 — 3/8" = 1'-0"



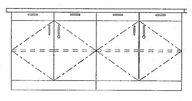
B4 A133 SAMPLE NORTH
1A-704 — 3/8" = 1'-0"



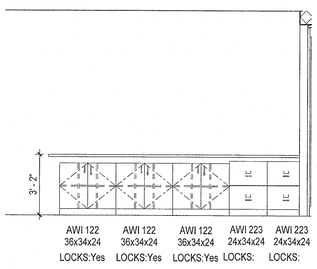
A1 CASEWORK ELEVATION
1A-704 — 3/8" = 1'-0"



A2 CASEWORK ELEVATION
1A-704 — 3/8" = 1'-0"



A3 CASEWORK ELEVATION
1A-704 — 3/8" = 1'-0"



1 1 - a
1A-704 — 1/4" = 1'-0"

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910 Louisiana Street
Houston, TX 77002

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FB NO. P-6232

REGISTERED ARCHITECT
DANIELLE DUNN
28298
STATE OF TEXAS

12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION CASEWORK ELEVATIONS 1A-704

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 114 OF 255	

ACCEPTED AS NOTED
80341
HOUSTON, TEXAS

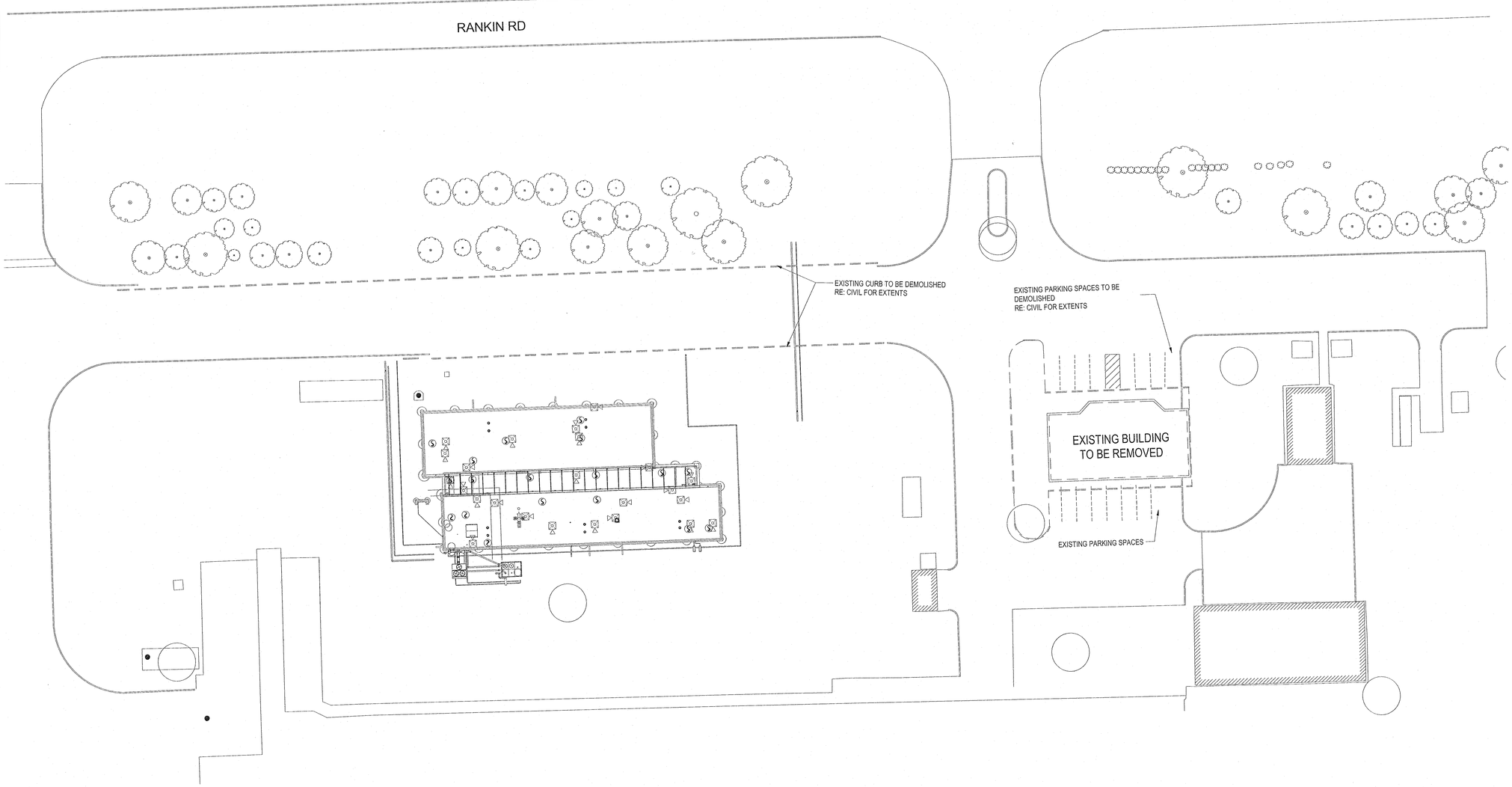
PLOTTED: 6/3/2025 12:41:30 PM
PLOT STYLE: COH.ctb
FILE PATH:

PLOTTED: 6/3/2025 12:41:33 PM

PLOT STYLE: COH.ctb

FILE PATH:

NO.	DATE	REVISION	APP.



A1 1AD-101 **OVERALL ARCHITECTURAL SITE DEMOLITION PLAN**
1" = 30'-0"

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Houston, TX 77002

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FB NO. P-6232

REGISTERED ARCHITECT DANIELLE DUNN 38298 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DEMO ARCHITECTURAL SITE PLAN 1AD-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1" = 30'-0"
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	115 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS APPROVAL ACCEPTED NOTED 80341 HOUSTON, TEXAS

BUILDING CODE SUMMARY

OWNER: CITY OF HOUSTON	DATE: MARCH 2023
PROJECT NAME: INTERCONTINENTAL AIRPORT WWTP	PROJECT NO: 224701062
PROJECT LOCATION: HOUSTON	ARCHITECT: EUGENE MINNICK
AREA/BUILDING: DEWATERING FACILITY	LICENSE NO: 17591

GOVERNING CODES

BUILDING CODE: 2015 INTERNATIONAL BUILDING CODE (IBC 2015)	ENERGY CODE: 2015 INTERNATIONAL ENERGY CONSERVATION CODE CONSERVATION CODE
FIRE CODE: 2015 INTERNATIONAL FIRE CODE (IFC 2015)	ELEVATOR CODE: N/A
ACCESSIBILITY CODE:	ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NEC), NFPA 70

USE AND OCCUPANCY CLASSIFICATION/ALLOWABLE AREA AND HEIGHT (1)

OCCUPANCY GROUP AND DESCRIPTION	CONSTRUCTION TYPE	ALLOWABLE HEIGHT	ALLOWABLE AREA	AUTOMATIC SPRINKLER INCREASE	ACTUAL AREA	ACTUAL AREA / ALLOWABLE AREA RATIO	AREA MODIFICATION FRONTAGE INCREASE
GROUP F-2	TYPE IIB	55 FT, 3 STORY	23,000 SF	N/A	8,042 SF	0.349	N/A

OCCUPANCY SEPARATION (2) / FIRE RESISTANCE RATING OF STRUCTURAL ELEMENTS (4)

OCCUPANCIES	ASSEMBLY RATING	INCIDENTAL USE (3)		STRUCTURAL FRAME	BEARING WALLS EXTERIOR	BEARING WALLS INTERIOR	FLOOR CONSTRUCTION	ROOF CONSTRUCTION	EXT WALLS BASED ON SEPARATION DISTANCE (5)	
		ROOM OR AREA	SEPARATION PROTECTION						SEPARATION DISTANCE	RATING
GROUP F-2	N/A	N/A	N/A	0	0	0	0	0	N/A	0

FIRE PROTECTION SYSTEMS (6)

FIRE EXTINGUISHERS: 75' MAX DISTANCE	AUTOMATIC FIRE PROTECTION SYSTEM: N/A

MEANS OF EGRESS (7)

ROOM NAME	FUNCTION OF SPACE	MAX FLOOR AREA PER OCCUPANT	TOTAL OCCUPANT LOAD	COMMON PATH OF TRAVEL DISTANCE	EXITS REQ'D	EXITS PROVIDED	EXIT ACCESS TRAVEL DIST	CORRIDOR FIRE-RESIST RATING	STAIRWAYS FIRE-RESIST RATED	OPEN STAIRWAYS
DEWATERING	INDUSTRIAL	100	47	93'	1	4	-	0	N/A	N/A
ELECTICAL/ CONTROL ROOM	INDUSTRIAL	100	16	37'	1	1	-	0	N/A	N/A

(1) IBC CHAPTER 3 - USE AND OCCUPANCY CLASSIFICATION, IBC CHAPTER 5 - GENERAL BUILDING HEIGHTS AND AREAS, TABLE 504.3 - ALLOWABLE BUILDING HEIGHT, TABLE 504.4 - ALLOWABLE NUMBER OF STORIES, 506.2 - ALLOWABLE AREA

(2) IBC CHAPTER 5, TABLE 508.4 - REQUIRED SEPARATION OF OCCUPANCIES

(3) IBC CHAPTER 5, TABLE 509 - INCIDENTAL USE AREAS

(4) IBC CHAPTER 6, - TYPES OF CONSTRUCTION, TABLE 601 - FIRE-RESISTANCE REQUIREMENTS FOR BUILDING ELEMENTS

(5) IBC CHAPTER 6 - TYPES OF CONSTRUCTION, TABLE 602 - FIRE-RESISTANCE RATING FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE

(6) IBC CHAPTER 9 - FIRE PROTECTION SYSTEMS

(7) IBC CHAPTER 10 - MEANS OF EGRESS

ACCESSIBILITY DISCLAIMER

BUILDING'S INTENDED USE:

EXCEPT FOR REGULAR MONITORING AND MAINTENANCE OF EQUIPMENT, THIS BUILDING IS NOT INTENDED FOR HUMAN OCCUPANCY FOR EXTENDED PERIODS OF TIME. THIS BUILDING'S PRIMARY PURPOSE IS TO HOUSE EQUIPMENT ASSOCIATED WITH PUBLIC WATER UTILITIES.

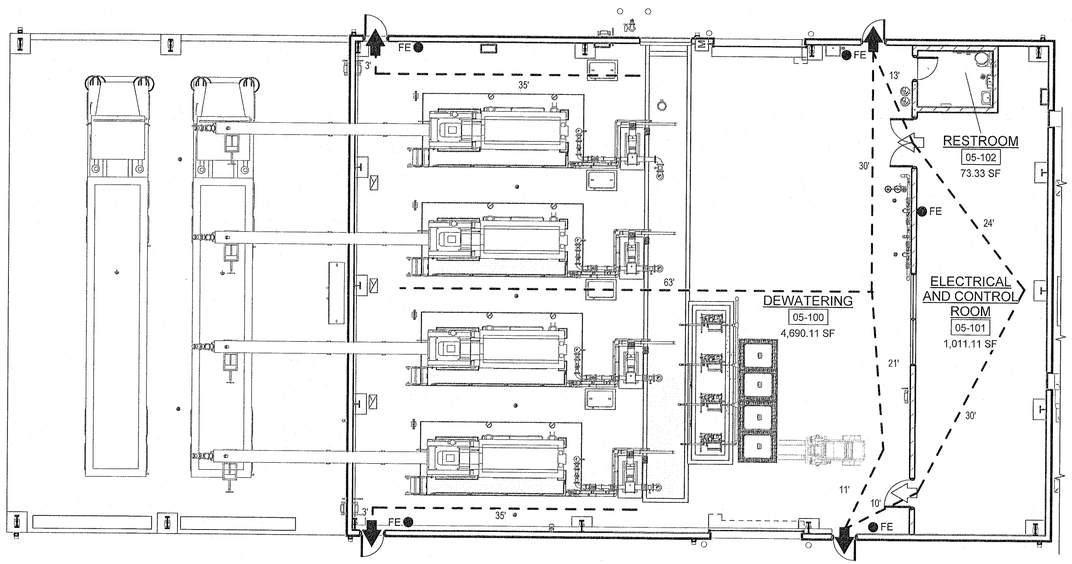
HANDICAPPED ACCESSIBILITY:

THIS BUILDING IS EXEMPT FROM CHAPTER 11 OF THE 2015 IBC BASED ON THE FOLLOWING STATEMENT, "SPACES FREQUENTED ONLY BY PERSONNEL FOR MAINTENANCE, REPAIR, OR MONITORING OF EQUIPMENT ARE NOT REQUIRED TO BE ACCESSIBLE. SUCH SPACES INCLUDE, BUT ARE NOT LIMITED TO...MECHANICAL AND ELECTRICAL EQUIPMENT ROOMS, PIPING OR EQUIPMENT CATWALKS, WATER OR SEWAGE TREATMENT PUMP ROOMS AND STATIONS, ELECTRICAL SUBSTATIONS AND TRANSFORMER VAULTS, ETC.

THIS BUILDING IS EXEMPT FROM AMERICANS WITH DISABILITIES ACT (ADA) BASED ON THE FOLLOWING STATEMENT, "GENERAL EXCEPTIONS - EQUIPMENT SPACES: SPACES FREQUENTED ONLY BY PERSONNEL FOR MAINTENANCE, REPAIR OR MONITORING OF EQUIPMENT ARE NOT REQUIRED TO BE ACCESSIBLE. SUCH SPACES INCLUDE, BUT ARE NOT LIMITED TO...WATER OR SEWAGE TREATMENT PUMP ROOMS AND STATIONS." (ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES 4.1.1 (5)(b)(11))

LEGEND

◀	EXIT
◁	EXIT ACCESS DOORWAY
- - -	EXIT ACCESS PATH
● FE	SURFACE MOUNTED FIRE EXTINGUISHER



LIFE SAFETY PLAN

SCALE: 1" = 10'-0"

0 5' 10' 20'

SCALE: 1" = 10'

TRUE NORTH

NO.	DATE	REVISION	APP.

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Engineered by Stantec Consulting Services, Inc Texas Registered Engineering Firm F-6324
910 Louisiana Street Suite 2600
Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

REGISTERED ARCHITECT EUGENE W MINNICK 17591 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CODE SUMMARY AND LIFE SAFETY PLAN 2A-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 116 OF 255	

ACCEPTED AS NOTED 80341

PLOTTED: 11/18/2024 7:10:50 PM

PLOT STYLE: COH.ctb

FILE PATH:

DOOR SCHEDULE

DOOR NO	ROOM NAME	DOOR SIZE		DOOR			FRAME			HARDWARE	DETAILS			FIRE RATING	KEY NOTES
		WIDTH	HEIGHT	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH		HEAD	JAMB	THRESHOLD		
D05-100A	DEWATERING	3'-0"	7'-2"	NG	HM	PAINT	ST	HM	PAINT	ES	A9004	A9005	A8100		
D05-100B	DEWATERING	3'-0"	7'-2"	NG	HM	PAINT	ST	HM	PAINT	ES	A9004	A9005	A8100		
D05-100C	DEWATERING	3'-0"	7'-2"	NG	HM	PAINT	ST	HM	PAINT	ES	A9004	A9005	A8100		
D05-100D	DEWATERING	12'-0"	12'-0"	OCD	STL	SPEC	-	-	-	-	A9006	A9006	A9006		
D05-100E	DEWATERING	12'-0"	12'-0"	OCD	STL	SPEC	-	-	-	-	A9006	A9006	A9006		
D05-100F	DEWATERING	3'-0"	7'-2"	NG	HM	PAINT	ST	HM	PAINT	ES	A9001	A9002	A8100		
D05-101A	ELECTRICAL AND CONTROL ROOM	3'-8"	7'-10"	NG	HM	PAINT	ST	HM	PAINT	IS	A8101	A8102	A8100		
D05-101B	ELECTRICAL AND CONTROL ROOM	3'-2"	7'-10"	NG x2	HM	PAINT	ST	HM	PAINT	ID	A8101	A8102	A8100		
D05-102	RESTROOM	3'-0"	7'-2"	FP	HM	PAINT	ST	HM	PAINT	TR	A8101	A8102	A8100		

WINDOW SCHEDULE

WINDOW NO	ROOM NAME	ROUGH OPENING		TYPE	FRAME		DETAILS			KEY NOTES
		WIDTH	HEIGHT	(ELEV)	MATERIAL	FINISH	HEAD	JAMB	SILL	
W05-101A	ELECTRICAL AND CONTROL ROOM	12'-0"	4'-0"	DPG	FRP	SPEC	A8201	A8202		

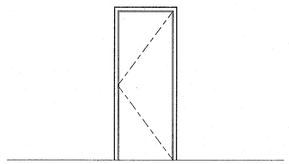
LOUVER SCHEDULE

LOUVER NO	ROOM NAME	ROUGH OPENING		TYPE	FRAME		DETAILS			KEY NOTES
		WIDTH	HEIGHT	(ELEV)	MATERIAL	FINISH	HEAD	JAMB	SILL	
LV-1	DEWATERING	5'-0"	5'-0"	SPL	ALUM	SPEC	A9007	A9009	A9008	
LV-2	DEWATERING	6'-0"	6'-0"	SPL	ALUM	SPEC	A9007	A9009	A9008	
LV-3	DEWATERING	6'-10"	6'-10"	SPL	ALUM	SPEC	A9007	A9009	A9008	
LV-4	RESTROOM	1'-2"	1'-2"	SPL	ALUM	SPEC	A9007	A9009	A9008	

INTERIOR FINISH SCHEDULE

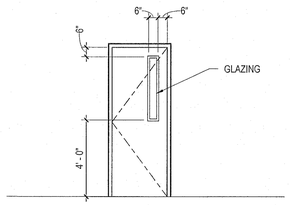
ROOM NO	ROOM NAME	FLOOR	NORTH WALL			EAST WALL			SOUTH WALL			WEST WALL			CEILING		REMARKS
			MATERIAL	FINISH	BASE	MATERIAL	FINISH	BASE	MATERIAL	FINISH	BASE	MATERIAL	FINISH	BASE	HEIGHT	MATERIAL	
05-100	DEWATERING		PEMP	SPEC	CONC CURB	PEMP	SPEC	CONC CURB	PEMP	SPEC	CONC CURB	PEMP	SPEC	CONC CURB			
05-101	ELECTRICAL AND CONTROL ROOM		CMU	PAINT	-	PEMP	SPEC	CONC CURB	PEMP	SPEC	CONC CURB	PEMP	SPEC	CONC CURB			
05-102	RESTROOM		CMU	PAINT	-	PEMP	SPEC	CONC CURB	CMU	PAINT	-	CMU	PAINT	-			

DOOR TYPES



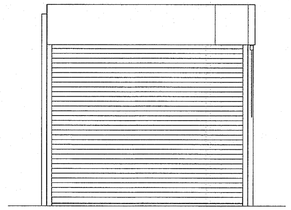
FP

FLUSH PANEL



NG

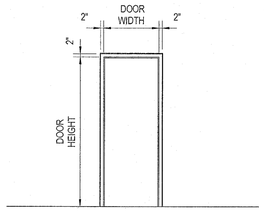
NARROW GLASS



OCD

OVERHEAD COILING DOOR

FRAME TYPES

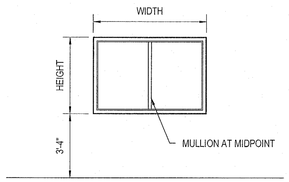


* DOOR TYPEx2 - PAIR OF EQUAL DOORS

ST

STANDARD

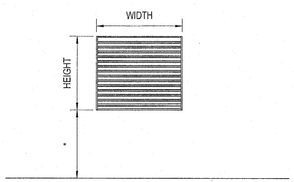
WINDOW TYPES



DPG

DOUBLE PANEL GLASS (FIXED)

LOUVER TYPES



SILL HEIGHT - SEE EXTERIOR ELEVATIONS

SPL

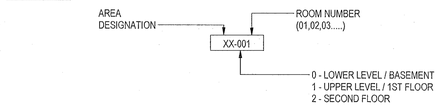
SINGLE PANEL LOUVER

GENERAL NOTES

1. HEIGHT OF INTERIOR PARTITIONS ARE FROM FLOOR TO UNDERSIDE OF ROOF/FLOOR DECK. (UNLESS OTHERWISE INDICATED)
2. NOT ALL EQUIPMENT IS SHOWN FOR CLARITY. REFER TO APPROPRIATE DISCIPLINE DRAWINGS FOR SPECIFIC EQUIPMENT LAYOUT AND OTHER REQUIREMENTS.
3. DO NOT SCALE FROM THESE ARCHITECTURAL DRAWINGS. DRAWING CONFLICTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER.
4. SEE CIVIL DRAWINGS FOR SIDEWALK AND ROAD PAVING. (UNLESS OTHERWISE INDICATED)
5. SEE STRUCTURAL DRAWINGS FOR SIZE AND LOCATION OF CONCRETE PADS, TRENCHES, VAULTS, SUMPS AND ETC.
6. SEE STRUCTURAL DRAWINGS FOR JOINTS IN CONCRETE FLOOR SLAB.
7. SEE STRUCTURAL DRAWINGS FOR FLOOR AND DECK SLOPES (AS APPLICABLE).
8. SEE STRUCTURAL DRAWINGS FOR CONCRETE REINFORCEMENT.
9. NOT ALL MASONRY JOINT REINFORCEMENT, WALL TIES AND ANCHORS ARE SHOWN ON THESE ARCHITECTURAL DRAWINGS, REFER TO MASONRY SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
10. PROFILE OF DOOR / WINDOW / LOUVER FRAMES MAY VARY DEPENDING ON MODEL SCHEDULED AND SPECIFIED, GLASS THICKNESS MAY ALSO VARY. SEE SCHEDULES AND SPECIFICATIONS.
11. ALL EXPOSED INTERIOR AND EXTERIOR STRUCTURAL STEEL, JOISTS, STEEL COLUMNS, SECONDARY FRAMING MEMBERS, METAL DECK, STEEL LINTELS, STEEL GUARDRAILS AND HANDRAILS, AND ASSOCIATED CONNECTIONS SHALL BE FIELD PAINTED. (UNLESS OTHERWISE INDICATED).
12. ALL INTERIOR EXPOSED MASONRY SHALL BE FIELD PAINTED (UNLESS OTHERWISE INDICATED).

ARCHITECTURAL SYMBOLS

ROOM NUMBER



CONCRETE (PLAN, SECTION AND DETAIL)

WINDOW (PLAN)

METAL PANEL (ELEVATION)

LOUVER (PLAN)

OVERHEAD COILING DOOR (PLAN)

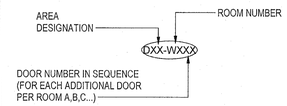
DOOR (PLAN)

OPENINGS

OPENINGS ARE TYPICALLY LABELED IN PLAN VIEW; OPENINGS NOT SHOWN IN PLAN VIEW ARE LABELED ON ELEVATIONS

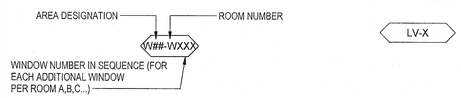
OPENING SYMBOLS

DOOR NUMBER



WINDOW NUMBER

LOUVER NUMBER



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LICENSED ARCHITECT JOSEPH W MINNICK 77591 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING GENERAL NOTES, SYMBOLS & SCHEDULES 2A-101

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
As indicated	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 117 OF 255	

ACCEPTED ARCHITECTURAL 80341 HOUSTON, TEXAS

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PLOT STYLE: COH.ctb

FILE PATH:

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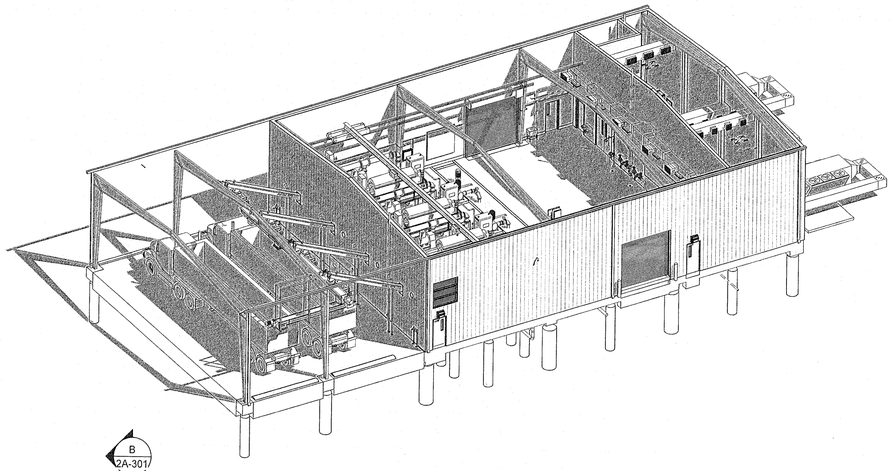
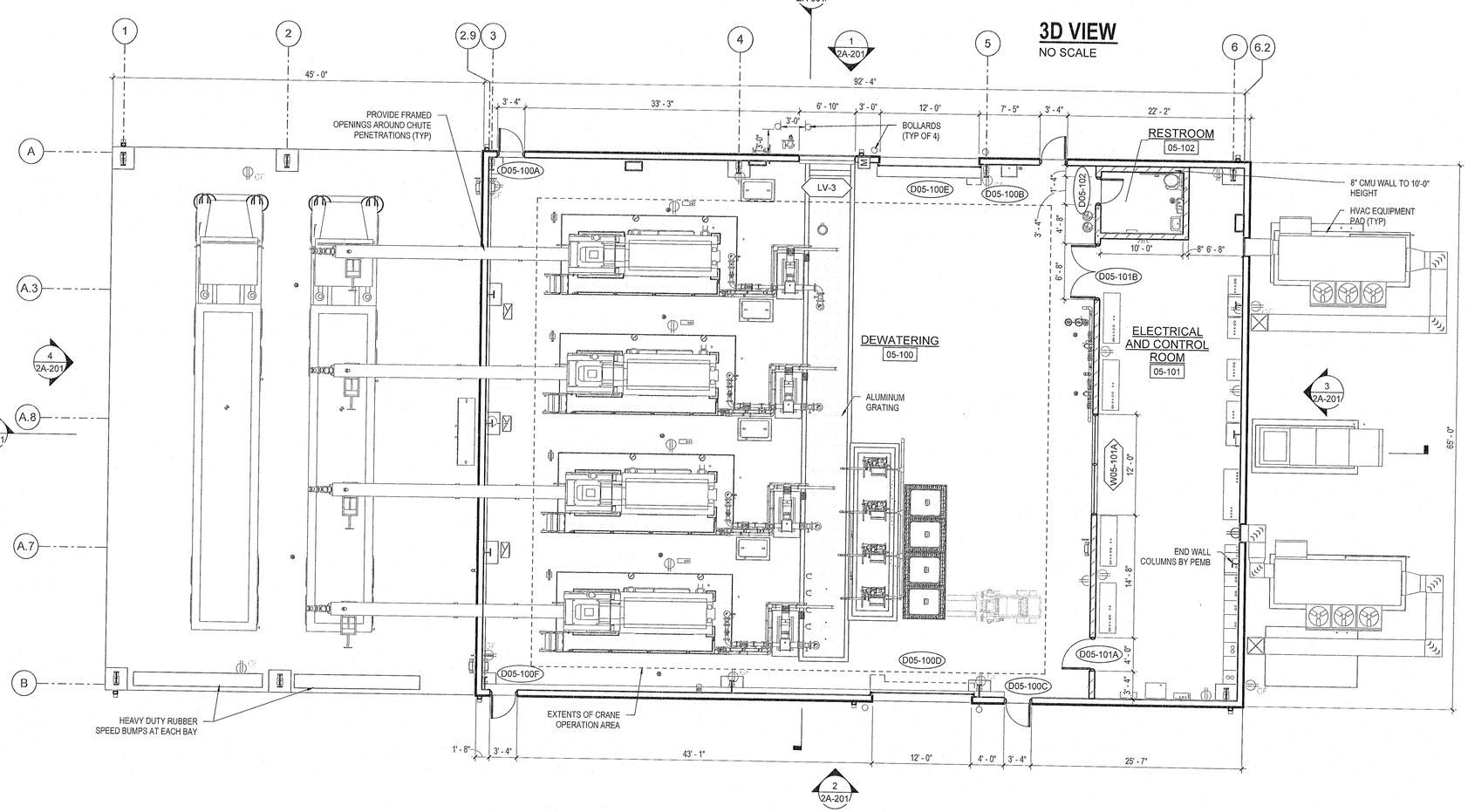
PLOT STYLE: COH.ctb

FILE PATH:

TRUE NORTH



3D VIEW
NO SCALE



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

0 4' 8' 16'

GENERAL NOTES

1. THE PRE-ENGINEERED METAL BUILDING MANUFACTURER (PEMB) SHALL INCLUDE STRUCTURAL ENGINEERING SERVICES TO DESIGN THE SUPPORT OF ALL HVAC, MECHANICAL, AND ELECTRICAL EQUIPMENT THAT IS NOT FLOOR MOUNTED. ALL LOADS SHALL BE DETERMINED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF TEXAS AND INCLUDED IN THE SERVICES PROVIDED BY THE PEMB. THE WEIGHT OF EQUIPMENT, PIPES, DUCTS, LIGHTS, ETC., TO BE PROVIDED BY THE SUBCONTRACTORS AND COORDINATED THROUGH THE CONTRACTOR.
2. SUPPORT OF THE BRIDGE CRANE GUIDE RAILS TO BE DESIGNED BY A STRUCTURAL ENGINEER AS A PART OF THE PEMB SCOPE OF WORK. THE CONTRACTOR AND PEMB MANUFACTURER SHALL COORDINATE DIRECTLY WITH THE CRANE MANUFACTURER TO PROVIDE THE BRIDGE CRANE AND SUPPORT SYSTEM.
3. ALL CMU WALLS TO INCLUDE VERTICAL REINFORCING, #5 @ 24" O.C., AND TRUSS TYPE HORIZONTAL WIRE REINFORCING AT 16" O.C. PROVIDE BOND BEAM LINTELS ABOVE MASONRY OPENINGS.
4. SEE DETAIL A-900 ON DRAWING 2A-502 FOR MASONRY LINTEL REQUIREMENTS AT MASONRY OPENINGS.
5. CONTRACTOR TO COORDINATE LOCATIONS OF ELECTRICAL EQUIPMENT, CONDUIT, PEMB FRAMING AND COLUMNS, AND HVAC DUCTWORK TO AVOID CONFLICTS.

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REGISTERED ARCHITECT — DENISE M. MAY — 77591 — STATE OF TEXAS

12/12/2024

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING FLOOR PLAN

2A-102

WBS NUMBER
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FILE PATH:

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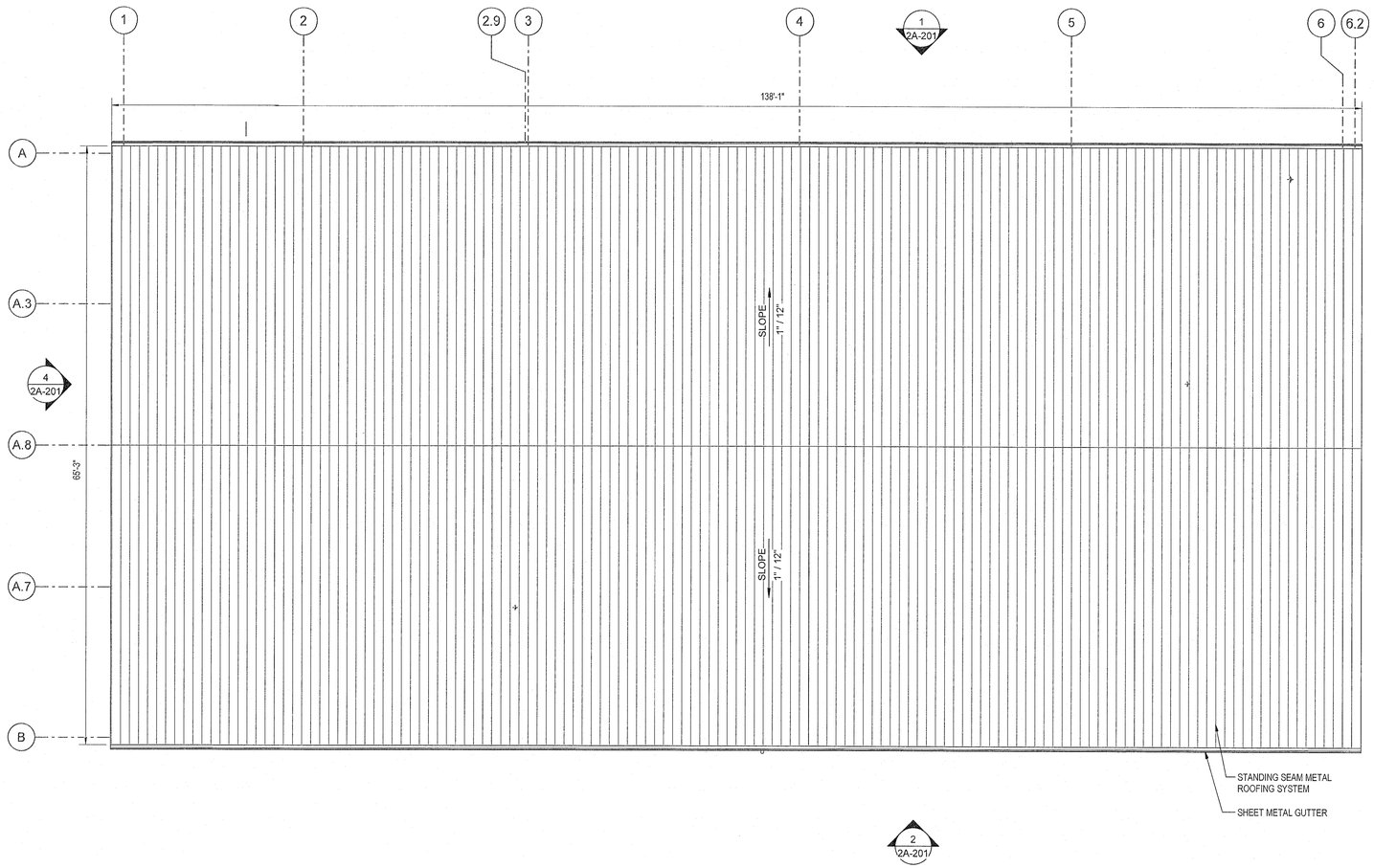

ROOF PLAN

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

0 4' 8' 16'

NO.	DATE	REVISION	APP.

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING ROOF PLAN

2A-103

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
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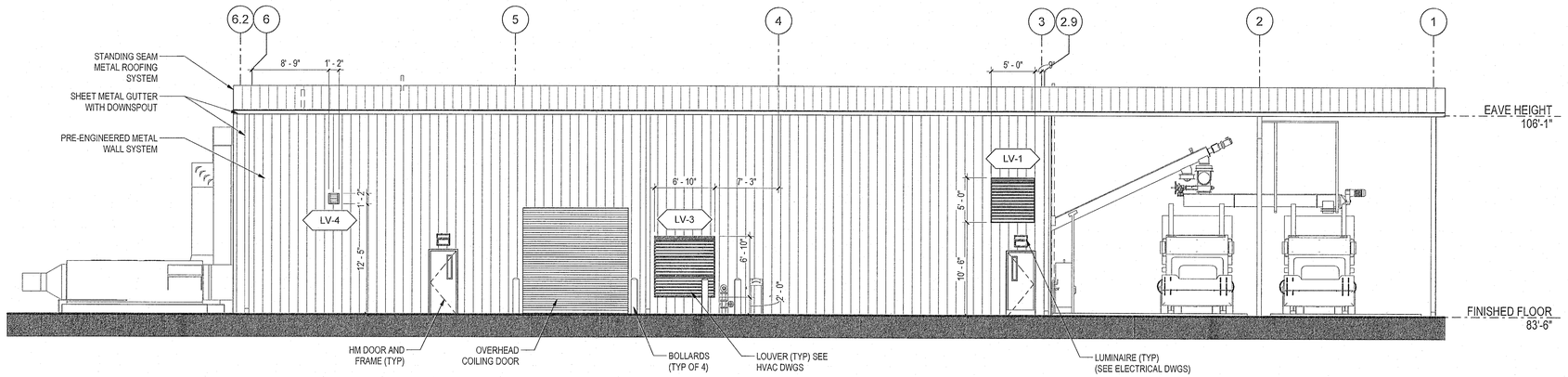
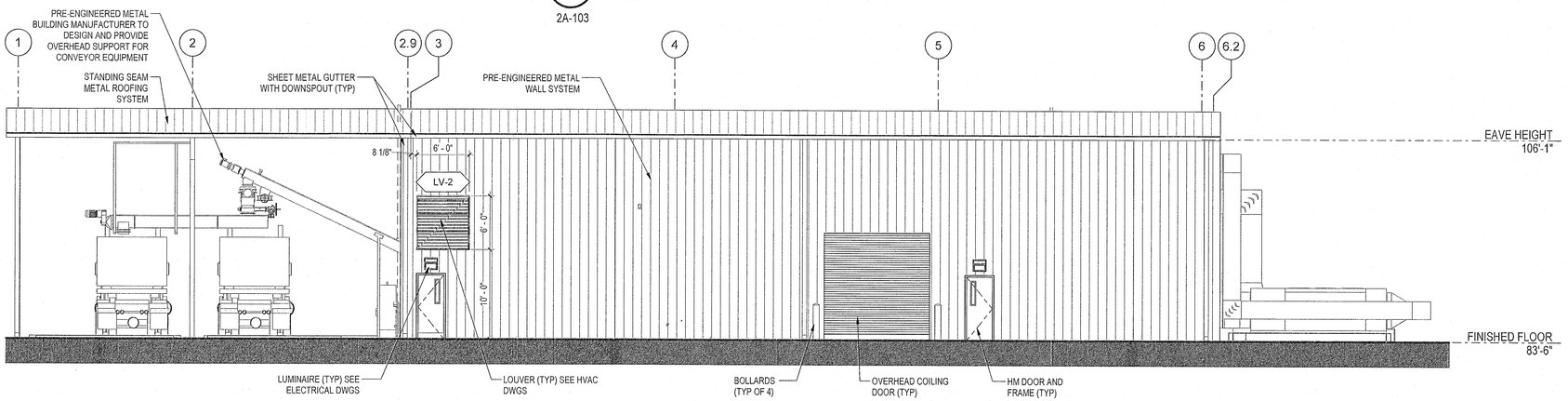
80341

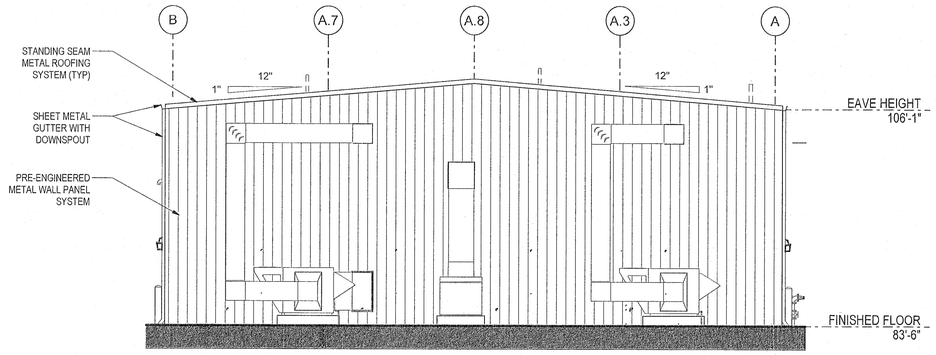
DIVISION, TEXAS



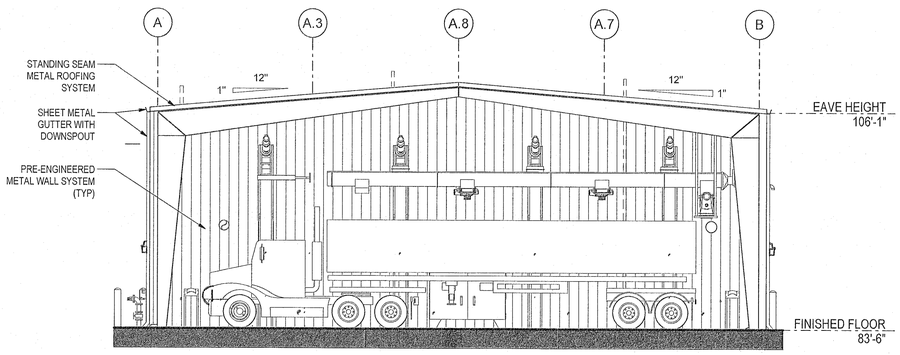
1 / 2A-102 **EAST ELEVATION**
SCALE: 1/8" = 1'-0"
2A-103



2 / 2A-102 **WEST ELEVATION**
SCALE: 1/8" = 1'-0"
2A-103



3 / 2A-102 **SOUTH ELEVATION**
SCALE: 1/8" = 1'-0"
2A-103



4 / 2A-102 **NORTH ELEVATION**
SCALE: 1/8" = 1'-0"
2A-103

0 4' 8' 16'

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING EXTERIOR ELEVATIONS

2A-201

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CITY OF HOUSTON PM	
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SHEET NO. 120 OF 255	

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HOUSTON, TEXAS

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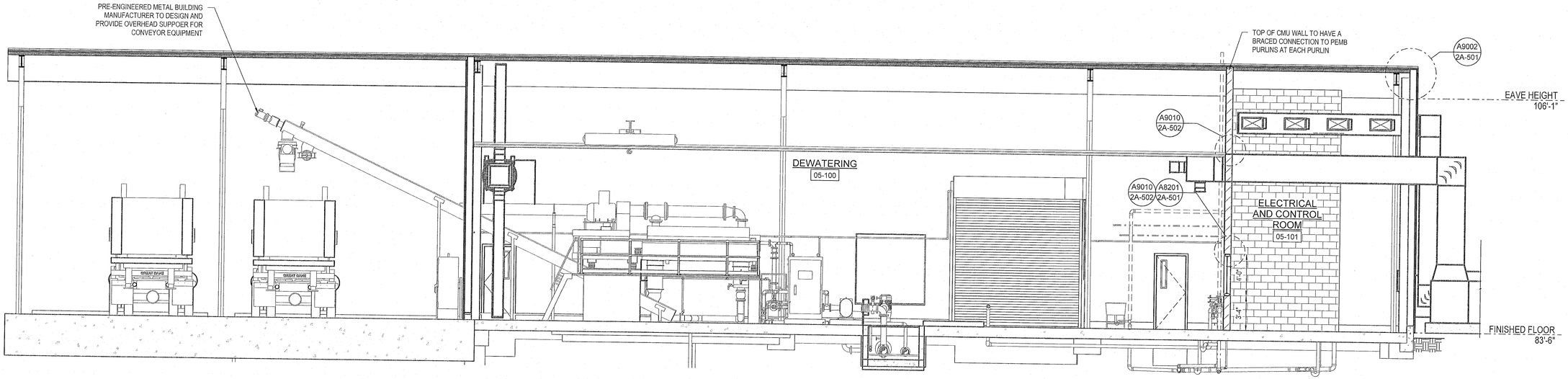
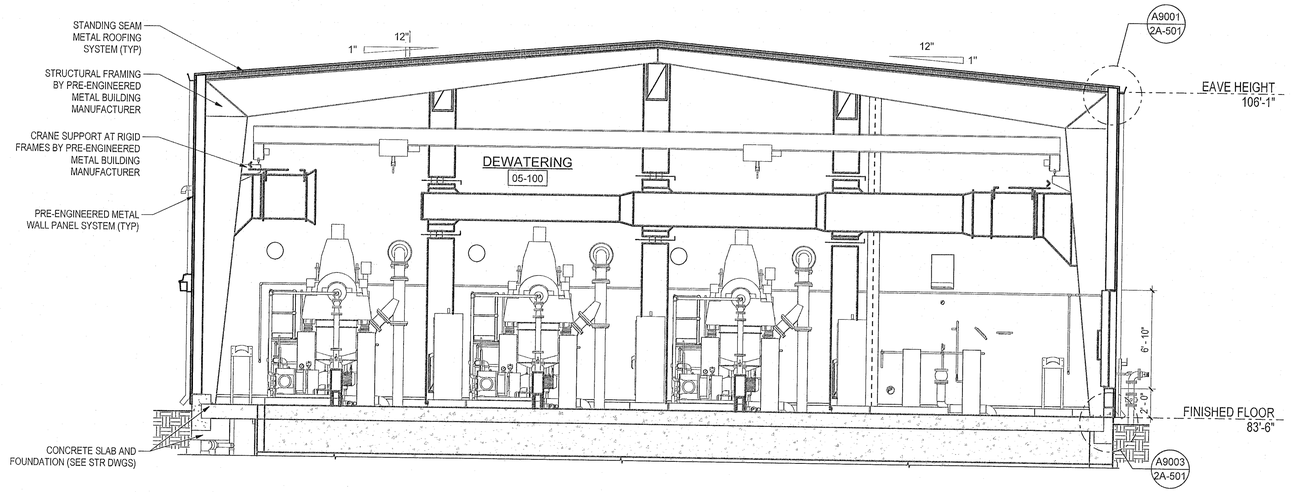


A 2A-102 **SECTION**
SCALE: 3/16" = 1'-0"
2A-103



B 2A-102 **SECTION**
SCALE: 3/16" = 1'-0"
2A-103

0 4' 8' 12'

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING BUILDING SECTIONS

2A-301

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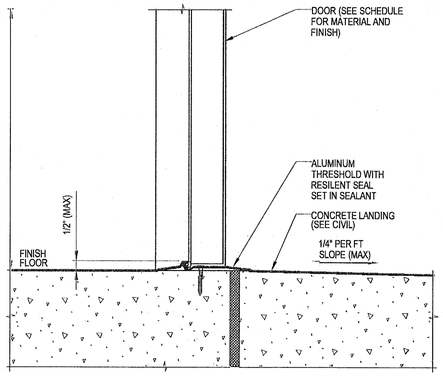
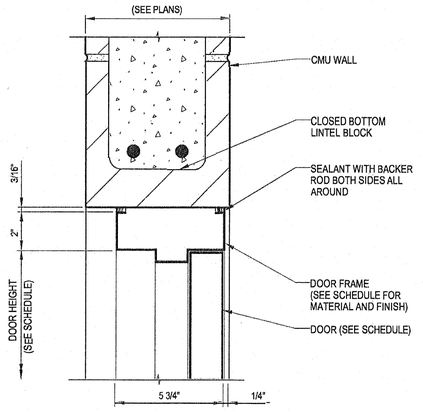
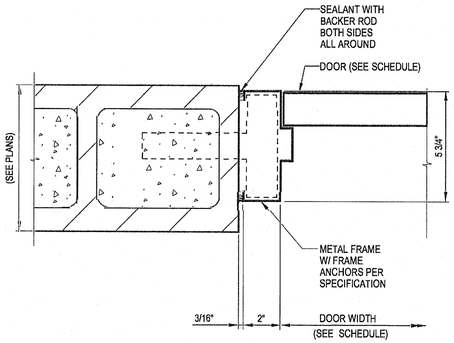


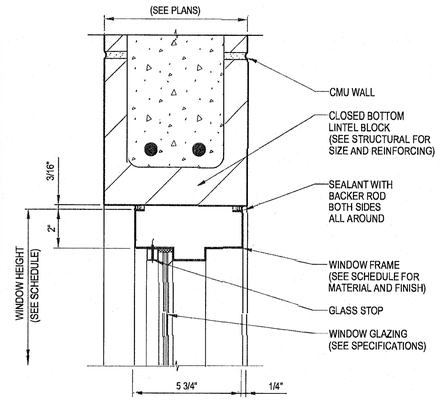
A8100 DOOR THRESHOLD
SCALE: 3"=1'-0"



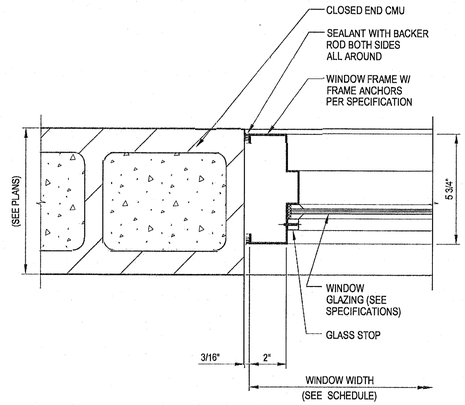
A8101 DOOR HEAD AT CMU WALL
SCALE: 3"=1'-0"



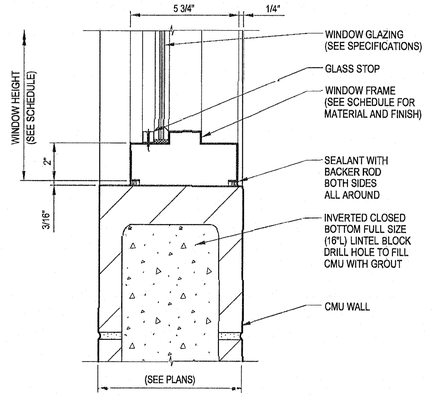
A8102 DOOR JAMB AT CMU WALL
SCALE: 3"=1'-0"



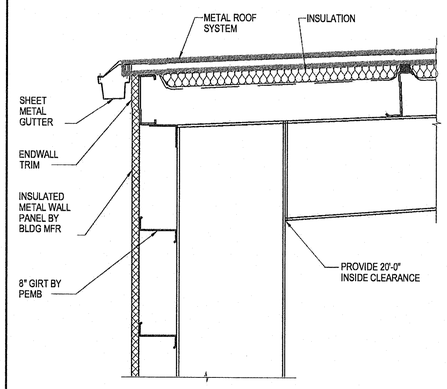
A8201 WINDOW HEAD AT INTERIOR CMU WALL
SCALE: 3"=1'-0"



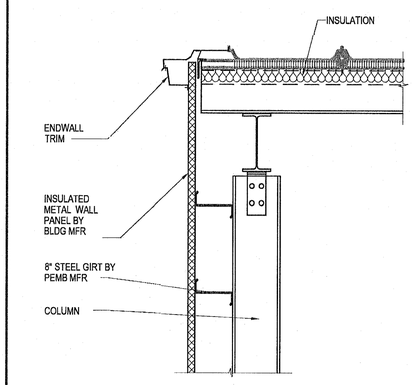
A8202 WINDOW JAMB AT INTERIOR CMU WALL
SCALE: 3"=1'-0"



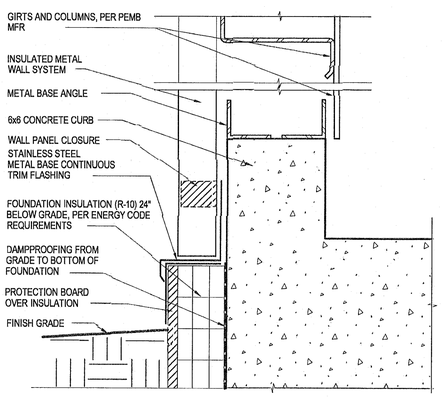
A8203 WINDOW SILL AT INTERIOR CMU WALL
SCALE: 3"=1'-0"



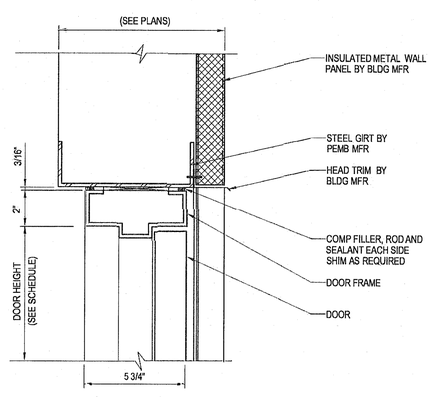
A9001 EAVE AT METAL ROOF - LOW
NO SCALE



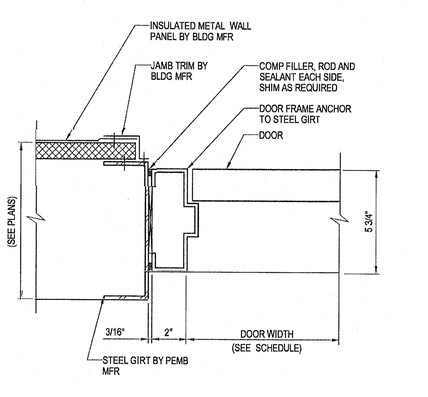
A9002 RAKE AT METAL ROOF
NO SCALE



A9003 BASE AT METAL PANELS
NO SCALE



A9004 DOOR HEAD AT METAL WALL
NO SCALE



A9005 DOOR JAMB AT METAL WALL
NO SCALE

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING STANDARD DETAILS - I

2A-501

WBS NUMBER	R-000265-0117-4
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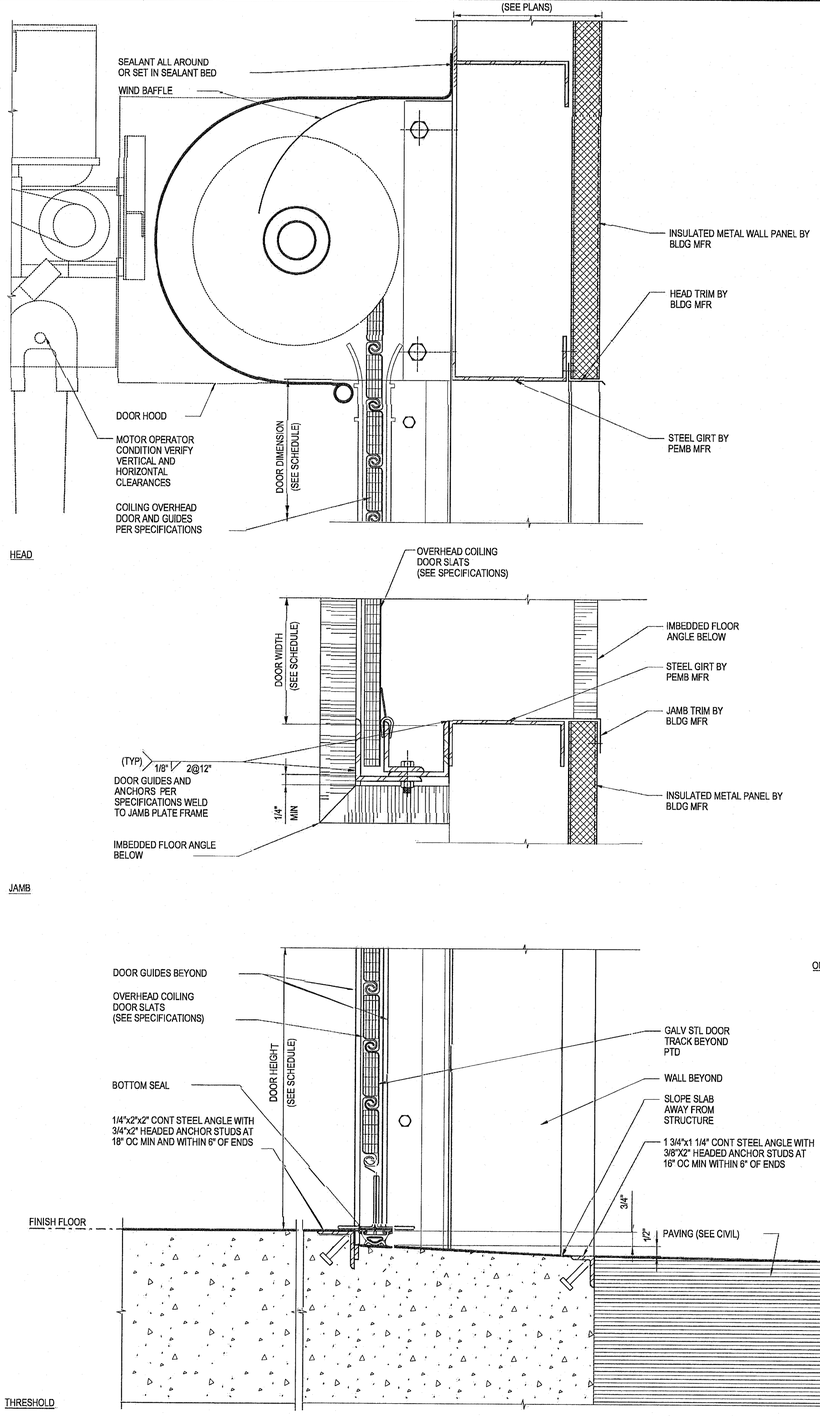
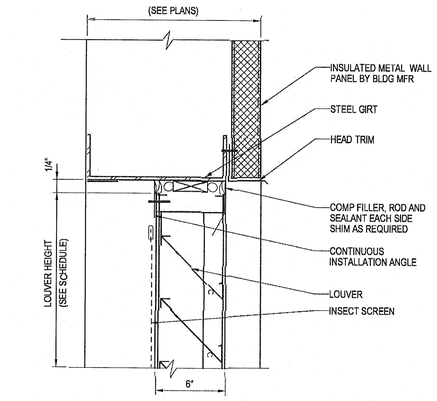


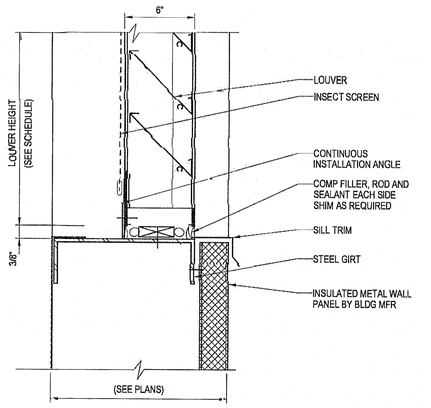
A9006 OVERHEAD COILING DOOR AT METAL WALL

SCALE: 3"=1'-0"



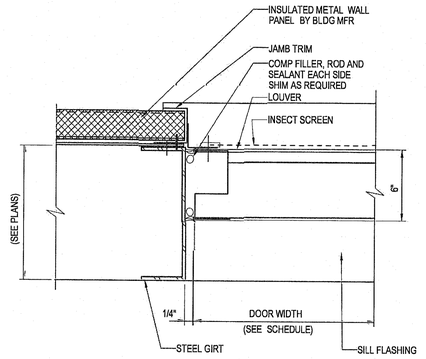
A9007 LOUVER HEAD AT METAL WALL

NO SCALE



A9008 LOUVER SILL AT METAL WALL

NO SCALE



A9009 LOUVER JAMB AT METAL WALL

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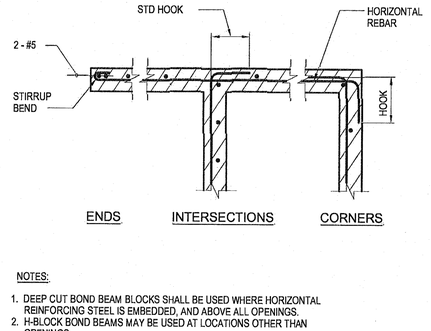


NOTES:

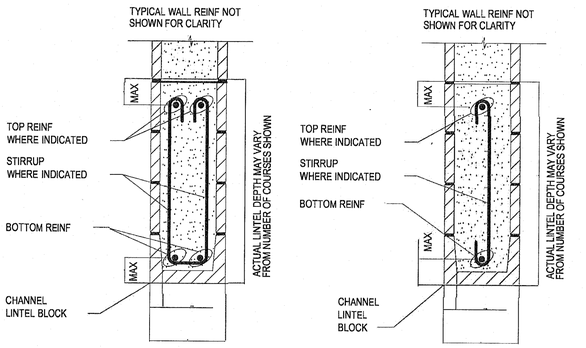
1. DEEP CUT BOND BEAM BLOCKS SHALL BE USED WHERE HORIZONTAL REINFORCING STEEL IS EMBEDDED, AND ABOVE ALL OPENINGS.
2. H-BLOCK BOND BEAMS MAY BE USED AT LOCATIONS OTHER THAN OPENINGS.
3. HOOKS SHALL BE TAKEN TO FAR FACE.

A9010 8" AND 10" BLOCK WALL SECTIONS

LINTEL DESIGNATOR	B	D	BOTTOM REINF	TOP REINF	STIRRUPS
L1	12"	16"	1 - #3	1 - #3	#3@4"
L2	8"	16"	1 - #3	1 - #3	#3@4"
L3	8"	16"	1 - #5	1 - #5	#3@4"

MASONRY LINTEL NOTES:

1. PROVIDE 8" MIN BEARING AT EACH SIDE OF CLEAR SPAN, UNO. BEARING CELLS SHALL BE FULLY GROUTED FROM FOUNDATION TO LINTEL.
2. ALL REINFORCING SHALL BE CONTINUOUS AND EXTEND A FULL LAP LENGTH BEYOND THE OPENING. WHERE WALLS STOP SHORT OF THE FULL LAP LENGTH, THE REINFORCING BARS SHALL BE TERMINATED IN THE LAST CELL WITH A STANDARD HOOK.
3. THIS CMU LINTEL REINFORCING APPLIES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.



A9011 CMU LINTEL REINFORCING

NO SCALE

NO.	DATE	REVISION	APP.

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REGISTERED ARCHITECT EUGENE W MINNICK 17591 STATE OF TEXAS

12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING STANDARD DETAILS - II

2A-502

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 123 OF 255	

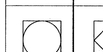
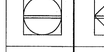
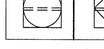
REGISTERED ENGINEER 80341 STATE OF TEXAS

PLOTTED: 11/14/2024 6:39 PM

PLOT STYLE: COH.ctb

FILE PATH: C:\Users\pmane\DC\ACCDocs\Stantec Consulting\22470062_Intercontinental Airport WWTP\Project Files\Architectural Dewatering\2A-502.dwg

GENERAL INSTRUMENT OR FUNCTION SYMBOLS

SHARED DISPLAY/ SHARED CONTROL				
PRIMARY CHOICE	SECONDARY CHOICE	COMPUTER SOFTWARE	DISCRETE	LOCATION AND ACCESSIBILITY
				FIELD MOUNTED AND NORMALLY OPERATOR ACCESSIBLE
				PRIMARY CONTROL PANEL MOUNTED AND NORMALLY OPERATOR ACCESSIBLE
				PRIMARY CONTROL PANEL MOUNTED AND NOT NORMALLY OPERATOR ACCESSIBLE
				SECONDARY CONTROL PANEL MOUNTED AND NORMALLY OPERATOR ACCESSIBLE
				SECONDARY CONTROL PANEL MOUNTED AND NOT NORMALLY OPERATOR ACCESSIBLE

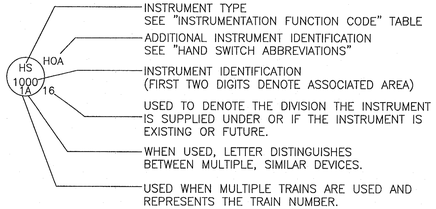
INSTRUMENTS SHARING COMMON HOUSING

PILOT LIGHT

MISCELLANEOUS SYMBOLS

- (M) MOTOR
- (M) VARIABLE FREQUENCY DRIVE
- MCC — INDICATES INTERLOCK OR LOGIC IN A MOTOR CONTROL CENTER
- I — INDICATES GENERAL OR MISCELLANEOUS HARDWIRED INTERLOCK
- MS — MOTOR STARTER
- SCR — SILICONE CONTROL RECTIFIER
- P — PURGE OR FLUSHING DEVICE

TYPICAL TAG NUMBERS & DESIGNATION



HAND SWITCH ABBREVIATIONS

AO = AUTO/OFF	LOR = LOCAL/OFF/REMOTE
AM = AUTO/MANUAL	LOS = LOCKOUT/STOP
CM = COMPUTER/MANUAL	LA = LOCAL/AUTO
CL = COMPUTER/LOCAL	LR = LOCAL/REMOTE
E-STOP = EMERGENCY STOP	OC = OPEN/CLOSE
FR = FORWARD/REVERSE	OCA = OPEN/CLOSE/AUTO
FOR = FORWARD/OFF/REVERSE	OO = ON/OFF
FS = FAST SLOW	OOA = ON/OFF/AUTO
FOS = FAST/OFF/SLOW	OSC = OPEN/STOP/CLOSE
HOA = HAND/OFF/AUTO	RSL = RAISE/STOP/LOWER
LLS = LEAD/LAG/STANDBY	SS = START/STOP
LOC = LOCAL/OFF/COMPUTER	SOR = START/OFF/RESET

INSTRUMENTATION FUNCTION CODE

	FIRST LETTERS		SUCCEEDING LETTERS		
	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
	MEASURED/INITIATING VARIABLE	VARIABLE MODIFIER	READOUT/PASSIVE FUNCTION	OUTPUT/ACTIVE FUNCTION	FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSED
D	USER'S CHOICE	DIFFERENCE, DIFFERENTIAL			DEVIATION
E	VOLTAGE		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE				MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION, MECHANICAL, ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL, PROBE		
X	UNCLASSIFIED (1)	X-AXIS	ACCESSORY DEVICES, UNCLASSIFIED (1)	UNCLASSIFIED (1)	UNCLASSIFIED (1)
Y	EVENT, STATE, PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS, SAFETY INSTRUMENT SYSTEM		DRIVER, ACTUATOR, UNCLASSIFIED, FINAL CONTROL ELEMENT	

TABLE NOTES:
(1) WHEN USED SYMBOL OR SIGNAL LINE IS ANNOTATED.

INSTRUMENT LINE SYMBOLS

- ELECTRICAL SIGNAL
- TELEPHONE SIGNAL
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
- ELECTROMAGNETIC OR SONIC SIGNAL (UNGUIDED)
- PNEUMATIC SIGNAL
- CAPILLARY TUBE
- HYDRAULIC SUPPLY
- VENDOR SUPPLIED CABLE
- COMMUNICATION LINK - COPPER (ETHERNET)
- COMMUNICATION LINK - FIBER OPTICS
- SOFTWARE LINK

ELECTRICAL / AIR SOURCES

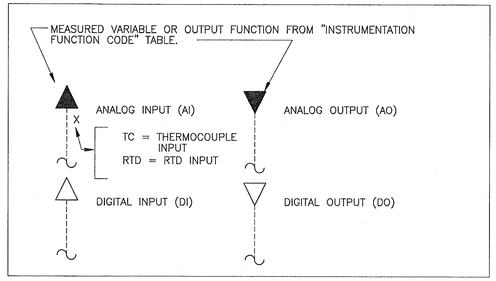
- UPS — UPS POWERED ELECTRICAL SOURCE
- ES — ELECTRICAL SOURCE
- IA — INSTRUMENT AIR SOURCE

- EQUIPMENT TO BE PROVIDED BY VENDOR
- EQUIPMENT TO BE DEMOLISHED

PRIMARY ELEMENTS

- FE/M — MAGNETIC FLOW METER
- FE — TURBINE OR PROPELLER FLOW METER
- FE — AVERAGING PITOT TUBE
- FE — ULTRASONIC FLOW METER
- FE — ORIFICE PLATE
- FE — VENTURI TUBE
- FE — FLUME
- LE — RADAR LEVEL SENSOR
- FE — ROTAMETER
- WEIR
- LE — FLOAT SWITCH
- LE — ULTRASONIC LEVEL SENSOR
- FE, X — GENERAL INSERTION FLOW METER (IM=INSERT MAG)
- FE — THERMAL MASS FLOW METER
- FE/C — CORIOLIS FLOW METER
- ME — CONDUCTIVE MOISTURE SENSOR
- LE — CAPACITANCE LEVEL SENSOR
- PI — PRESSURE GAUGE
- PDI — DIFFERENTIAL PRESSURE GAUGE
- TI — TEMPERATURE GAUGE
- AE, X — GENERAL ANALYZER (pH=pH; DO=DISSOLVED OXYGEN; H2S=HYDROGEN SULFIDE; LEL=% LOWER EXPLOSIVE LIMIT; O2=OXYGEN; O3=OZONE; NH3=NITRATE; TURB=TURBIDITY; FL=FLUORIDE; TSS = TOTAL SUSPENDED SOLIDS)

I/O SIGNALS



GENERAL NOTES

1. THIS LEGEND APPLIES TO P&IDS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.
2. IN GENERAL THIS LEGEND SHEET AND THE P&IDS ARE BASED ON THE INTERNATIONAL SOCIETY OF AUTOMATION (ISA) STANDARDS FOR PRACTICES FOR INSTRUMENTATION. SOME MODIFICATIONS, ADDITIONS AND ALTERATIONS HAVE BEEN MADE AS REQUIRED TO ACCOMODATE PROJECT REQUIREMENTS.
3. SOME PROCESS ITEMS SUCH AS EQUIPMENT ISOLATION VALVES, BYPASS LINES, ETC., WHICH ARE NOT CRITICAL FOR AN UNDERSTANDING OF THE INSTRUMENTATION FUNCTIONS ARE NOT SHOWN ON THE P&IDS.
4. SEE ELECTRICAL AND MECHANICAL SHEETS AND SPECIFICATIONS FOR ADDITIONAL CONTROL AND INTERLOCK REQUIREMENTS.
5. LIGHTER WEIGHT LINES, SHOWN AS ———— , INDICATE EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE EXISTING. WEIGHTED LINES, SHOWN AS ———— OR HEAVIER, INDICATE EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE NEW. DASHED WEIGHTED LINES, SHOWN AS — - - — , INDICATE EQUIPMENT, INSTRUMENTS OR PIPING THAT ARE GROUPED AS A PACKAGE. WEIGHTED LINES, SHOWN AS ———— , INDICATE FUTURE EQUIPMENT.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
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STATE OF TEXAS — ABHISHEK PANDEY — 147640 — LICENSED PROFESSIONAL ENGINEER — 7/19/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL SYMBOLS AND ABBREVIATIONS - I
I-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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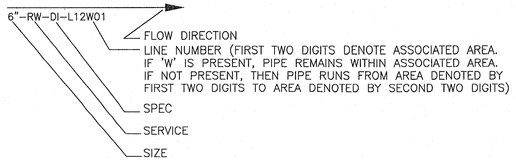
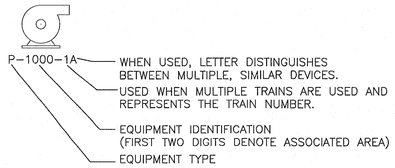
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 124 OF 255	

ACCEPTED / FILED — CITY OF HOUSTON, TEXAS — CITY DRAWING NUMBER — 80341

TYPICAL PIPE TAG NUMBERS & DESIGNATION



TYPICAL EQUIPMENT TAG NUMBERS & DESIGNATION



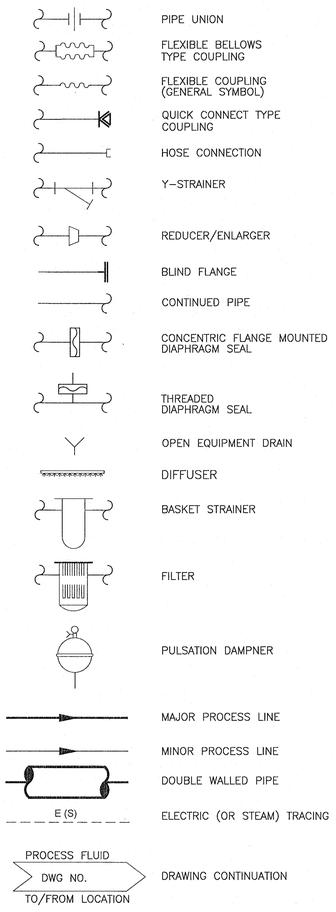
GENERAL ABBREVIATIONS

AI	ANALOG IN
AO	ANALOG OUT
ASD	ADJUSTABLE SPEED DRIVE
CPU	CENTRAL PROCESSOR UNIT
DI	DIGITAL OR DISCRETE INPUT
DO	DIGITAL OUTPUT
FC	FAIL CLOSED
FO	FAIL OPEN OR FIBER OPTIC
HMI	HUMAN MACHINE INTERFACE
MCC	MOTOR CONTROL CENTER
NC	NORMALLY CLOSED
NPW	NON–POTABLE WATER
NO	NORMALLY OPEN
NO	OPERATOR INTERFACE TERMINAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE INPUT/OUTPUT
UPS	UNINTERRUPTIBLE POWER SUPPLY
BFP	BELT FILTER PRESS
CNV	CONVEYOR
GBT	GRAVITY BELT THICKENER
PW	PLANT WATER
SL	SLUDGE
SLPMP	SLUDGE PUMP
TP	TOWER PRESS
CFG	CENTRIFUGE
ICV	INCLINED CONVEYOR
HCV	HORIZONTAL CONVEYOR
PMP	PUMP
CCP	CENTRIFUGE CONTROL PANEL
GR	GRINDER

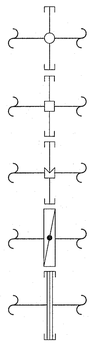
GENERAL NOTES

1. REFER TO SHEET I–1 FOR ADDITIONAL NOTES
2. REFER TO GENERAL SHEETS FOR PIPE MATERIAL AND FLUID ABBREVIATIONS.

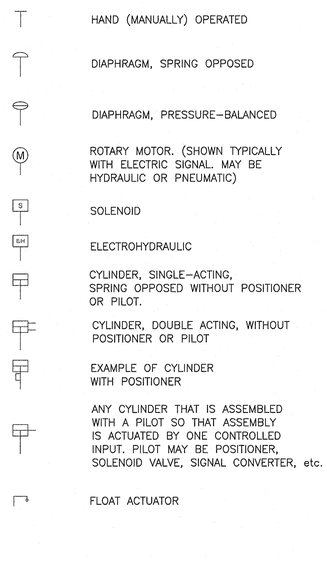
PIPE LINE SYMBOLS



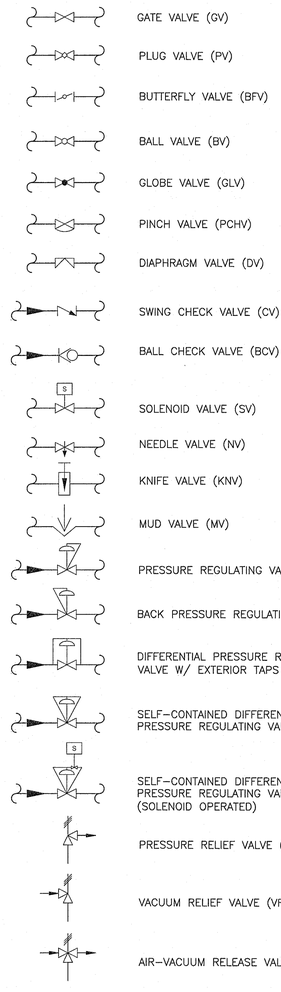
GATE SYMBOLS



VALVE ACTUATORS

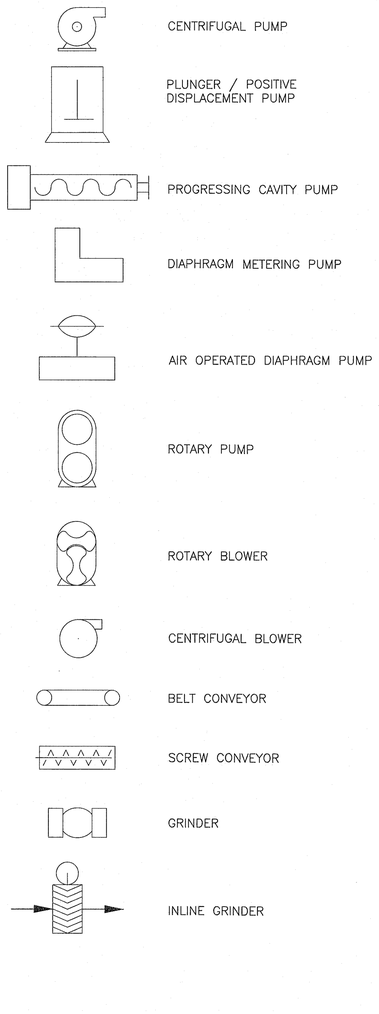


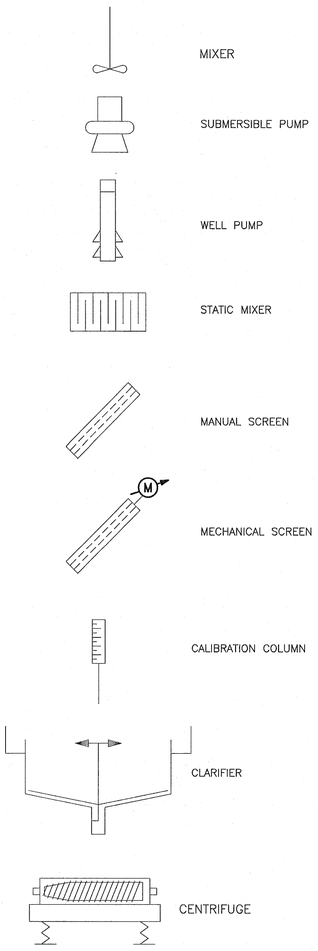
VALVE SYMBOLS

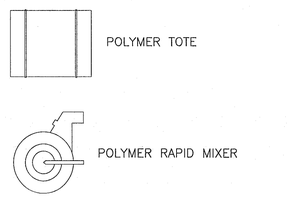


PROCESS EQUIPMENT

PARTIAL LIST ADDITIONAL SYMBOLS MAY BE SHOWN ON THE FLOW DIAGRAMS







APP.	REVISION	DATE	NO.

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LICENSED
PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

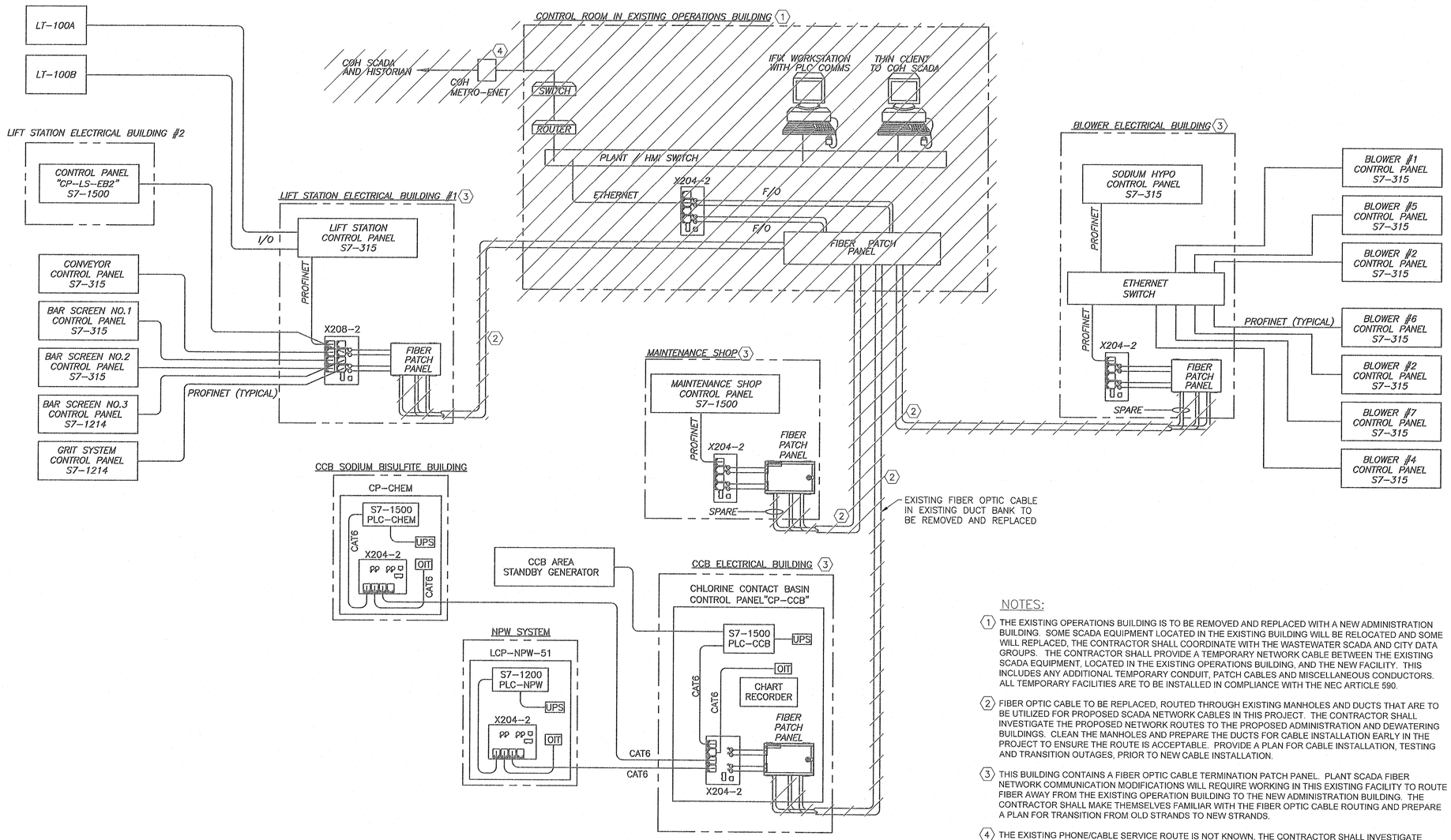
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL SYMBOLS & ABBREVIATIONS - II

I-002

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 125 OF 255	

ACCEPTED NOTED
80341
HOUSTON, TEXAS



EQUIPMENT REMOVAL NOTES:

1. THIS DRAWING ILLUSTRATES AND DESCRIBES SCADA NETWORK MODIFICATION TASKS TO BE PERFORMED, FIBER OPTIC CABLE TO BE REMOVED AND REPLACED IN THIS PROJECT. SEE DIV 13 SPECIFICATIONS FOR SCADA NETWORK REQUIREMENTS.
2. CONTRACTOR SHALL DOCUMENT THE OPERATIONAL STATUS OF ALL EQUIPMENT AND CABLE TO BE REMOVED, PRIOR TO SCHEDULING REMOVAL. THE HMI STATUS, SOURCE OF SIGNALS AND PATH OF SCADA CIRCUITS SHALL BE CONFIRMED.
3. CONTRACTOR SHALL SHALL INVESTIGATE TASKS IN THIS DRAWING EARLY IN THE PROJECT AND NOTIFY THE CITY CONSTRUCTION REPRESENTATIVE UPON DISCOVERY OF ANY DEVIATIONS FROM THE DRAWINGS.

NOTES:

(1) THE EXISTING OPERATIONS BUILDING IS TO BE REMOVED AND REPLACED WITH A NEW ADMINISTRATION BUILDING. SOME SCADA EQUIPMENT LOCATED IN THE EXISTING BUILDING WILL BE RELOCATED AND SOME WILL REPLACED, THE CONTRACTOR SHALL COORDINATE WITH THE WASTEWATER SCADA AND CITY DATA GROUPS. THE CONTRACTOR SHALL PROVIDE A TEMPORARY NETWORK CABLE BETWEEN THE EXISTING SCADA EQUIPMENT, LOCATED IN THE EXISTING OPERATIONS BUILDING, AND THE NEW FACILITY. THIS INCLUDES ANY ADDITIONAL TEMPORARY CONDUIT, PATCH CABLES AND MISCELLANEOUS CONDUCTORS. ALL TEMPORARY FACILITIES ARE TO BE INSTALLED IN COMPLIANCE WITH THE NEC ARTICLE 590.

(2) FIBER OPTIC CABLE TO BE REPLACED, ROUTED THROUGH EXISTING MANHOLES AND DUCTS THAT ARE TO BE UTILIZED FOR PROPOSED SCADA NETWORK CABLES IN THIS PROJECT. THE CONTRACTOR SHALL INVESTIGATE THE PROPOSED NETWORK ROUTES TO THE PROPOSED ADMINISTRATION AND DEWATERING BUILDINGS. CLEAN THE MANHOLES AND PREPARE THE DUCTS FOR CABLE INSTALLATION EARLY IN THE PROJECT TO ENSURE THE ROUTE IS ACCEPTABLE. PROVIDE A PLAN FOR CABLE INSTALLATION, TESTING AND TRANSITION OUTAGES, PRIOR TO NEW CABLE INSTALLATION.

(3) THIS BUILDING CONTAINS A FIBER OPTIC CABLE TERMINATION PATCH PANEL. PLANT SCADA FIBER NETWORK COMMUNICATION MODIFICATIONS WILL REQUIRE WORKING IN THIS EXISTING FACILITY TO ROUTE FIBER AWAY FROM THE EXISTING OPERATION BUILDING TO THE NEW ADMINISTRATION BUILDING. THE CONTRACTOR SHALL MAKE THEMSELVES FAMILIAR WITH THE FIBER OPTIC CABLE ROUTING AND PREPARE A PLAN FOR TRANSITION FROM OLD STRANDS TO NEW STRANDS.

(4) THE EXISTING PHONE/CABLE SERVICE ROUTE IS NOT KNOWN, THE CONTRACTOR SHALL INVESTIGATE EARLY IN THE PROJECT TO LOCATE BOXES AND SERVICE OUTLETS OR SERVICE DEMARKS FOR SERVICES REMOVAL AND PROPOSED SERVICES COORDINATION.

OVERALL EXISTING SCADA NETWORK DIAGRAM

NTS

NO.	DATE	REVISION	APP.

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Consulting Engineers & Project Managers
TBPE Registration No. F-665
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Houston, Texas 77094
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STATE OF TEXAS
ABHISHEK PANDEY
147640
LICENSED
PROFESSIONAL ENGINEER
10/31/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL EXISTING SCADA NETWORK DIAGRAM I-003

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 126 OF 255	

PROFESSIONAL ENGINEER
ABHISHEK PANDEY
80341
LICENSED
HOUSTON, TEXAS

EQUIPMENT REMOVAL NOTES:

1. THIS DRAWING ILLUSTRATES AND DESCRIBES SCADA NETWORK MODIFICATION TASKS TO BE PERFORMED, FIBER OPTIC CABLE TO BE REMOVED AND REPLACED IN THIS PROJECT. SEE DIV 13 SPECIFICATIONS FOR SCADA NETWORK REQUIREMENTS.
2. CONTRACTOR SHALL DOCUMENT THE OPERATIONAL STATUS OF ALL EQUIPMENT AND CABLE TO BE REMOVED, PRIOR TO SCHEDULING REMOVAL. THE HMI STATUS, SOURCE OF SIGNALS AND PATH OF SCADA CIRCUITS SHALL BE CONFIRMED.
3. CONTRACTOR SHALL SHALL INVESTIGATE TASKS IN THIS DRAWING EARLY IN THE PROJECT AND NOTIFY THE CITY CONSTRUCTION REPRESENTATIVE UPON DISCOVERY OF ANY DEVIATIONS FROM THE DRAWINGS.

NOTES:

(1) THE PROPOSED ADMINISTRATION BUILDING IS TO BE PROVIDED NEW SCADA EQUIPMENT, THE CONTRACTOR SHALL COORDINATE WITH THE WASTEWATER SCADA AND CITY DATA GROUPS ANY EQUIPMENT TO BE RELOCATED AND USED. THE CONTRACTOR SHALL PROVIDE A TEMPORARY NETWORK CABLE BETWEEN THE EXISTING SCADA EQUIPMENT, LOCATED IN THE EXISTING OPERATIONS BUILDING, AND THE NEW FACILITY. THIS INCLUDES ANY ADDITIONAL TEMPORARY CONDUIT, PATCH CABLES AND MISCELLANEOUS CONDUCTORS. ALL TEMPORARY FACILITIES ARE TO BE INSTALLED IN COMPLIANCE WITH THE NEC ARTICLE 590.

(2) PROPOSED FIBER OPTIC CABLE SHALL BE ROUTED THROUGH EXISTING MANHOLES AND DUCT BANKS IN THIS PROJECT. THE CONTRACTOR SHALL INVESTIGATE THE PROPOSED NETWORK ROUTES TO THE PROPOSED ADMINISTRATION AND DEWATERING BUILDINGS. CLEAN THE MANHOLES AND PREPARE THE DUCTS FOR CABLE INSTALLATION EARLY IN THE PROJECT TO ENSURE THE ROUTE IS ACCEPTABLE. PROVIDE A PLAN FOR CABLE INSTALLATION, TESTING AND TRANSITION OUTAGES, PRIOR TO NEW CABLE INSTALLATION.

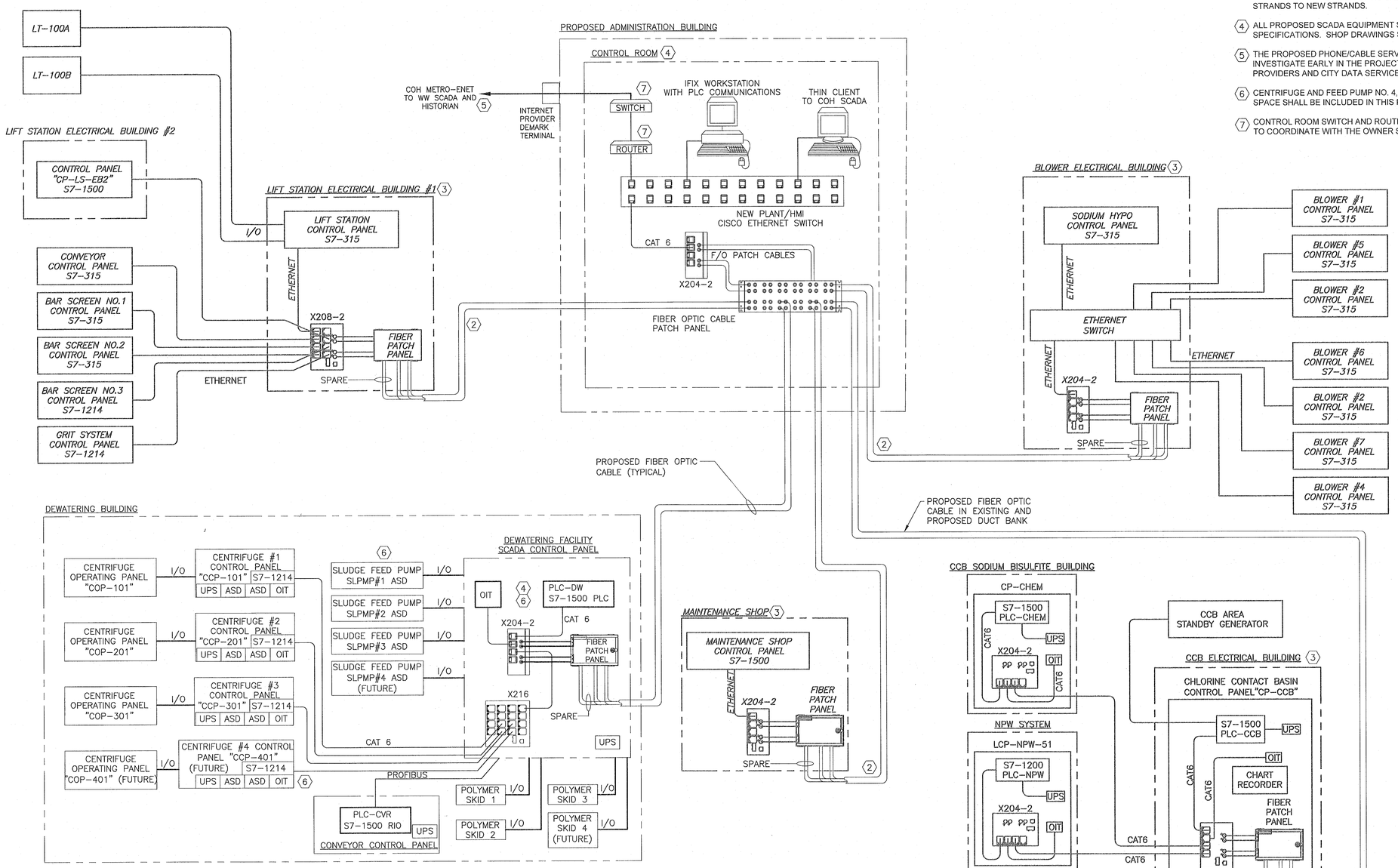
(3) THIS BUILDING CONTAINS A FIBER OPTIC CABLE TERMINATION PATCH PANEL TO BE PROVIDED NEW CABLE ROUTED TO THE PROPOSED ADMINISTRATION BUILDING. THE CONTRACTOR SHALL MAKE THEMSELVES FAMILIAR WITH THE FIBER OPTIC CABLE ROUTING AND PREPARE A PLAN FOR TRANSITION FROM OLD STRANDS TO NEW STRANDS.

(4) ALL PROPOSED SCADA EQUIPMENT SHALL BE PROVIDED IN ACCORDANCE WITH DIVISION 13 SPECIFICATIONS. SHOP DRAWINGS SHALL BE ACCEPTED PRIOR TO ORDERING EQUIPMENT.

(5) THE PROPOSED PHONE/CABLE SERVICE SHALL BE ROUTED IN NEW DUCT BANK, THE CONTRACTOR SHALL INVESTIGATE EARLY IN THE PROJECT TO LOCATE PROPOSED SERVICE DEMARKS WITH SERVICES PROVIDERS AND CITY DATA SERVICES GROUP.

(6) CENTRIFUGE AND FEED PUMP NO. 4, AND THE RELATED ANCILLARY EQUIPMENT, ARE FUTURE. ALL I/O SPACE SHALL BE INCLUDED IN THIS PROJECT.

(7) CONTROL ROOM SWITCH AND ROUTER TO BE SUPPLIED BY THE OWNER SERVICE PROVIDER. CONTRACTOR TO COORDINATE WITH THE OWNER SERVICE PROVIDER.



OVERALL PROPOSED SCADA NETWORK DIAGRAM

NTS

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

Stantec

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Houston, Texas 77002
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www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
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147640
LICENSED PROFESSIONAL ENGINEER
10/01/2024

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL PROPOSED SCADA NETWORK DIAGRAM I-004

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 127 OF 255	

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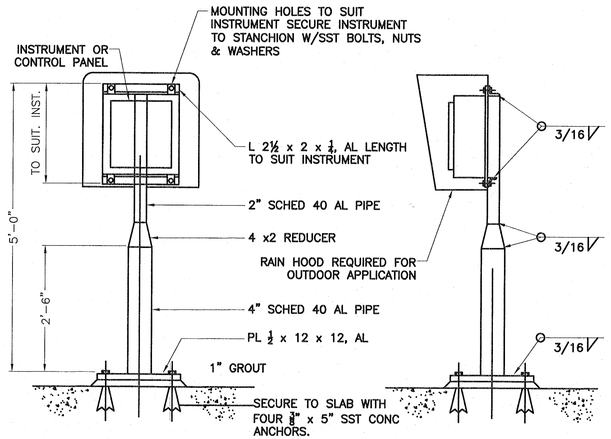
80341
CITY OF HOUSTON, TEXAS

NO.	DATE	REVISION	APP.



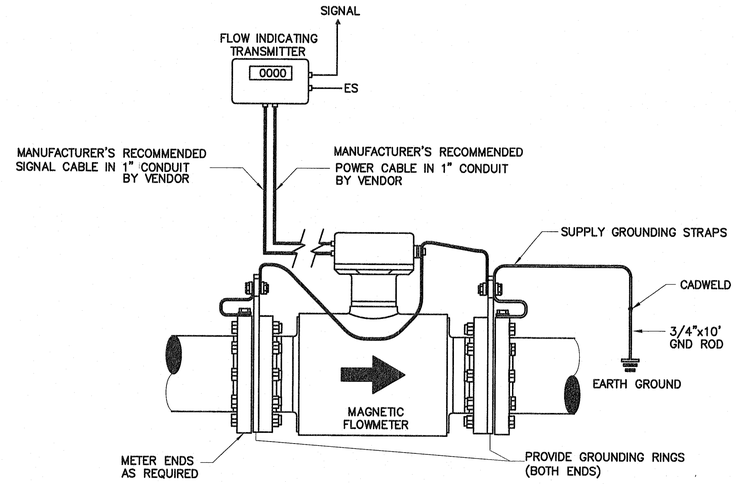
GENERAL NOTES:

A. ROUND OFF ALL EXPOSED EDGES AND CORNERS.

B. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.

STANCHION SUPPORT FOR CASE MOUNTED INSTRUMENTS

DETAIL 1
NONE -



GENERAL NOTES:

A. POWER SUPPLY TO MAGNETIC METER PRIMARY DEVICE AND TRANSMITTER TO BE FROM SAME SOURCE WITH RESPECT TO VOLTAGE, FREQUENCY AND PHASE.

B. INSTALLATION OF METERS SHALL PROVIDE FOR 6 PIPE DIAMETERS UPSTREAM AND 6 PIPE DIAMETERS DOWNSTREAM AND PER MANUFACTURERS RECOMMENDATION.

C. METER MUST HAVE ULTRASONIC SELF-CLEANING ELECTRODES.

D. METER SHALL BE INSTALLED SO THAT IT CAN BE TAKEN OUT OF SERVICE FOR CALIBRATION AND/OR MAINTENANCE WITHOUT DISRUPTING ASSOCIATED PROCESS.

E. METER SHALL NOT BE LOCATED NEAR HEAVY INDUCTION EQUIPMENT (MIN 20 FEET) AND PER MANUFACTURERS RECOMMENDATION.

F. ORIENT THE METER SO THAT THE ELECTRODES LIE IN PLANE PARALLEL TO FLOOR.

G. WALL MOUNT THE TRANSMITTER WITHIN SITE OF METER.

H. INSTALL AIR BLEED VALVES FOR METER MOUNTED HORIZONTALLY.

I. REFER DETAIL A AND G FOR GENERAL INSTALLATION DETAILS AND TRANSMITTER SUNSHIELD INSTALLATION.

MAGNETIC FLOW METER INSTALLATION

DETAIL 2
NONE -

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

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STATE OF TEXAS
ABHISHEK PANDEY
147640
LICENSED PROFESSIONAL ENGINEER
11/22/21

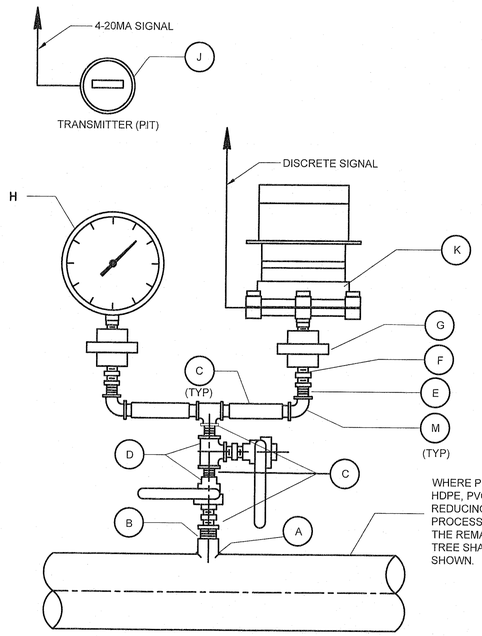
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION DETAIL-I
I-005

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 128 OF 255	

ACCEPTED AND FILED
80341
CITY OF HOUSTON, TEXAS



	ITEM	DESCRIPTION	MATERIAL
*	A	1 1/2" PROCESS CONNECTION	MATCH PIPE
*	B	1 1/2" X 3/4" BUSHING	304SS
*	C	3/4" NIPPLE	304SS
*	D	3/4" BALL VALVE	304SS
*	E	3/4" X 1/2" BUSHING	304SS
*	F	1/2" NIPPLE	304SS
*	G	THREADED DIAPHRAGM SEAL	REFER SPEC
*	H	PRESSURE GAUGE (PG)	REFER SPEC
*	J	PRESSURE TRANSMITTER (PIT)	REFER SPEC
*	K	PRESSURE SWITCH (PSH/PSL)	REFER SPEC
*	L	3/4" TEE	304SS
*	M	3/4" ELBOW	304SS

* DENOTES NOTE TO CONTRACTOR

WHERE PROCESS PIPING IS HDPE, PVC OR CPVC, PROVIDE REDUCING TEE FOR THE PROCESS CONNECTION. THE REMAINING INSTRUMENT TREE SHALL REMAIN AS SHOWN.

GENERAL NOTES:

A. PROVIDE PROCESS CONNECTION (ITEM A) ACCORDING TO MECHANICAL DETAILS.

B. COMBINATION BLOCK AND BLEED MANIFOLD MAY BE INSTALLED IN PLACE OF BALL VALVES (ITEM D).

C. PROVIDE THREADED DIAPHRAGM SEAL WHERE INDICATED ON DRAWINGS. REFER TO SPECS FOR GUIDANCE.

D. WHEN DIAPHRAGM SEAL IS INSTALLED, EVACUATE SECTION BETWEEN DIAPHRAGM AND INSTRUMENT OF AIR AND SEAL WITH SILICONE FILL FLUID UNLESS SPECIFIED OTHERWISE.

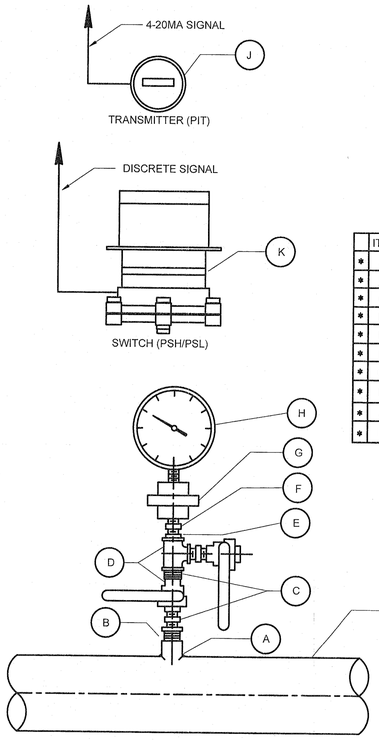
E. PROVIDE PRESSURE DEVICE (ITEM H, J, OR K) WHERE INDICATED ON THE DRAWINGS. REFER TO SPECS FOR GUIDANCE.

F. ROUTE FIELD WIRES FROM DEVICE TO JUNCTION BOX IN FLEXIBLE CONDUIT.

G. SPACE PRESSURE DEVICES TO PROMOTE SERVICING DEVICE WITHOUT INTERFERENCE.

PRESSURE DEVICE (DOUBLE TREE) STANDARD SERVICE TAP

DETAIL 1
NONE -



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*	E	3/4" X 1/2" BUSHING	304SS
*	F	1/2" NIPPLE	304SS
*	G	THREADED DIAPHRAGM SEAL	REFER SPEC
*	H	PRESSURE GAUGE (PG)	REFER SPEC
*	J	PRESSURE TRANSMITTER (PIT)	REFER SPEC
*	K	PRESSURE SWITCH (PSH/PSL)	REFER SPEC

* DENOTES NOTE TO CONTRACTOR

WHERE PROCESS PIPING IS HDPE, PVC OR CPVC, PROVIDE REDUCING TEE FOR THE PROCESS CONNECTION. THE REMAINING INSTRUMENT TREE SHALL REMAIN AS SHOWN.

GENERAL NOTES:

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D. WHEN DIAPHRAGM SEAL IS INSTALLED, EVACUATE SECTION BETWEEN DIAPHRAGM AND INSTRUMENT OF AIR AND SEAL WITH SILICONE FILL FLUID UNLESS SPECIFIED OTHERWISE.

E. PROVIDE PRESSURE DEVICE (ITEM H, J, OR K) WHERE INDICATED ON THE DRAWINGS. REFER TO SPECS FOR GUIDANCE.

F. ROUTE FIELD WIRES FROM DEVICE TO JUNCTION BOX IN FLEXIBLE CONDUIT.

PRESSURE DEVICE (SINGLE TREE) STANDARD SERVICE TAP

DETAIL 2
NONE -

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
ABHISHEK PANDEY
147640
LICENSED PROFESSIONAL ENGINEER
11/15/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION DETAIL-II I-006

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 129 OF 255	

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80341
CITY CONTROLLER
HOUSTON, TEXAS

GENERAL NOTES:

A. TERMINATE SPD DIRECTLY TO GROUND BUS. DO NOT DAISY CHAIN.

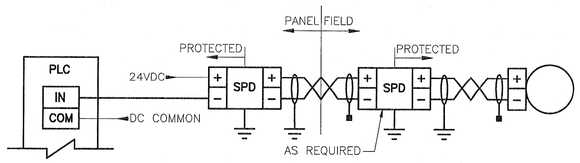
B. TERMINATE SHIELD/DRAIN WIRE DIRECTLY TO SHIELD BUS/GROUND. DO NOT DAISY CHAIN.

C. TAPE BACK SHIELD/DRAIN WIRE WHERE INDICATED.

D. WHERE SPD ARE REQUIRED IN THE FIELD, INSTALL SURGE PROTECTION AS CLOSE TO FIELD DEVICE AS POSSIBLE.

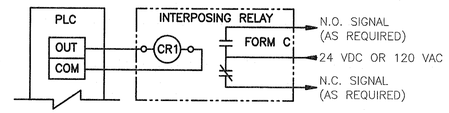
E. ALL CIRCUITS TO BE FUSED PROTECTED.

NO.	DATE	REVISION	APP.



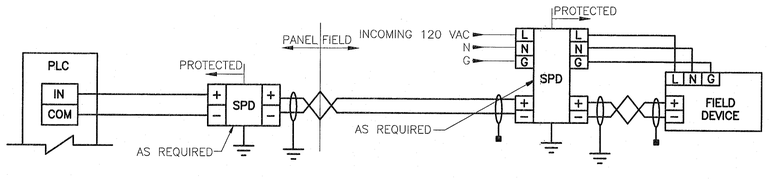
TYPICAL TRANSMITTER LOOP (LOOP POWERED: 2 WIRE)

DETAIL 1 / NONE



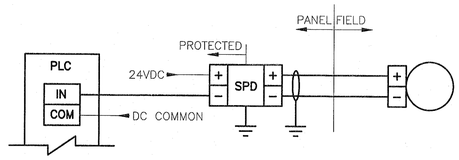
TYPICAL DISCRETE OUTPUT LOOP

DETAIL 2 / NONE



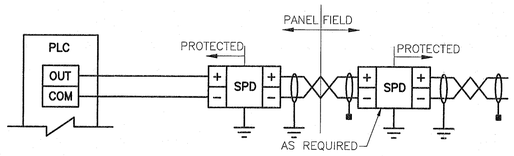
TYPICAL TRANSMITTER LOOP (LOOP POWERED: 4 WIRE)

DETAIL 3 / NONE



TYPICAL DISCRETE INPUT LOOP

DETAIL 4 / NONE



TYPICAL ANALOG OUTPUT LOOP

DETAIL 5 / NONE

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STATE OF TEXAS
ABHISHEK PANDEY
147640
LICENSED PROFESSIONAL ENGINEER
10/10/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

INSTRUMENTATION DETAIL-III I-007

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 130 OF 255	

PUBLIC WORKS
REGISTERED
80341
HOUSTON, TEXAS

"PLC-DW"

E STOP ACTIVATED | FAIL | RUN | START/STOP | IN REMOTE | HIGH TEMPERATURE | RUN FORWARD | RUN REVERSE | JAM | PHASE FAILURE

HMI/SCADA OIT

E-STOP ACTIVATED | START/STOP | IN REMOTE | RUNNING | FAULT | PUMP TEMPERATURE | SPEED | SPEED COMMAND | HIGH DISCHARGE PRESSURE | HIGH MOTOR TEMPERATURE | LOW SUCTION PRESSURE | HIGH PUMP LOAD DETECTED

ELECTRICAL ROOM

MCC-DW
PQM
XA 010 PHASE FAILURE

480VAC

SLPMP-1 ASD AMP
HS 001A L/O/R | HS 001B START | HS 001C STOP | HS 001D SPEED | HS 001E E-STOP | XL 001E LOW PRESSURE
XL 001A FAULT | XL 001B HIGH MOTOR TEMP. | XL 001C HIGH PUMP TEMP. | HS 001H RESET | XL 001D RUN | XL 001F HIGH PRESSURE

SLPMP-2 ASD AMP
HS 002A L/O/R | HS 002B START | HS 002C STOP | HS 002D SPEED | HS 002E E-STOP | XL 002E LOW PRESSURE
XL 002A FAULT | XL 002B HIGH MOTOR TEMP. | XL 002C HIGH PUMP TEMP. | HS 002H RESET | XL 002D RUN | XL 002F HIGH PRESSURE

SLPMP-3 ASD AMP
HS 003A L/O/R | HS 003B START | HS 003C STOP | HS 003D SPEED | HS 003E E-STOP | XL 003E LOW PRESSURE
XL 003A FAULT | XL 003B HIGH MOTOR TEMP. | XL 003C HIGH PUMP TEMP. | HS 003H RESET | XL 003D RUN | XL 003F HIGH PRESSURE

SLPMP-3 ASD AMP
HS 004A L/O/R | HS 004B START | HS 004C STOP | HS 004D SPEED | HS 004E E-STOP | XL 004E LOW PRESSURE
XL 004A FAULT | XL 004B HIGH MOTOR TEMP. | XL 004C HIGH PUMP TEMP. | HS 004H RESET | XL 004D RUN | XL 004F HIGH PRESSURE

"PLC-DW" | ELECTRICAL ROOM

FIELD

POLYMER SKID 2I-607
UTILITY WATER N/A
PV03 (SEE CIVIL) SS01
3"-UW-SS01
1-1/2"-POL-SS01
(NOTE C)
CIP WASH WATER
480V- M MOV-1
OPEN/CLOSE OC
ZI 001
ZSC 001 HS 001F LR
ZSO 001 HS 001G OC
HARDWIRED
PSL 001 PI 001
TSH 001 HS 001 E-STOP
PSH 104 PI 104
FLUSH 2"
6"-TSL-SS01
SLPMP-1 (NOTE D)
TT 001 WSE 001
1-1/2"
LOR E-STOP START STOP TEMP. LOAD ALM
HS 001K HS 001L HS 001M HS 001N TI 001 WSH 001
SLPMP-1 ASD-LCP
1-1/2"-POC-SS01
ALTERNATE 2I-602 INJECTION POINT
TO CCP-101
1"-UW-SS01 UTILITY WATER 2I-602
4"-TSL-SS01 SLUDGE 2I-602 CENTRIFUGE NO. 1

POLYMER SKID 2I-608
3"-UW-SS01
1-1/2"-POL-SS01
(NOTE C)
CIP WASH WATER
480V- M MOV-2
OPEN/CLOSE OC
ZI 002
ZSC 002 HS 002F LR
ZSO 002 HS 002G OC
PSL 002 PI 002
TSH 002 HS 002 E-STOP
PSH 204 PI 204
6"-TSL-SS01
SLPMP-2 (NOTE D)
TT 002 WSE 002
1-1/2"
LOR E-STOP START STOP TEMP. LOAD ALM
HS 002K HS 002L HS 002M HS 002N TI 002 WSH 002
SLPMP-2 ASD-LCP
1-1/2"-POC-SS01
ALTERNATE 2I-603 INJECTION POINT
TO CCP-102
1"-UW-SS01 UTILITY WATER 2I-603
4"-TSL-SS01 SLUDGE 2I-603 CENTRIFUGE NO. 2

POLYMER SKID 2I-609
3"-UW-SS01
1-1/2"-POL-SS01
(NOTE C)
CIP WASH WATER
480V- M MOV-3
OPEN/CLOSE OC
ZI 003
ZSC 003 HS 003F LR
ZSO 003 HS 003G OC
PSL 003 PI 003
TSH 003 HS 003 E-STOP
PSH 304 PI 304
6"-TSL-SS01
8"-TSL-SS01
SLPMP-3 (NOTE D)
TT 003 WSE 003
1-1/2"
LOR E-STOP START STOP TEMP. LOAD ALM
HS 003K HS 003L HS 003M HS 003N TI 003 WSH 003
SLPMP-3 ASD-LCP
1-1/2"-POC-SS01
ALTERNATE 2I-604 INJECTION POINT
TO CCP-103
1"-UW-SS01 UTILITY WATER 2I-604
4"-TSL-SS01 SLUDGE 2I-604 CENTRIFUGE NO. 3

POLYMER SKID (FUTURE) 2I-610
3"-UW-SS01
1-1/2"-POL-SS01
(NOTE C)
WASTE ACTIVATED SLUDGE GRINDER, LCP-SL-GR
RUNNING YR | L/O/R HS | START HS | F/O/R HS | AMP | JAM XA | E-STOP HS | MS | FAULT XA | STOP HS | HS
FLUSH (NOTE 2)
480VAC
CIP WASH WATER
480V- M MOV-4
OPEN/CLOSE OC
ZI 004
ZSC 004 HS 004F LR
ZSO 004 HS 004G OC
PSL 004 PI 004
TSH 004 HS 004 E-STOP
PSH 404 PI 404
THICKENED SLUDGE N/A
FROM AERATION BASINS
4"-TSL-DI03
8"-TSL-SS01
DI03 (SEE CIVIL) SS01
SL-GR
6"-TSL-SS01
SLPMP-4 (FUTURE) (NOTE D)
TT 004 WSE 004
1-1/2"
LOR E-STOP START STOP TEMP. LOAD ALM
HS 004K HS 004L HS 004M HS 004N TI 004 WSH 004
SLPMP-4 ASD-LCP (FUTURE)
1-1/2"-POC-SS01
ALTERNATE 2I-605 INJECTION POINT
1"-UW-SS01 UTILITY WATER 2I-605
4"-TSL-SS01 SLUDGE 2I-605 CENTRIFUGE NO. 4

GENERAL NOTES:

A. REFER TO SPECIFICATIONS FOR MINIMUM CONTROL SYSTEM REQUIREMENT FROM OIT.

B. CONNECTION FOR WET SLUDGE HAULING LOCATED OUTSIDE OF THE BUILDING.

C. LOCATE INSIDE POLYMER SYSTEM CONTAINMENT AREA.

D. PUMP TO BE EQUIPPED WITH AN INTEGRATED MECHANICAL OVERPRESSURE PROTECTION DEVICE OR A RECIRCULATION LOOP WITH A PRESSURE RELIEF VALVE.

NO.	DATE	REVISION	APP.

KGL Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
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Houston, Texas 77094
Phone: (713)-365-9288

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910 Louisiana Street Suite 2600
Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED PROFESSIONAL ENGINEER
05.01.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING SLUDGE FEED PUMPS P&ID 2I-601

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	S/E SHAHIDUR RAHMAN, P.E.
SHEET NO.	131 OF 255

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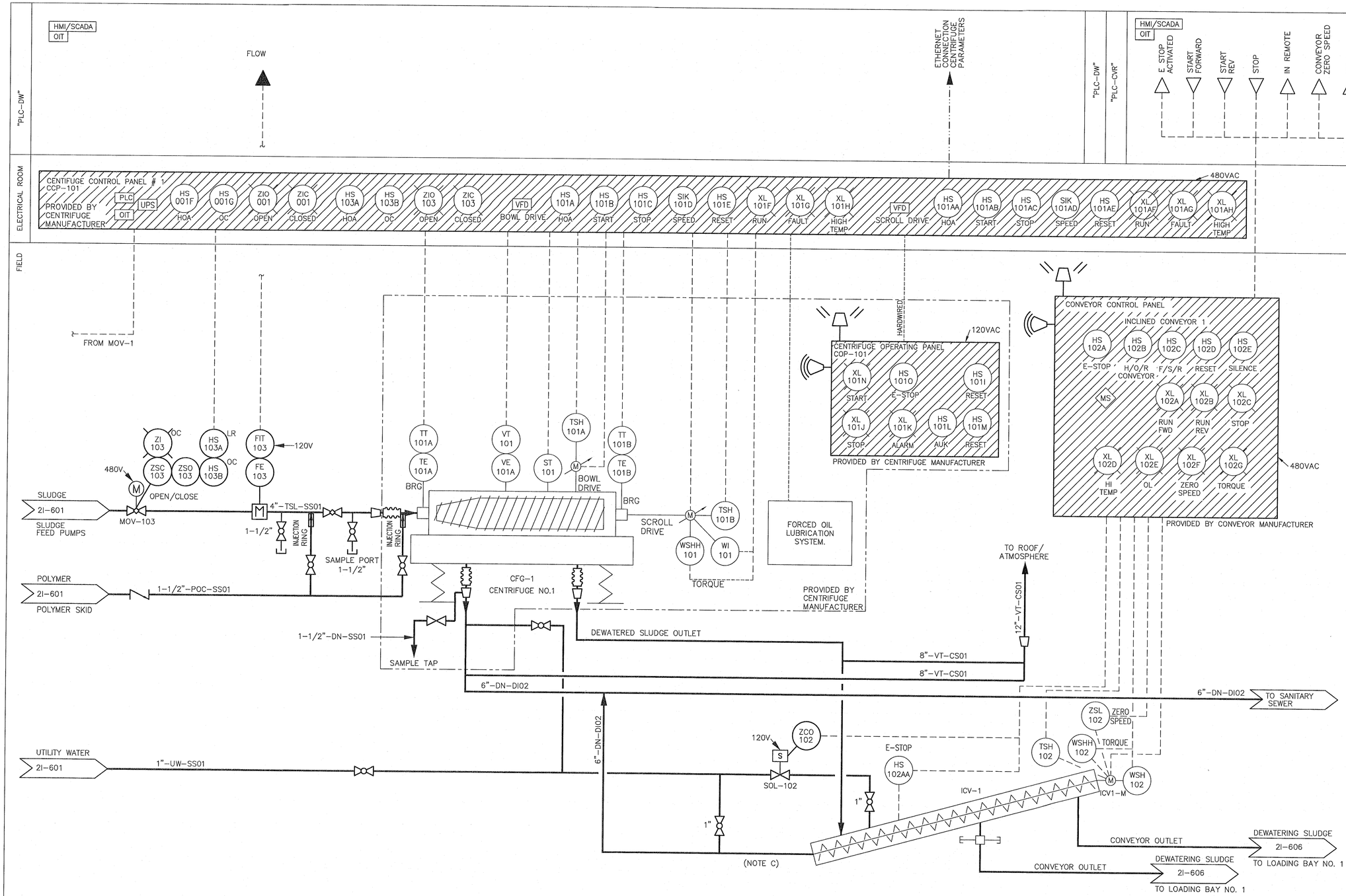

CENTRIFUGE NO. 1 P&ID
NTS

GENERAL NOTES:

A. REFER TO SPECIFICATIONS FOR MINIMUM CONTROL SYSTEM REQUIREMENTS FROM OIT.

B. REFER TO ELECTRICAL DRAWINGS FOR ALL CONTROL PANEL LOCATIONS.

C. ALL HORIZONTAL DRAIN LINES TO BE SLOPED PER CENTRIFUGE AND CONVEYOR MANUFACTURER RECOMMENDATION.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-366-9288

Stantec

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910 Louisiana Street Suite 2600
Houston, Texas 77002
Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-8232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED PROFESSIONAL ENGINEER
07.01.2025

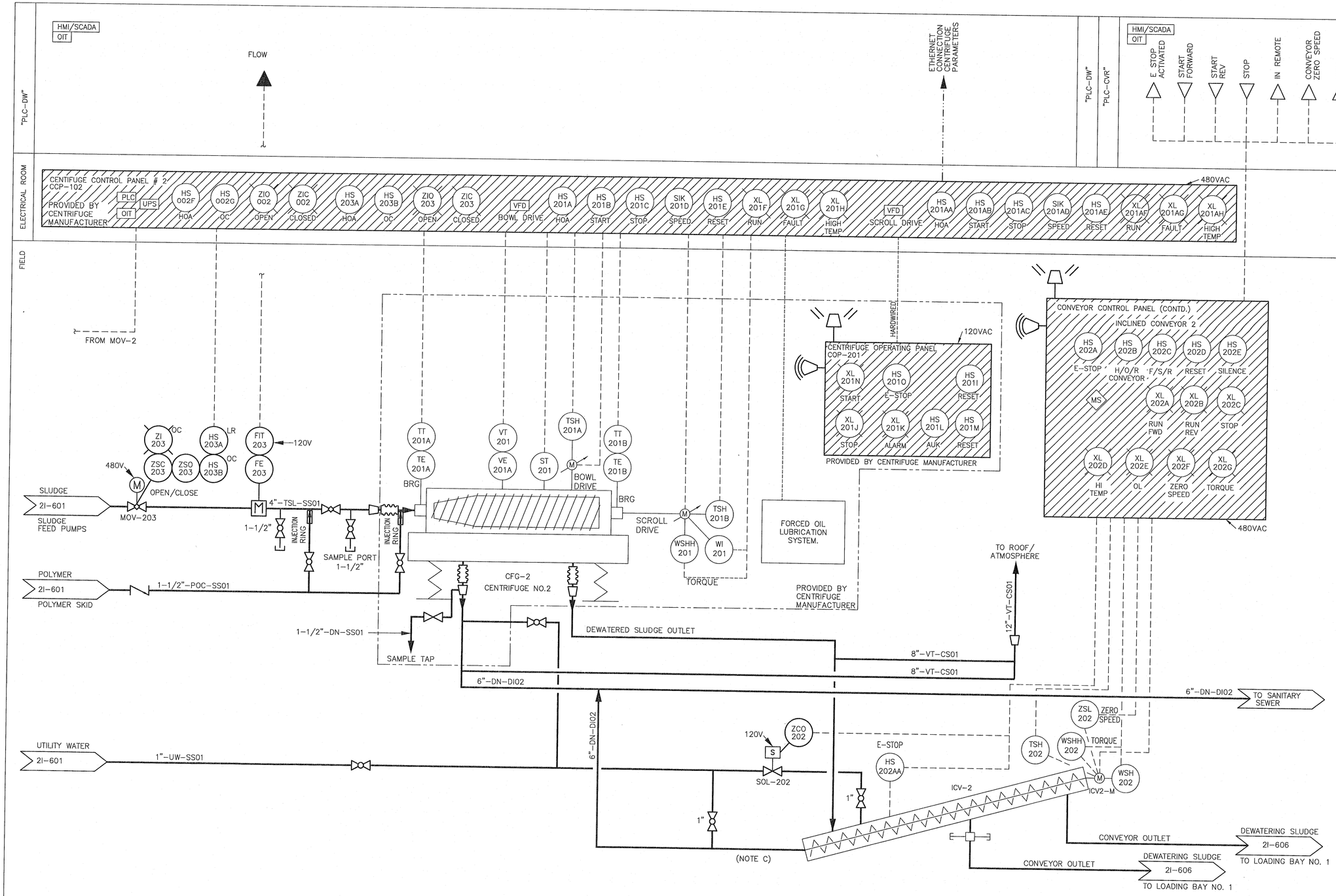
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CENTRIFUGE NO. 1 P&ID 2I-602

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 132 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AND FILED
80341
CITY ENGINEER
HOUSTON, TEXAS



CENTRIFUGE NO. 2 P&ID

NTS

GENERAL NOTES:

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B. REFER TO ELECTRICAL DRAWINGS FOR ALL CONTROL PANEL LOCATIONS.

C. ALL HORIZONTAL DRAIN LINES TO BE SLOPED PER CENTRIFUGE AND CONVEYOR MANUFACTURER RECOMMENDATION.

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
05.06.2025

CITY OF HOUSTON

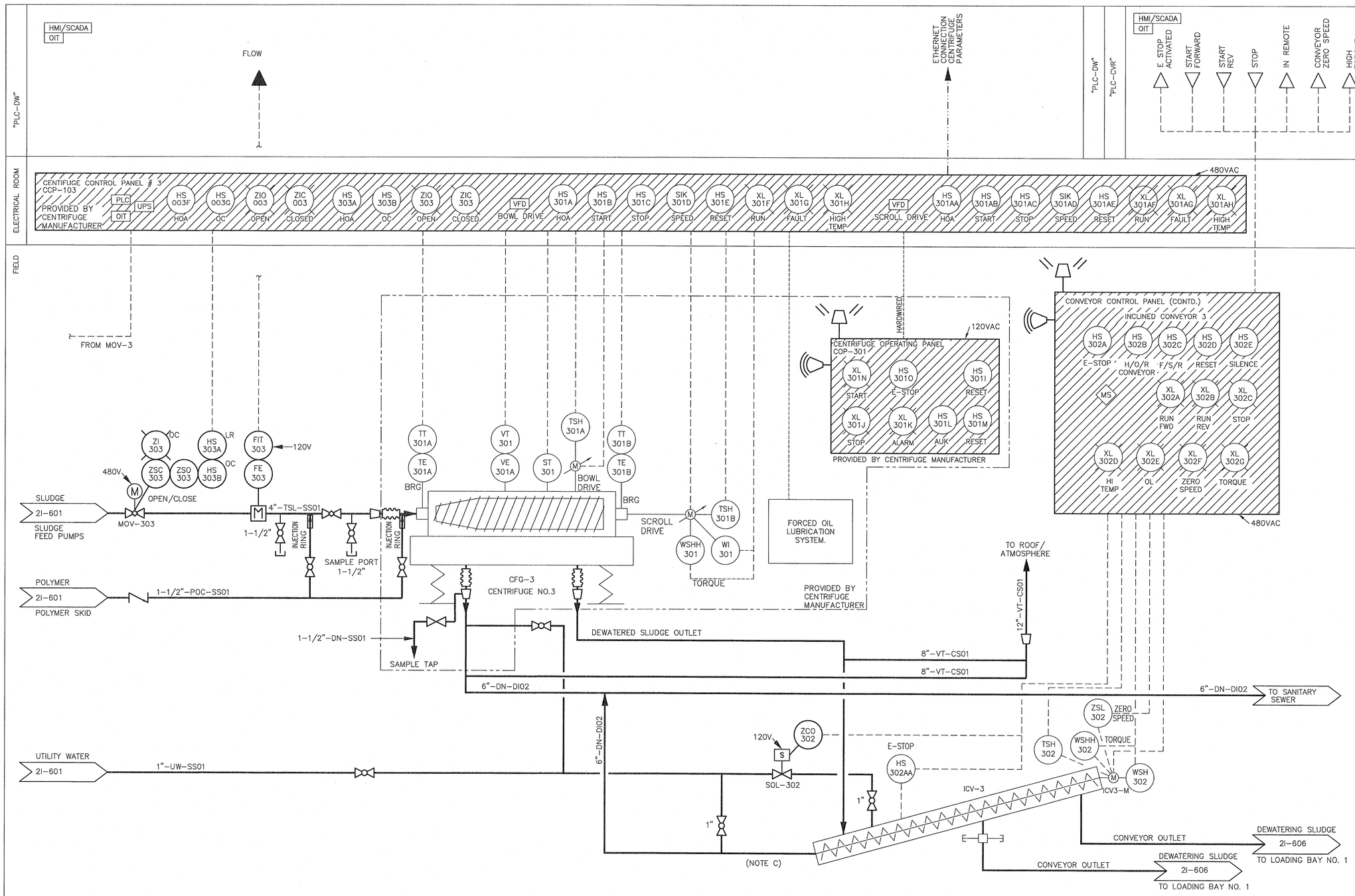
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CENTRIFUGE NO. 2 P&ID 2I-603

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 133 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED NOTED
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS



CENTRIFUGE NO. 3 P&ID
NTS

GENERAL NOTES:

A. REFER TO SPECIFICATIONS FOR MINIMUM CONTROL SYSTEM REQUIREMENTS FROM OIT.

B. REFER TO ELECTRICAL DRAWINGS FOR ALL CONTROL PANEL LOCATIONS.

C. ALL HORIZONTAL DRAIN LINES TO BE SLOPED PER CENTRIFUGE AND CONVEYOR MANUFACTURER RECOMMENDATION.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

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PROFESSIONAL ENGINEER
05.06.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CENTRIFUGE NO. 3 P&ID 2I-604

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
S/E SHAHIDUR RAHMAN, P.E.	
SHEET NO. 134 OF 255	

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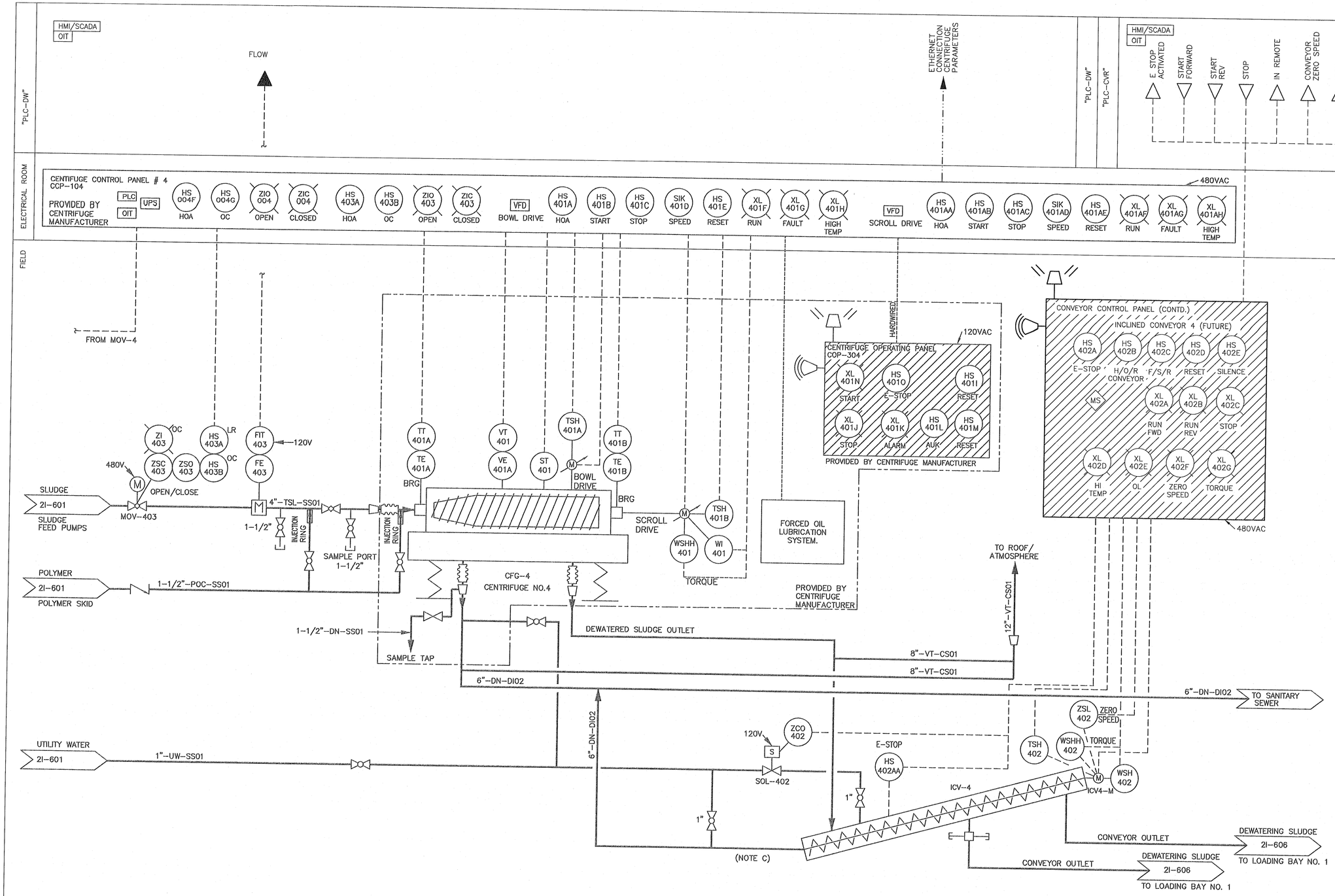
PUBLIC WORKS AND ENGINEERING
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS



CENTRIFUGE NO. 4 P&ID (FUTURE)

NTS

GENERAL NOTES:

A. REFER TO SPECIFICATIONS FOR MINIMUM CONTROL SYSTEM REQUIREMENTS FROM OIT.

B. REFER TO ELECTRICAL DRAWINGS FOR ALL CONTROL PANEL LOCATIONS.

C. ALL HORIZONTAL DRAIN LINES TO BE SLOPED PER CENTRIFUGE AND CONVEYOR MANUFACTURER RECOMMENDATION.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9285

Stantec

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STATE OF TEXAS
STACY L. JORDAN
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LICENSED PROFESSIONAL ENGINEER
05.06.2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CENTRIFUGE NO. 4 P&ID (FUTURE) 2I-605

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	135 OF 255

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HOUSTON, TEXAS

"PLC-CVR"

- E STOP ACTIVATED (TYP. 2)
- START FORWARD (TYP. 2)
- START REV (TYP. 2)
- STOP (TYP 2)
- IN REMOTE (TYP. 2)
- CONVEYOR ZERO SPEED (TYP. 2)
- GATE IN REMOTE (TYP. 2)
- GATE OPEN/CLOSE (TYP. 2)
- GATE CLOSED (TYP. 2)
- GATE OPENED (TYP. 2)
- HIGH TORQUE (TYP. 2)

HMI/SCADA
OIT

"PLC-CVR"

ELECTRICAL ROOM

ELECTRICAL ROOM

FIELD

FIELD

DEWATERING SLUDGE
2I-605
FROM CFG-4 (FUTURE)

DEWATERING SLUDGE
2I-604
FROM CFG-3

DEWATERING SLUDGE
2I-603
FROM CFG-2

DEWATERING SLUDGE
2I-602
FROM CFG-1

CONVEYOR CONTROL PANEL (CONTD.)

HORIZONTAL CONVEYOR 1

HS 501A E-STOP
HS 501B H/O/R CONVEYOR
HS 501C F/S/R
HS 501D RESET
HS 501E SILENCE
XL 501D HI TEMP
XL 501A RUN FWD
XL 501B RUN REV
XL 501C STOP
XL 501D TORQUE
XL 501E OL
XL 501F ZERO SPEED
MS
MS
MS
MS
HS 501F L/O/R GATE
HS 501G O/C GATE
XL 501H GATE OPEN
XL 501I GATE CLOSE
HS 501K L/O/R GATE
HS 501L O/C GATE
XL 501M GATE OPEN
XL 501N GATE CLOSE

HORIZONTAL CONVEYOR 2

HS 502A E-STOP
HS 502B H/O/R CONVEYOR
HS 502C F/S/R
HS 502D RESET
HS 502E SILENCE
XL 502G TORQUE
XL 502A RUN FWD
XL 502B RUN REV
XL 502C STOP
XL 502D HI TEMP
XL 502E OL
XL 502F ZERO SPEED

480VAC

ZSL 501 ZERO SPEED
WSH 501
WSHH 501 TORQUE
TSH 501
HCV1-M

CURRENT CONVEYOR

FUTURE CONVEYOR

(FUTURE)
HCV-1 (NOTE B)

CONVEYOR OUTLET

HCV1-SG1
HCV1-SG2

HCV-2

ZSL 502 ZERO SPEED
WSH 502
WSHH 502 TORQUE
TSH 502
HCV2-M

TRUCK LOADING BAY No.1

TRUCK LOADING BAY No.2
(NOTE A)

GENERAL NOTES:

A. DURING THE USE OF HORIZONTAL CONVEYOR HCV-2 FOR TRUCK LOADING,THE TRUCK PARKED AT LOADING BAY 2 IS REQUIRED TO BE MOVED FOR EVEN DISTRIBUTION OF SLUDGE CAKE.DURING RAIN EVENTS, IT IS RECOMMENDED TO MOVE TRUCK UNDER HCV-1 AND CONTINUE TO USE THE COVERED AREA.

B. AT TIME OF INSTALLATION OF FUTURE (NO.4) CENTRIFUGE AND CONVEYOR, HORIZONTAL CONVEYOR HCV-1 WILL NEED TO BE REPLACED WITH A LONGER UNIT.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
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Phone: (713)-365-9285

Stantec

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910 Louisiana Street Suite 2600
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Tel: 713.548.5700
www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
05.01.2025

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING TRUCK LOADING BAY P&ID 2I-606

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	136 OF 255

FOR CITY OF HOUSTON USE ONLY

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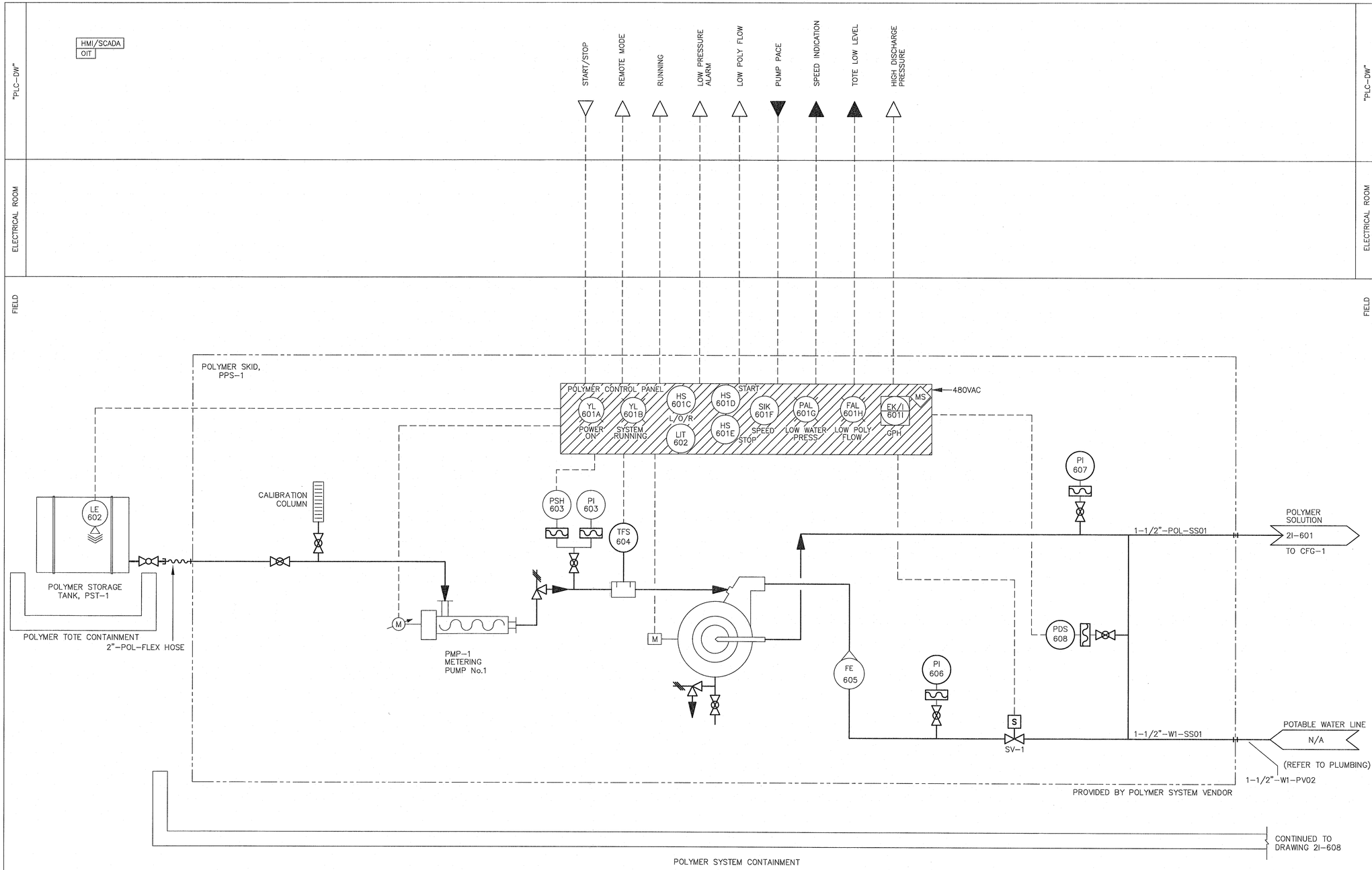
80341
CITY SECRETARY
HOUSTON, TEXAS



POLYMER SYSTEM NO. 1 P&ID

NTS

GENERAL NOTES:

A. PIPING AND INSTRUMENTATION SHOWN MAY NOT BE COMPLETE. THE CONTROL SYSTEM COULD VARY BASED ON POLYMER SYSTEM MANUFACTURER. CONTRACTOR SHALL PROVIDE UPDATED P&ID BASED ON THE POLYMER SYSTEM FURNISHED. REFER TO SPECIFICATIONS FOR MINIMUM CONTROL SYSTEM REQUIREMENT.

B. THE CONTRACTOR SHALL COORDINATE WITH THE POLYMER STORAGE TOTE SUPPLIER TO DETERMINE THE INSTALLATION AND MOUNTING TYPE FOR THE RADAR LEVEL SENSOR.

C. LOCATE INSIDE THE CONTAINMENT AREA

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F–665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)–365–9288

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
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05.01.2025

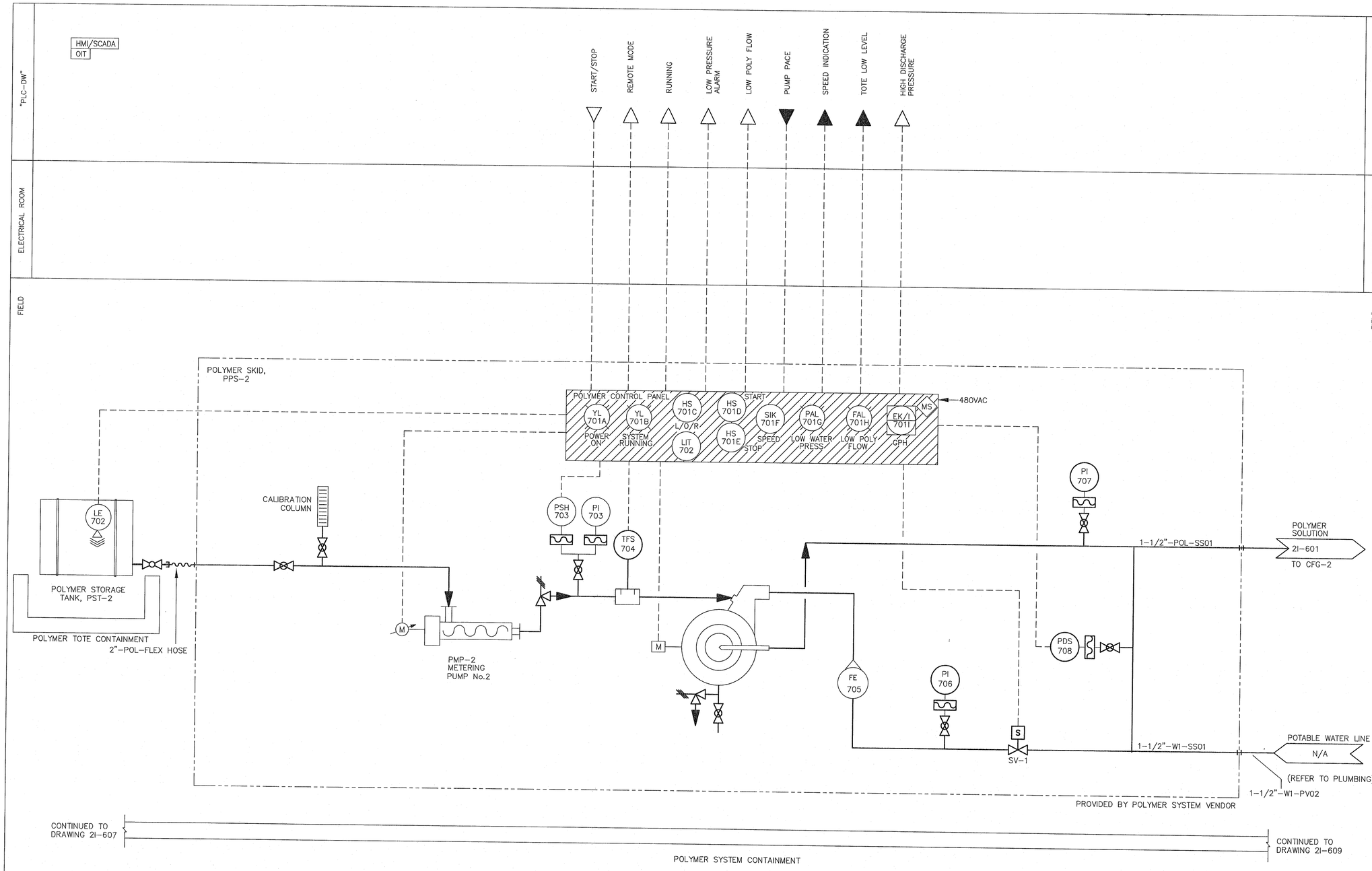
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING POLYMER SYSTEM NO. 1 P&ID 2I-607

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
Se SHAHIDUR RAHMAN, P.E.	
SHEET NO. 137 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS FILED
80341
CITY ENGINEER'S NUMBER
HOUSTON, TEXAS



POLYMER SYSTEM NO. 2 P&ID
NTS

GENERAL NOTES:

A. PIPING AND INSTRUMENTATION SHOWN MAY NOT BE COMPLETE. THE CONTROL SYSTEM COULD VARY BASED ON POLYMER SYSTEM MANUFACTURER. CONTRACTOR SHALL PROVIDE UPDATED P&ID BASED ON THE POLYMER SYSTEM FURNISHED. REFER TO SPECIFICATIONS FOR MINIMUM CONTROL SYSTEM REQUIREMENT.

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C. LOCATE INSIDE THE CONTAINMENT AREA

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

Stantec

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STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
07.01.2025

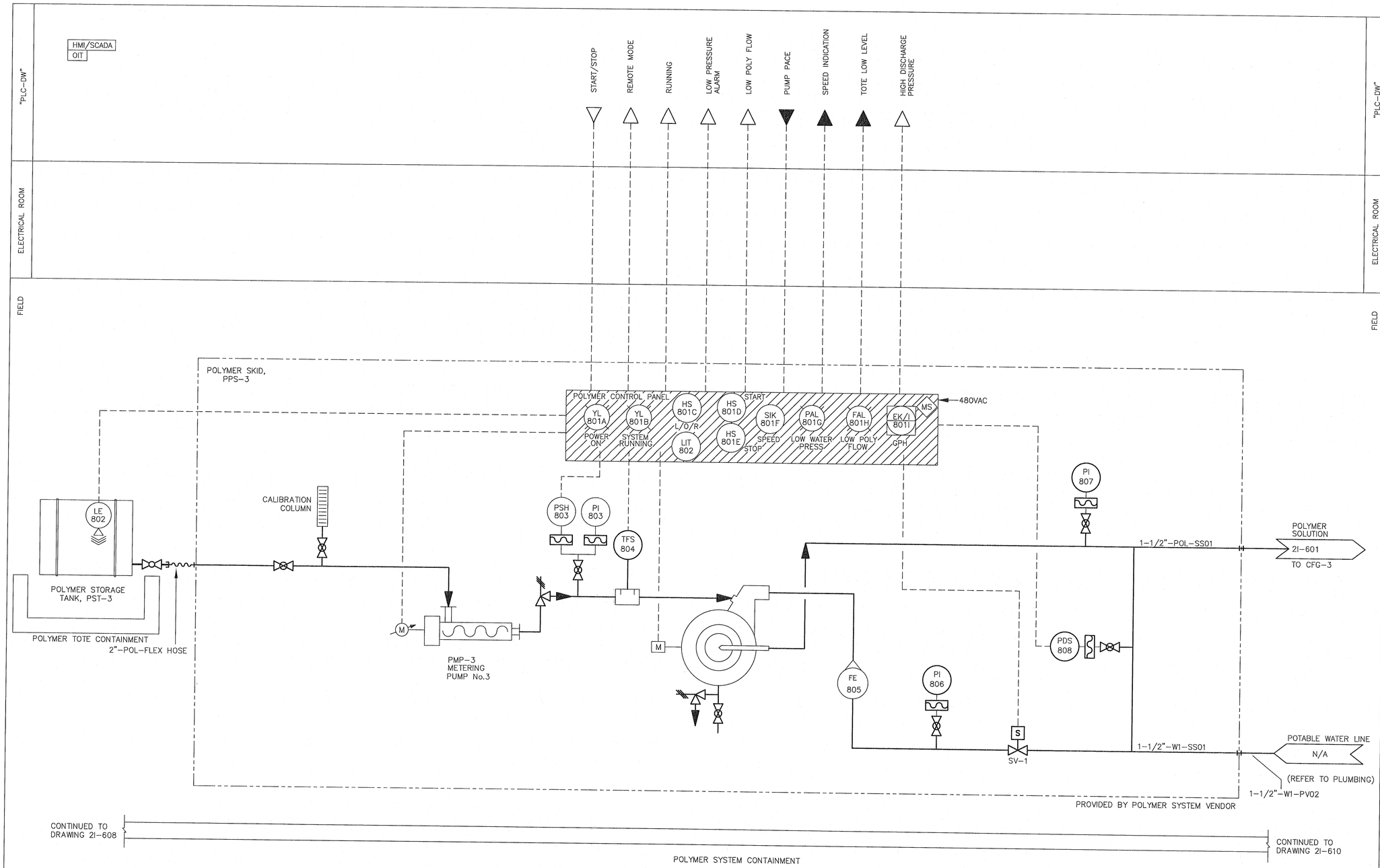
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING POLYMER SYSTEM NO. 2 P&ID 2I-608

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 138 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS NOTED
80341
CITY OF HOUSTON, TEXAS



POLYMER SYSTEM NO. 3 P&ID

NTS

GENERAL NOTES:

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B. THE CONTRACTOR SHALL COORDINATE WITH THE POLYMER STORAGE TOTE SUPPLIER TO DETERMINE THE INSTALLATION AND MOUNTING TYPE FOR THE RADAR LEVEL SENSOR.

C. LOCATE INSIDE THE CONTAINMENT AREA

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

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SURVEYED BY: KUO & ASSOC, FB NO. P-8232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED PROFESSIONAL ENGINEER
07.01.2025

CITY OF HOUSTON

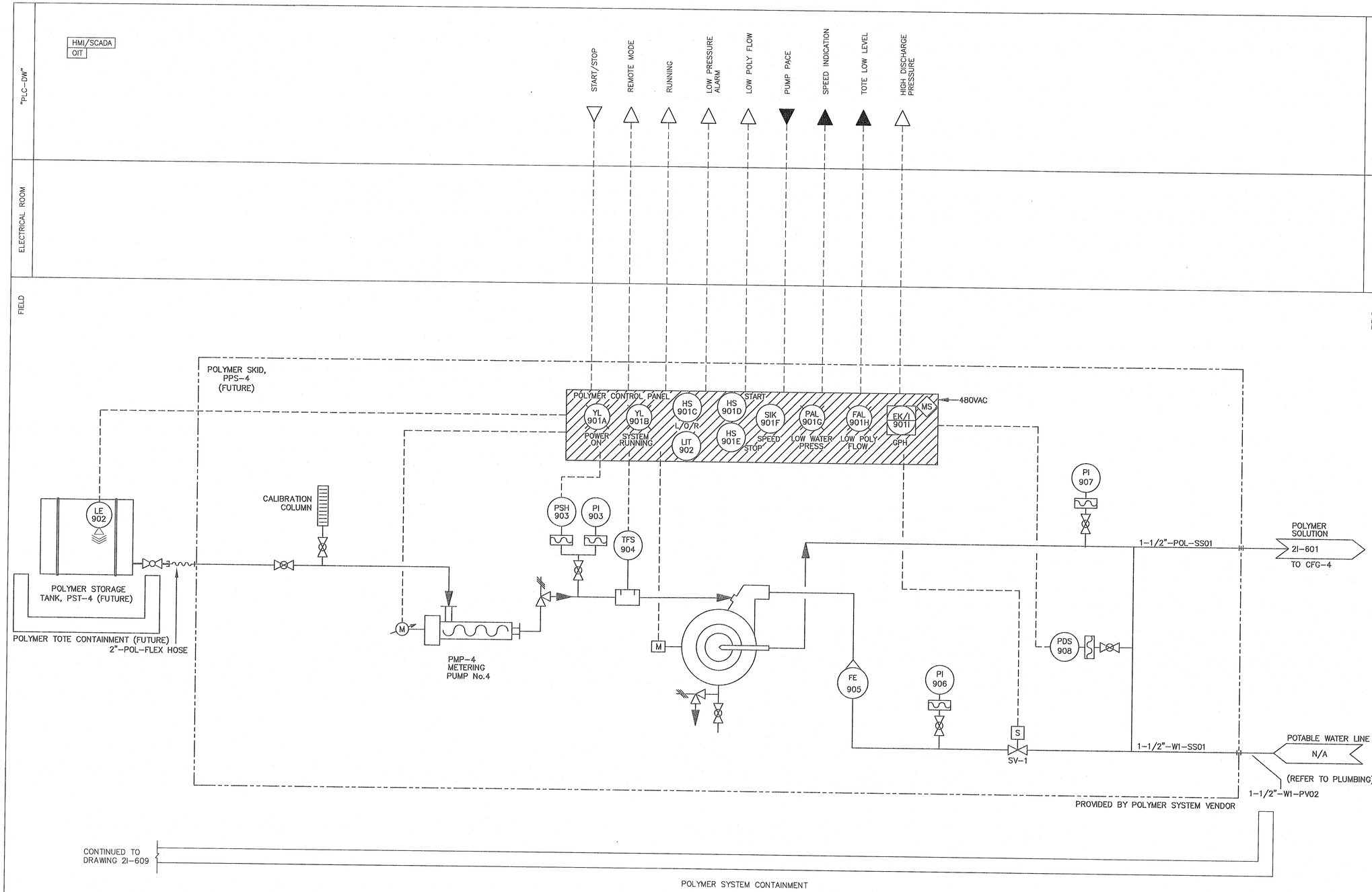
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING POLYMER SYSTEM NO. 3 P&ID 2I-609

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 139 OF 255	

ACCEPTED AS NOTED
PUBLIC WORKS AND ENGINEERING
80341
CITY ENGINEER
HOUSTON, TEXAS



POLYMER SYSTEM NO. 4 P&ID (FUTURE)

NTS

GENERAL NOTES:

A. PIPING AND INSTRUMENTATION SHOWN MAY NOT BE COMPLETE. THE CONTROL SYSTEM COULD VARY BASED ON POLYMER SYSTEM MANUFACTURER. CONTRACTOR SHALL PROVIDE UPDATED P&ID BASED ON THE POLYMER SYSTEM FURNISHED. REFER TO SPECIFICATIONS FOR MINIMUM CONTROL SYSTEM REQUIREMENT.

B. THE CONTRACTOR SHALL COORDINATE WITH THE POLYMER STORAGE TOTE SUPPLIER TO DETERMINE THE INSTALLATION AND MOUNTING TYPE FOR THE RADAR LEVEL SENSOR.

C. LOCATE INSIDE THE CONTAINMENT AREA

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
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TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
05.01.2025

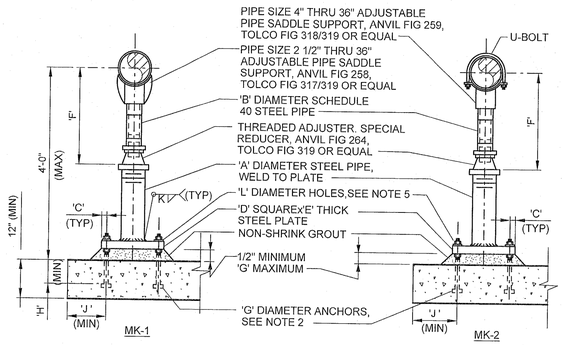
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING POLYMER SYSTEM NO. 4 P&ID (FUTURE) 2I-610

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 140 OF 255	

PUBLIC WORKS AND ENGINEERING
REGISTERED ARCHITECT
80341
CITY OF HOUSTON, TEXAS



DIMENSIONS IN INCHES													Sds<0.5	
NOMINAL PIPE DIAMETER	'A' (SCH 40 UNO)	'B'	'C'	'D'	'E'	'F' (APPROX) (MINIMUM)	'F' (APPROX) (MAXIMUM)	'G'	'H'	'J'	'K'	'L'	LOAD MAX (LBS)	'M'
2 1/2	* 2 / 2 1/2	1 1/2	1	8	7/16	7	11 1/2	1/2	4	6	3/8	13/16	1400	500
3	* 2 / 2 1/2	1 1/2	1	8	7/16	7 5/16	11 13/16	1/2	4	6	3/8	13/16	1400	500
3 1/2	* 2 / 2 1/2	1 1/2	1	8	7/16	7 9/16	12 1/16	1/2	4	6	3/8	13/16	1400	500
4	3	* 2 1/2 / 3	1 1/4	10	5/8	10 1/4	14 3/4	5/8	5	8	7/16	1 1/16	2650	1100
6	3	* 2 1/2 / 3	1 1/4	10	5/8	11 9/16	16 1/16	5/8	5	8	7/16	1 1/16	2650	1100
8	3	* 2 1/2 / 3	1 1/4	10	5/8	13 9/16	18 1/16	5/8	5	8	7/16	1 1/16	2650	1100
10	3	* 2 1/2 / 3	1 1/4	10	5/8	14 5/8	19 1/8	5/8	5	8	7/16	1 1/16	2650	1100
12	3	* 2 1/2 / 3	1 1/4	10	5/8	15 5/8	20 1/8	5/8	5	8	7/16	1 1/16	2650	1100
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16	4	3	1 3/8	12	3/4	19 7/8	24 3/8	3/4	7	10.5	1/2	1 5/16	4200	2200
18	6 (SCH 80)	* 4 / 3 1/2	1 5/8	14	1 1/4	22 1/4	26 3/4	7/8	8	12	11/16	1 9/16	6050	2775
20	6 (SCH 80)	* 4 / 3 1/2	1 5/8	14	1 1/4	23 1/4	27 3/4	7/8	8	12	11/16	1 9/16	6050	2775
24	6 (SCH 80)	4	1 5/8	14	1 1/4	26 1/2	31	7/8	8	12	11/16	1 9/16	6050	2775
30	6 (SCH 80)	4	1 7/8	16	1 1/4	29 5/8	34 1/8	1	8	12	11/16	1 13/16	8150	3100
32	6 (SCH 80)	4	1 7/8	16	1 1/4	30 5/8	35 1/8	1	8	12	11/16	1 13/16	8150	3100
36	6 (SCH 80)	4	1 7/8	16	1 1/4	32 5/8	37 1/8	1	8	12	11/16	1 13/16	8150	3100

* SEE MANUFACTURER

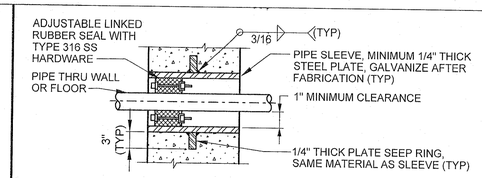
NOTES:

1. HOT DIP GALVANIZE PARTS AFTER FABRICATION, UNO. PROVIDE 316 SS PARTS AND BOLTS IN SUBMERGED OR CORROSIVE CONDITIONS.
2. PROVIDE CAST-IN-PLACE HEAVY HEX HEAD ASTM F1554 GR 36 ANCHORS, UNO.
3. REFER TO TABLE FOR MAXIMUM ALLOWABLE SERVICE LOAD ON EACH SUPPORT.
4. USE MK-2, UNLESS OTHERWISE INDICATED.
5. FOR 3/4" ANCHORS AND LARGER, PROVIDE SQUARE WASHERS PER AISC MANUAL OF STEEL CONSTRUCTION TABLE 14-2 WITH STD HOLES WELDED TO PLATE WITH 3/16" FILLETS. USE 1 3/4" SQx3/16" THICK WASHERS FOR 5/8" ANCHORS.
6. IF ADHESIVE ANCHORS ARE USED (SIMPSON SET XP, OR EQUAL), USE REDUCED MAX LOADS IN COLUMN 'M'. OVERSIZED HOLES AND WASHERS ARE NOT REQUIRED.

SEISMIC AND WIND COMPLIANT DESIGN CRITERIA

1. THE SUPPORTS ARE ADEQUATE FOR SEISMIC RESPONSE COEFFICIENT (SDS) GIVEN IN THE TABLE. SEISMIC FORCE ASSUMPTIONS (ASCE 7-10, EQN 13.3-1): ap=2.5, Rp=6,
2. THE SUPPORTS, DESIGNED FOR SEISMIC LOADS, ARE ALSO ADEQUATE FOR A DESIGN WIND SPEED (Vult) OF UP TO 165 MPH WITH A MAXIMUM HEIGHT ABOVE GRADE OF 40'. WIND FORCE ASSUMPTIONS: EXPOSURE CATEGORY C, Kzt=1.0, Kz=1.04, Kd=0.95, G=0.85, Cf=1.2 (DESIGNED PER ASCE 7-10 SECTION 29.5 - OTHER STRUCTURES).

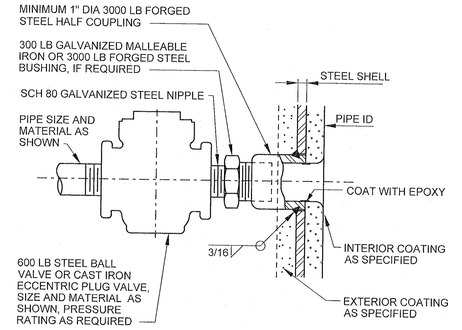
D-108 ADJ PIPE SUPPORT W OR W/O 'U' BOLT
(FOR PIPE 36" DIAMETER AND SMALLER)
REV 010119



NOTES:

1. THESE SLEEVED PIPE OPENING DETAILS SHALL BE USED IN DRY AREAS ONLY AND SHALL NOT BE USED FOR AREAS WITH WATER ON ONE OR BOTH SIDES.
2. PIPE SLEEVES ARE NOT REQUIRED FOR CORE-DRILLED PENETRATIONS THROUGH EXISTING WALLS OR FLOORS.

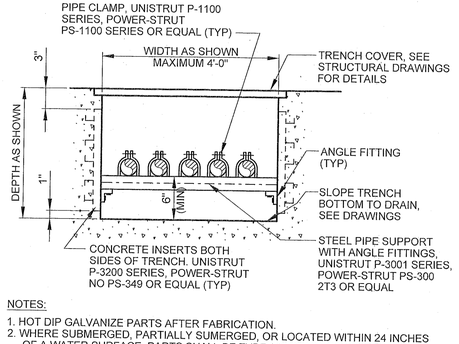
D-111 SLEEVED PIPE OPENING
REV 010119



NOTE:

1. PROVIDE DIELCTRIC COUPLING FOR DISSIMILAR METAL CONNECTIONS.

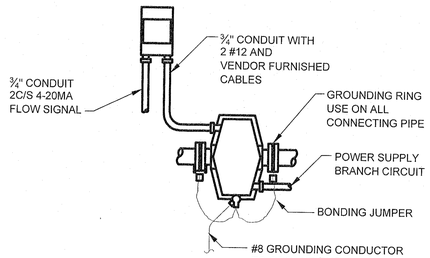
D-120 PIPE CONNECTION
(FOR PIPE AND VALVE 2 1/2" DIAMETER AND SMALLER)
REV 010119



NOTES:

1. HOT DIP GALVANIZE PARTS AFTER FABRICATION.
2. WHERE SUBMERGED, PARTIALLY SUMERGED, OR LOCATED WITHIN 24 INCHES OF A WATER SURFACE, PARTS SHALL BE TYPE 316 STAINLESS STEEL.
3. WHERE LOCATED IN CHEMICAL OR CORROSIVE AREAS, PARTS SHALL BE FRP OR TYPE 316 STAINLESS STEEL.
4. WHERE PIPE TRENCH PROVIDES SECONDARY CONTAINMENT FOR PIPING, TRENCH CONCRETE SHALL BE COATED PER THE 'PROTECTIVE COATING' SPECIFICATION.

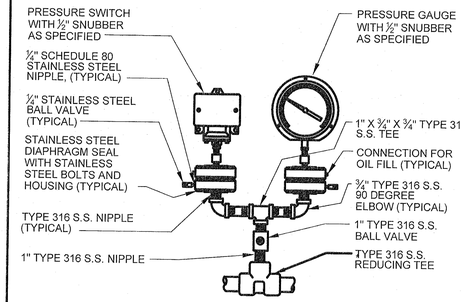
D-125 PIPE TRENCH
(FOR PIPE 6" DIAMETER AND SMALLER)
REV 010119



NOTES:

1. ALL VENDOR FURNISHED CABLES SHALL BE CUT TO LENGTH AND TERMINATED PER MANUFACTURER'S RECOMMENDATIONS
2. SEE SPECIFICATIONS FOR LOCATIONS REQUIRING GROUNDING RINGS.

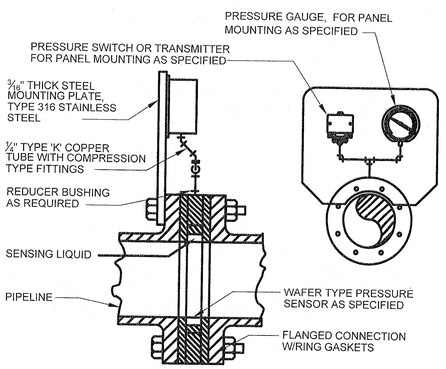
D-904 MAGNETIC FLOWMETER



NOTE:

DIAPHRAGM HOUSING AND SEAL SHALL BE CONSTRUCTED OF HASTALLOY C FOR SODIUM HYPOCHLORITE SERVICE.

D-906 PRESSURE GAUGE OR SWITCH
(WITH DIAPHRAGM SEAL ON STAINLESS STEEL PIPE)



D-907 PRESSURE GAUGE, SWITCH, OR TRANSMITTER
(WITH PRESSURE SENSOR)

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING MECHANICAL STANDARD DETAILS - I 2D-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
-	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 141 OF 255	

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1. ALL EQUIPMENT DIMENSIONS AND OVERALL LOCATIONS WITHIN BUILDING ARE SUBJECT TO MANUFACTURERS APPROVED SUBMITTALS AND COORDINATION BETWEEN THE CONTRACTOR AND SUPPLIERS ANY DEVIATION FROM THE SHOWN LAYOUT WILL REQUIRE A CHANGE AND UPDATE TO THE DESIGN
2. ANY EXISTING FEED LINES OR DRAIN LINES ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS AND CONDITIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS
3. ALL PIPING WITHIN THE DEWATERING BUILDING IS ILLUSTRATIVE ONLY. CONTRACTOR SHALL FURNISH AND INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S DESIGN SUBMITTED DURING CONSTRUCTION
4. ALL PIPE SUPPORTS ARE NOT SHOWN. CONTRACTOR SHALL SUPPORT PIPING AND VALVES IN ACCORDANCE WITH SPECIFICATION SECTION 15006D AND THE MECHANICAL STANDARD DETAILS
5. PIPING, VALVES, AND EQUIPMENT SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09800D
6. REFERENCE PIPE SCHEDULE, SHEET G-005, FOR PIPING MATERIALS AND TEST PRESSURES

SHEET KEYNOTES

A. REFER TO CIVIL DRAWINGS FOR CONTINUATION OF PIPING IN THE YARD.

B. PROVIDE BRIDGE CRANE STOPS 8 FEET FROM THE NORTH AND 8 FEET FROM THE SOUTH INTERIOR WALLS ON THE MONORAIL TO PROTECT HVAC EQUIPMENT.

C. DRAINS, POTABLE WATER LINES, EYEWASH, AND HOSE BIBS ARE SHOWN ON THE PLUMBING DRAWINGS.

D. CONVEYOR SUPPORTS ARE NOT FULLY SHOWN AND SHALL BE DESIGNED BY THE CONVEYOR MANUFACTURER.

E. CONTRACTOR TO COORDINATE THE CONVEYOR SUPPORTS AND STRUCTURAL LOADS FROM ALL EQUIPMNET WITH THE PEMB MANUFACTURER TO INCORPORATE INTO THE DESIGN OF THE PEMB.

F. DURING THE USE OF HORIZONTAL CONVEYOR HCV-2 FOR TRUCK LOADING, THE TRUCK PARKED AT LOADING BAY 2 IS REQUIRED TO BE MOVED FOR EVEN DISTRIBUTION OF SLUDGE CAKE. DURING RAIN EVENTS, IT IS RECOMMENDED TO MOVE TRUCK UNDER HCV-1 AND CONTINUE TO USE THE COVERED AREA.

G. AT TIME OF INSTALLATION OF FUTURE (NO. 4) CENTRIFUGE AND CONVEYOR, HORIZONTAL CONVEYOR HCV-1 WILL NEED TO BE REPLACED WITH A LONGER UNIT TO ACCOMMODATE THE NO. 4 CENTRIFUGE.

H. CENTRIFUGE ACCESS PLATFORM IS FURNISHED BY CENTRIFUGE VENDOR.

I. PUMP EQUIPPED WITH AN MECHANICAL OVERPRESSURE PROTECTION SUCH AS INTEGRATED OVERPRESSURE DEVICE OR A RECIRCULATION LOOP WITH A PRESSURE RELIEF VALVE.

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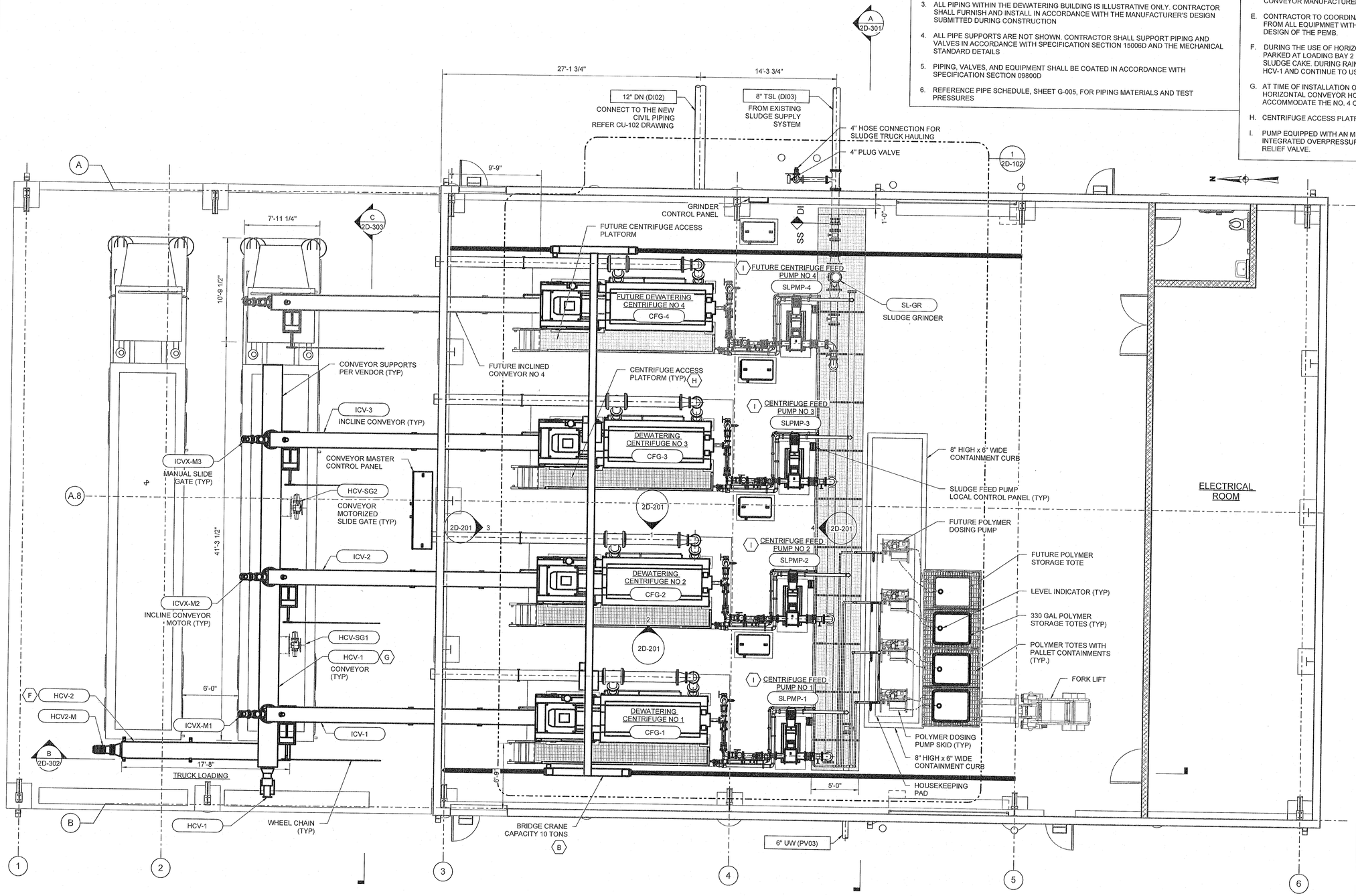

CENTRIFUGE FACILITY OVERALL PLAN

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

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PAUL R. GALLEGO
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LICENSED PROFESSIONAL ENGINEER
03/07/2025

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DEWATERING CENTRIFUGE FACILITY OVERALL PLAN 2D-101

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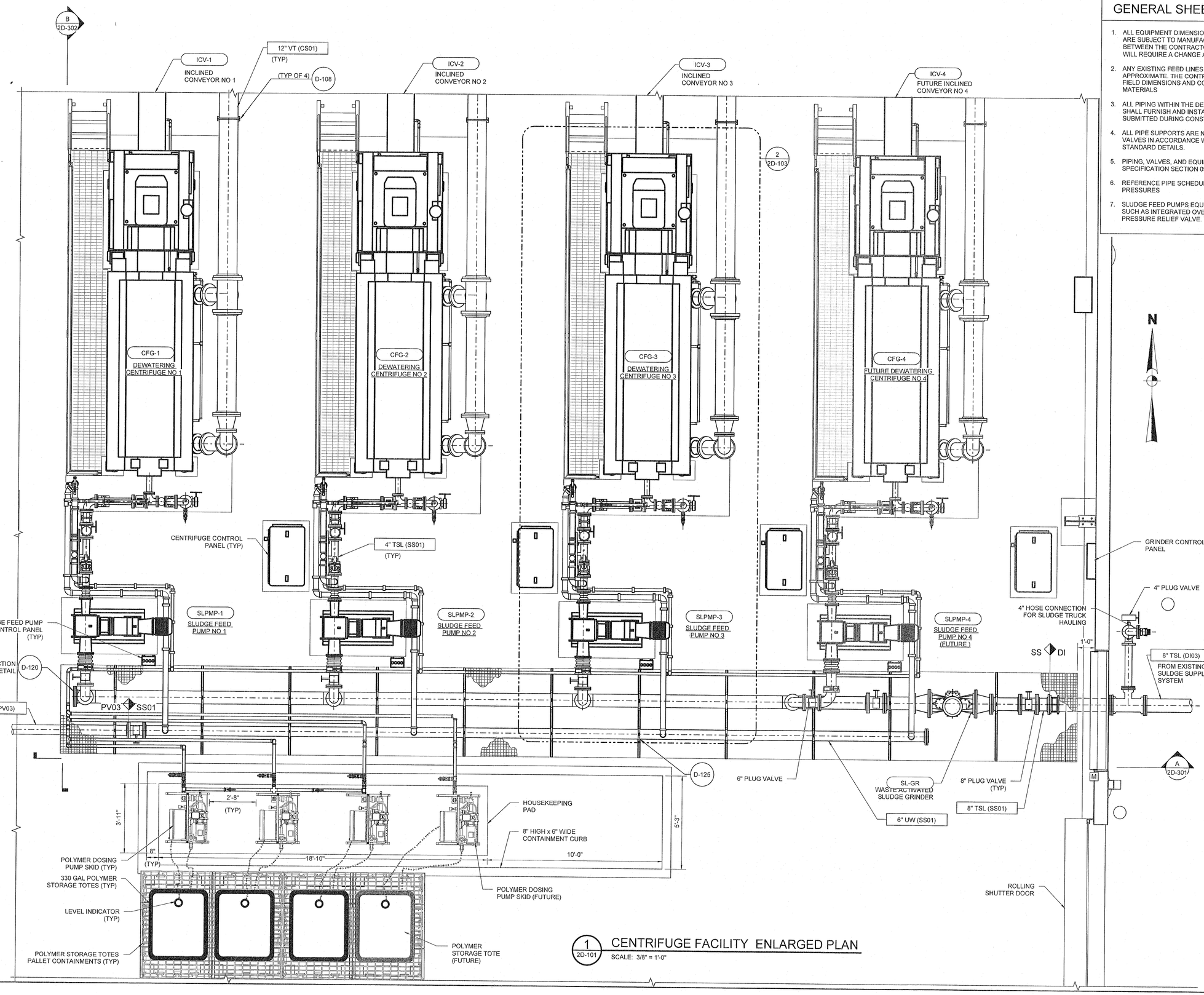

1 2D-101 CENTRIFUGE FACILITY ENLARGED PLAN
SCALE: 3/8" = 1'-0"

GENERAL SHEET NOTES

1. ALL EQUIPMENT DIMENSIONS AND OVERALL LOCATIONS WITHIN BUILDING ARE SUBJECT TO MANUFACTURERS APPROVED SUBMITTALS AND COORDINATION BETWEEN THE CONTRACTOR AND SUPPLIERS ANY DEVIATION FROM THE SHOWN LAYOUT WILL REQUIRE A CHANGE AND UPDATE TO THE DESIGN
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3. ALL PIPING WITHIN THE DEWATERING BUILDING IS ILLUSTRATIVE ONLY. CONTRACTOR SHALL FURNISH AND INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S DESIGN SUBMITTED DURING CONSTRUCTION
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5. PIPING, VALVES, AND EQUIPMENT SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09800D
6. REFERENCE PIPE SCHEDULE, SHEET G-005, FOR PIPING MATERIALS AND TEST PRESSURES
7. SLUDGE FEED PUMPS EQUIPPED WITH AN MECHANICAL OVERPRESSURE PROTECTION SUCH AS INTEGRATED OVERPRESSURE DEVICE OR A RECIRCULATION LOOP WITH A PRESSURE RELIEF VALVE.

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CENTRIFUGE FACILITY ENLARGED PLAN 2D-102

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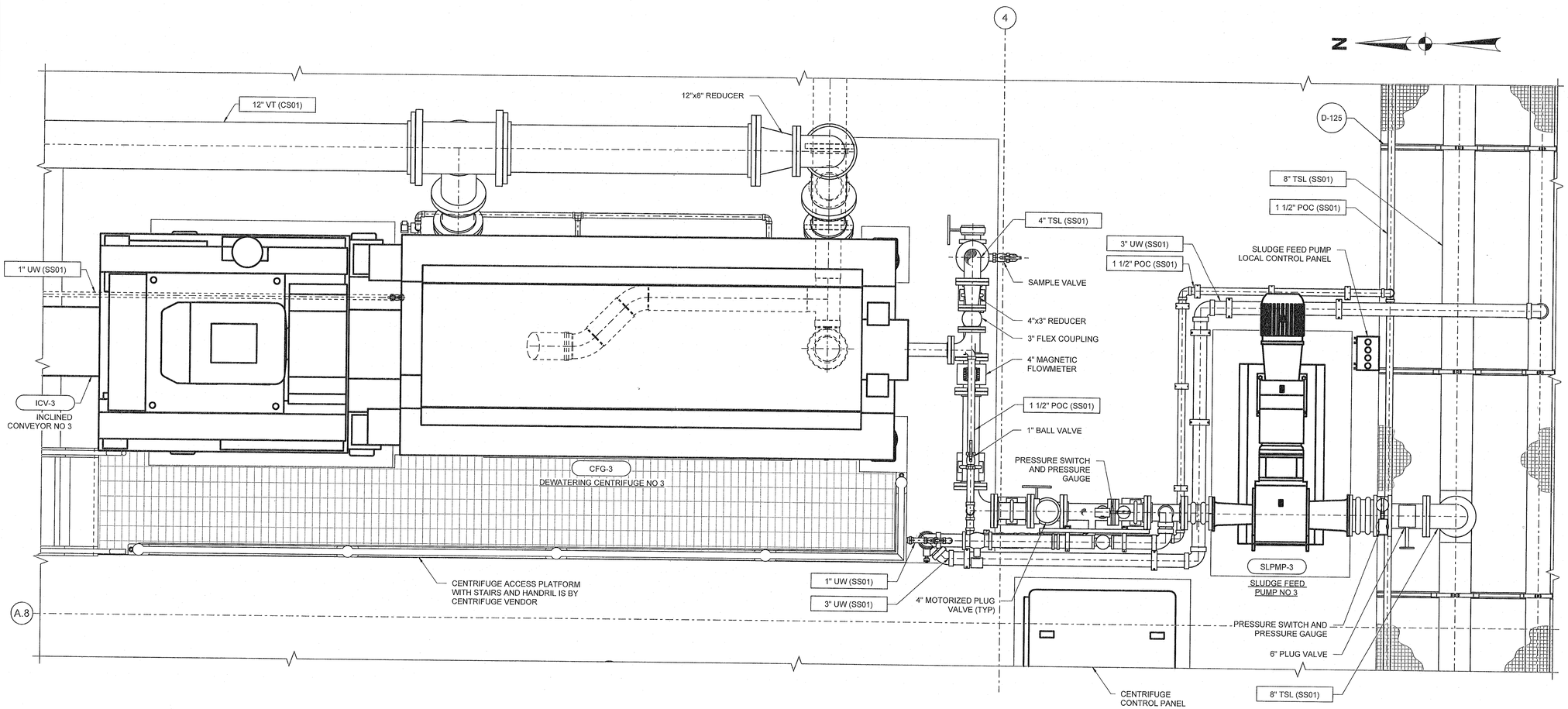

2 / 2D-102 CENTRIFUGE ENLARGED PLAN
SCALE: 3/4" = 1'-0"

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CENTRIFUGE ENLARGED PLAN 2D-103

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DRAWING SCALE	
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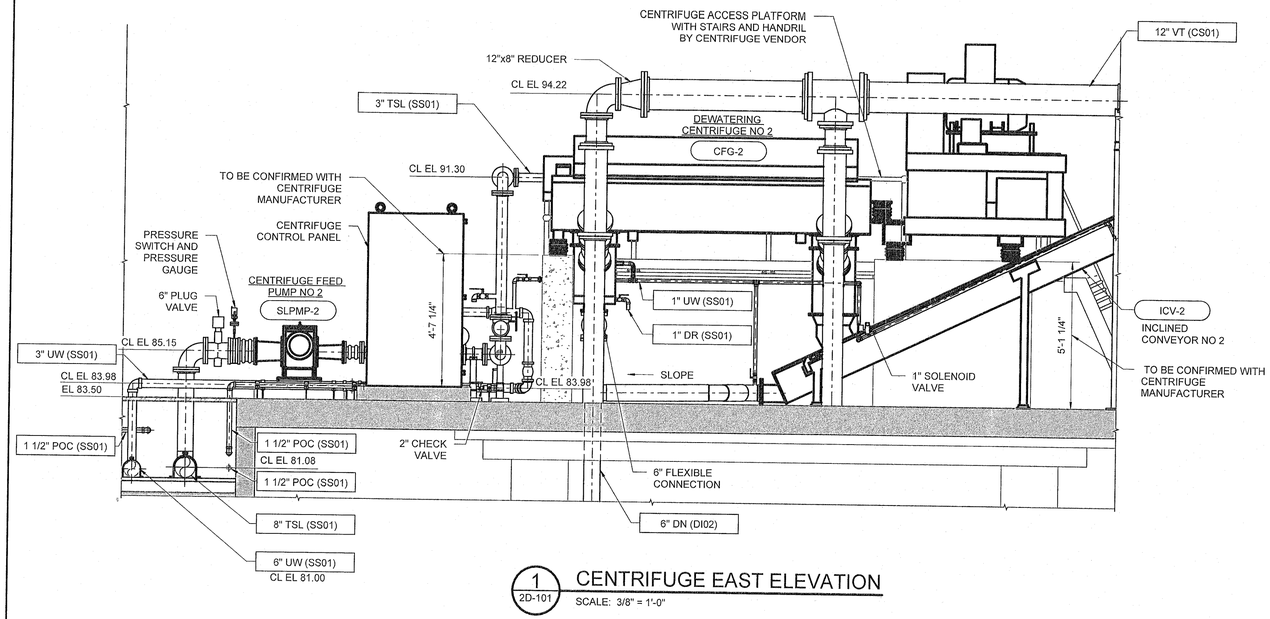
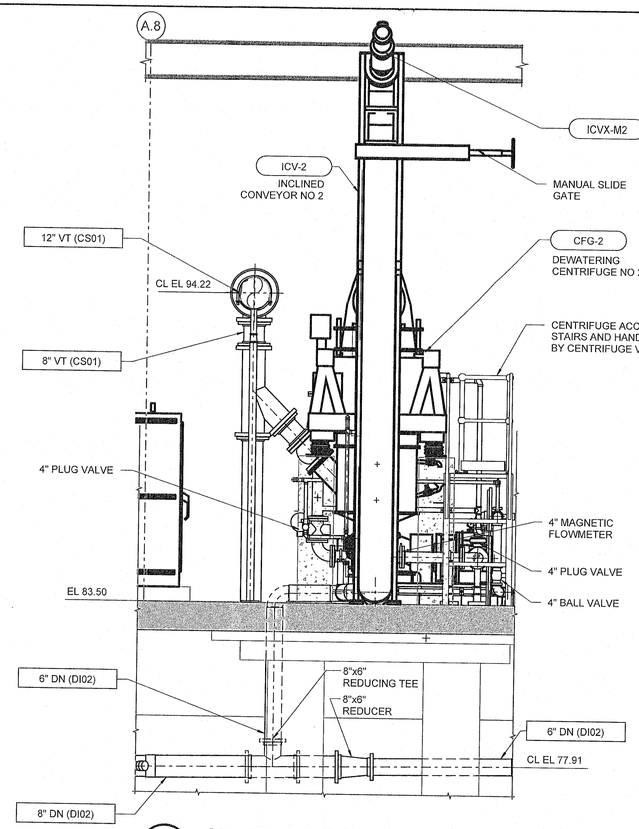


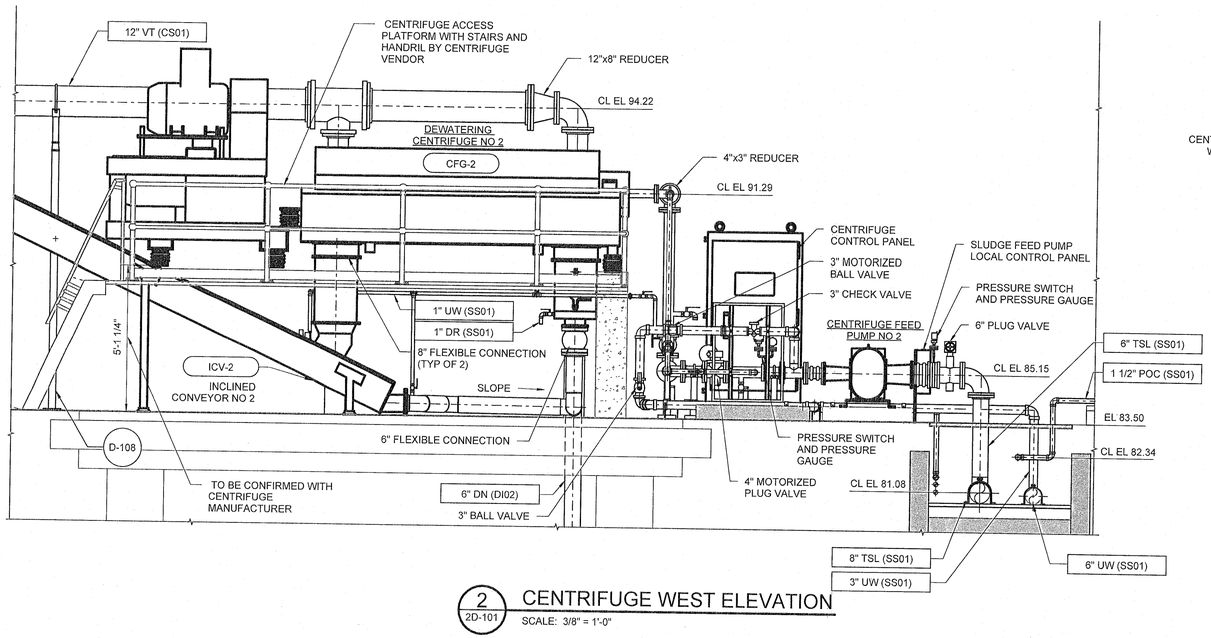
1 2D-101 **CENTRIFUGE EAST ELEVATION**

SCALE: 3/8" = 1'-0"



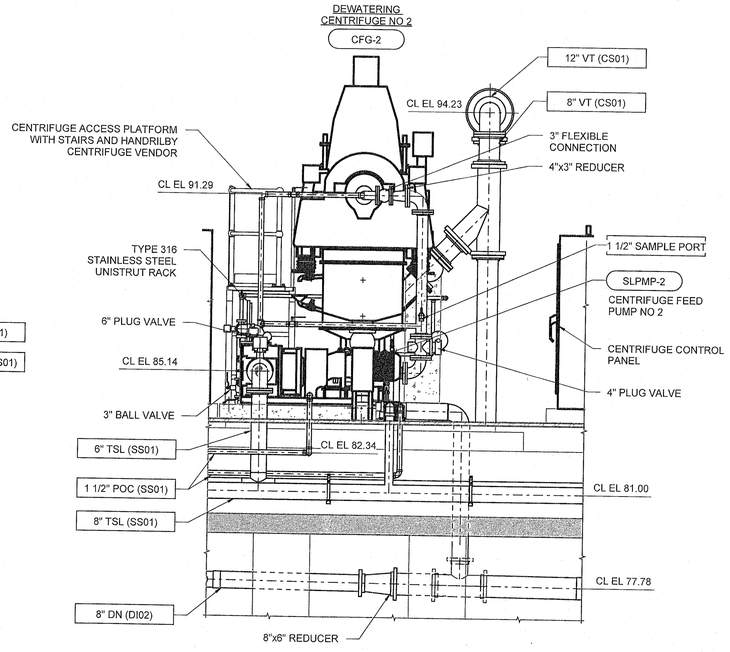
3 2D-101 **CENTRIFUGE SOUTH ELEVATION**

SCALE: 3/8" = 1'-0"



2 2D-101 **CENTRIFUGE WEST ELEVATION**

SCALE: 3/8" = 1'-0"



4 2D-101 **CENTRIFUGE NORTH ELEVATION**

SCALE: 3/8" = 1'-0"

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DEWATERING CENTRIFUGE ELEVATIONS 2D-201

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GENERAL SHEET NOTES

5. PIPING, VALVES, AND EQUIPMENT SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09800D
6. REFERENCE PIPE SCHEDULE, SHEET G-005, FOR PIPING MATERIALS AND TEST PRESSURES
7. SLUDGE FEED PUMPS EQUIPPED WITH AN MECHANICAL OVERPRESSURE PROTECTION SUCH AS INTEGRATED OVERPRESSURE DEVICE OR A RECIRCULATION LOOP WITH A PRESSURE RELIEF VALVE.

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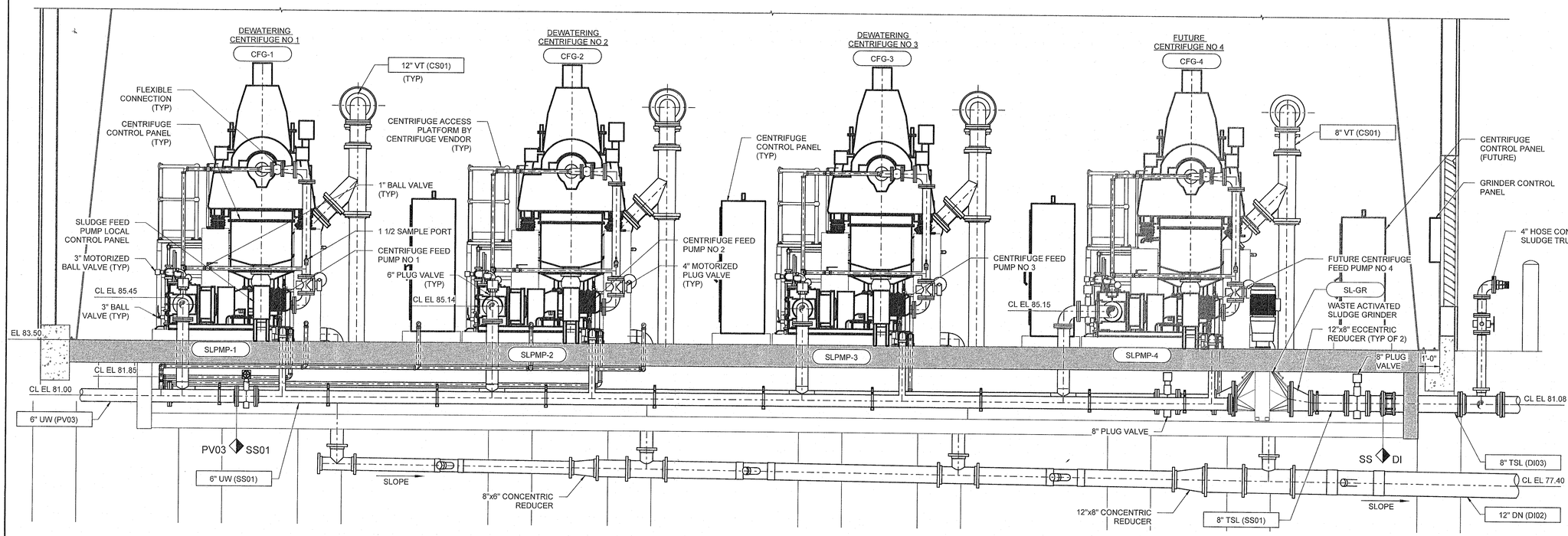
NO.	DATE	REVISION	APP



A 2D-101 SECTION
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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING SECTION-I

2D-301

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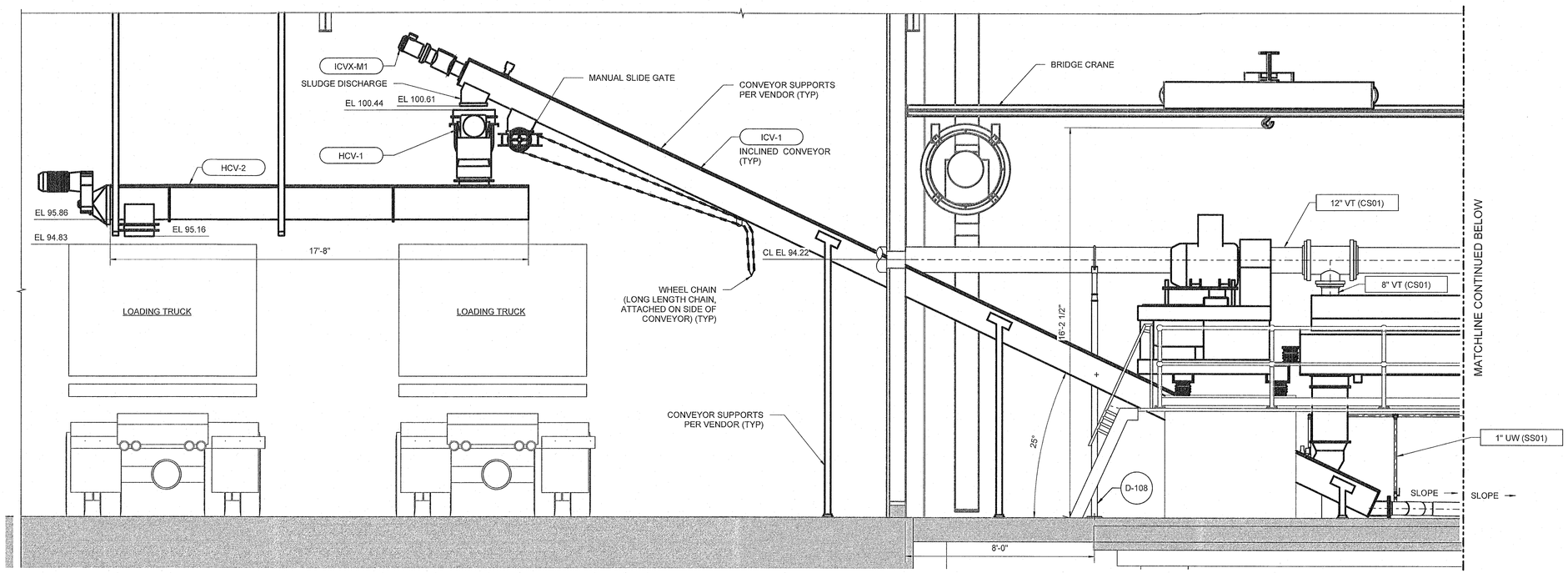

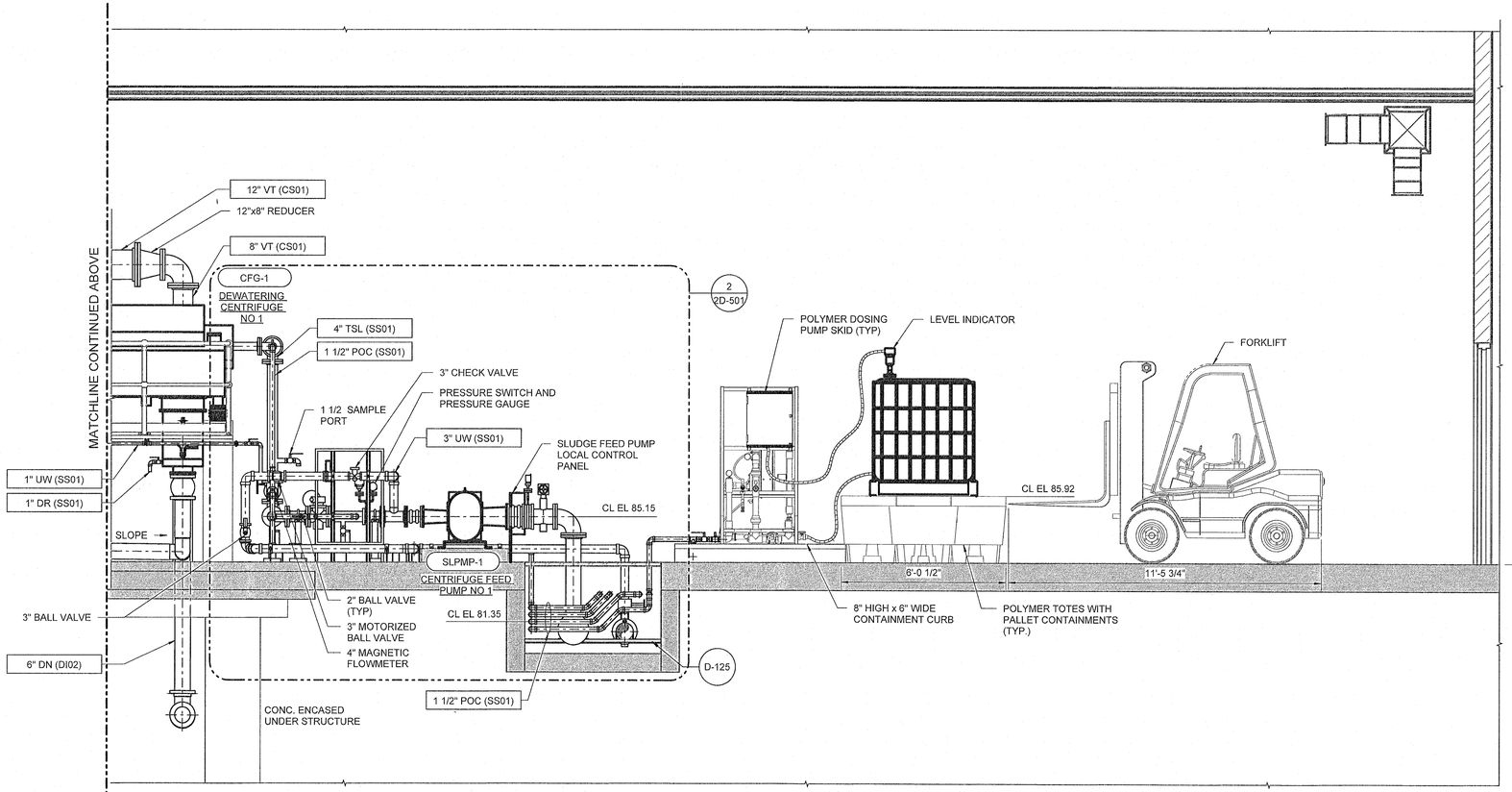

B 2D-101 SECTION

SCALE: 3/8" = 1'-0"

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Tel: 713.548.5700
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STATE OF TEXAS — PAUL R. GALLEGO — 143659 — LICENSED PROFESSIONAL ENGINEER — 03/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING SECTION-II

2D-302

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
3/8" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 147 OF 255	

ACCEPTED AS NOTED — 80341

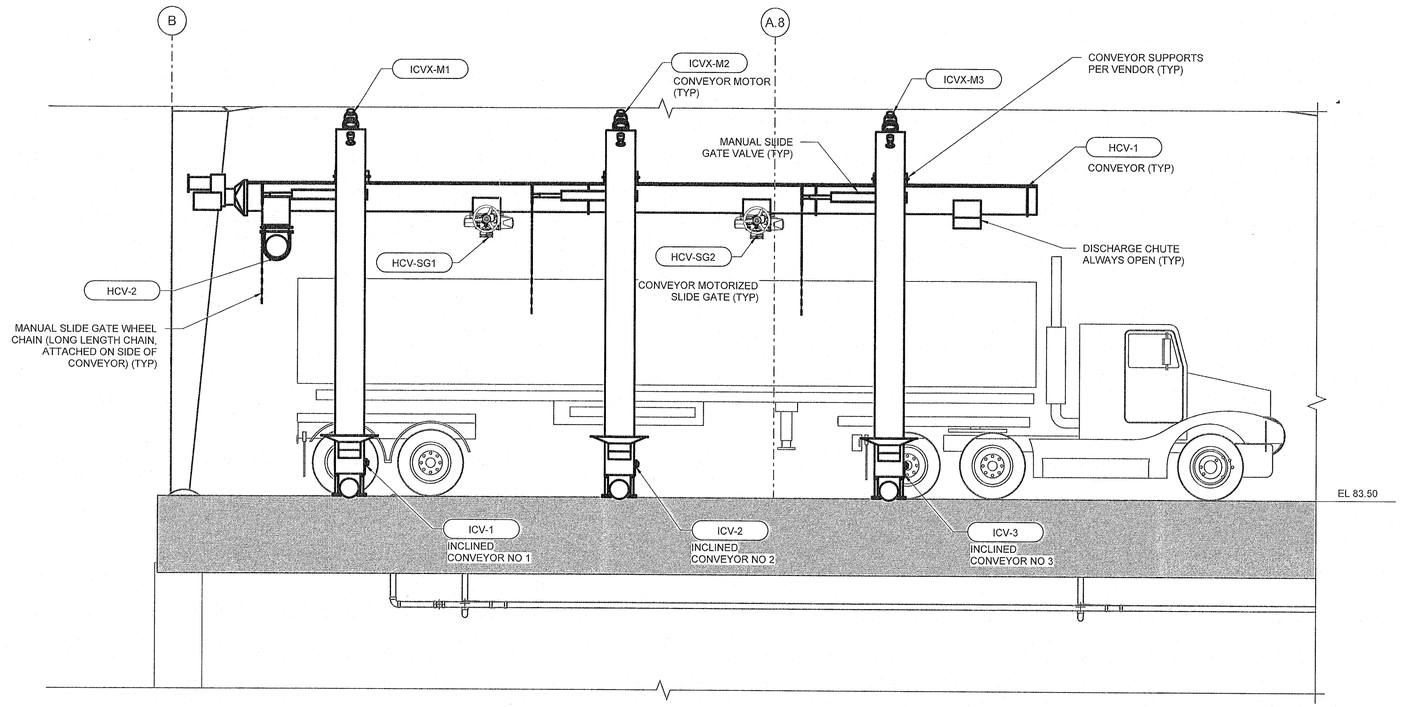
GENERAL SHEET NOTES

5. PIPING, VALVES, AND EQUIPMENT SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09800D
6. REFERENCE PIPE SCHEDULE, SHEET G-005, FOR PIPING MATERIALS AND TEST PRESSURES.
7. SLUDGE FEED PUMPS EQUIPPED WITH AN MECHANICAL OVERPRESSURE PROTECTION SUCH AS INTEGRATED OVERPRESSURE DEVICE OR A RECIRCULATION LOOP WITH A PRESSURE RELIEF VALVE.

GENERAL SHEET NOTES

1. ALL EQUIPMENT DIMENSIONS AND OVERALL LOCATIONS WITHIN BUILDING ARE SUBJECT TO MANUFACTURERS APPROVED SUBMITTALS AND COORDINATION BETWEEN THE CONTRACTOR AND SUPPLIERS ANY DEVIATION FROM THE SHOWN LAYOUT WILL REQUIRE A CHANGE AND UPDATE TO THE DESIGN
2. ANY EXISTING FEED LINES OR DRAIN LINES ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL CONTROLLING FIELD DIMENSIONS AND CONDITIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS
3. ALL PIPING WITHIN THE DEWATERING BUILDING IS ILLUSTRATIVE ONLY. CONTRACTOR SHALL FURNISH AND INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S DESIGN SUBMITTED DURING CONSTRUCTION
4. ALL PIPE SUPPORTS ARE NOT SHOWN. CONTRACTOR SHALL SUPPORT PIPING AND VALVES IN ACCORDANCE WITH SPECIFICATION SECTION 15006D AND THE MECHANICAL STANDARD DETAILS

NO.	DATE	REVISION	APP



C 2D-101 SECTION

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

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PAUL R. GALLEGO
143659
LICENSED PROFESSIONAL ENGINEER
03/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING SECTIONS-III

2D-303

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
1/4" = 1'-0"
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GENERAL SHEET NOTES

5. PIPING, VALVES, AND EQUIPMENT SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09800D
6. REFERENCE PIPE SCHEDULE, SHEET G-005, FOR PIPING MATERIALS AND TEST PRESSURES
7. SLUDGE FEED PUMPS EQUIPPED WITH AN MECHANICAL OVERPRESSURE PROTECTION SUCH AS INTEGRATED OVERPRESSURE DEVICE OR A RECIRCULATION LOOP WITH A PRESSURE RELIEF VALVE.

GENERAL SHEET NOTES

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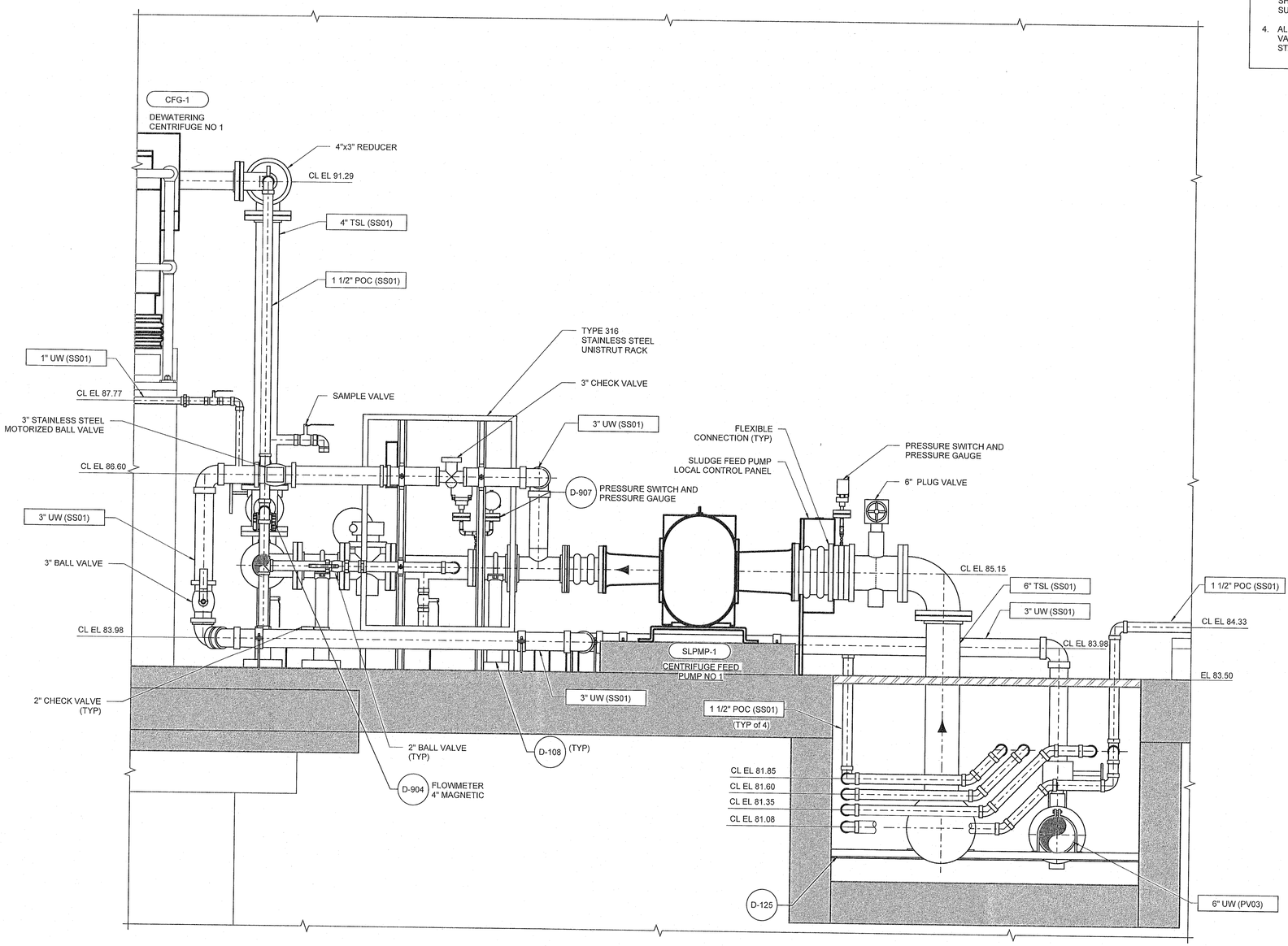
3. ALL PIPING WITHIN THE DEWATERING BUILDING IS ILLUSTRATIVE ONLY. CONTRACTOR SHALL FURNISH AND INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S DESIGN SUBMITTED DURING CONSTRUCTION
4. ALL PIPE SUPPORTS ARE NOT SHOWN. CONTRACTOR SHALL SUPPORT PIPING AND VALVES IN ACCORDANCE WITH SPECIFICATION SECTION 15006D AND THE MECHANICAL STANDARD DETAILS

NO.	DATE	REVISION	APP



2 / 2D-302 DETAIL
SCALE: 1" = 1'-0"

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03/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING DETAIL

2D-501

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DRAWING SCALE	
1" = 1'-0"	
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GENERAL SHEET NOTES

5. PIPING, VALVES, AND EQUIPMENT SHALL BE COATED IN ACCORDANCE WITH SPECIFICATION SECTION 09800D
6. REFERENCE PIPE SCHEDULE, SHEET G-005, FOR PIPING MATERIALS AND TEST PRESSURES.
7. SLUDGE FEED PUMPS EQUIPPED WITH AN MECHANICAL OVERPRESSURE PROTECTION SUCH AS INTEGRATED OVERPRESSURE DEVICE OR A RECIRCULATION LOOP WITH A PRESSURE RELIEF VALVE.

GENERAL SHEET NOTES

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3. ALL PIPING WITHIN THE DEWATERING BUILDING IS ILLUSTRATIVE ONLY. CONTRACTOR SHALL FURNISH AND INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S DESIGN SUBMITTED DURING CONSTRUCTION
4. ALL PIPE SUPPORTS ARE NOT SHOWN. CONTRACTOR SHALL SUPPORT PIPING AND VALVES IN ACCORDANCE WITH SPECIFICATION SECTION 15006D AND THE MECHANICAL STANDARD DETAILS

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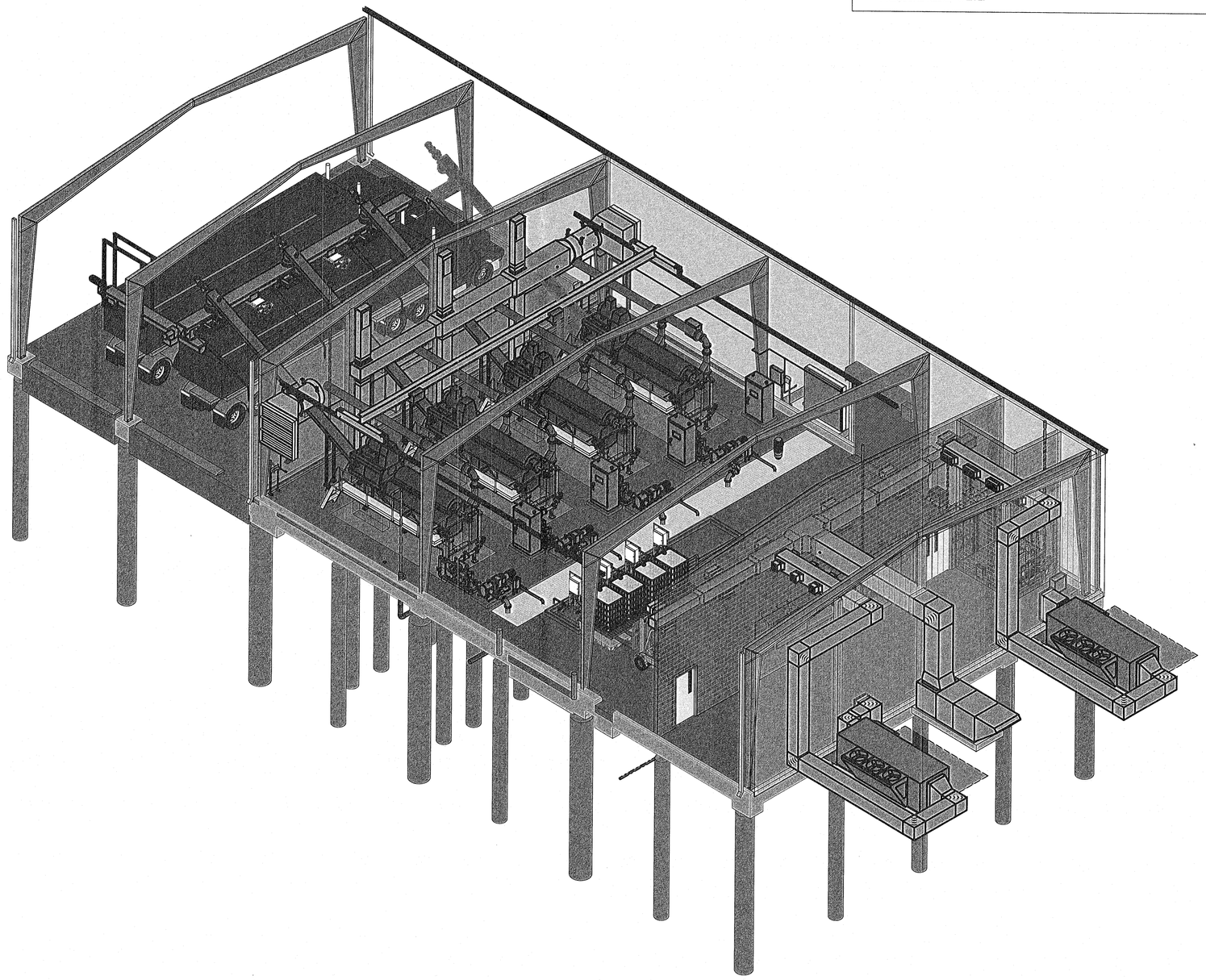

DEWATERING BULIDING ISOMETRIC
NO SCALE

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03/07/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING BUILDING ISOMETRIC

2D-901

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DRAWING SCALE	
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PIPING SYMBOLS

	PIPE UP
	PIPE DOWN
	PIPE CAP
	90° ELBOW
	RISE OR DROP IN ELEVATION
	TEE OR BRANCH CONNECTION
	TEE DOWN
	TEE UP
CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
PCHS	PROCESS CHILLED WATER SUPPLY
PCHR	PROCESS CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
CD	CONDENSATE DRAIN LINE
RL	REFRIGERANT LINE
15#S	15 PSIG STEAM
50#S	50 PSIG STEAM
80#S	80 PSIG STEAM
LPC	LOW PRESSURE CONDENSATE
PCR	PUMPED CONDENSATE RETURN
	BALL VALVE
	BUTTERFLY VALVE
	GATE VALVE
	GLOBE VALVE
M	2 WAY CONTROL VALVE
M	3 WAY CONTROL VALVE
S	2 WAY SOLENOID VALVE
S	3 WAY SOLENOID VALVE
	BALANCING VALVE
	PRESSURE REDUCING VALVE
	CHECK VALVE
	SAFETY VALVE
	ANGLE VALVE
	STRAINER
	STRAINER W/ BLOWDOWN
	PIPE REDUCER
	PETE'S PLUG
	FLEXIBLE CONNECTION
	UNION
	COMPANION FLANGE
A	AIR VENT - AUTOMATIC
	AIR VENT - MANUAL
	THERMOMETER
	PRESSURE GAUGE W/ GAUGE COCK
FM	FLOW METER
	PIPE ANCHOR
	PIPE EXPANSION JOINT
	PIPE GUIDE
	STEAM TRAP

NOTE: NOT ALL SYMBOLS MAY BE USED IN THIS PROJECT.

MECHANICAL SYMBOLS

	CEILING DIFFUSERS WITH ROUND RIGID DUCT CONNECTION
	CEILING DIFFUSERS WITH ROUND FLEX DUCT CONNECTION
	CEILING SUPPLY AIR DEVICE (24x24 AND 12x12)
	CEILING RETURN AIR DEVICE (24x24 AND 12x12)
	CEILING EXHAUST AIR DEVICE (24x24 AND 12x12)
	1-WAY THROW CEILING AIR DEVICE
	2-WAY THROW CEILING AIR DEVICE
	3-WAY THROW CEILING AIR DEVICE
	SIDEWALL EXHAUST OR RETURN AIR GRILLE OR REGISTER
	SIDEWALL SUPPLY REGISTER
MVD	MANUAL VOLUME DAMPER
M	MOTORIZED DAMPER
FD	FIRE DAMPER
FSD	COMBINATION FIRE/SMOKE DAMPER
SD	SMOKE DAMPER
S	DUCT MOUNTED SMOKE DETECTOR
	FLEXIBLE DUCT CONNECTION
12x12 8x8	DUCT TRANSITION
12x12 8"Ø	DUCT TRANSITION FROM RECTANGULAR TO ROUND
R	DUCT RISE IN DIRECTION OF AIRFLOW
D	DUCT DROP IN DIRECTION OF AIRFLOW
	VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EXCEPT TRANSFER AIR SOUND ELBOW)
	LONG RADIUS DUCT ELBOW
	AIR DUCT SPLITTER
	ACOUSTICAL FIBER FREE LINED DUCT
6"Ø	BRANCH CONNECTION TO MAIN WITH VOLUME DAMPER (ALL BRANCH DUCTWORK TO AIR DEVICE SHALL HAVE VOLUME DAMPERS UNLESS OTHERWISE NOTED)

	SUPPLY DUCT UP / DOWN
	RETURN DUCT UP / DOWN
	EXHAUST DUCT UP / DOWN
24x24 12"Ø 24x14Ø	INDICATES 24"x24" RECTANGULAR DUCT INDICATES 12" ROUND DUCT INDICATES 24"x24" FLAT OVAL
	ACCESS DOOR
T	THERMOSTAT OR TEMPERATURE SENSOR (RE: CONTROLS)
H	HUMIDISTAT OR HUMIDITY SENSOR (RE: CONTROLS)
M	MAGNAHELIC GAUGE
SPS	STATIC PRESSURE SENSOR
CO	CARBON DIOXIDE SENSOR
CO_2	CARBON DIOXIDE SENSOR
DPS	DIFFERENTIAL PRESSURE SENSOR
OS	OCCUPANCY SENSOR (REFER TO ELECTRICAL FOR MORE INFO)
	THERMOSTAT CONTROL WIRE
	EXISTING TO BE DEMOLISHED
	EXISTING TO REMAIN
	NEW CONSTRUCTION
	CONNECT AT THIS POINT
	REMOVE TO THIS POINT
A 500S B 500R B 500E	AIR DEVICE TAG DENOTING CFM QUANTITY AND SCHEDULES TYPE S = SUPPLY R = RETURN E - EXHAUST

TU-1-1 / 1000 — EQUIPMENT TAG / CFM

TERMINAL UNIT TAG
TU = SINGLE DUCT
FPTU = FAN POWERED
DDTU= DUAL DUCT
SAV = SUPPLY AIR VALVE
EAV = EXHAUST AIR VALVE

EQUIPMENT — EQUIPMENT CLEARANCE

SECTION CALLOUT SYMBOL
SECTION NUMBER — 1
SHEET NUMBER — M201

GENERAL CALLOUT SYMBOL
ENLARGED PLAN DETAIL NUMBER — 1
ENLARGED PLAN SHEET NUMBER — M201

NOTE: NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.

OUTDOOR AIR VENTILATION CALCULATIONS

OUTDOOR AIR REQUIREMENTS PER HOUSTON AMMENDMENTS 2015

AHU-1 OUTSIDE AIR CALCULATIONS

ROOM	AREA (SF)	PEOPLE	AREA OUTDOOR AIR RATE (CFM/SQFT)	PEOPLE OUTDOOR AIR RATE (CFM/PERSON)	OUTSIDE AIR CFM	EXHAUST CFM
OFFICE AREAS	3900	130	0.06	5	884	0
SAMPLE ROOM	420	4	0.06	5	45	830
CORRIDORS / VESTIBULE	1560	0	0.06	0	94	0
CONFERENCE ROOM	1020	45	0.06	5	286	0
BREAK ROOM	420	6	0.12	5	80	0
STORAGE	85	0	0.12	5	10	0
RESTROOMS / LOCKERS	1165	0	0.12	5	140	1400
				Total Outside Air CFM Requirerd =	1400	
				Total Exhaust CFM Requirerd =		2230
				Total Outside Air CFM Provided =		2730
				Total Building Positive CFM Provided =		500

GENERAL NOTES

1. THESE NOTES APPLY TO ALL MECHANICAL SHEETS.
2. ALL EQUIPMENT, MATERIALS AND INSTALLATION METHODS SHALL BE PROVIDED AND INSTALLED AS OUTLINED IN THE SPECIFICATIONS AND THE DRAWINGS.
3. STANDARD DETAILS ILLUSTRATED ON THE DRAWINGS SHALL BE APPLIED IN ALL CASES WHERE THE FEATURE OCCURS IN THE SYSTEM DESIGN.
4. DRAWING ARE SCHEMATIC IN NATURE. VERIFY DIMENSIONS AND EQUIPMENT LOCATIONS IN THE FIELD. CONTRACTOR SHALL VERIFY EXACT LOCATION AND CONFIGURATION OF EXISTING INSTALLATIONS TO REMAIN.
5. DRAWINGS ARE SCHEMATIC IN NATURE AND SHALL NOT BE SCALED. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DUCTWORK AND PIPING WITH OTHER TRADES AND PROVIDING OFFSETS IN DUCTWORK AND PIPING AS REQUIRED. ALL DUCTWORK SHALL BE ROUTED AS CLOSE TO STRUCTURE AS POSSIBLE WITH MAIN TRUNK DUCTS ABOVE BRANCH DUCTS TO CEILING AIR DEVICES.
6. COORDINATE MECHANICAL EQUIPMENT ABOVE CEILING WITH LIGHT FIXTURES, ELECTRICAL EQUIPMENT, AND PIPING TO CODE REQUIRED CLEARANCE AND MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES FOR MAINTENANCE.
7. COORDINATE ALL DUCTWORK, PIPING, PLUMBING AND FIRE PROTECTION PIPING WITH STRUCTURAL AND ELECTRICAL SYSTEMS AND PROVIDE NECESSARY OFFSETS TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.
8. MAJOR EQUIPMENT SHOWN ON THE PLANS AND ELEVATIONS ILLUSTRATE THE GENERAL ARRANGEMENT AND SPACE ALLOCATIONS. THE CONTRACTOR SHALL VERIFY THE SPACE REQUIREMENTS FOR EACH SYSTEM COMPONENT USING MANUFACTURER CERTIFIED SHOP DRAWINGS AND MAKE THE NECESSARY ADJUSTMENTS IN EQUIPMENT PLACEMENT AND CONNECTION IN ORDER TO ACCOMMODATE THE EXACT EQUIPMENT INSTALLED.
9. SIZE RIGID ROUND AND FLEX DUCT RUN-OUTS TO DIFFUSERS IN ACCORDANCE WITH THE AIR DEVICE RUNOUT SCHEDULE. ALL ROUND RUNOUTS AND DROPS TO DIFFUSERS SHALL BE THE SAME NOMINAL SIZE AS THE SCHEDULED DIFFUSER NECK SIZE.
10. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FIRE RATED AND/OR SMOKE RATED WALLS AND ASSEMBLIES. PROVIDE APPROVED FIRE DAMPERS IN ALL REQUIRED PENETRATIONS FOR DUCTWORK, GRILLES, REGISTERS AND DIFFUSERS. ALL PIPE AND DUCTWORK PENETRATIONS OF FIRE, SMOKE AND FULL HEIGHT WALLS SHALL BE CAULKED AIRTIGHT TO THE ADJACENT STRUCTURE BY MEANS OF U.L. APPROVED FIRE PROOF CAULKING MATERIAL.
11. PROVIDE SMOKE DETECTORS AS INDICATED ON THE MECHANICAL PLANS AND AS REQUIRED BY NFPA 90A AND LOCAL CODES. COORDINATE WITH FIRE ALARM TRADE.
12. CEILING SUPPLY AIR DIFFUSERS ARE FOUR WAY THROW UNLESS NOTED ON THE DRAWINGS WITH FLOW ARROWS. REFER TO AIR DEVICE SCHEDULE FOR ADDITIONAL INFORMATION.
13. PROVIDE ACCESS PANELS OR DOORS IN INACCESSIBLE CEILINGS AND/OR CHASES FOR ALL VALVES, TRAPS, DAMPERS, CLEANOUTS, COILS, FANS, CONTROLS, ETC. REFER TO SPECIFICATIONS AND COORDINATE WITH ARCHITECTURAL. ACCESS DOOR RATING SHALL MATCH CLASSIFICATION OF WALL AND CEILING FIRE RATING.
14. ALL DUCTWORK SIZES SHOWN ARE CLEAR NET INSIDE DIMENSION IN INCHES. SUPPLY, RETURN AND EXHAUST DUCTWORK ARE EXTERNALLY INSULATED UNLESS OTHERWISE INDICATED. CONTRACTOR IS REQUIRED TO COORDINATE ACTUAL DUCT ROUTING AND SIZING AS NECESSARY FOR MAINTAINING REQUIRED CLEARANCES IN COORDINATION WITH OTHER TRADES. RESIZING OF DUCT, IF NECESSARY, SHALL BE BASED ON EQUAL FRICTION METHOD. REFER TO SPECIFICATIONS.
15. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN FURRED CHASES OR SUSPENDED CEILINGS, UNLESS OTHERWISE NOTED.
16. PROVIDE ALL NECESSARY MISCELLANEOUS ANGLES, CHANNELS, UNISTRUT, ETC., AS REQUIRED TO ADEQUATELY SUPPORT THE MECHANICAL PIPING, DUCTWORK, AND EQUIPMENT, COORDINATE WITH STRUCTURAL.
17. FURNISH ALL NECESSARY STRUCTURES, INSERTS, SLEEVES, AND HANGING DEVICES FOR INSTALLATION OF MECHANICAL AND PLUMBING EQUIPMENT, DUCTWORK AND PIPING, ETC. COORDINATE WITH ALL BUILDING TRADES TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.
18. THE CONTRACTOR SHALL COORDINATE WORK AFFECTING OCCUPIED AREAS OUTSIDE OF THE SCOPE OF WORK AREA WITH THE OWNER. EXISTING UTILITIES PASSING THROUGH THE SCOPE OF WORK AREA ARE TO REMAIN IN SERVICE THROUGHOUT THE PROJECT. RELOCATION AND INTERRUPTION OF EXISTING SERVICES ARE TO BE CLOSELY COORDINATED WITH THE BUILDING OWNER TO MEET THE REQUIREMENTS OF THE HOSPITAL AND BUILDING SCHEDULE. THE CONTRACTOR'S BID SHALL INCLUDE COST FOR OVERTIME WORK AS REQUIRED TO ACCOMMODATE THE OWNER'S OPERATING SCHEDULE.
19. REFER TO ARCHITECTURAL CEILING PLANS FOR CEILING TYPES AND COORDINATE EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES. COORDINATE AIR DEVICE MOUNTING TYPE WITH CEILING CONSTRUCTION.
20. REFER TO ARCHITECTURAL INTERIOR ELEVATION DRAWINGS FOR EXACT LOCATION OF ALL WALL MOUNTED DEVICES WHERE THE ARCHITECT HAS INDICATED ITEMS.
21. MAINTAIN NEC CLEARANCE REQUIREMENTS ON ENERGIZED EQUIPMENT.
22. PROVIDE MANUAL DAMPER FOR ALL BRANCH DUCTS AND AIR DEVICES.
23. PROVIDE TURNING VANES IN ALL MITERED SQUARE ELBOWS WITH EXCEPTION OF TRANSFER AIR SOUND ELBOWS.
24. SEAL ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS AND FITTING CONNECTIONS ON ALL DUCT SYSTEMS.

NO.	DATE	REVISION	APP.

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

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Houston, TX 77002

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FB NO. P-6232

STATE OF TEXAS
KRISTEN OWEN
93869
LICENSED PROFESSIONAL ENGINEER
12-12-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION HVAC SYMBOLS NOTES ABBREVIATTIONS 1M-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

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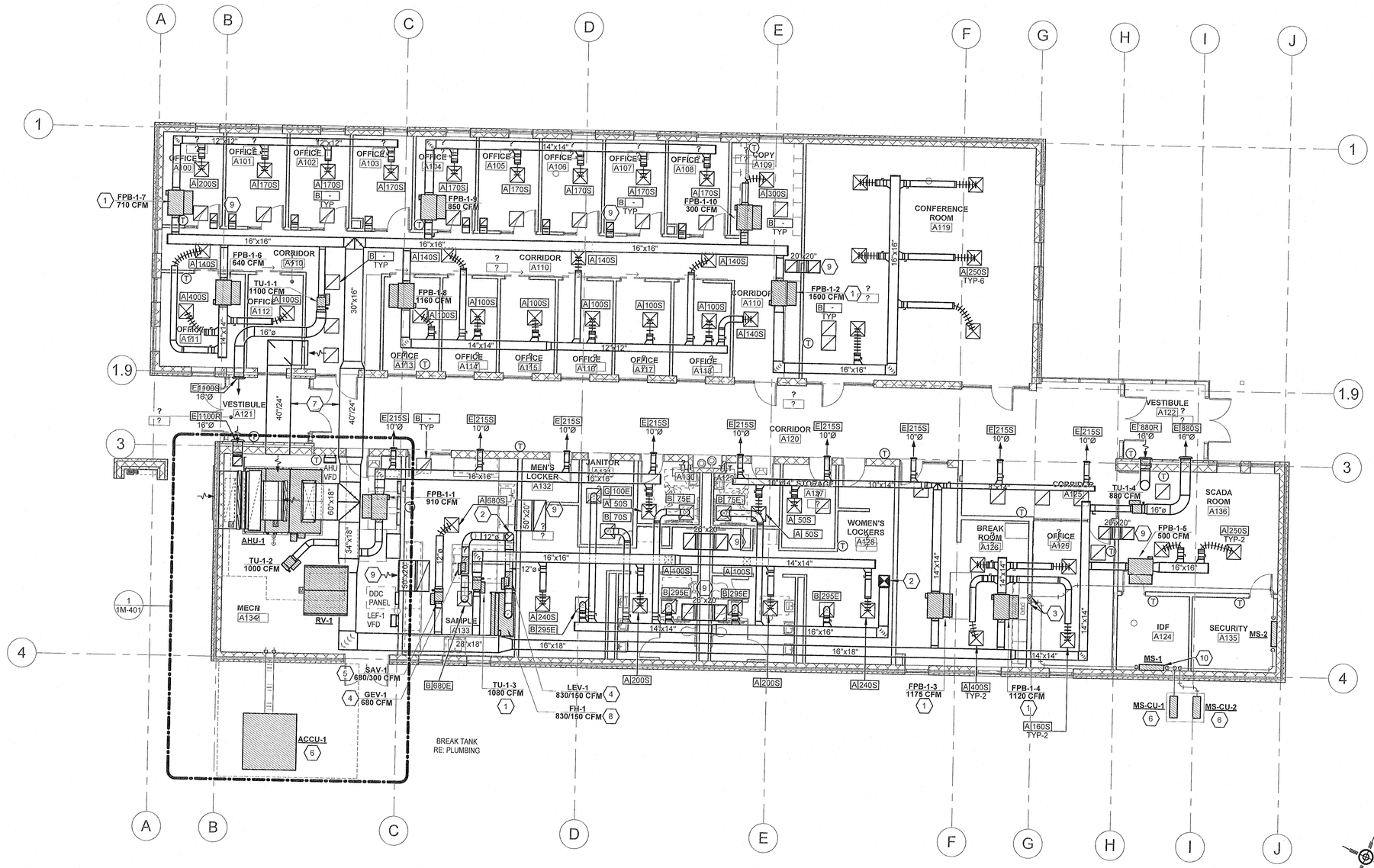

1 1M-101 **MECHANICAL FLOOR PLAN**
SCALE: 1/8" = 1'-0"

TRUE NORTH PLAN NORTH

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

0' 4' 8' 16'

GENERAL NOTES

A. CONTRACTOR TO VERIFY ROUTING WITH STRUCTURAL AND OTHER TRADES.

B. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

C. MAINTAIN EQUIPMENT MANUFACTURER'S ACCESS CLEARANCES.

D. COORDINATE ALL CEILING AIR DEVICES WITH ELECTRICAL LIGHTING AND ARCHITECTURAL REFLECTED CEILING PLAN.

NO.	DATE	REVISION	APP.

KEYED NOTES

1. TERMINAL UNIT ABOVE CEILING SUSPENDED FROM STRUCTURE. COORDINATE LOCATION WITH LIGHTING SUPPORTS AND OTHER TRADES (TYPICAL).
2. DUCT UP TO EXHAUST FAN ON ROOF. REFER TO M102 FOR CONTINUATION.
3. ROUTE 3/4" CONDENSATE DRAIN LINE DOWN IN WALL TO FUNNEL DRAIN UNDER SINK. PROVIDE 90 DEGREE ELBOW DOWN INTO DRAIN. REFER TO PLUMBING FOR ADDITIONAL INFORMATION.
4. EXHAUST AIR VALVE MOUNTED FROM STRUCTURE.
5. SUPPLY AIR VALVE SUSPENDED FROM STRUCTURE.
6. AIR COOLED CONDENSER MOUNTED AND ANCHORED TO 12" THICK CONCRETE HOUSEKEEPING PAD.
7. EXPOSED DUCTWORK CROSSING CORRIDOR TO BE DOUBLEWALL SPIRAL.
8. 6' FOOT LONG CHEMICAL FUME HOOD WITH VAV OPERATION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. RETURN AIR TRANSFER DUCT WITH INTERNAL ACOUSTICAL LINER (TYPICAL).
10. PROVIDE DRAIN PAIN AT MINISPLIT AND ROUTE CONDENSATE PIPING TO SINK TAILPIECE.

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KRISTEN OWEN
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11-11-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FLOOR PLAN

1M-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	152 OF 255

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80341
DRAWING NUMBER
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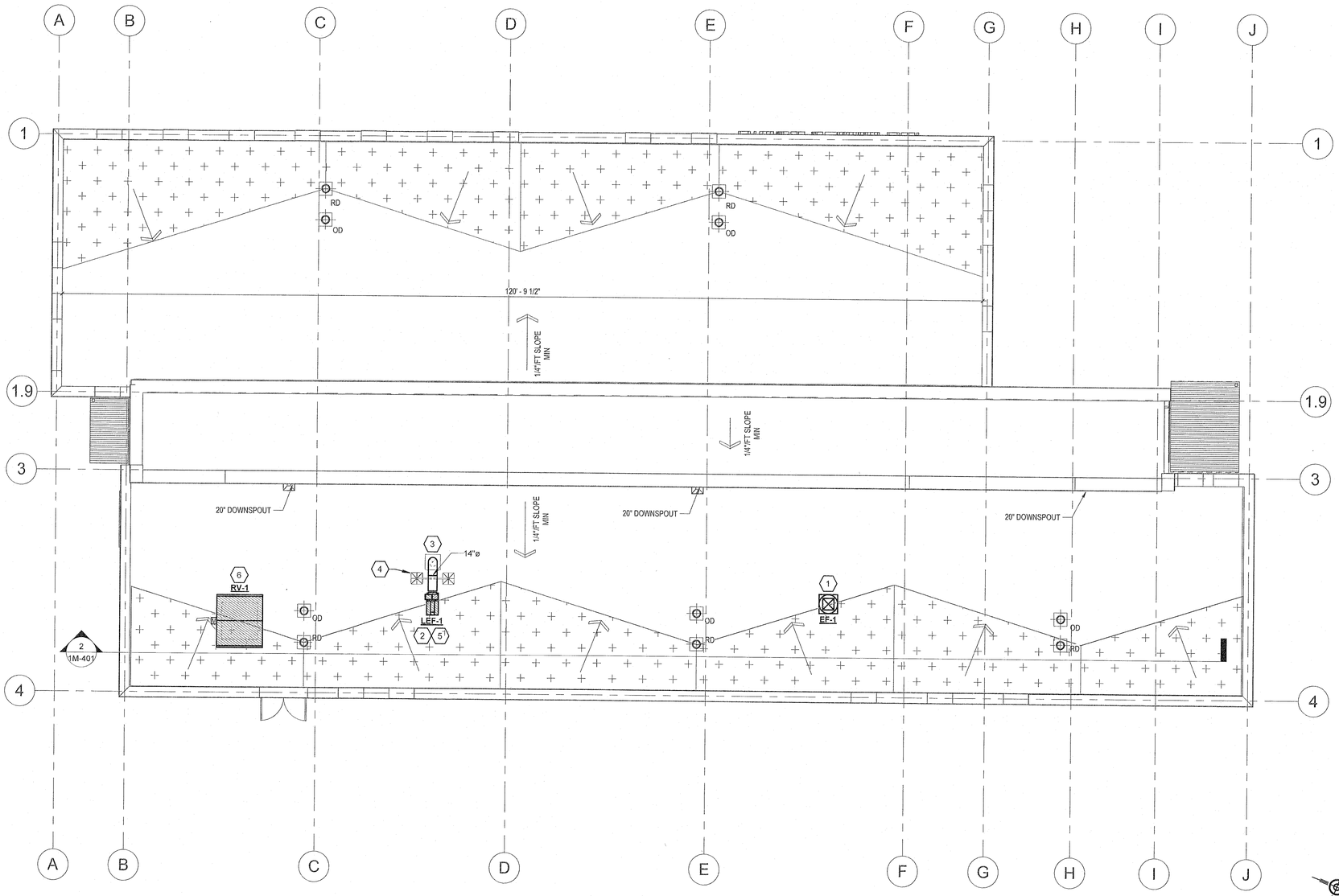
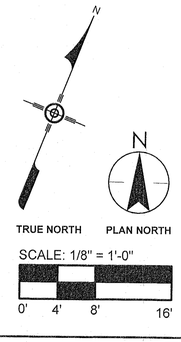


1 / 1M-102 **MECHANICAL ROOF PLAN**

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



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

0' 4' 8' 16'

GENERAL NOTES

A. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. MAINTAIN EQUIPMENT MANUFACTURER'S ACCESS CLEARANCES.

KEYED NOTES

1. DOWNBLAST EXHAUST FAN MOUNTED ON 14" TALL ROOF CURB.
2. UTILITY VENT SET MOUNTED AND ANCHORED ON EQUIPMENT STAND.
3. DUCT FROM FUME HOOD IN SAMPLE ROOM BELOW. REFER TO M101 FOR CONTINUATION.
4. MOUNT AND SECURE DUCT TO SUPPORT ON ROOF. REFER TO DETAIL 4/M5.1 FOR ADDITIONAL FORMATION.
5. LAB EXHAUST FAN SHALL OPERATE AT VARIABLE SPEED. FAN SHALL BE PROVIDED WITH FAN DISCONNECT MOUNTED ON UNISTRUT ON ROOF AND VFD SHALL BE LOCATED IN MECHANICAL ROOM BELOW. COORDINATE WITH ELECTRICAL.
6. ROOF MOUNTED RELIEF HOOD ON ROOF WITH MOTORIZED DAMPER IN CURB. COORDINATE WITH ELECTRICAL CONTRACTOR.

NO.	DATE	REVISION	APP.

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ROOF PLAN

1M-102

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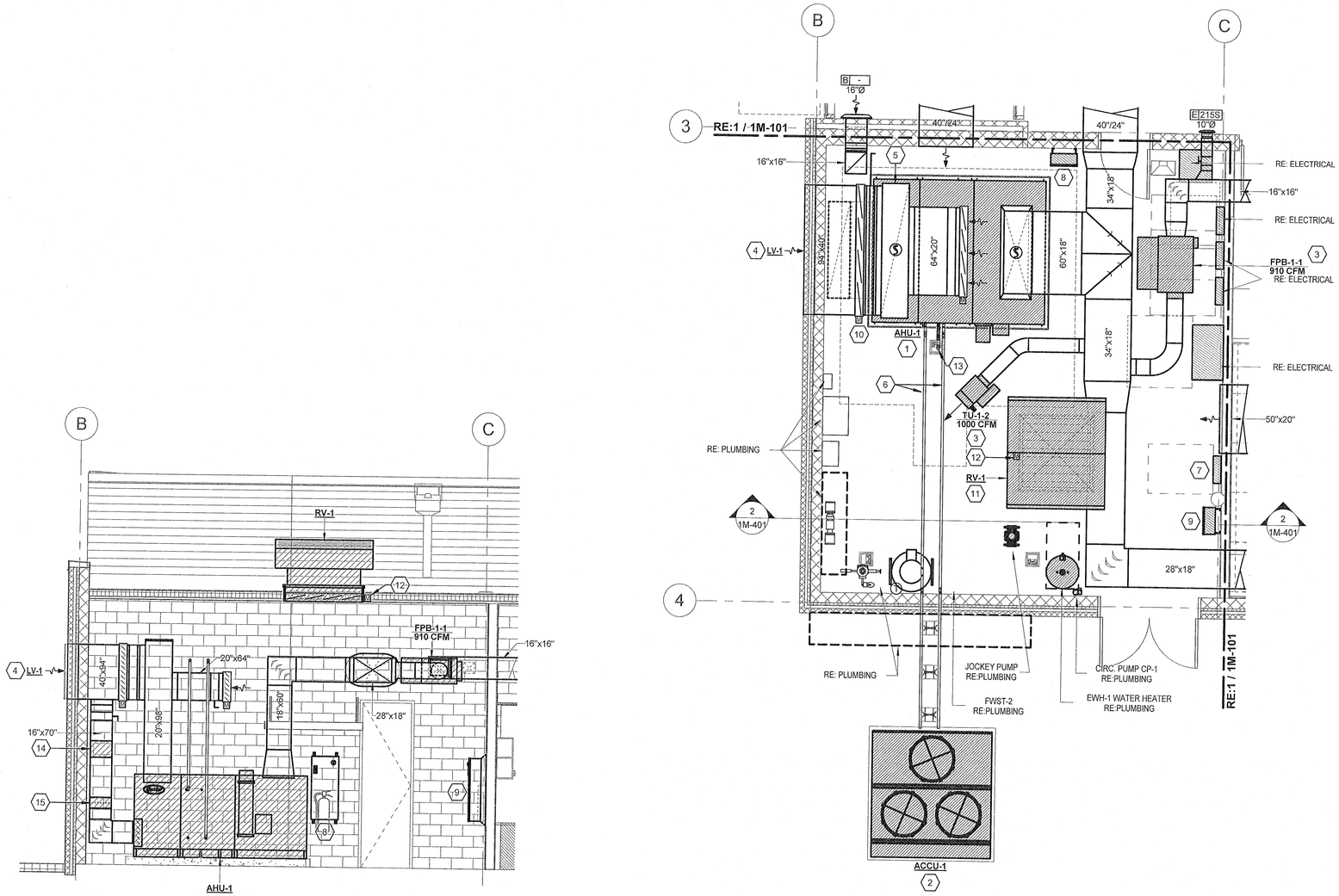

2 / 1M-401 SECTION AT MECHANICAL ROOM A134
SCALE: 1/4" = 1'-0"

1 / 1M-401 ENLARGED MECHANICAL ROOM
SCALE: 1/4" = 1'-0"

TRUE NORTH PLAN NORTH

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

0' 2' 4' 8'

GENERAL NOTES

A. CONTRACTOR TO VERIFY HVAC ROUTING WITH STRUCTURAL AND OTHER TRADES.

B. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

C. MAINTAIN EQUIPMENT MANUFACTURER'S ACCESS CLEARANCES.

NO.	DATE	REVISION	APP.

KEYED NOTES

1. MOUNT AIR HANDLING UNIT 4" THICK CONCRETE HOUSEKEEPING PAD.
2. MOUNT AIR COOLED CONDENSING UNIT ON 12" THICK CONCRETE HOUSEKEEPING PAD.
3. TERMINAL UNIT SUSPENDED FROM STRUCTURE. COORDINATE LOCATION WITH LIGHTING SUPPORTS AND OTHER TRADES.
4. CONNECT OUTSIDE AIR DUCT FROM LOUVER TO AHU RISER PLENUM.
5. CONNECT RETURN AIR DUCT TO AHU RETURN AIR PLENUM.
6. ROUTE REFRIGERANT LINES TIGHT TO STRUCTURE. SIZE PER MANUFACTURER'S RECOMMENDATIONS
7. WALL MOUNTED DDC CONTROL PANEL. COORDINATE POWER WITH ELECTRICAL.
8. WALL MOUNTED AHU VFD. COORDINATE WITH ELECTRICAL CONTRACTOR.
9. WALL MOUNTED LEF-1 VFD. COORDINATE WITH ELECTRICAL CONTRACTOR.
10. DUCT MOUNTED MOTORIZED DAMPER INTERLOCKED WITH AHU. REFER TO CONTROLS.
11. ROOF MOUNTED RELIEF HOOD ON ROOF WITH MOTORIZED DAMPER IN CURB. COORDINATE WITH ELECTRICAL CONTRACTOR.
12. MOTORIZED DAMPER IN RELIEF VENTILATOR ROOF CURB.
13. ROUTE CONDENSATE DRAIN LINE DOWN INTO FLOOR DRAIN. REFER TO PLUMBING FOR ADDITIONAL INFORMATION.
14. PROVIDE 70X16 SIDE ACCESS DUCT FILTER HOUSING IN VERTICAL OUTSIDE AIR DUCT. HOUSING SHALL BE BY AAF SUREPLEAT MODEL OR EQUAL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
15. PROVIDE WITH DUCT MOUNTED AIRFLOW MONITORING STATION. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ENLARGED PLANS

1M-401

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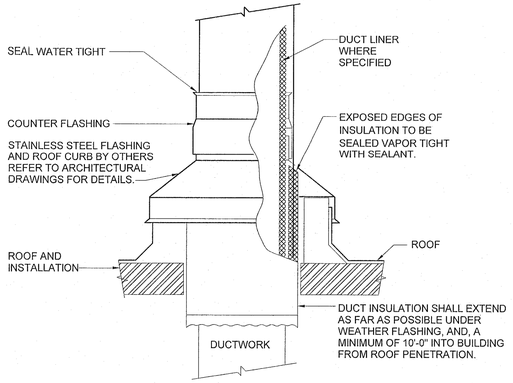

9 1M-501 **DUCT PENETRATION THRU ROOF**

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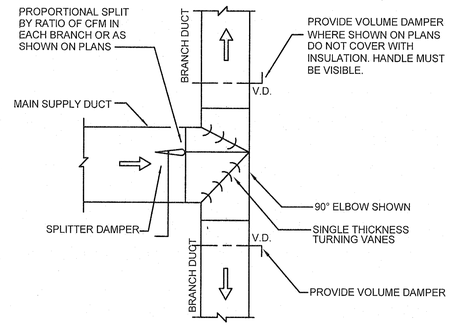
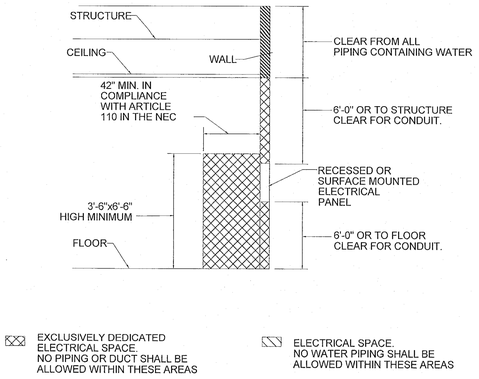


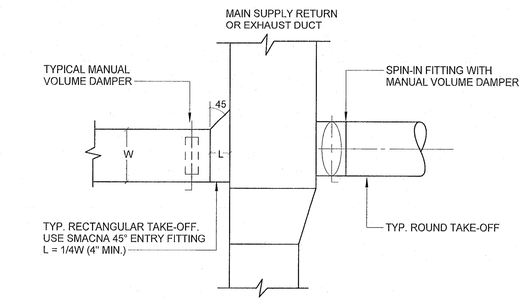
6 1M-501 **AIR DUCT SPLITTER DETAIL**

SCALE: N.T.S.



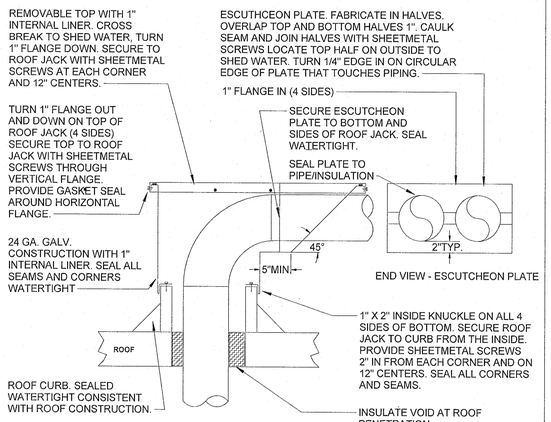
3 1M-501 **CLEARANCE REQUIREMENTS AT ELECTRICAL PANELS**

SCALE: N.T.S.



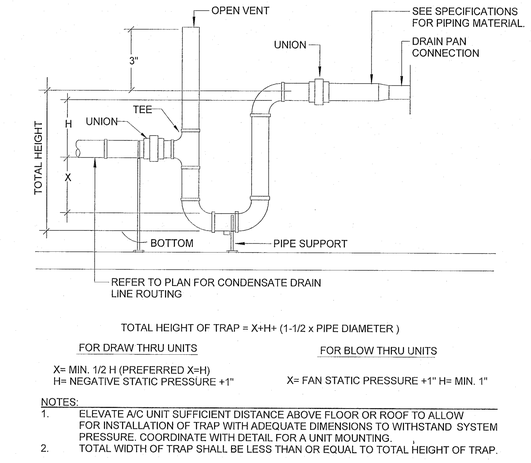
8 1M-501 **DUCT BRANCH TAKE OFF**

SCALE: N.T.S.



5 1M-501 **PIPING AND CONDUIT THRU ROOF DETAIL**

SCALE: N.T.S.



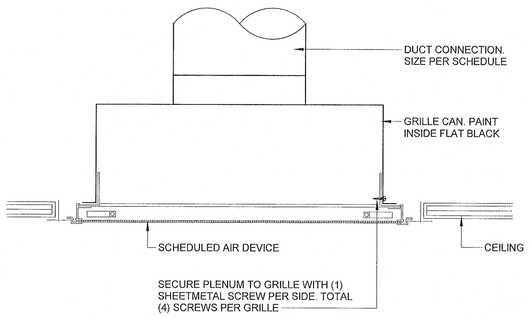
TOTAL HEIGHT OF TRAP = X+H+ (1-1/2 x PIPE DIAMETER)

FOR DRAW THRU UNITS	FOR BLOW THRU UNITS
X= MIN. 1/2 H (PREFERRED X=H) H= NEGATIVE STATIC PRESSURE +1"	X= FAN STATIC PRESSURE +1" H= MIN. 1"

NOTES:
1. ELEVATE A/C UNIT SUFFICIENT DISTANCE ABOVE FLOOR OR ROOF TO ALLOW FOR INSTALLATION OF TRAP WITH ADEQUATE DIMENSIONS TO WITHSTAND SYSTEM PRESSURE. COORDINATE WITH DETAIL FOR A UNIT MOUNTING.
2. TOTAL WIDTH OF TRAP SHALL BE LESS THAN OR EQUAL TO TOTAL HEIGHT OF TRAP.

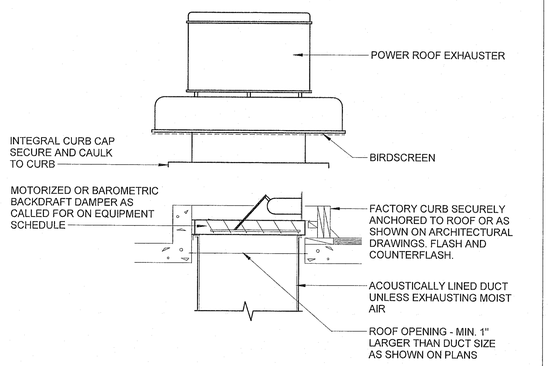
2 1M-501 **CONDENSATE DRAIN DETAIL**

SCALE: N.T.S.



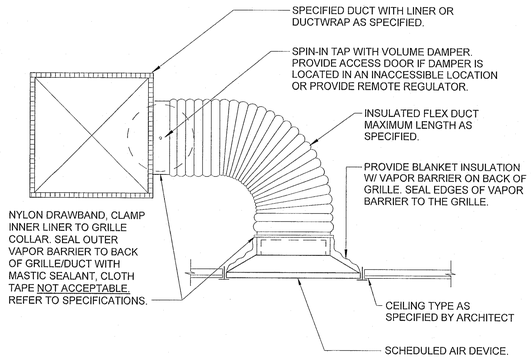
7 1M-501 **EXHAUST/RETURN AIR CONNECTION**

SCALE: N.T.S.



4 1M-501 **ROOF MOUNTED EXHAUST FAN**

SCALE: N.T.S.



NOTE:
1. SUPPORT FLEX DUCT FROM STRUCTURE SO THAT IT DOES NOT KINK, SAG OR REST ON LIGHT FIXTURES, CEILING SUPPORT TEES OR TILE.

1 1M-501 **GRILLE CONNECTION DETAIL**

SCALE: N.T.S.

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93869
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - I

1M-501

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CITY DRAWING NUMBER
10-2-25

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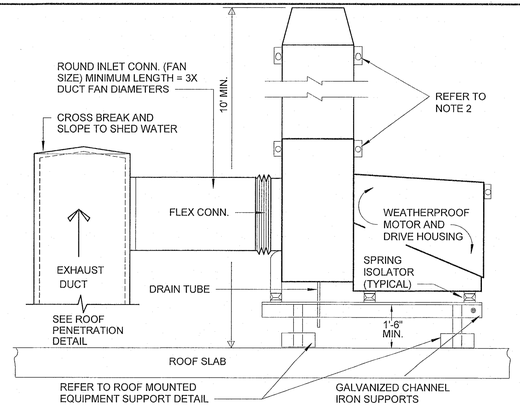
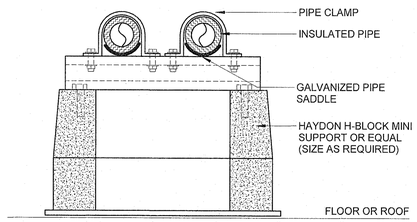


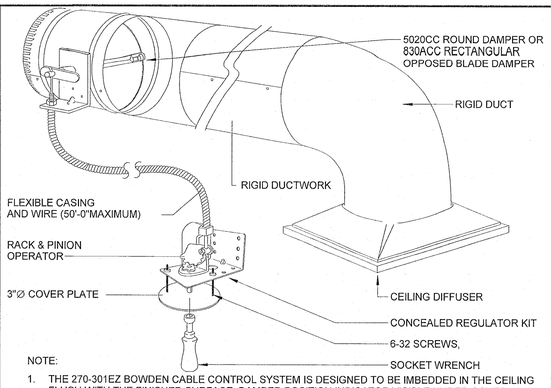
NOTES:
1. PROVIDE MEANS TO LUBRICATE BEARINGS, EITHER BY ACCESS PANEL OR EXTERIOR MOUNTED ZERK FITTING.
2. REFER TO ARCHITECTURAL DRAWING FOR ADDITIONAL BRACING AND TIE-DOWN REQUIREMENTS.

8 / 1M-502 ROOF MOUNTED UTILITY FAN
SCALE: N.T.S.



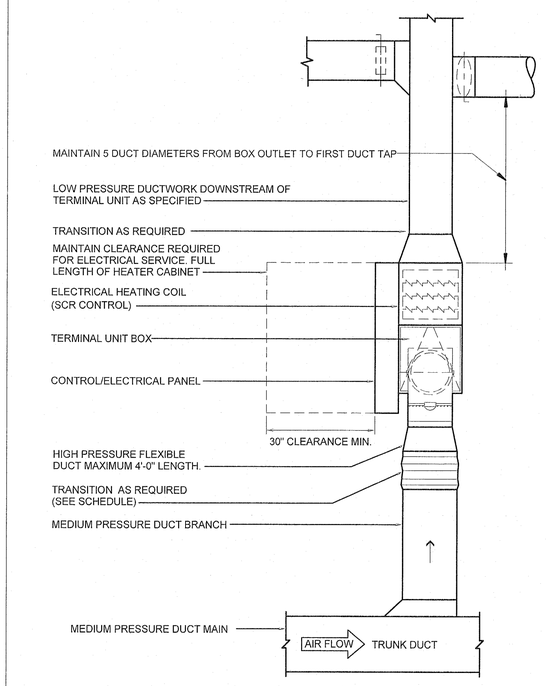
NOTES:
1. SPACING OF SUPPORTS PER SPECIFICATIONS.
2. IF PIPING IS LOCATED ON ROOF, ATTACH SUPPORT BASE TO ROOF MEMBRANE WITH MASTIC APPROVED FOR USE WITH ROOFING SYSTEM.
3. REFER TO MANUFACTURER'S INSTALLATION RECOMMENDATIONS.

6 / 1M-502 MULTIPLE PIPE SUPPORT
SCALE: N.T.S.



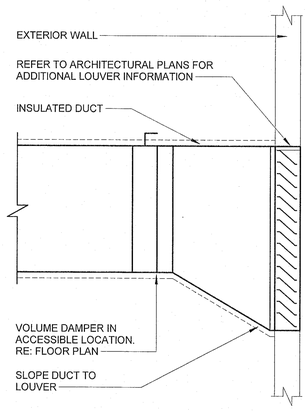
NOTE:
1. THE 270-301EZ BOWDEN CABLE CONTROL SYSTEM IS DESIGNED TO BE IMBEDDED IN THE CEILING FLUSH WITH THE FINISHED SURFACE. DAMPER POSITION INDICATOR VISIBLE UNDER COVER PLATE.
2. CABLE SHALL CONSIST OF BOWDEN CABLE 0.054" STAINLESS STEEL CONTROL WIRE ENCAPSULATED IN 1/16" FLEXIBLE GALVANIZED SPIRAL WIRE SHEATH.
3. LOCKING RACK AND PINION GEAR DRIVE SHALL BE CONSTRUCTED OF 14 GAUGE STEEL AND SHALL BE USED TO CONVERT ROTARY MOTION INTO PUSH-PULL MOTION.
4. CONTROL SHAFT SHALL BE "D"-STYLE FLATTENED 1/4" DIAMETER WITH 265° ROTATION PROVIDING 1-1/2" LINEAR TRAVEL CAPABILITY.

3 / 1M-502 REGULATOR AT CLG. MOUNTED GRILLE
SCALE: N.T.S.

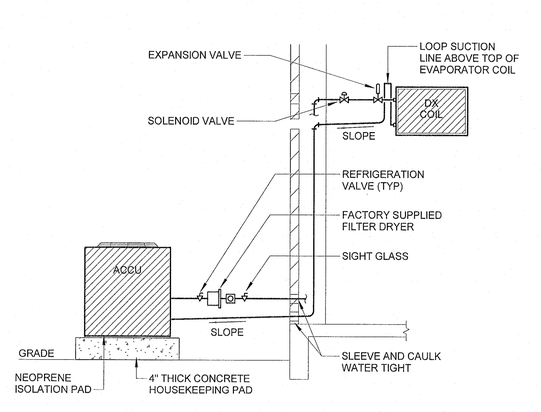


NOTES:
1. SUPPORT FLEX DUCT FROM STRUCTURE AS SPECIFIED, DUCT SHALL NOT KINK, SAG OR REST ON LIGHT FIXTURES, CEILING SUPPORT TEES OR TILE.
2. SUPPORT BOX WITH DUCT STRAPS AT ALL FOUR CORNERS.
3. CONFIGURATION SHOWN IS A SCHEMATIC AND DOES NOT REPRESENT THE SPECIFIC UNIT.
4. PROVIDE SUFFICIENT CLEARANCE TO ACCESS CONTROL BOX.
5. PROVIDE RECOMMENDED STRAIGHT DUCT WORK BEFORE TERMINAL UNIT SENSOR INLET.

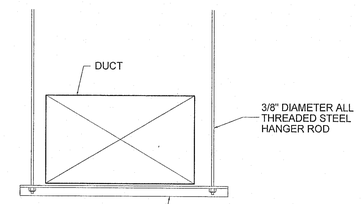
7 / 1M-502 SINGLE DUCT TERMINAL UNIT WITH ELECTRIC HEAT
SCALE: N.T.S.



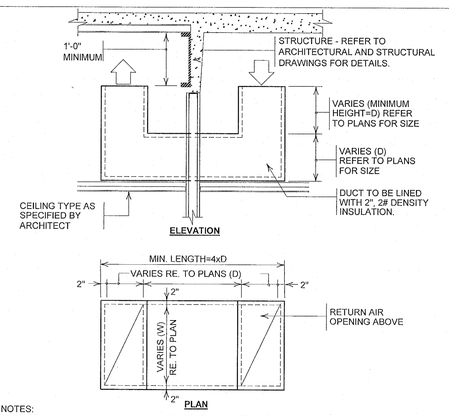
5 / 1M-502 DUCT TRANSITION TO EXTERIOR LOUVER
SCALE: N.T.S.



2 / 1M-502 REFRIGERANT PIPING INSTALLATION
SCALE: N.T.S.



4 / 1M-502 DUCT SUPPORT DETAIL
SCALE: N.T.S.



NOTES:
1. INTERNALLY LINED RETURN AIR DUCT SECTION (LINED W/ 2",2# DENSITY INSULATION. THROUGH PARTITION ABOVE CEILING. PLENUM AND OPENING SHALL BE OF THE INDICATED SIZE. OPENINGS ON EACH SIDE OF PARTITION SHALL BE PROVIDED IN TOP OR BOTTOM OF PLENUM AS SHOWN. END SHALL BE CAPPED. LINED AND SEALED. REFER TO PLANS FOR RETURN AIR BOOT SIZE AND OPENING LOCATION

1 / 1M-502 RETURN AIR TRANSFER DUCT
SCALE: N.T.S.

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12-12-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - II

1M-502

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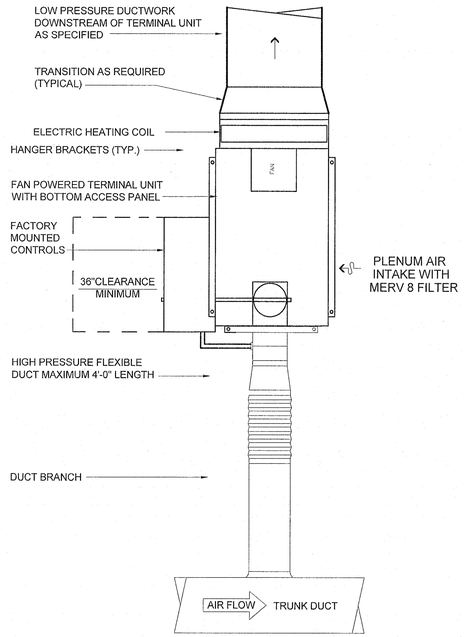
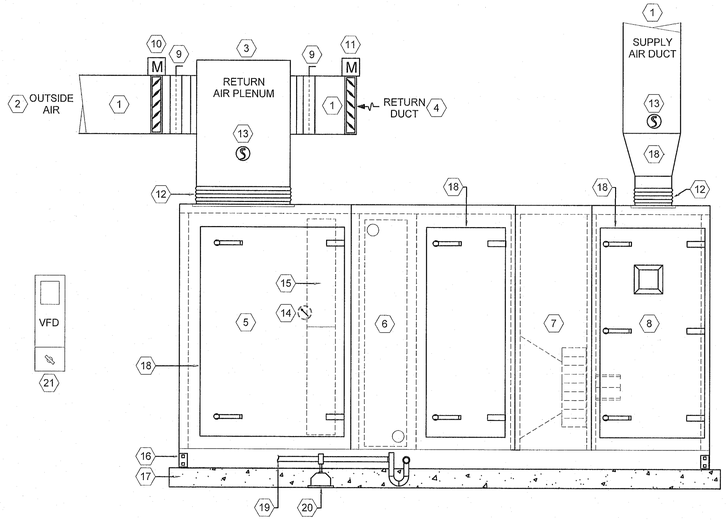


NOTES:

1. SUPPORT FLEX DUCT FROM STRUCTURE AS SPECIFIED, DUCT SHALL NOT KINK, SAG OR REST ON LIGHT FIXTURES, CEILING SUPPORT TEES OR TILE.
2. SUPPORT BOX PER MANUFACTURER'S RECOMMENDATION.
3. CONFIGURATION SHOWN IS A SCHEMATIC AND DOES NOT REPRESENT THE SPECIFIC UNIT.
4. MAINTAIN SUFFICIENT CLEARANCE TO ACCESS CONTROL BOX AND HEATER TERMINATION ENCLOSURE PER MANUFACTURER'S RECOMMENDATION AND NEC CODE. ALSO ALLOW SUFFICIENT CLEARANCE TO CHANGE THE RECIRCULATED INLET FILTER.
5. PROVIDE RECOMMENDED STRAIGHT DUCT WORK BEFORE TERMINAL UNIT SENSOR INLET.
6. COORDINATE COIL AND CONTROL PANEL RIGHT HAND/LEFT HAND CONFIGURATION WITH EXISTING FIELD CONDITIONS AND MAINTENANCE CLEARANCES.

2 / 1M-503 FAN POWERED TERMINAL UNIT DETAIL

SCALE: N.T.S.



GENERAL NOTES:

1. THIS DETAIL SHOWS GENERAL ARRANGEMENT OF A/C UNIT COMPONENTS ONLY.
2. COIL CONNECTION SIDE LOCATIONS AND ACCESS DOOR SWING LOCATIONS.
3. CONDENSATE SHALL DISCHARGE TO APPROVED PLUMBING FIXTURE INSIDE OF BUILDING. CONDENSATE DRAIN SHALL SLOPE TOWARDS DRAIN (REFER TO SPECIFICATIONS).
4. SUPPORT STRUCTURE MAY VARY. COORDINATE WITH STRUCTURAL TRADE OR FIELD CONDITIONS FOR EXACT TYPE.

KEYED NOTES:

1. REFER TO PLANS FOR AIR DUCT CONFIGURATION AND SIZING.
2. OUTSIDE AIR DUCT. REFER TO PLANS FOR CONFIGURATION AND SIZING.
3. AHU MANUFACTURER'S INLET SIZED RETURN AIR PLENUM.
4. AIR SYSTEM RETURN AIR OPENING. REFER TO PLANS FOR CONFIGURATION.
5. MIXING BOX SECTION WITH ACCESS DOOR ON EACH SIDE OF UNIT.
6. DX COOLING COIL SECTION WITH UV LIGHTS AND ACCESS DOOR ON EACH SIDE OF UNIT.
7. PLENUM FAN SECTION.
8. SUPPLY DISCHARGE PLENUM SECTION WITH ACCESS DOOR ON EACH SIDE UNIT.
9. MANUAL VOLUME DAMPER (TYPICAL).
10. LOW LEAKAGE OUTSIDE AIR MOTORIZED DAMPER.
11. LOW LEAKAGE RETURN AIR MOTORIZED DAMPER.
12. FLEXIBLE DUCT CANVASS CONNECTION (TYPICAL). COORDINATE SIZE WITH UNIT MANUFACTURER.
13. SMOKE DETECTOR. (UNITS 2000 CFM OR GREATER).
14. FILTER PRESSURE GAUGE.
15. MERV 8 FILTER.
16. 6" BASE RAIL.
17. CONTRACTOR TO VERIFY AHU CONCRETE HOUSEKEEPING PAD HEIGHT TO ACCOMMODATE P-TRAP INSTALLATION.
18. TRANSITION FROM UNIT OPENING AS REQUIRED.
19. REFER TO PLAN FOR CONDENSATE DRAIN ROUTING.
20. ADJUSTABLE PIPE SUPPORT (SEE DETAIL).
21. WALL MOUNTED VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT SWITCH. PROVIDE SINGLE POINT POWER. REFER TO PLANS FOR LOCATION

1 / 1M-503 AIR HANDLING UNIT COMPONENT DETAIL

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KRISTEN OWEN
93869
LICENSED PROFESSIONAL ENGINEER
12-12-2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - III

1M-503

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
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AIR HANDLING UNIT SCHEDULE (DX COIL)

GENERAL					SUPPLY PLENUM FAN					FILTERS DIRTY SP.WG. INCLUDED IN TOTAL S.P. (INCHES)	DX COOLING COIL (VELOCITY = 450 FPM MAXIMUM)						ELECTRICAL			WEIGHT LBS.	REMARKS
UNIT TAG	AREA SERVED	MANUFACTURER	TYPE	MODEL	SA CFM	OA CFM	EXTERNAL SP. WG. (INCHES) (SEE NOTE 6)	(QTY) HP	STARTER	MERV 13	TOTAL LOAD (BTUH)	SENSIBLE LOAD (BTUH)	EAT DB TEMP. (°F)	EAT WB TEMP. (°F)	LAT DB TEMP. (°F)	LAT WB TEMP. (°F)	FLA	MOCP	V / PH / HZ		
AHU-1	GENERAL	38APD0506M-48124	INDOOR / MODULAR	39MN SIZE 30W	14,000	2,730	2.5	(2)10	VFD	1.0	546,130	379,370	77.9	65.5	52.9	52.4	33.0	50.0	460/3/60	4,200	ALL

NOTES: TOTAL STATIC PRESSURE DROP SHALL INLCUDE DIRTY FILTER LOSS.

1. PROVIDE WALL MOUNTED VARIABLE FREQUENCY DRIVE WITH BYPASS AND INTEGRAL DISCONNECT SWITCH. REFER TO SPECS FOR ADDITIONAL INFORMATION, AND TO FLOOR PLANS FOR VFD LOCATION.
2. PROVIDE WITH SINGLEPOINT ELECTRICAL CONNECTION FOR UNIT FAN. PROVIDE 120 V CIRCUIT FOR UNIT LIGHTS AND RECEPTACLES. PROVIDE A SEPERATE CIRCUIT WITH STEP DOWN TRANSFORMER FOR CONTROLS AND ACTUATORS AS NECESSARY.
3. WITH SMOKE DETECTOR AT UNIT SUPPLY AND RETURN AIR DUCTS. SMOKE DETECTORS TO BE PROVIDED BY DIV. 28. NOTE FOR COORDINATIONONLY.
4. PROVIDE WITH FILTER PRESSURE GAUGES.
5. PROVIDE SEPARATE POINT OF CONNECTION FOR CONTROLS. REFER TO ELECTRICAL.
6. DOES NOT INCLUDE DIRTY FILTER STATIC PRESSURE.
7. PROVIDE WITH OUTSIDE AIR MODULATING DAMPER.

DUCTLESS MINI-SPLIT SCHEDULE

GENERAL					SUPPLY FAN		FILTER SP.WG.(INCHES)	COOLING COIL (VELOCITY = 450 FPM MAXIMUM)						HEAT PUMP	ELECTRICAL 208/1/60		WEIGHT LBS.	REMARKS
UNIT TAG	AREA SERVED	BASIS OF DESIGN MANUFACTURER	TYPE	MODEL	CFM LOW/MED/HIGH	FLA		TOTAL LOAD (BTUH)	SENSIBLE LOAD (BTUH)	EAT DB TEMP. (°F)	EAT WB TEMP. (°F)	LAT DB TEMP. (°F)	LAT WB TEMP. (°F)	BTUH	MCA	MOCP		
MS-1	IT ROOM	MITSUBISHI	HIGH WALL	TPKA0A0241KA70A	635–705–775	0.36	MERV 7	24,000	22,100	75	63	55	54	28,000	POWERED FROM OUTDOOR UNIT (1.0 FLA)		50	ALL
MS-2	IT ROOM	MITSUBISHI	HIGH WALL	TPKA0A0241KA70A	635–705–775	0.36	MERV 7	24,000	22,100	75	63	55	54	28,000	POWERED FROM OUTDOOR UNIT (1.0 FLA)		50	ALL

NOTES:
1. PROVIDE WITH UNIT DISCONNECT.
2. UNIT SHALL BE POWERED FROM ASSOCIATED AIR COOLED CONDENSING UNIT. REFER TO ACCU SCHEDULE FOR ELECTRICAL REQUIREMENTS.
3. PROVIDE WITH CONTROLS KIT CONTROLS KIT.
4. PROVIDE WITH A PROGRAMMABLE THERMOSTAT WITH DIGITAL DISPLAY AND SCHEDULING TO PREVENT UNIT SHORT CYCLING.
5. PROVIDE PRIMARY CONDENSATE DRAIN LINE PUMP AND OVERFLOW SWITCH.
6. PROVIDE DRAIN PAN WITH OVERFLOW SENSING SWITCH.

MINI-SPLIT AIR COOLED CONDENSER SCHEDULE

GENERAL						TOTAL COOLING LOAD (BTUH)	HEAT PUMP (BTUH)	OA DB TEMP (°F)	ELECTRICAL			SEER / EER	WEIGHT LBS.	REMARKS
MARK	ASSOCIATED UNIT	BUILDING	AREA SERVED	MANUFACTURER	MODEL				V/PH/HZ	MCA	MOCP			
MS-CU-1	MS-1	IT ROOM	ELECTRICAL ROOM	MITSUBISHI	TRUZA0241HA70NA	24,000	28,000	95.0	208/1/60	19	25	21.4 / 12.2	105	ALL
MS-CU-2	MS-1	IT ROOM	ELECTRICAL ROOM	MITSUBISHI	TRUZA0241HA70NA	24,000	28,000	95.0	208/1/60	19	25	21.4 / 12.2	105	ALL

NOTES:
1. MOUNT AND SECURE TO ROOF EQUIPMENT CURB.
2. WITH REFRIGERANT 410A
3. WITH DISCONNECT SWITCH. INDOOR UNIT POWERED BY AIR COOLED CONDENSING UNIT.
4. EVAPORATOR LOCATED 10 FT BELOW CONDENSER.

AIR COOLED CONDENSING UNIT

GENERAL				TOTAL COOLING LOAD (BTUH)	OUTDOOR CONDITIONS		ELECTRICAL			ARI CONDITIONS		WEIGHT LBS	REMARKS
UNIT TAG	ASSOCIATED AHU	MANUFACTURER	MODEL		SUMMER DB TEMP. (°F)	WINTER DB TEMP. (°F)	V/PH/HZ	MCA	MOCP	SEER	EER		
ACCU-1	AHU-1	CARRIER	38APD0506M-48124	546,130	105.0	20.0	480/3/60	97	110	12.5	11.1	2200	ALL

NOTES:
1. MOUNT AND ANCHOR ON DEDICATED 4" CONCRETE PAD.
2. WITH REFRIGERANT 410A
3. SINGLE POINT POWER WITH NON FUSED DISCONNECT SWITCH.
4. FIELD INSTALLED FILTER DRYER.
5. SUCTION TEMPERATURE SENSOR.
6. COMPRESSOR DISCHARGE TEMPERATURE SENSOR.
7. PROVIDE CONTROL WIRING AND CONDUIT AS REQUIRED.
8. PROVIDE WTH LOW SOUND FANS AND COMPRESSORS.
9. LONG LINE LENGTH CHECK VALVES, RTPF.
10. SECURITY GRILLES / HAIL GAURDS
11. ALUMINUM E-COAT / COPPER TUBE.
12. LOW AMBIENT HEAD PRESSURECONTROL.
13. PROVIDE WITH DIGITAL COMPRESSORS.

NO	DATE	REVISION	APP.

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STATE OF TEXAS
KRISTEN OWEN
93869
REGISTERED ENGINEER

12-12-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION SCHEDULES - I

1M-601

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
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LOUVER SCHEDULE

TAG	SERVICE	AIRFLOW (CFM)	FREE AREA (SQUARE FEET)	W X H (INCHES)	QTY.	MAX VELOCITY (FPM)	MAX PRESSURE DROP (IN H20)	MANUFACTURER & MODEL	REMARKS
LV-1	OUTSIDE AIR	14,000	16.5	100X40	1	850	0.1	GREENHECK ESD-635D	ALL

NOTES:
1. PROVIDE WITH BIRDSCREEN.
2. COORDINATE FLANGE/BORDER TYPE WITH ARCHITECTURAL AND BUILDING CONSTRUCTION.
3. PROVIDE WITH EPDM JAMB SEAL.
4. LOUVER COLOR BY ARCHITECT.

FAN SCHEDULE

MARK	TYPE	DRIVE TYPE	AIRFLOW CFM	EXTERNAL SP (IN H20 W.G.)	HP	FAN RPM	VOLT/PHASE/HZ	INTERLOCK	BASIS OF DESIGN MANUFACTURER / MODEL	WEIGHT (LBS)	NOTES
EF-1	DOWNBLAST ROOF	DIRECT DRIVE	1,400	1.5	3/4	1,725	120 / 1 / 60	CONTINUOUS	GREENHECK G-130-VG	60	1,2.3
LEF-1	UTILITY VENT SET	BELT DRIVE	830	1.75	1/2	1,793	120 / 1 / 60	CONTINUOUS	GREENHECK FJI-12-BI-X	200	3-14

NOTES:
1. PROVIDE WITH MOTORIZED DAMPER IN CURB. INTERLOCK WITH FAN.
2. PROVIDE WITH FACTORY DISCONNECT SWITCH.
3. PROVIDE 14" FACTORY EQUIPMENT CURB. COORDINATE WITH SLOPE OF ROOF.
4. ALUMINUM BIRDSCREEN.
5. PROVIDE WITH BACKDRAFT DAMPER.
6. PROVIDE WITH MOTOR STARTER RATED FOR OUTDOOR USE. COORDINATE WITH ELECTRICAL CONTRACTOR.
7. PROVIDE WITH STEEL CONSTRUCTION.
8. PROVIDE 14" FACTORY EQUIPMENT CURB. COORDINATE WITH SLOPE OF ROOF.
9. PROVIDE FAN AND STACK WITH PERMATECTOR COATING.
10. PROVIDE FAN WITH 1" DRAIN CONNECTION, BOLTED ACCESS DOOR, CURB CAP, OUTLET CONNECTION, STEEL WEATHERHOOD, AND ALUMINUM RUB RING.
11. PROVIDE 10'-0" TALL COMBINED STACK AND AJUSTABLE NOZZLE WITH EXIT VELOCITY AT 3000 FPM.
12. PROVIDE WITH CONVENIENCE GFCI OUTLET.
13. PROVIDE WITH ECM MOTOR AND VARIGREEN CONTROL.
14. PROVIDE WITH FAN WITH MOTOR COVER.

AIR DEVICE SCHEDULE

MARK	TYPE	MANUFACTURER / MODEL	REMARKS
A	ARCHITECTURAL SQUARE PANEL SUPPLY AIR DEVICE	TITUS OMNI-AA	24"x24" OR 12"x12" FACE AREA. AIR PATTERN SHALL BE 4-WAY THROW UNLESS OTHERWISE NOTED ON DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPE & CONSTRUCTION DETAILS. FLEX SUPPLYING DUCT TO BE SAME AS NECK SIZE. PROVIDE WHITE FINISH. PROVIDE DIFFUSER WITH INSULATED BACK (EXTERNAL TO AIRFLOW).
B	PERFORATED RETURN/EXHAUST AIR DEVICE	TITUS PAR-AA	24"x24" OR 12"x12" FACE AREA. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPE & CONSTRUCTION DETAILS. INCLUDE INSULATED BACK PLENUM . PROVIDE WITH WHITE FINISH.
C	LOUVERED FACE SIDEWALL GRILLE	TITUS 300FL	EXTRUDED ALUMINUM SUPPLY AIR DOUBLE-DEFLECTION RECTANGULAR SIDEWALL DIFFUSER, 3/4" SPACE BLADES. FRONT BLADES PARALLEL TO SHORT SECTION. REFER TO PLANS FOR SIZE (W"xH") AND AIR QUANTITY. PROVIDE WITH WHITE FINISH.
D	LOUVERED FACE SIDEWALL GRILLE	TITUS 350FL	ALUMINUM RETURN/EXHAUST RECTANGULAR SIDEWALL DIFFUSER, 3/4" SPACE BLADES. FRONT BLADES PARALLEL TO LONG SECTION. REFER TO PLANS FOR SIZE (W"xH") AND AIR QUANTITY. PROVIDE WITH WHITE FINISH.
E	PUNKAH NOZZLE JET DIFFUSER	KAM-W	ALUMINUM SUPPLY/RETURN SIDEWALL DIFFUSER WITH ADJUSTABLE CORE. REFER TO PLANS FOR SIZE AND AIR QUANTITY. COORDINATE FACTORY FINISH WITH ARCHITECT.

NOTES:
1. CEILING DIFFUSERS ARE 4-WAY UNLESS INDICATED OTHERWISE IN THE DRAWINGS.
2. PROVIDE OPTIONAL BLOW CLIPS FOR 3-WAY, 2-WAY AND 1-WAY THROWS.
3. ALL VISIBLE SURFACES OF THE RETURN/EXHAUST PLENUM AND DUCT CONNECTION SHALL BE PAINTED FLAT BLACK.
4. AIR DEVICE FRAME AND STYLE SHALL MATCH CEILING TYPE. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.

ROOF VENTILATOR SCHEDULE

MARK	SERVICE	AIRFLOW CFM	EXTERNAL SP (IN H20 W.G.)	THROAT SIZE	THROAT AREA	THROAT VELOCITY	MANUFACTURER / MODEL	WEIGHT (LBS)	NOTES
RV-1	BUILDING RELIEF AIR	14,000	0.081	54 X 54	18.7	750	GREENHECK FGR	400	ALL

NOTES:
1. WITH BIRDSCREEN.
2. WITH 12" INSULATED ROOF CURB. COORDINATE CURB WITH ROOF SLOPE.

NECK SIZING SCHEDULE

CFM RANGE	SUPPLY		RETURN & EXHAUST	
	CEILING TYPE		CEILING TYPE	
	ROUND NECK SIZE	SQUARE NECK SIZE	ROUND NECK SIZE	SQUARE NECK SIZE
0 - 200	6"Ø	6" X 6 "	6"Ø	6" X 6 "
201 - 350	8"Ø	8" X 8 "	8"Ø	8" X 8 "
351 - 450	10"Ø	10" X 10 "	10"Ø	10" X 10 "
451 - 600	12"Ø	12" X 12 "	12"Ø	12" X 12 "
601 - 725	14"Ø	15" X 15 "	14"Ø	15" X 15 "
726 - 900	15"Ø	16" X 16 "	16"Ø	18" X 18"

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12-12-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION SCHEDULES - II

1M-602

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
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SERIES FAN POWERED BOX TERMINAL UNIT SCHEDULE (ELECTRIC HEAT)

MARK	PRIMARY MAXIMUM CFM	PRIMARY MINIMUM CFM	ESP AT MAX CFM (IN W.G.)	PLENUM INLET CFM	ELECTRIC HEATING COIL (SCR CONTROL)					PRICE MODEL	ELECTRICAL							NOTES
											ELECTRIC HEATER		ECM FAN					
					HEATING COIL ENTERING AIR TEMP F	HEATING COIL LEAVING AIR TEMP F	HEATING CAPACITY (BTU/HR)	KW	HEATING CFM		FLA	VOLTAGE	FLA	MOTOR (QUANTITY) / HP	VOLTAGE	SINGLE POINT ELECTRICAL CONNECTION VOLTAGE	TOTAL BOX MCA / MOCP	
FPB-1-1	910	360	0.3	550	63.5	95.0	31,430	9.2	364	FDC 2010	11.1	480 / 3 / 60	2.4	1/3	277 / 1 / 60	480 / 3 / 60	16.8 / 20.0	ALL
FPB-1-2	1500	600	0.3	900	63.2	95.0	52,314	15.3	600	FDC 4012	18.4	480 / 3 / 60	6.0	3/4	277 / 1 / 60	480 / 3 / 60	30.5 / 35.0	ALL
FPB-1-3	1175	470	0.3	710	63.5	95.0	40,595	11.9	470	FDC 3010	14.3	480 / 3 / 60	3.8	1/2	277 / 1 / 60	480 / 3 / 60	22.6 / 25.0	ALL
FPB-1-4	1120	450	0.3	670	63.1	95.0	39,215	11.5	448	FDC 3010	13.7	480 / 3 / 60	3.8	1/2	277 / 1 / 60	480 / 3 / 60	21.9 / 25.0	ALL
FPB-1-5	500	200	0.3	300	63.2	95.0	17,439	5.1	200	FDC 1008	18.4	277 / 1 / 60	2.3	1/4	277 / 1 / 60	277 / 1 / 60	25.9 / 30.0	ALL
FPB-1-6	640	260	0.3	380	62.8	95.0	22,628	6.6	256	FDC 1008	7.8	480 / 3 / 60	2.3	1/4	277 / 1 / 60	480 / 3 / 60	12.7 / 15.0	ALL
FPB-1-7	710	280	0.3	430	63.6	95.0	24,455	7.2	284	FDC 1008	8.7	480 / 3 / 60	2.3	1/4	277 / 1 / 60	480 / 3 / 60	13.7 / 15.0	ALL
FPB-1-8	1160	460	0.4	700	63.4	95.0	40,149	11.8	464	FDC 3010	14.2	480 / 3 / 60	3.8	1/2	277 / 1 / 60	480 / 3 / 60	22.5 / 25.0	ALL
FPB-1-9	850	340	0.3	510	63.2	95.0	29,645	8.7	340	FDC 2010	10.3	480 / 3 / 60	2.4	1/3	277 / 1 / 60	480 / 3 / 60	15.9 / 20.0	ALL
FPB-1-10	300	120	0.4	180	63.2	95.0	10,464	3.1	120	FDC 1008	10.8	277 / 1 / 60	2.3	1/4	277 / 1 / 60	277 / 1 / 60	16.4 / 20.0	ALL

NOTES:
1. PROVIDE FACTORY MOUNTED CONTROLS AND END DEVICES.
2. PROVIDE CONTROL VOLTAGE TRANSFORMER.
3. PROVIDE WITH FACTORY INSTALLED ELECTRICAL DISCONNECT.
4. PROVIDE WITH ACCESS PANEL AT ELECTRIC HEATING COIL SECTION.
5. PROVIDE WITH ECM MOTOR AND TIE INTO EXISTING CAMPUS BAS.

SUPPLY AIR VALVE SCHEDULE

UNIT TAG	AHU SYSTEM NUMBER	MANUFACTURER	MODEL	BOX TYPE	MAX CFM	MIN CFM	S.P. AT INLET (IN) W.G.	MAX. P.D. THRU BOX (IN) W.G.	VALVE INLET SIZE (IN)	ELECTRIC HEATING COIL		BTUH	KW	V / PH / HZ	REMARKS
										EAT (°F)	LAT (°F)				
SAV-1	AHU-1	SIEMENS	LGS	CAV	680	300	1	.2	8	52	95	31579	9	480 / 3 / 60	ALL

NOTES:
1. CONTROLS SHALL BE MOUNTED BY MANUFACTURER.
2. PROVIDE CONTROL VOLTAGE TRANSFORMER.
3. PROVIDE WITH FACTORY INSTALLED ELECTRICAL DISCONNECT.

RETURN / EXHAUST AIR VALVE SCHEDULE

UNIT TAG	EXHAUST FAN SYSTEM NUMBER	SERVICE	MANUFACTURER	MODEL	BOX TYPE	MAX CFM	MIN CFM	S.P. AT INLET (IN) W.G.	MAX. P.D. THRU BOX (IN) W.G.	BOX INLET SIZE (IN)	V / PH / HZ	REMARKS
LEV-1	LEF-1	FUME HOOD	SIEMENS	LGE	VAV	830	150	1.0	0.25	10	120 / 1 / 60	ALL
GEV-1		ROOM GENERAL EXHAUST	SIEMENS	LGE	VAV	680	0	1.0	0.25	10	120 / 1 / 60	ALL

NOTES:
1. CONTROLS SHALL BE MOUNTED BY MANUFACTURER.
2. PROVIDE CONTROL VOLTAGE TRANSFORMER.
3. PROVIDE WITH FACTORY INSTALLED ELECTRICAL DISCONNECT.

TERMINAL UNIT SCHEDULE

UNIT TAG	MANUFACTURER	MODEL	BOX TYPE	MAX CFM	MIN CFM	S.P. AT INLET (IN) W.G.	MAX. P.D. THRU BOX (IN) W.G.	BOX INLET SIZE (IN)	DUCT RUNOUT TO BOX	ELECTRIC HEATING COIL (SCR CONTROL)				ELECTRICAL	REMARKS
									ROUND	EAT (°F)	LAT (°F)	BTUH	KW	V / PH / HZ	
TU-1-1	PRICE	SVD5	VAV	1,100	550	1.0	.35	10	12	50	95	26,730	7.8	480 / 3 / 60	ALL
TU-1-2	PRICE	SVD5	VAV	1,000	500	1.0	.35	10	12	50	95	24,300	7.1	480 / 3 / 60	ALL
TU-1-3	PRICE	SVD5	CAV	1,080	1,080	1.0	.35	10	12	50	95	52,488	15.4	480 / 3 / 60	ALL
TU-1-4	PRICE	SVD5	VAV	880	440	1.0	.35	10	12	50	95	21,384	6.3	480 / 3 / 60	ALL

NOTES:
1. CONTROLS SHALL BE MOUNTED BY MANUFACTURER.
2. PROVIDE CONTROL VOLTAGE TRANSFORMER.
3. PROVIDE WITH FACTORY INSTALLED ELECTRICAL DISCONNECT.
4. PROVIDE ELECTRIC HEATING COIL WITH SCR CONTROL.

SAMPLE ROOM LAB AIRFLOW BALANCE SCHEDULE

ROOM	AIR VALVE	MAXIMUM CFM SASH OPEN	MAXIMUM CFM SASH CLOSED	MINIMUM CFM SASH OPEN	MINIMUM CFM SASH CLOSED
SAMPLE ROOM	SAV-1	680	680	680	300
	LEV-1	-830	-150	-830	-150
	GEV-1	0	-680	0	0
ROOM OFFSET CFM		-150	-150	-150	150

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION SCHEDULES III

1M-603

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	160 OF 255

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HOUSTON, TEXAS

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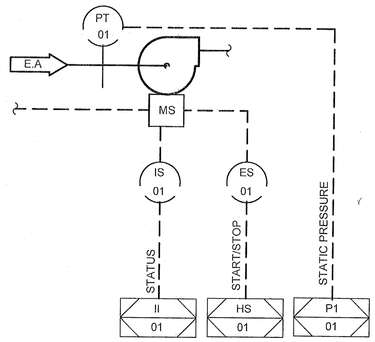

SEQUENCE OF OPERATION

THE FAN'S SHALL BE INTERLOCKED WITH RTU SO EXHAUST FAN SHALL ONLY RUN WHEN UNIT IS OPERATING.

2 / 1M-801 TYPICAL EXHAUST FAN CONTROL DIAGRAM

SCALE: N.T.S.

INSTRUMENTATION ABBREVIATION LIST

CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
AA	ANALYTICAL ALARM	LA	LEVEL ALARM	VA	VIBRATION ALARM
AE	ANALYTICAL ELEMENT	LC	LEVEL CONTROLLER (STAND ALONE)	VS	VIBRATION SWITCH
AET	ANALYTICAL ELEMENT TRANSMITTER	LCV	LEVEL CONTROL VALVE		
AI	ANALYTICAL INDICATOR	LE	LEVEL ELEMENT	XV	SOLENOID VALVE
AC	ANALYTICAL CONTROLLER	LIC	LEVEL INDICATING CONTROLLER		
AIC	ANALYTICAL INDICATING CONTROLLER	LIT	LEVEL INDICATING TRANSMITTER	YA	EQUIPMENT ALARM
AT	ANALYTICAL TRANSMITTER	LS	LEVEL SWITCH	YI	EQUIPMENT STATUS
AIT	ANALYTICAL INDICATING CONTROLLER	LT	LEVEL TRANSMITTER	YCD	SMOKE DAMPER
ACV	ANALYTICAL CONTROL VALVE	LY	LEVEL SIGNAL CONVERTER	YS	SMOKE DETECTOR
AY	ANALYTICAL SIGNAL CONVERTER				
		MV	MANUAL HAND VALVE	ZC	POSITION CONTROL
EI	VOLTAGE INDICATOR			ZI	POSITION INDICATOR
EA	VOLTAGE ALARM	NT	HUMIDITY TRANSMITTER	ZS	POSITION SWITCH
ES	VOLTAGE SWITCH (CONTROL RELAY)				
ESL	VOLTAGE SWITCH LOW (24 VAC OR LESS)	PA	PRESSURE ALARM	NC	NORMALLY CLOSED
ET	VOLTAGE TRANSMITTER	PCV	PRESSURE CONTROL VALVE	NO	NORMALLY OPEN
EY	VOLTAGE SIGNAL CONVERTER	PDI	PRESSURE DIFFERENTIAL INDICATOR		
		PDS	PRESSURE DIFFERENTIAL SWITCH		
FA	FLOW ALARM	PDT	PRESSURE DIFFERENTIAL TRANSMITTER		
FCV	FLOW CONTROL VALVE	PI	PRESSURE INDICATOR		
FE	FLOW ELEMENT	PIS	PRESSURE INDICATING SWITCH		
FET	FLOW ELEMENT\TRANSMITTER	PIT	PRESSURE INDICATING TRANSMITTER		
FI	FLOW INDICATOR	PS	PRESSURE SWITCH		
FIT	FLOW INDICATING TRANSMITTER	PT	PRESSURE TRANSMITTER		
FS	FLOW SWITCH	PY	PRESSURE SIGNAL CONVERTER		
FT	FLOW TRANSMITTER				
FY	FLOW SIGNAL CONVERTER	SC	SPEED CONTROL		
		SCM	SPEED CONTROL MANUAL		
HK	MANUAL VARIABLE CONTROL				
HS	HAND SWITCH	TA	TEMPERATURE ALARM		
HSI	HAND SWITCH INDICATOR	TC	TEMPERATURE CONTROLLER		
		TCV	TEMPERATURE CONTROL VALVE		
II	CURRENT INDICATOR	TE	TEMPERATURE ELEMENT		
IA	CURRENT ALARM	TET	TEMPERATURE ELEMENT TRANSMITTER		
IS	CURRENT SWITCH	TI	TEMPERATURE INDICATOR		
IT	CURRENT TRANSMITTER	TIT	TEMPERATURE INDICATING TRANSMITTER		
IY	CURRENT SIGNAL CONVERTER	TIC	TEMPERATURE INDICATING CONTROLLER		
		TS	TEMPERATURE SWITCH		
JIT	POWER INDICATING TRANSMITTER	TSL	FREEZE STAT		
JY	POWER SIGNAL CONVERTER	TT	TEMPERATURE TRANSMITTER		
KC	CLOCK				

*NOTE: NOT ALL ABBREVIATIONS SHOWN ABOVE MAY NOT BE USED IN THIS PROJECT.

NO.	DATE	REVISION	APP.

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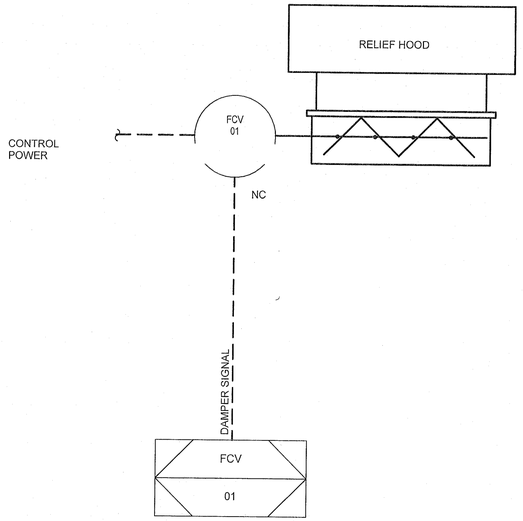
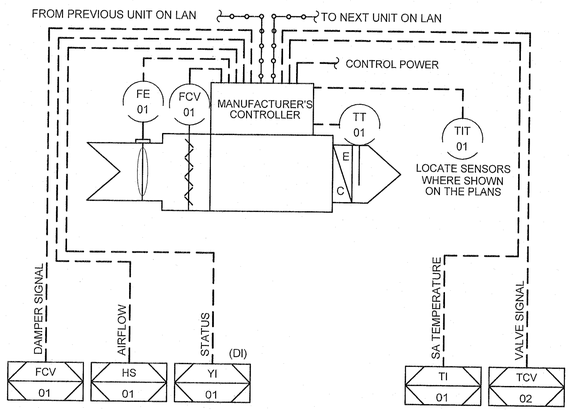


RELIEF AIR HOOD WITH MOTORIZED DAMPER
THE RELIEF HOOD MOTORIZED DAMPER SHALL BE BE ENABLED AS NEEDED INDEPENDENTLY FROM SUPPLY FANS, AND SPEED SHALL BE CONTROLLED IN SEQUENCE WITH THE BUILDING PRESSURE SENSOR SET TO MAINTAIN BUILDING DIFFERENTIAL PRESSURE WITH RESPECT TO AMBIENT. A PRESSURE MONITORING STATION SHALL CONTINUOUSLY MONITOR THE DIFFERENTIAL PRESSURE AND SEND OUTPUT THE BAS. WHEN THE DIFFERENTIAL PRESSURE IS ABOVE 0.05" W.G. (ADJUSTABLE) RELATIVE TO AMBIENT THE RELIEF DAMPER WILL OPEN. MODULATE RELIEF AIR DAMPER AS NEEDED TO MAINTAIN POSITIVE PRESSURE DIFFERENTIAL SETPOINT RELATIVE TO AMBIENT AS SENSED BY MONITOR.

3 / 1M-801 RELIEF AIR CONTROL DIAGRAM

SCALE: N.T.S.



SEQUENCE OF OPERATION

GENERAL NOTES
EACH TERMINAL UNIT SHALL BE EQUIPPED WITH ITS OWN STAND ALONE CONTROLLER. THE WIRING SHOWN IS PROVIDED AS A GENERAL DESCRIPTION AND IS NOT AS A DETAILED WIRING DIAGRAM WHICH VARIES WITH THE MANUFACTURER.

VARIABLE AIR VOLUME TERMINAL UNITS
EACH TERMINAL UNIT SHALL MODULATE THE SUPPLY AIR DAMPER TO MAINTAIN THE SPACE TEMPERATURE CONDITIONS. IF THE ZONE REQUIRES COOLING, THE SUPPLY AIR DAMPER SHALL BE MODULATED BETWEEN THE MINIMUM AND MAXIMUM COOLING AIR FLOWS TO MAINTAIN THE SPACE TEMPERATURE AT THE COOLING SETPOINT OF 73°F (ADJUSTABLE). IF BOX IS AT MINIMUM SETTING AND STILL TOO COLD, THE SCR CONTROL SHALL STAGE THE ELECTRIC HEATING COIL TO MAINTAIN SPACE TEMPERATURE.

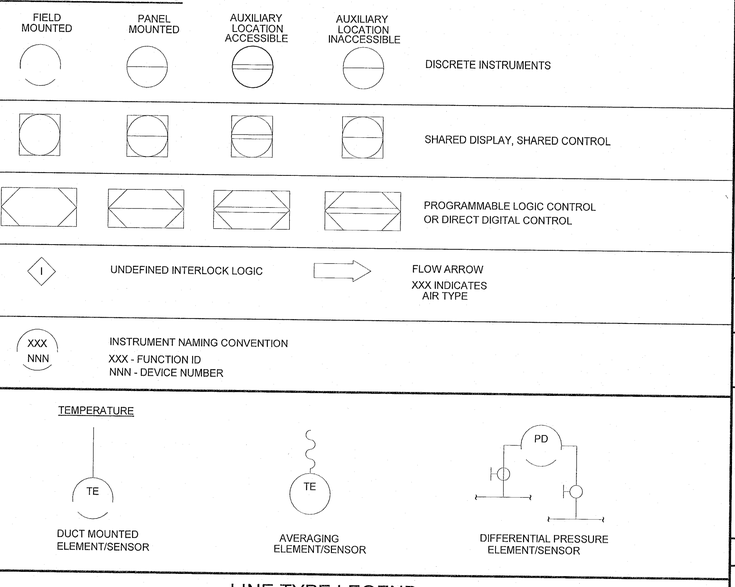
EACH ROOM IS EQUIPPED WITH DUAL TECHNOLOGY OCCUPANCY SENSOR TO BE USED TO TURN OFF LIGHTS WHEN UNOCCUPIED AS WELL AS SETBACK VAV TO CLOSED POSITION (OR MINIMUM - ADJUSTABLE). IF VAV SERVES MORE THAN ONE ROOM, ANY OCCUPANCY IN SPACES SHALL OVERRIDE CONTROL. A HI/LO LIMIT SHALL OPEN TERMINAL UNIT SHOULD TEMPERATURE RISE 3°F DEGREES (ADJ.) OR DROP 5°F DEGREES (ADJ.) FROM SPACE SETPOINT.

1 / 1M-801 TERMINAL UNIT WITH ELECTRIC REHEAT CONTROL DIAGRAM

SCALE: N.T.S.

GENERAL INSTRUMENT SYMBOLS

FUNCTION SYMBOLS



TEMPERATURE

LINE TYPE LEGEND

ELECTRICAL SIGNAL

PNEUMATIC SIGNAL

INTERNAL SYSTEM LINK

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KRISTEN OWEN
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LICENSED
PROFESSIONAL ENGINEER
12-12-2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION - CONTROLS - I

1M-801

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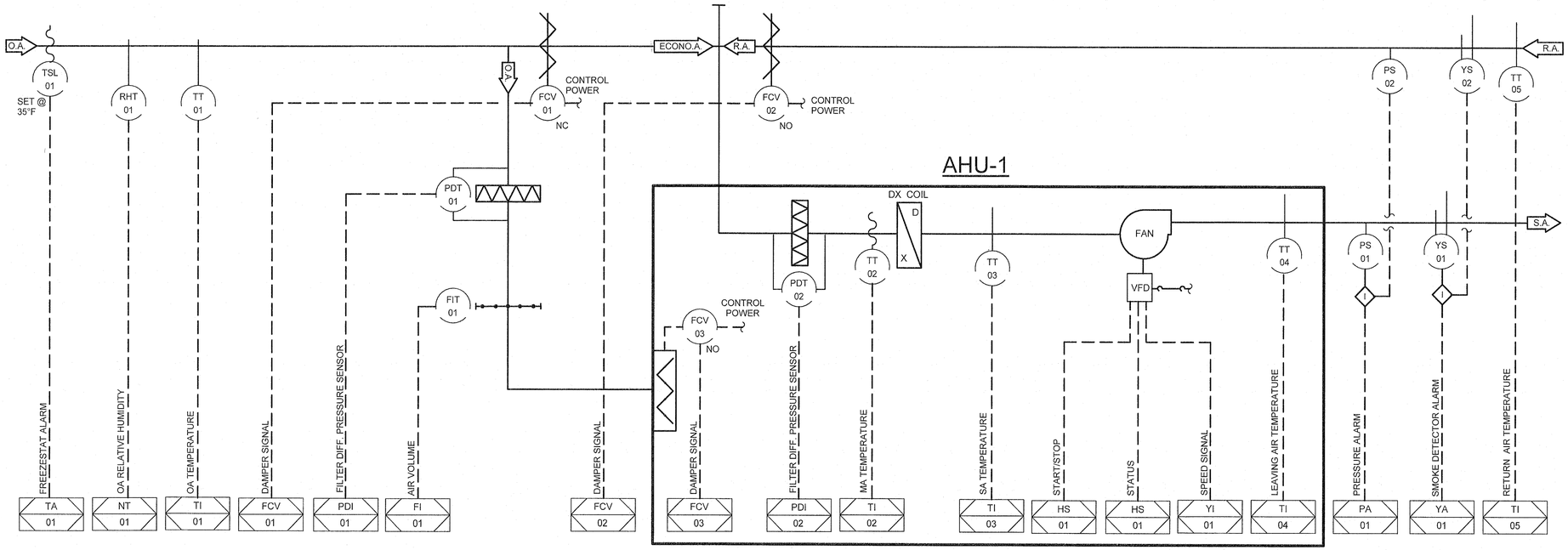

AHU SHALL BE FURNISHED WITH FACTORY DDC CONTROLS. THE CONTRACTOR SHALL PROVIDE INSTALLATION FOR ALL FIELD INSTALLED DEVICES FURNISHED WITH THE MECHANICAL EQUIPMENT IN ADDITION TO THE DEVICES REQUIRED IN THE DIAGRAM ABOVE. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SEQUENCE OF OPERATION

PROGRAMMING
THE AHU UNIT SHALL BE PROGRAMMED ACCORDING TO THE FOLLOWING SEQUENCE OF OPERATIONS INCLUDING ALL ENERGY REDUCTION OPERATIONS DESCRIBED IN THIS SEQUENCE AND IN THE PROJECT SPECIFICATIONS.

SYSTEM STATUS DISPLAY
THE DISPLAYS SHALL INCLUDE ALL POINTS INDICATED ON THE DRAWINGS AND ANY OTHERS REQUIRED TO ACHIEVE THE SEQUENCE OF OPERATIONS. THE UNIT CONTROLLER SHALL BE ABLE TO INTEGRATE SYSTEM DIAGNOSTICS INTO CONTROL ACTION DECISIONS. THIS SHALL ALSO INCLUDE THE ABILITY TO DESIGNATE INDIVIDUAL UNITS AS BEING IN MAINTENANCE MODE TO AVOID GENERATING ALARMS. ALL SYSTEM CONTROL AND STATUS EVENTS SHALL BE RECORDED, AT THE OPERATOR'S SELECTION TO FACILITATE TROUBLESHOOTING. ALL DETECTED ALARMS OR FAILURES SHALL INITIATE AN ALARM WITHIN THE UNIT.

POWER FAILURE RECOVERY
THE POWER FAILURE RECOVERY CAPABILITY SHALL RETURN THE SYSTEM TO ITS LAST STATE (BEFORE THE BUILDING LOST POWER).

OCCUPANCY CONTROL
THE RTU SHALL BE SETUP WITH AN OCCUPANCY SCHEDULE FOR DIFFERENT AREAS OF THE FACILITY. THE OWNER SHALL BE INTERVIEWED BY THE CONTRACTOR BEFORE START-UP TO ESTABLISH THESE SCHEDULES. EACH TERMINAL BOX SHALL BE TIED IN TO A ZONE OCCUPANCY SENSORFOR USE IN CONSERVING ENERGY WHILE UNOCCUPIED. AN AFTER HOURS OVERRIDE SHALL BE PROVIDED.

MINIMUM OUTSIDE AIR VOLUME SETPOINT CONTROL
OUTSIDE AIR VOLUME SHALL BE CONSTANT AND SHALL MATCH CFM ON SCHEDULE DURING UNOCCUPIED PERIODS, VAV BOXES SHALL GO TO MINIMUM CFM. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER SELECTED TO ENSURE AHU IS NOT OPERATED BELOW MANUFACTURER'S RECOMMENDED MINIMUM AIRFLOW.

SUPPLY AIR TEMPERATURE CONTROL
THE RTU COMPRESSORS SHALL BE STAGED TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT OF 52 F (ADJ.). ZONE HEATING COILS WILL HEAT SPACE TO MEET ZONE T-STAT REQUIREMENTS.

SUPPLY AIR STATIC SETPOINT CONTROL
A DUCT MOUNTED STATIC PRESSURE TRANSDUCER LOCATED TWO THIRDS THE DISTANCE DOWN THE LONGEST PRIMARY DUCT SYSTEM SERVED BY THE AIR HANDLING UNIT. MODULATE THE FAN MOTOR SPEED AS REQUIRED TO MAINTAIN DUCT STATIC PRESSURE SET POINT (ADJUSTABLE). UNIT FAN SHALL ALWAYS START UNLOADED AND INCREASE STATIC PRESSURE GRADUALLY TO SET POINT.

SUPPLY FAN CONTROL
THE SUPPLY FAN VFD SHALL BE ENABLED BASED ON AN OCCUPANCY SCHEDULE FOR THE SPACE PROGRAMMED INTO UNIT CONTROLLER. THE FAN SHALL OPERATE ONLY WHEN COMPRESSORS ARE OPERATING. IF DURING UNOCCUPIED PERIODS, ANY OF THE SPACE TEMPERATURES RISE ABOVE THE UNOCCUPIED COOLING SETPOINT, THE AIR HANDLING UNIT SHALL START AND OPERATE TO CHANGE THE SPACE TEMPERATURE 2°F (ADJUSTABLE) BEFORE STOPPING. IF DURING UNOCCUPIED PERIODS, ANY OF THE SPACE OCCUPANCY SWITCHES ARE ACTIVATED, THE AIR HANDLING UNIT SHALL START AND OPERATE FOR A PERIOD OF TWO HOURS BEFORE STOPPING.

FILTER MONITORING
THE DIFFERENTIAL PRESSURE ACROSS THE FILTER SHALL BE MONITORED BY THE FMS THROUGH A DIFFERENTIAL PRESSURE TRANSMITTER. IF THE DIFFERENTIAL PRESSURE EXCEEDS SET POINT, THE FMS SHALL INITIATE AN ALARM.

SMOKE DETECTORS
SMOKE DETECTORS LOCATED IN THE SUPPLY AIR STREAM, SHALL STOP THE FAN IF AN ALARM CONDITION IS DETECTED. WHEN THE FANS ARE STOPPED, THE UNIT CONTROLLER SHALL POSITION THE DAMPERS TO THEIR NORMAL STATE.

DUCT PRESSURE SAFETY SWITCHES
SAFETY SWITCHES INSTALLED IN THE SUPPLY AND RETURN AIR DUCTS FOR EACH UNIT SHALL ALARM IF THE DUCT PRESSURE IS ABOVE THE HIGH ALARM SETPOINT. THE HIGH ALARM SETPOINT SHALL BE 150% OF THE NORMAL OPERATING STATIC OF THE SYSTEM. IF THE RTU CONTROLLER SENSES AN ALARM CONDITION, THE CONTROLLER SHALL STOP THE SUPPLY FANS.

ECONOMIZER CONTROL
MODULATE THE OUTSIDE AIR AND RETURN AIR DAMPERS IN SEQUENCE TO MAINTAIN THE MIXED AIR TEMPERATURE SETPOINT 2°F (ADJ.) LESS THAN THE DISCHARGE AIR TEMPERATURE SETPOINT.

ECONOMIZER ENABLING
ECONOMIZER SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE IS LESS THAN 68°F (ADJ.), THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AND ENTHALPY AND THE SUPPLY FANS STATUS ARE ON. WHEN ECONOMIZER IS ENABLED, THE ECONOMIZER DAMPER SHALL MODULATE AND THE RETURN AIR DAMPER SHALL MODULATE TO MAINTAIN THE LEAVING AIR TEMPERATURE. IF THE OUTSIDE AIR DAMPER IS FULLY OPEN AND THE ECONOMIZER OPERATION ALONE IS NOT SUFFICIENT TO SATISFY THE DISCHARGE AIR TEMPERATURE SETPOINT REQUIREMENT FOR COOLING THE UNIT WILL CALL FOR MECHANICAL COOLING AND RESUME NORMAL COOLING OPERATION.

ECONOMIZER DISABLING
WHEN THE DISCHARGE AIR TEMPERATURE IS OUT OF THE DESIGN LIMITS (55°F TO 45°F) OR THE FREEZESTAT IS ON OR LOSS OF SUPPLY FAN ON STATUS OR IF UNIT IS OFF THE ECONOMIZER MODE IS DISABLED. WHEN THIS CONDITION OCCUR THE ECONOMIZER DAMPER SHALL CLOSE AND THE OUTSIDE AIR DAMPER SHALL AND THE RETURN AIR DAMPER SHALL MODULATE TO MAINTAIN MINIMUM OUTSIDE AIR.

1 / 1M-802 VAV UNIT CONTROL DIAGRAM
SCALE: N.T.S.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION CONTROLS - II

1M-802

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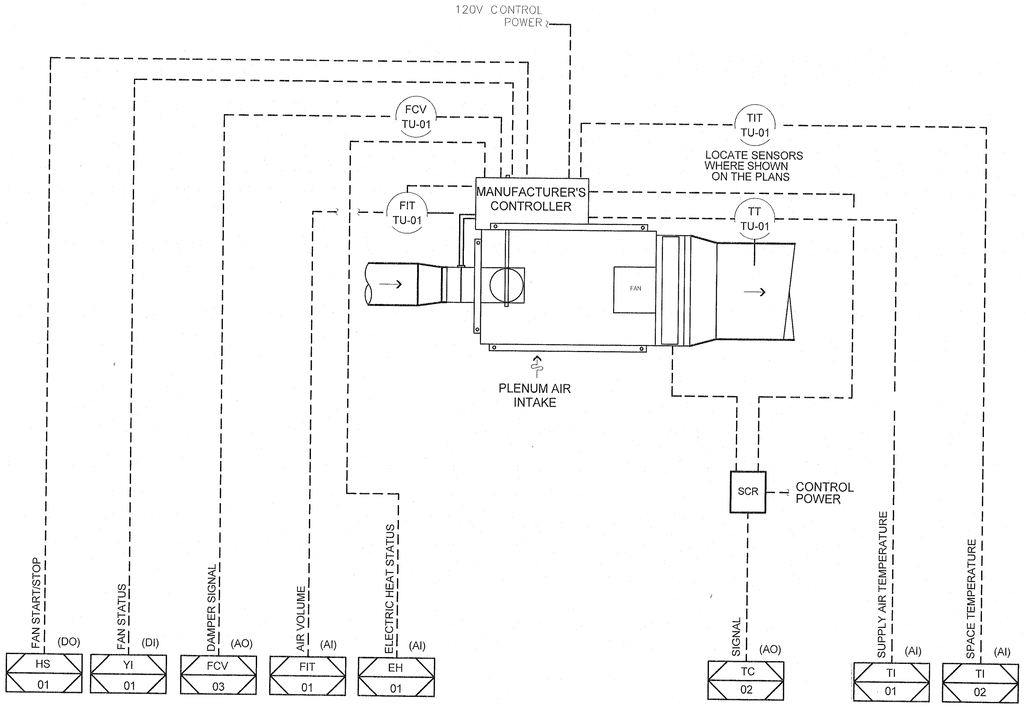


SEQUENCE OF OPERATION

GENERAL:

EACH TERMINAL UNIT SHALL BE EQUIPPED WITH ITS OWN STAND ALONE CONTROLLER. THE WIRING SHOWN IS PROVIDED AS A GENERAL DESCRIPTION AND IS NOT AS A DETAILED WIRING DIAGRAM WHICH VARIES WITH THE MANUFACTURER. EACH OF THESE UNITS SHALL CONSIST OF A VARIABLE VOLUME SERIES FAN POWERED TERMINAL UNIT, VARIABLE VOLUME PRIMARY INLET AIR DAMPER, FLOW CROSS/FLOW RING MULTI-POINT SENSOR, ELECTRIC HEATING COIL (WHERE SCHEDULED), AND RELATED CONTROL SYSTEMS.

ZONE CONTROL:

A. THE PRIMARY AIR DAMPER SHALL MODULATE BETWEEN MINIMUM AND MAXIMUM SETPOINTS TO MAINTAIN SPACE TEMPERATURE SETPOINT AT 73° (ADJUSTABLE).
B. IF THE PRIMARY AIR DAMPER IS AT ITS MINIMUM POSITION AND THE SPACE TEMPERATURE IS BELOW SETPOINT, THE PLENUM FAN SHALL VARY SPEED TO MAINTAIN SPACE TEMPERATURE SETPOINT.
C. IF THE PLENUM FAN IS AT ITS MAXIMUM SPEED AND THE SPACE TEMPERATURE IS BELOW SETPOINT, THE HEATING COIL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.

UNOCCUPIED MODE

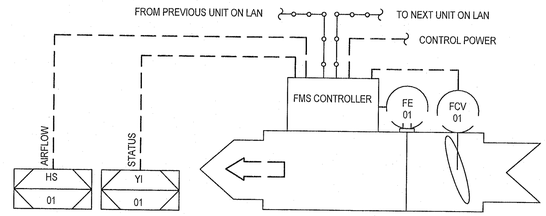
A. DUAL TECHNOLOGY OCCUPANCY SENSORS TO BE USED TO TURN OFF LIGHTS WHEN UNOCCUPIED AS WELL AS SETBACK VAV TO CLOSED POSITION (OR MINIMUM - ADJUSTABLE). IF TERMINAL UNIT SERVES MORE THAN ONE ROOM, ANY OCCUPANCY IN SPACES SHALL OVERRIDE CONTROL. REFER TO ELECTRICAL FOR MORE INFORMATION.

COMMUNICATION

A. THE UNIT SHALL BE CAPABLE OF TRANSMITTING THE FOLLOWING INFORMATION AND RECEIVING INSTRUCTIONS TO CHANGE SETPOINTS IN STANDARD BINARY CODED DECIMAL FORMAT (DDC):

- ΠΡΙΜΑΡΥ ΑΙΡ ςΕΛΟΧΙΤΥ.
- ΠΡΙΜΑΡΥ ΑΙΡ ΜΑΞΙΜΥΜ ΧΦΜ ΣΕΤ ΠΟΙΝΤ.
- ΠΡΙΜΑΡΥ ΑΙΡ ΜΙΝΙΜΥΜ ΧΦΜ ΣΕΤ ΠΟΙΝΤ.
- ΤΕΜΠΕΡΑΤΥΡΕ ΑΤ ΡΟΟΜ ΤΗΕΡΜΟΣΤΑΤ.
- ΧΟΟΛΙΝΓ ΤΕΜΠΕΡΑΤΥΡΕ ΣΕΤ ΠΟΙΝΤ.
- ΗΕΑΤΙΝΓ ΤΕΜΠΕΡΑΤΥΡΕ ΣΕΤ ΠΟΙΝΤ.
- ΦΑΝ ΟΠΕΡΑΤΙΝΓ ΣΤΑΤΥΣ.
- ΣΥΠΠΛΥ ΑΙΡ ΤΕΜΠΕΡΑΤΥΡΕ.

3 1M-803 FAN POWERED TEMIRNAL UNIT WITH ELECTRIC REHEAT DIAGRAM
SCALE: N.T.S.

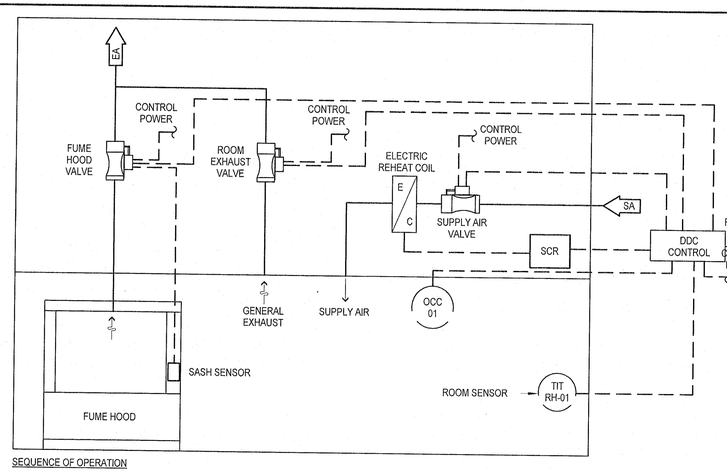


SEQUENCE OF OPERATION

EXHAUST AIR VALVE UNIT

A. THE AIR VALVE SHALL OPERATE CONTINUOUSLY AS CONTROLLED BY THE BAS CONTROL SYSTEM. EXHAUST AIR VALVE SHALL BE INTERLOCK WITH LAB TRACKING SYSTEM TO KEEP THE ROOM NEGATIVE/POSSITIVE PRESSURE. REFER TO DRAWINGS FOR PRESSURE REQUIREMENT.

2 1M-803 EXHAUST AIR VALVE CONTROL DIAGRAM
SCALE: N.T.S.



SEQUENCE OF OPERATION

GENERAL

THE LABORATORY ENVELOPE SHALL CONSIST OF ONE SUPPLY AIR CONTROL VALVE, FUME HOOD AIR VALVE AND A GENERAL EXHAUST AIR VALVE.

NORMAL MODE

A. THE FUME HOOD SHALL ACT INDEPENDENTLY TO MAINTAIN A 100 FT. PER MINUTE (ADJ.) CONSTANT AVERAGE FACE VELOCITY, AT ANY SASH POSITION.
B. THE LAB CONTROL SYSTEM SHALL MAINTAIN A CONSTANT NEGATIVE OFFSET (ADJ.) BETWEEN THE SUM OF THE LABORATORY ROOM TOTAL EXHAUSTS (GENERAL AND FUME HOODS, AS APPLICABLE) AND THE SUPPLY AIR VOLUME. THIS OFFSET SHALL BE INDEPENDENT OF THE EXHAUST VOLUME MAGNITUDE, AND SHALL REPRESENT THE VOLUME OF AIR THAT WILL ENTER THE ROOM FROM THE CORRIDOR OR OTHER ADJACENT SPACES. REFER TO SCHEDULES FOR OFFSET AIRFLOW FOR EACH SPACE AND AIR BALANCE PLAN ON THIS SHEET.
C. THE SYSTEM SHALL INCREASE FLOW AT THE GENERAL EXHAUST VALVE UNDER THE CONDITIONS WHERE ADDITIONAL EXHAUST IS REQUIRED TO MAINTAIN THE ROOM'S AIRFLOW BALANCE.
D. THE OUTPUT SIGNAL FROM THE LABORATORY ROOM TEMPERATURE SENSOR SHALL BE PROPORTIONAL TO THE REQUIRED SUPPLY AIR VOLUME NEEDED TO MAINTAIN ROOM TEMPERATURE SETPOINT.
E. THE CONTROL SIGNAL FOR THE SUPPLY AIR CONTROL VALVE SHALL BE GENERATED BY COMPARING THE TEMPERATURE SENSOR SIGNAL TO THE TOTAL HOOD AIR SIGNAL. THE HIGHER OF THESE TWO SIGNALS SHALL BE SELECTED AND USED AS A VOLUME SETPOINT TO CONTROL THE SUPPLY AIR CONTROL VALVE.
F. ON A CALL FOR INCREASED VOLUME THROUGH THE FUME HOOD TO MAINTAIN CONSTANT FACE VELOCITY AS THE SASH IS OPENED, THE CONTROLLER SHALL MODULATE THE GENERAL EXHAUST VALVE TO MINIMUM POSITION TO MAINTAIN LABORATORY PRESSURIZATION WITHOUT INCREASED ENERGY USAGE. WITH THE GENERAL EXHAUST VALVE AT MINIMUM POSITION, THE SUPPLY AIR VALVE SHALL MODULATE OPEN TO MAINTAIN THE LABORATORY PRESSURIZATION. THE SPACE TEMPERATURE SENSOR SHALL MODULATE THE ELECTRIC DUCT REHEAT SCR CONTROL TO MAINTAIN ROOM TEMPERATURE SETPOINT. ON A DECREASE IN FUME HOOD VOLUME, THE REVERSE SHALL OCCUR.

OCCUPIED / UNOCCUPIED MODE

A. EACH ROOM IS EQUIPPED WITH DUAL TECHNOLOGY OCCUPANCY SENSOR TO BE USED TO TURN OFF LIGHTS WHEN UNOCCUPIED AS WELL AS CHANGE FROM THE AIR VALVES OCCUPANCY MODE. DURING UNOCCUPIED MODE THE AIR VALVES SHALL MODULATE TO A MINIMUM FLOW POSITION (ADJUSTABLE). REFER TO LABORATORY AIR FLOW BALANCE TABLE ON SHEET M6.1 FOR ADDITIONAL INFORMATION.

SAFETIES

A. THE DDC SYSTEM SHALL ALARM BASED UPON THE ITEMS INDICATED IN THE POINT SUMMARY.
B. AHU SHUT-DOWN. UPON SHUT-DOWN OF AN AHU SUPPLY FAN BY THE FIRE ALARM SYSTEM DUE TO THE DUCT SMOKE DETECTION, HIGH STATIC PRESSURE SWITCH OR LOW STATIC PRESSURE SWITCH, THE LABORATORY GENERAL EXHAUST TERMINALS FOR THE LABORATORIES SERVED BY THE SHUT-DOWN AHU SHALL BE OVERRIDDEN TO CLOSE BY THE DDC SYSTEM (DOES NOT AFFECT LE TERMINALS). THE GENERAL EXHAUST TERMINALS SHALL BE PLACED BACK INTO NORMAL OPERATION WHEN THE AHU SUPPLY FAN IS BACK IN OPERATION.
C. WHEN THE LABORATORY EMERGENCY MODE IS PRESSED ONCE (MAINTAINS DEPRESSED POSITION), THE LAB SUPPLY VALVES SHALL GO TO ITS MAXIMUM SCHEDULED CFM AND THE DDC SYSTEM SHALL ALARM. WHIT MODE RESET, THE LABORATORY SHALL GO BACK TO THE NORMAL OPERATION AND THE ALARM CANCELLED.

1 1M-803 TYPICAL LABORATORY W/ FUME HOOD CONTROL SCHEMATIC
SCALE: N.T.S.

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HOUSTON PUBLIC WORKS

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SHEET NO. 163 OF 255	

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DEC 20th, 2024

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ABBREVIATIONS

AC	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AFS	AIR FLOW STATION
ALT	ALTITUDE
BO	BOILER
BHP	BRAKE HORSE POWER
BTU	BRITISH THERMAL UNIT
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CT	COOLING TOWER
CU	CONDENSING UNIT
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DB	DRY BULB
EA	EXHAUST AIR
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FRP	FIBER-REINFORCED PLASTIC
HP	HORSEPOWER
HPU	HEAT PUMP UNIT
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IH	INTAKE HOOD
KW	KILOWATT
LV	LOUVER
M	MOTOR OPERATED DAMPER
MAU	MAKE-UP AIR HANDLING UNIT
MBH	THOUSAND BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MTD	MOUNTED
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OD AMB	OUTDOOR AMBIENT TEMPERATURE
PM	PUMP
PW	POTABLE WATER
RA	RETURN AIR
RF	RETURN FAN
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SEN	SENSIBLE HEAT
SF	SUPPLY FAN
S/S	STAINLESS STEEL
TA	TRANSFER AIR
TYP	TYPICAL
VD	VOLUME DAMPER
V-PH-C	VOLTS-PHASE-CYCLE
WB	WET BULB
WG	WATER GAUGE
WH	WATER HEATER

LEGEND

DOUBLE LINE

- DUCTWORK WITH DUCT LINING
- REDUCER OR INCREASER
- NEW DUCTWORK
- VOLUME DAMPER (VD) (VD)
- RADIUS ELBOW (R=1.5)
- VANED ELBOW
- BRANCH DUCT TAKE-OFF
- DIFFUSER (NECK SIZE / CFM)
- CEILING RETURN/EXHAUST REGISTER (R) OR GRILLE (G) (NECK SIZE / CFM)
- SUPPLY AIR GRILLE (G) OR SUPPLY AIR REGISTER (R) (TAG / NECK SIZE / CFM)
- RETURN AND/OR AIR GRILLE (G) OR REGISTER (R) (TAG / NECK SIZE / CFM)
- DUCT (FIRST DIMENSION, DUCT SIDE SHOWN; SECOND DIMENSION, DUCT SIDE NOT SHOWN) (12x24)
- EQUIPMENT CLEARANCE ZONE

EQUIPMENT SYMBOLS

- MD — MOTORIZED DAMPER (OPPOSED BLADE)
- EXAUST FAN
- M — LOUVER WITH MOTORIZED DAMPERS
- ELECTRIC UNIT HEATER
- SD — SMOKE DETECTOR
- SPS — STATIC PRESSURE SENSOR
- T — THERMOSTAT
- T — TEMPERATURE SENSOR
- SUPPLY DIFFUSER
- GAS UNIT HEATER
- M — INTAKE HOOD
- AIRFLOW
- CEILING RETURN EXHAUST AIR GRILLE
- S — DUCT SMOKE DETECTOR
- FS — AIRFLOW SENSOR/AIRFLOW MEASURING STATION
- OS — OCCUPANCY SENSOR

GENERAL HVAC NOTES

1. SCOPE OF WORK

A. THE HVAC CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.

B. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL MECHANICAL CODE, ALL LOCAL CODES AND ALL OTHER REGULATIONS GOVERNING THE WORK OF THIS NATURE.

C. BEFORE SUBMITTING ANY PROPOSAL, THE HVAC CONTRACTOR SHALL EXAMINE THE PROPOSED SITE AND SHALL DETERMINE THE CONDITIONS THAT MAY AFFECT THE WORK. NO ALLOWANCE SHALL BE MADE BECAUSE THE HVAC CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.

D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER.

2. SHOP DRAWINGS

A. REFER TO THE SPECIFICATIONS FOR SHOP DRAWING REQUIREMENTS.

3. DUCTWORK

A. DUCTWORK SHALL BE ALUMINUM ONLY, CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.

B. THE HVAC CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ALL DUCTWORK THAT PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON THE DRAWINGS.

C. ALL BRANCH DUCTS SHALL HAVE VOLUME DAMPERS.

D. WHERE FLOW EXCEEDS 150 CFM, THE CONTRACTOR SHALL USE SMOOTH RADIUS ELBOWS OR TURNING VANES.

E. ALL DUCT JOINTS SHALL BE SEALED IN ACCORDANCE WITH SMACNA STANDARDS AND ACCEPTED GOOD PRACTICE.

F. ALL DUCT DIMENSIONS ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED PROVIDED THAT THE NET FREE AREA IS MAINTAINED.

G. ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1□ " FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.

4. HVAC CONTROLS

A. THE HVAC CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

5. ELECTRICAL

A. THE HVAC CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR LOCATION OF POWER WIRING TO EACH HVAC UNIT.

6. PIPE SUPPORTS

A. ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAPS TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING SHALL BE SUPPORTED EVERY 4 FEET.

7. MISCELLANEOUS

A. ALL EXTERIOR OPENINGS SHALL BE PROPERLY CAULKED AND SEALED TO PREVENT INFILTRATION OF OUTSIDE AIR INTO THE CONDITIONED SPACE.

B. COORDINATE THE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATIONS.

C. THE HVAC CONTRACTOR SHALL VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE.

D. THE MECHANICAL PLANS ARE DIAGRAMATIC IN NATURE AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL OF THE DETAILS FOR THE EQUIPMENT. THE HVAC CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT AND ENSURE THAT IT WILL FIT IN THE AVAILABLE SPACE.

8. TESTING AND BALANCING

A. THE HVAC SYSTEMS SHALL BE TESTED AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.

9. GUARANTEE

A. MATERIALS, EQUIPMENT, AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE. DEFECTS THAT APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

B. COMPRESSOR SHALL COME WITH MANUFACTURER'S STANDARD 5-YEAR WARRANTY.

STRUCTURE/SPACE NAME	AREA (FT^2)	HEIGHT (FT)	SPACE VOLUME (FT^3)	APPLICABLE 2020 NFPA 820 CODE SECTION	NEC AREA CLASSIFICATION AFTER APPLYING VENTILATION AS STATED	DESIGN REQUIREMENTS	HVAC METHOD	BASIS OF VENTILATION RATES	DESIGN SPACE TEMPERATURE (°F)		MIN CONTINUOUS AIR CHANGES (ACH)	MAX CONTINUOUS AIR CHANGES (ACH)	NOTES
									WINTER	SUMMER			
DEWATERING ROOM	4736	24	113664	TABLE 6.2.2(a) ROW 12, LINE a. SECTION 9.2.5	UNCLASSIFIED	VENTILATION AND FREEZE PROTECTION	EXHAUST FANS, MAKE UP AIR UNIT, AND WALL LOUVERS	CONTINUOUS 6 ACH WITH THE EXCEPTIONS BELOW: • 3 ACH WHEN OUTSIDE IS BELOW 50 F, ROOM IS UNOCCUPIED, AND HAZARDOUS GAS LEVEL IS BELOW THE REQUIRED LEVEL IN NFPA 820. • INTERMITTENT VENTILATION RATES HIGHER THAN 6 ACH TO OFFSET THE HEAT GENERATED BY EQUIPMENT.	40	104	3	6	1
ELECTRICAL ROOM	1000	24	24000	N/A	UNCLASSIFIED	HEATING AND COOLING	PACKAGED HEAT PUMP	VENTILATION IS PROVIDED FOR ROOM PRESSURIZATION	60	80	1	1	1
RESTROOM	95	24	2280	N/A	UNCLASSIFIED	HEATING AND COOLING	WALL HEATER, SUPPLY FROM ELECTRICAL ROOM'S AC UNITS	NO VENTILATION REQUIRED AS THE SPACE IS NOT NORMALLY OCCUPIED	70	75	-	-	1

NOTE:
1. ACCORDING TO ASHRAE 2017 HANDBOOK WEATHER DATA, GEORGE BUSH INTERCONTINENTAL AIRPORT IN HOUSTON, TX HAS SUMMER DESIGN TEMPERATURE OF 97.5 °F DB/76.4 °F WB AND WINTER DESIGN TEMPERATURE OF 31.1°F. THESE TEMPERATURES DO NOT REPRESENT EXTREME WEATHER CONDITIONS THAT MAY OCCUR.

NO.	DATE	REVISION	APP.

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12/2/2024
SAVVAS HADJI SAVVAS
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REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING NOTES, SYMBOLS, AND ABBREVIATION 2M-001

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	-
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
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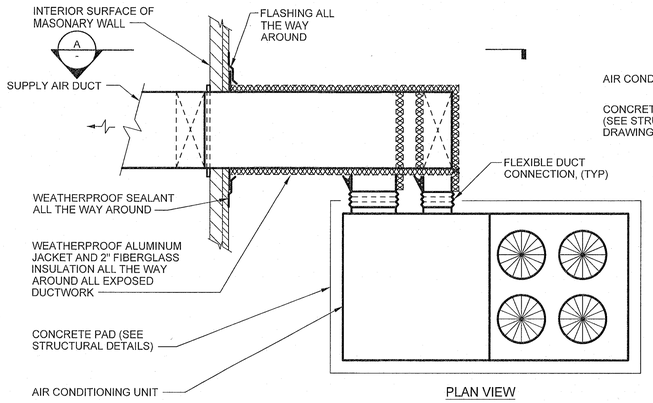
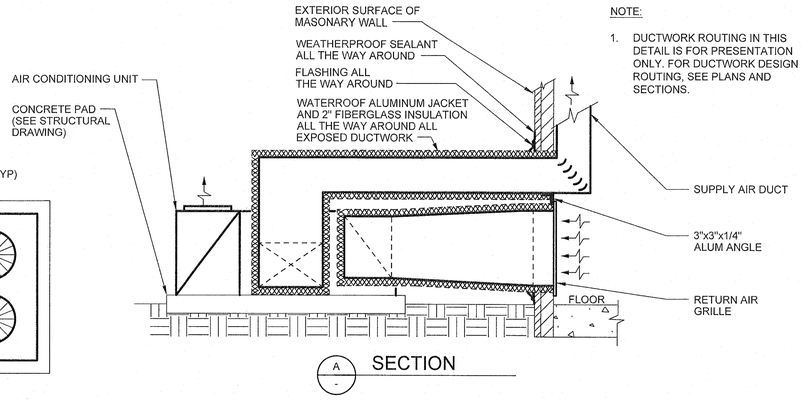




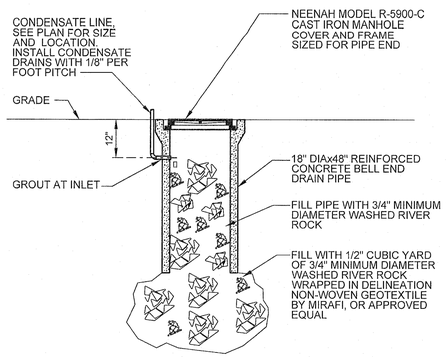
NOTE:

1. DUCTWORK ROUTING IN THIS DETAIL IS FOR PRESENTATION ONLY. FOR DUCTWORK DESIGN ROUTING, SEE PLANS AND SECTIONS.

M-111 PACKAGED AC UNIT WITH HORIZONTAL DUCTWORK

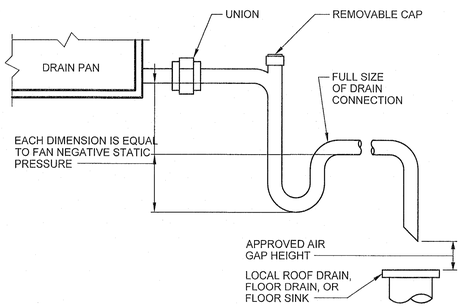
(THOUGH OUTSIDE WALL DETAIL)

REV 010119



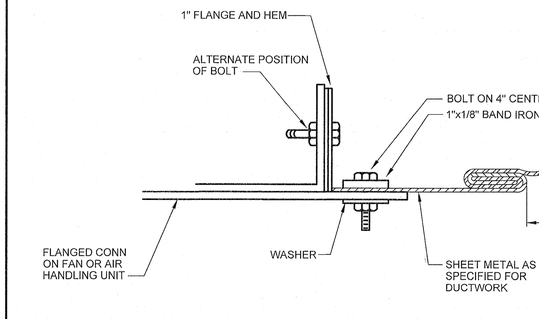
M-113 CONDENSATE DRAIN DRYWELL

REV 010119



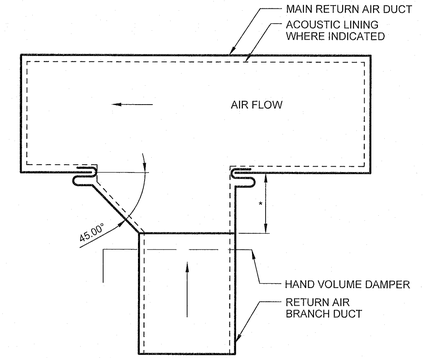
M-114 CONDENSATE DRAIN DETAIL

REV 010119



M-401 RECTANGULAR FLEXIBLE CONNECTION

REV 010119

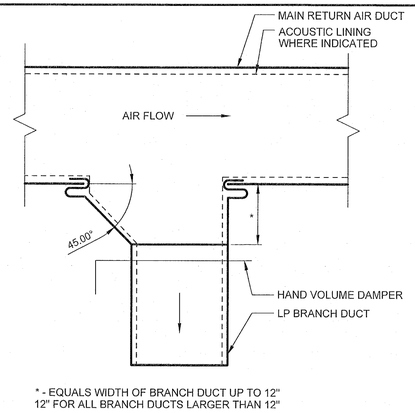


*-EQUALS WIDTH OF BRANCH DUCT UP TO 12". 12" FOR ALL BRANCH DUCTS LARGER THAN 12".

M-404 TYPICAL RETURN AIR BRANCH

(DUCT TAKE-OFF)

REV 010119

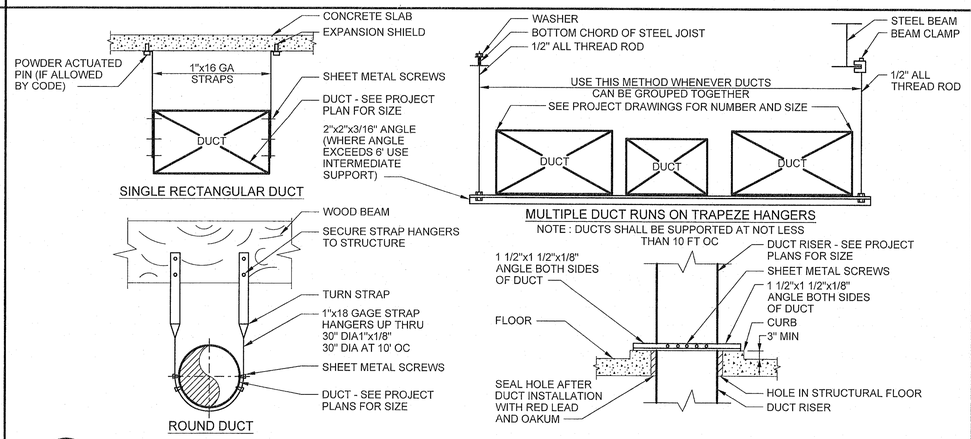


* - EQUALS WIDTH OF BRANCH DUCT UP TO 12" 12" FOR ALL BRANCH DUCTS LARGER THAN 12"

M-405 TYPICAL SUPPLY AIR BRANCH

(DUCT TAKE-OFF)

REV 010119



M-410 HANGER AND SUPPORT

(LOW PRESSURE DUCT)

REV 010119

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CITY OF HOUSTON

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING HVAC STANDARD DETAILS - I 2M-002

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R-000265-0117-4	
DRAWING SCALE	
-	
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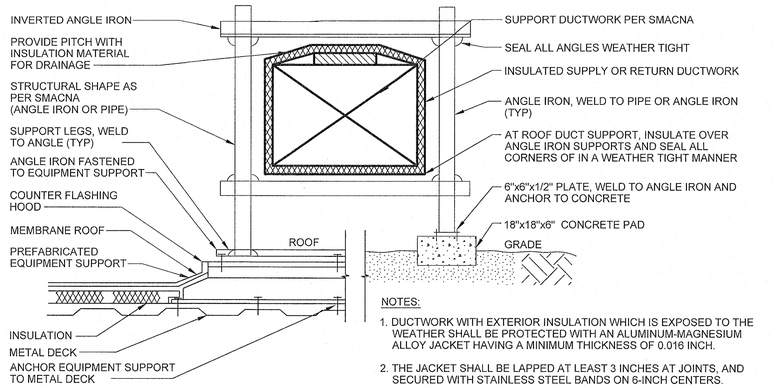
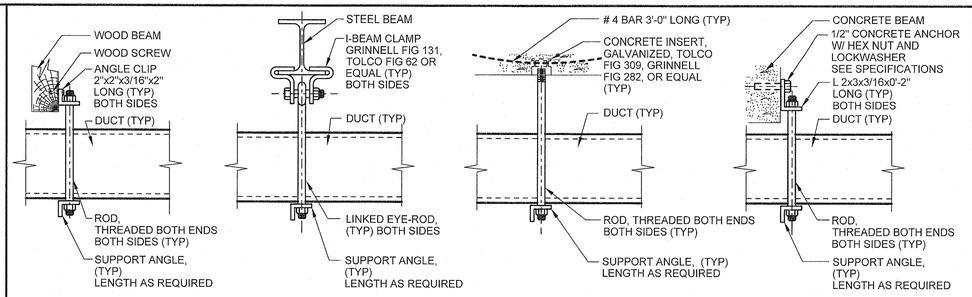


NOTES:

1. DUCTWORK WITH EXTERIOR INSULATION WHICH IS EXPOSED TO THE WEATHER SHALL BE PROTECTED WITH AN ALUMINUM-MAGNESIUM ALLOY JACKET HAVING A MINIMUM THICKNESS OF 0.016 INCH.
2. THE JACKET SHALL BE LAPPED AT LEAST 3 INCHES AT JOINTS, AND SECURED WITH STAINLESS STEEL BANDS ON 6-INCH CENTERS.
3. INSTALL DUCTWORK MINIMUM 2'-0" ABOVE GRADE OR ROOF.

M-412 EXTERIOR DUCT SUPPORT

REV 010119



WOOD BEAM HANGER | STEEL BEAM HANGER | CONCRETE BEAM OR SLAB HANGER | CONCRETE BEAM HANGER

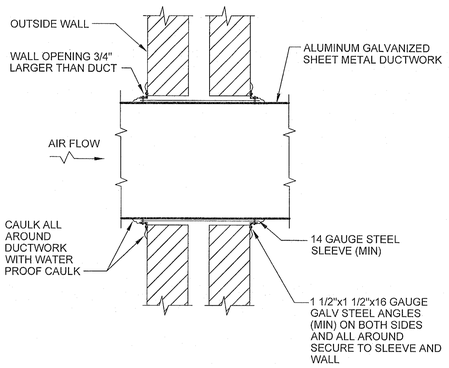
NOTE:

GALVANIZE ALL PARTS AFTER FABRICATION.

HANGER SIZING AND SPACING (INCHES)			
MAXIMUM DUCT SIZE	ROD DIA	SUPPORT ANGLE	MAXIMUM SPACING
36x12	3/8"	1 1/2"x1 1/2"x1/8"	8'-0" ON CENTER
48x18	1/2"	2"x2"x1/8"	8'-0" ON CENTER
60x24	1/2"	2"x2"x3/16"	6'-0" ON CENTER
80x24	1//2"	2"x2"x1/4"	6'-0" ON CENTER

M-423 AIR DUCTS HANGING DETAILS

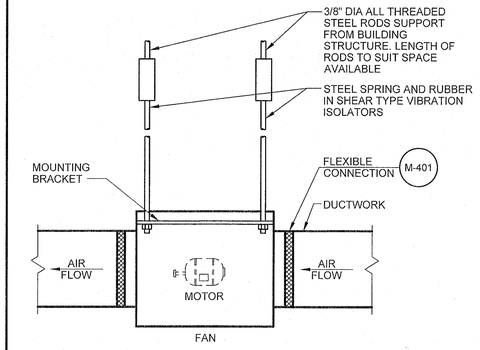
REV 010119



M-424 DUCT PENETRATION

(THROUGH OUTSIDE WALL)

REV 010119



M-504 IN-LINE FAN

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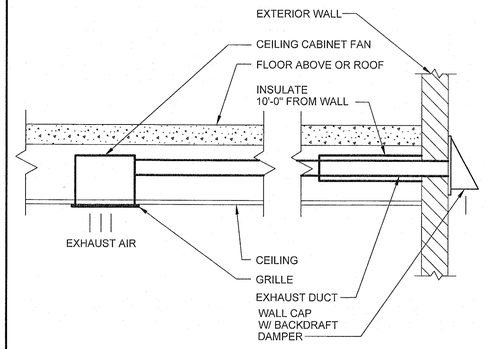
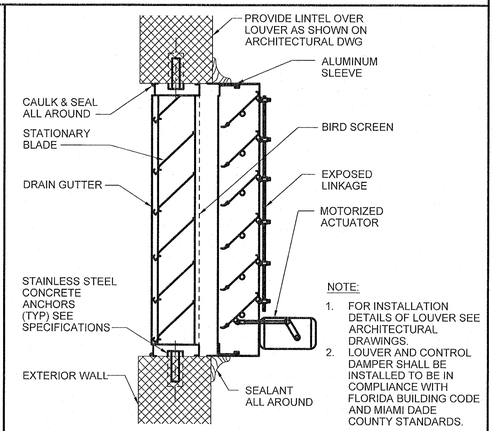


M-507 BATHROOM EXHAUST FAN

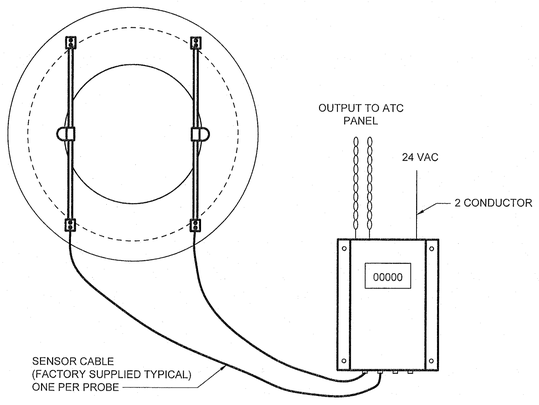
REV 010119



NOTE:

1. FOR INSTALLATION DETAILS OF LOUVER SEE ARCHITECTURAL DRAWINGS.
2. LOUVER AND CONTROL DAMPER SHALL BE INSTALLED TO BE IN COMPLIANCE WITH FLORIDA BUILDING CODE AND MIAMI DADE COUNTY STANDARDS.

M-901 STATIONARY LOUVER WITH CONTROL DAMPER



NOTES:

1. CONTRACTOR SHALL INSTALL AIR FLOW MEASUREMENT STATION PER THE MANUFACTURE'S REQUIREMENTS AND INSTRUCTIONS.
2. CONTRACTOR SHALL COORDINATE WITH MANUFACTURE FOR APPROPRIATE MOUNTING STYLE FOR APPLICABLE APPLICATION, FAN INLET OR DUCT.
3. TRANSMITTER SHALL BE EQUIPPED WITH AN AIRFLOW ANALOG OUTPUT AND TEMPERATURE OUTPUT THAT CAN BE CONFIGURED AS AN ALARM OUTPUT. ALARM CAN BE SET AS ACTIVE HIGH, ACTIVE LOW OR SETPOINT.
4. CONNECT OUTPUT SIGNAL CABLE DRAINS TO EARTH GROUND AT ONE END ONLY.
5. ON MULTIPLE TRANSMITTER INSTALLATIONS WITH A COMMON 24 VAC SOURCE, WIRE 24 VAC POWER TO THE SAME TERMINALS ON ALL TRANSMITTERS (EG L1 TO L1, L2 TO L2).
6. ALL WIRING SHALL BE INSTALLED IN CONDUITS, MEETING DIV 26 SPECIFICATIONS
7. CONTRACTOR SHALL INSTALL LABEL OF DESIGN AIR FLOW RATES ABOVE THE LCD DISPLAY.
8. PROVIDE 24 VAC POWER SUPPLY FROM ASSOCIATED HVAC AUTOMATIC CONTROL PANEL.

M-902 AIRFLOW MEASURING STATION

ON FAN INLET OR IN DUCT

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING HVAC STANDARD DETAILS - II 2M-003

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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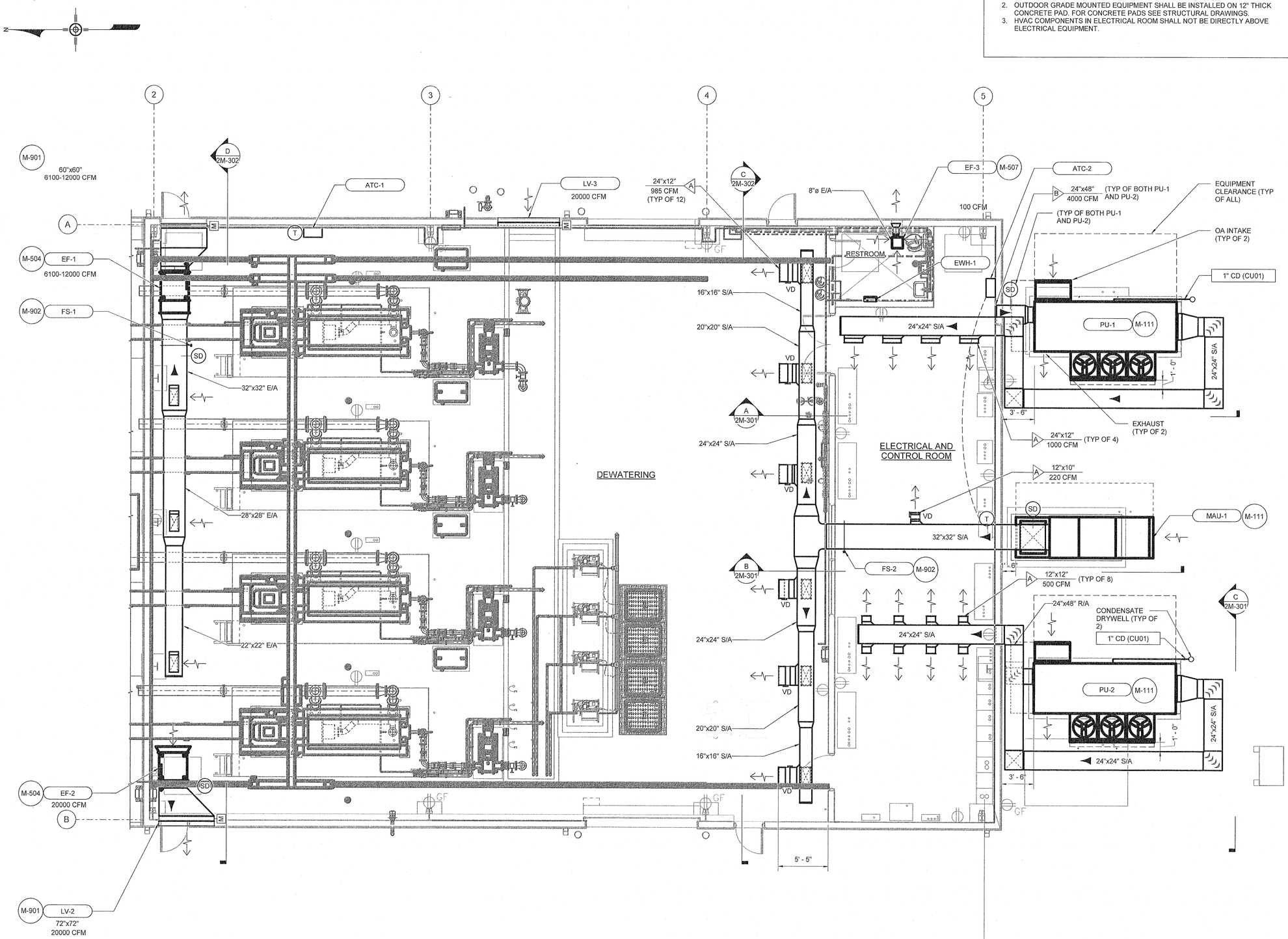
GENERAL SHEET NOTES

1. INTERLOCK RESTROOM FAN WITH RESTROOM LIGHT SWITCH
2. OUTDOOR GRADE MOUNTED EQUIPMENT SHALL BE INSTALLED ON 12" THICK CONCRETE PAD. FOR CONCRETE PADS SEE STRUCTURAL DRAWINGS.
3. HVAC COMPONENTS IN ELECTRICAL ROOM SHALL NOT BE DIRECTLY ABOVE ELECTRICAL EQUIPMENT.

NO.	DATE	REVISION	APP.



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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING HVAC FLOOR PLAN 2M-101

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
3/16" = 1'-0"	
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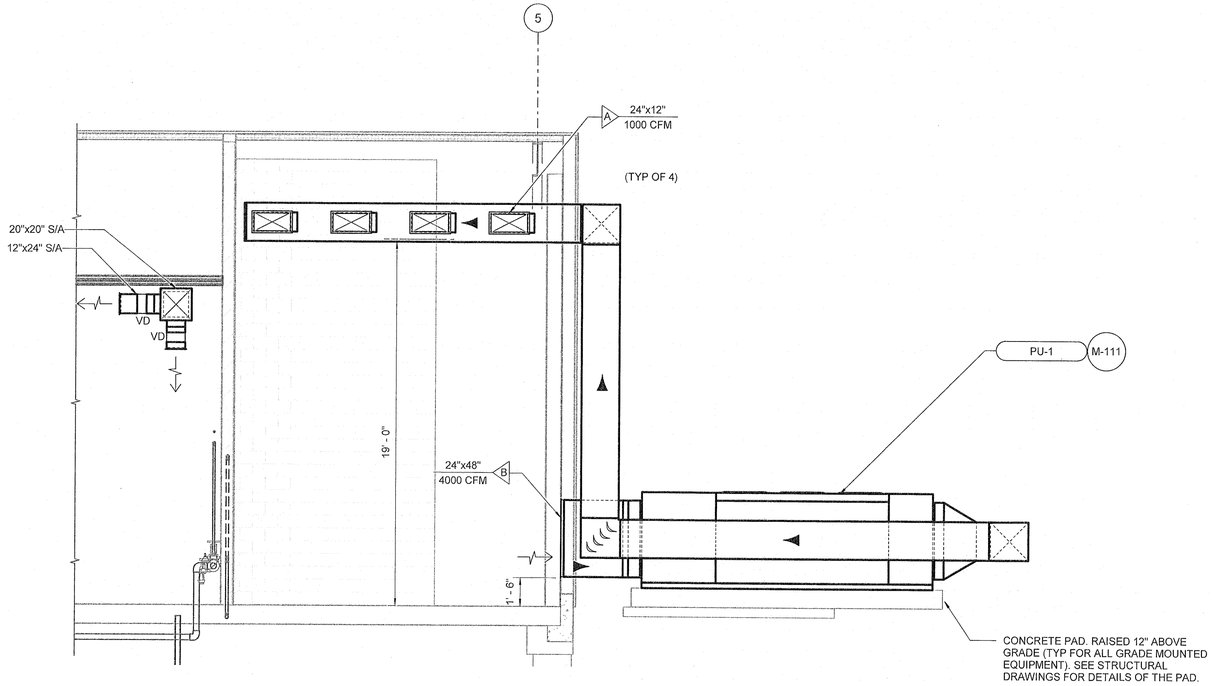
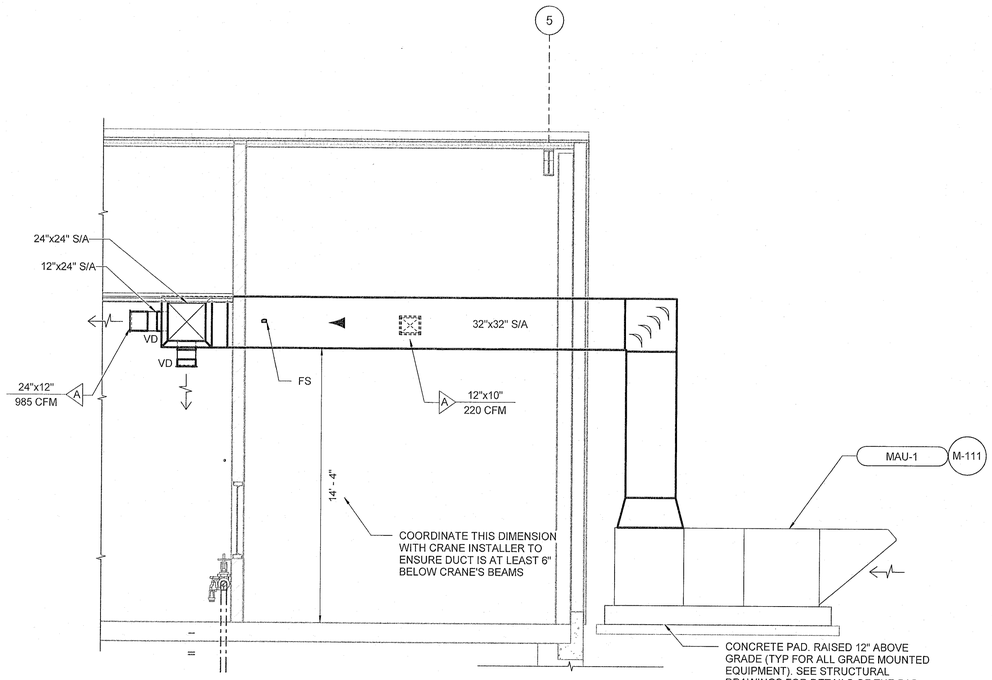


A 2M-101 SECTION - A

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



B 2M-101 SECTION - B

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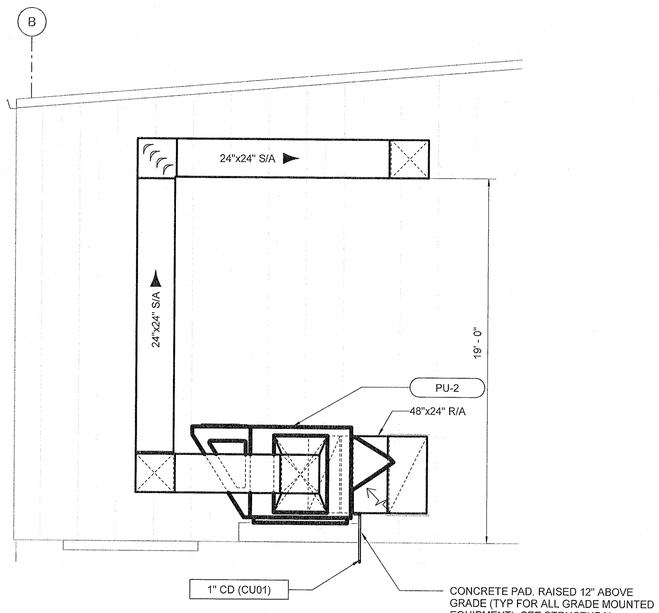

C 2M-101 SECTION - C

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

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STATE OF TEXAS 12/2/2024 SAWAS HADJ SAWAS 88293 REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING HVAC SECTIONS - I 2M-301

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/4" = 1'-0"	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 168 OF 255	

ACCEPTED NOTED 80341 CITY DRAWING NO.

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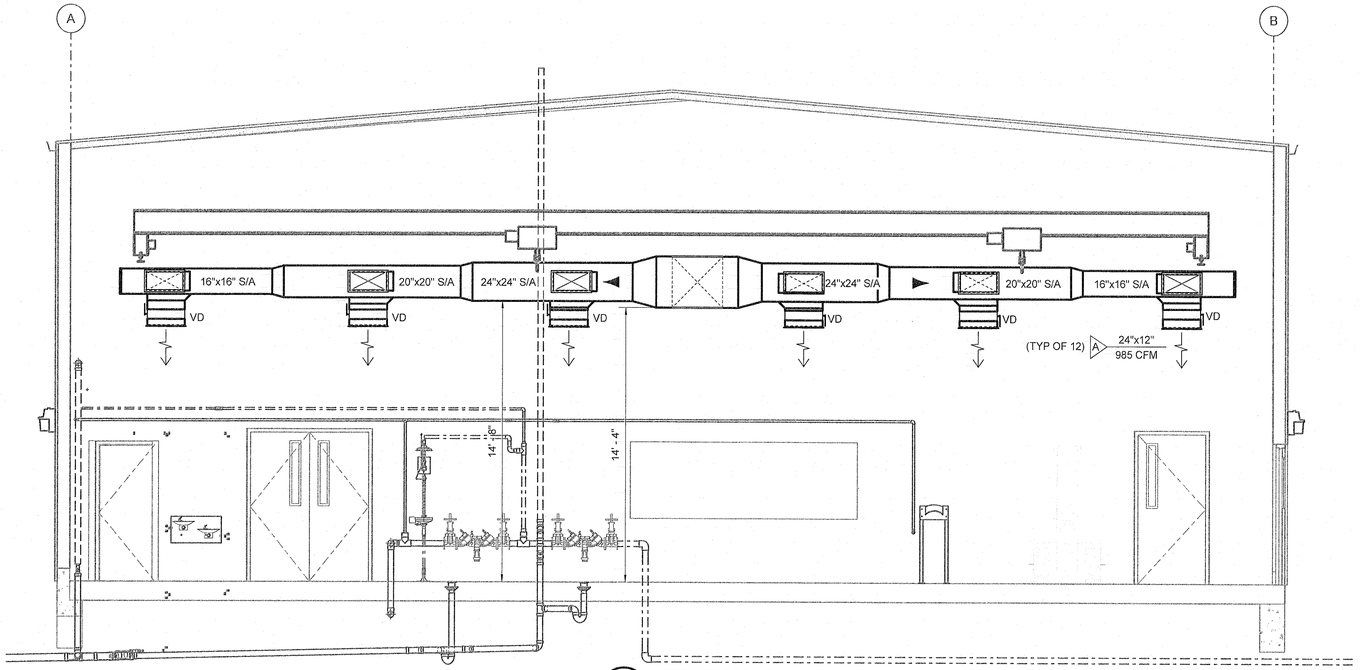
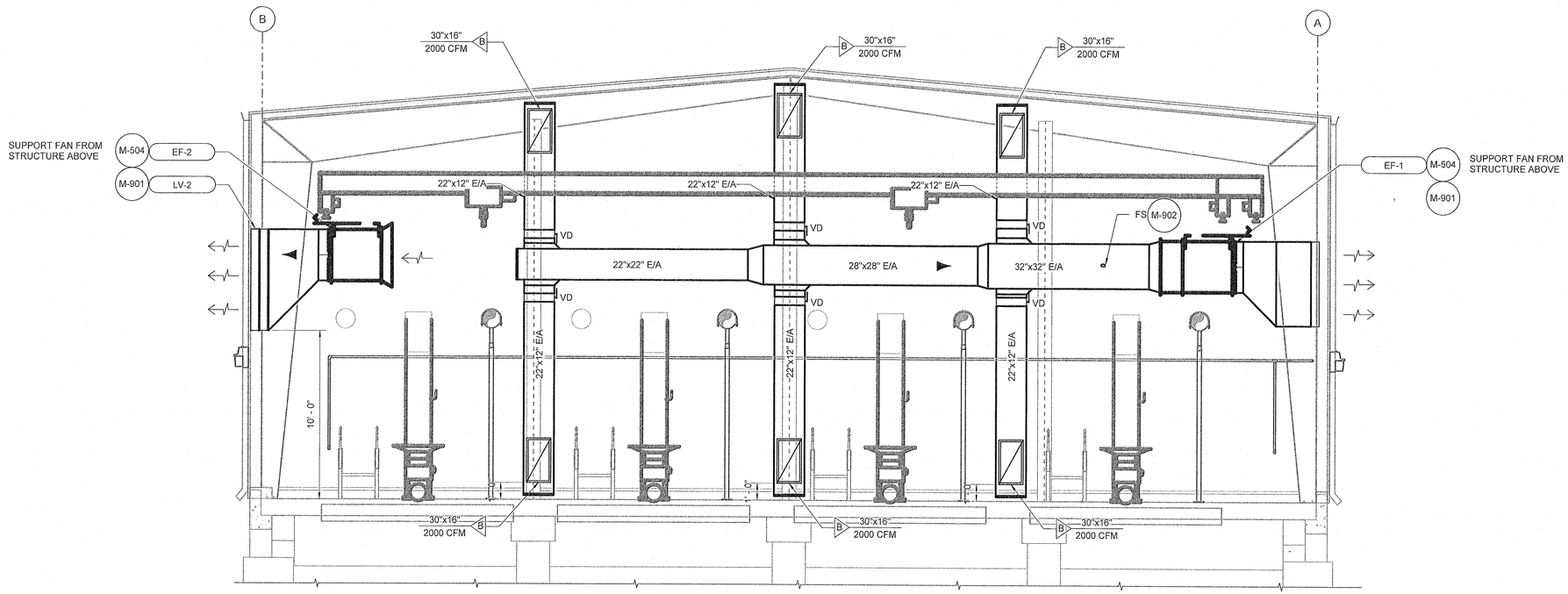


C 2M-101 SECTION - D

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



D 2M-101 SECTION - E

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

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
12/12/2024
SAWAS HADI SAWAS
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING HVAC SECTIONS - II 2M-302

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
1/4" = 1'-0"	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 169 OF 255	

PUBLIC WORKS
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80341

FAN SCHEDULE

EQUIPMENT NUMBER	SERVICE	DRIVE	HIGH (CFM)	LOW (CFM)	FAN SPEED - HIGH (RPM)	FAN STATIC EFF	MOTOR (BHP)	MOTOR (HP)	MOTOR (RPM)	MOTOR VFD RATED	MOTOR V-PH-CY	MOTOR ENCL	MOTOR FLA (A)	WEIGHT (LBS)	MANUFACTURER	MODEL	OPTIONS AND ACCESSORIES
EF-1	DEWATERING ROOM	DIRECT DRIVE	12000	6100	1170	53%	1.96	3.00	1170	YES	460-3-60	TEFC	3.59	680	GREENHECK	AX-90-275-0612-B30	1-14
EF-2	DEWATERING ROOM	DIRECT DRIVE	20000	0	1170	34%	4.07	5.00	1170	YES	460-3-60	TEFC	5.98	690	GREENHECK	AX-90-275-0623-B50	1,2,6,7,8,9,10,11,15,16,17
EF-3	RESTROOM	DIRECT DRIVE	100	0	900	29%	0.45	0.06	900	NO	115/1/60	ODP	0.43	24	GREENHECK	SP-A200	1,18-22

OPTIONS AND ACCESSORIES

1. DISCONNECT SWITCH BY DIV 16
2. MANUALLY ADJUSTABLE BLADE PITCH
3. NEMA PREMIUM MOTOR EFFICIENCY
4. VFD RATED MOTOR
5. MOTOR WITH SHAFT GROUNDING
6. EXTENDED MOTOR LEADS
7. HI-PRO Z COATING ON FAN AND ATTACHED ACCESSORIES
8. HANGING INSTALLATION WITH SPRING ISOLATORS
8. UNIVERSAL MOUNTING SUPPORT
9. BOLTED INSPECTION DOOR
10. COMPANION FLANGES ON BOTH INLET AND OUTLET
11. INSPECTION SECTION COATED SAME AS THE FAN
12. VFD PROVIDED BY THE FAN MANUFACTURER; VFD MANUFACTURER: ABB; VFD MODEL: ACS255; 3 PHASE; OUTPUT: 460 VOLTS; NEMA 4X ENCLOSURE
13. VFD SHIPPED LOOSE
15. COMPANION FLANGE ON OUTLET
16. INLET BELL WITH COATING MATCH THE FAN
17. INLET BELLL GUARD WITH COATING MATCH THE FAN
18. MOTOR WITH THERMAL OVERLEAD
19. MOTOR WITH 40 CELCIUS DEGREE AMBIENT TEMPERATURE
20. MOTOR RATED FOR CONTINUOUS OPERATION
21. DESIGNER GRILLE
22. ALUMINUM METAL WHEEL

GENERAL SHEET NOTES

1. EQUIPMENT MANUFACTURERS AND MODEL NUMBERS ARE THE BASES FOR DESIGN. SEE SPECIFICATION FOR APPROVED EQUALS.
2. SIZES OF EQUIPMENT PADS AND WALL PENETRATIONS ARE GIVEN FOR REFERENCE ONLY AND SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR ORDERING OF THE EQUIPMENT.

LOUVER SCHEDULE

EQUIPMENT NUMBER	SERVICE	LOCATION	SIZE WxH	SIZE DEPTH (IN)	(CFM)	MINIMUM FREE AREA (SQFT)	MAXIMUM FREE AREA VELOCITY (FPM)	MANUFACTURER	MODEL	OPTIONS AND ACCESSORIES
LV-1	EXHAUST	DEWATERING ROOM	60"x60"	6	12000	14.58	820	RUSKIN	ELF6375DXD	1-6
LV-2	OA INTAKE	DEWATERING ROOM	72"x72"	6	20000	21.36	940	RUSKIN	ELF6375DXD	1-6
LV-3	OA INTAKE	DEWATERING ROOM	80"x80"	6	20000	27.71	720	RUSKIN	ELF6375DXD	1-6
LV-4	OA INTAKE	DEWATERING ROOM	12"x12"	6	100	0.36	280	RUSKIN	ELF6375DXD	1-6

OPTIONS AND ACCESSORIES

1. DISCONNECT SWITCH BY DIV 16.
2. AMCA-540 AND AMCA-550 APPROVED
3. AMCA-500 TESTED
4. CD50 MOTORIZED DAMPER
5. ALUMINUM BIRD SCREEN
6. CONTRACTOR TO FURNISH ALUMINUM CLIP ANGLES AND FASTENERS AS REQUIRED TO INSTALL PER IBC

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

TAG NUMBER	SERVICE	DESCRIPTION	MATERIAL	FINISH	MANUFACTURER	MODEL
A	SUPPLY	SUPPLY GRILLE	ALUMINUM	STANDARD WHITE	TITUS	300 FL
B	RETURN	RETURN GRILLE	ALUMINUM	STANDARD WHITE	TITUS	300 ZFS

ELECTRIC WALL HEATER SCHEDULE

EQUIPMENT NUMBER	SERVICE	DESCRIPTION	AIRFLOW (CFM)	(kW)	FULL LOAD AMPS (A)	V-PH-CY	MANUFACTURER	MODEL	OPTIONS AND ACCESSORIES
EWH-1	RESTROOM	FAN FORCED WALL HEATER	100	2	9.6	208-1-60	QMARK	CWH3000	1

OPTIONS AND ACCESSORIES

1. DISCONNECT SWITCH BY DIV 16.

AIRFLOW MEASURING STATION SCHEDULE

TAG NO	SERVICE	LOCATION	MANUFACTURER OR EQUAL	MODEL	OPTIONS AND ACCESSORIES
FS-1	EXHAUST FAN	MECHANICAL VAULT	EBTRON	GTM-108-F/SI	1-3
FS-2	MAKE UP AIR UNIT'S SUPPLY	MECHANICAL VAULT	EBTRON	GTM-108-F/SI	2,3

OPTIONS AND ACCESSORIES

1. THE CONTRACTOR SHALL COORDINATE THE ACTUAL FAN THROAT, FORWARD, AND FACE DIAMETER WITH THE MANUFACTURER OF THE AIRFLOW MEASURING DEVICE, AFTER EQUIPMENT HAS BEEN APPROVED BY THE ENGINEER.
2. AIRFLOW MEASURING DEVICE SHALL BE OF THE THERMAL DISPERSION TYPE. (REFER TO SPECIFICATION 15916).
3. TRANSMITTER SHALL BE EQUIPPED WITH AN ANALOG TEMPERATURE AND AIRFLOW OUTPUT AND ETHERNET NETWORK CONNECTION.

MAKE UP AIR UNIT SCHEDULE

EQUIPMENT NUMBER	LOCATION	AIRFLOW (CFM) HIGH	AIRFLOW (CFM) LOW	TOTAL SP (IN WG)	ISP (IN WG)	FAN BHP (HP)	FAN (RPM)	HEATING TYPE	EAT (°F)	LAT (°F)	HEATING CAPACITY (KW)	ELECTRICAL MOTOR (HP)	MOTOR (RPM)	MOTOR ENCL	V-PH-CY	MCA	MOCP	WEIGHT (LBS)	MANUFACTURER	MODEL	OPTIONS AND ACCESSORIES
MAU-1	ON GRADE	11800	5900	0.91	0.41	3.97	1219	ELECTRIC	31.1	41.8	40.0	5.00	1180	TEFC	460-3-60	73	80	1767	GREENHECK	MSX-P124-H32-MF	1-17

OPTIONS AND ACCESSORIES

1. DISCONNECT SWITCH BY DIV 16.
2. DOUBLE WALL CONSTRUCTION
3. 1" WALL FIBERGLASS INSULATION FROM HEAT SECTION ON
4. 1" BASE FIBERGLASS INSULATION ON ENTIRE UNIT
5. HINGED ACCESS DOOR
6. HI-PRO POLYESTER COATING
7. UNIT CONTROLS: TERMINAL STRIP WITH NETWORKING INTERFACE
8. BMS COMMUNICATION FOR MONITORING ONLY
9. BACNET MSTP COMMUNICATION PROTOCOL
10. DISCHARGE TEMPERATURE CONTROL
11. SUPPLY FAN VFD BY MANUFACTURER
12. SUPPLY FAN CONTROL: 0-20 mA SIGNAL
13. HEATING INLET SENSOR
14. DIRTY FILTER SWITCH
15. WEATHERHOOD WITH ALUMINUM MESH FILTER
16. MOTOR SHAFT WITH GROUNDING
17. SERVICE OUTLET - SHIPPED LOOSE

PACKAGED OUTDOOR HEAT PUMP

EQUIPMENT NUMBER	SERVICE	LOCATION	SUPPLY FAN AIRFLOW (CFM) SA	SUPPLY FAN AIRFLOW (CFM) MAX OA	SUPPLY FAN AIRFLOW (CFM) MIN OA	SUPPLY FAN ESP (IN WG)	SUPPLY FAN MOTOR BHP (HP)	SUPPLY FAN MOTOR (HP)	EXHAUST FAN AIRFLOW (CFM) MAX	EXHAUST FAN AIRFLOW (CFM) MIN	EXHAUST FAN ESP IN WG)	EXHAUST FAN MOTOR BHP (HP)	EXHAUST FAN MOTOR (HP)	COOLING EAT DB (°F)	COOLING EAT WB (°F)	COOLING LAT DB (°F)	COOLING LAT WB (°F)	COOLING COND AMB (°F)	COOLING NET TOTAL (BTUH)	COOLING NET SENSIBLE (BTUH)	COOLING EER	HEATING EAT DB (°F)	HEATING EAT WB (°F)	HEATING LAT DB (°F)	HEATING LAT WB (°F)	HEATING AMBIENT DB (°F)	HEATING AMBIENT WB (°F)	HEATING (BTUH)	ELECTRICAL V-PH-CY	ELECTRICAL FLA (A)	ELECTRICAL MCA (A)	ELECTRICAL MOCP (A)	CURB SIZE L x W x H (IN)	WEIGHT	MANUFACTURER	MODEL	OPTIONS AND ACCESSORIES
PU-1	ELECTRICAL AND CONTROL ROOM	ON GRADE	4000	4000	0	0.50	1.29	2.00	4000	0	0.25	0.85	1.00	80.0	66.0	54.9	53.9	97.5	140860.0	106280.0	10.5	60.0	55.0	82.1	63.2	31.4	30.0	111.1	460-3-60	29	32	40	185 x 101 x 60	3459	AAON	RNA-013-C-0-3-DJAAA-00000	1-19
PU-2	ELECTRICAL AND CONTROL ROOM	ON GRADE	4000	4000	0	0.50	1.29	2.00	4000	0	0.25	0.85	1.00	80.0	66.0	54.9	53.9	97.5	140860.0	106280.0	10.5	60.0	55.0	82.1	63.2	31.4	30.0	111.1	460-3-60	29	32	40	185 x 101 x 60	3459	AAON	RNA-013-C-0-3-DJAAA-00000	1-19

OPTIONS AND ACCESSORIES

1. DISCONNECT SWITCH BY DIV 16.
2. HORIZONTAL CONFIGURATION - END SUPPLY AND END RETURN
3. SUPPLY FAN WITH VFD
4. 0-100% ECONOMIZER WITH POWERED EXHAUST
5. OA CONTROL: FULLY MODULATING ACTURATOR - ENTHALPY LIMIT
6. EXHAUST FAN WITH VFD
7. STANDARD BAROMETRIC RELIEF EXHAUST AIR DAMPER
8. 2" PLEATED MERV-8 FILTER
9. CLOGGED FILTER SWITCH
10. MODULATING HOT GAS REHEAT
11. SINGLE POINT POWER
12. DISCONNECT SWITCH BY DIVISION 16
13. VCC-X CONTROLLER FOR CONSTANT AIR VOLUME HEATING AND COOLING CONTROLLER
14. CONTROLLER WITH BACNET COMMUNICATION PROTOCOL
15. OUTSIDE AIR HOOD
16. FACTORY INSTALLED 115 V CONVENIENCE OUTLET
17. VFD CONDENSER FAN HEAD PRESSURE CONTROL
18. GALVANIZED, DOUBLE WALL CABINET CONSTRUCTION WITH R-13 FOAM INSULATION
19. PREMIUM AAON GRAY EXTERIOR PAINT

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STATE OF TEXAS
12/12/2024
SAVVAS HADJ SAVVAS
88293
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING HVAC EQUIPMENT SCHEDULES 2M-601

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	12" = 1'-0"
CITY OF HOUSTON PM	S/E SHAHIDUR RAHMAN, P.E.
SHEET NO.	170 OF 255

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80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

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GENERAL INFORMATION ABOUT HVAC CONTROLS

HVAC CONTROLS:
HVAC CONTROLS LOGIC IS BASED ON STANDALONE HVAC CONTROLS.

FIRE ALARM SYSTEM:
FOR AREAS THAT ARE PROTECTED BY FIRE ALARM SYSTEM, SMOKE/FIRE SIGNALS SHALL FIRST BE SENT TO THE FIRE ALARM CONTROL PANEL; THEN THE FIRE ALARM CONTROL PANEL SHALL PROVIDE SIGNAL TO THE HVAC AUTOMATIC CONTROL PANEL ASSOCIATED WITH THE FIRE/SMOKE AREA TO SHUT DOWN THE HVAC UNITS AS DESCRIBED IN THE SEQUENCE OF OPERATION.

FOR ALL AREAS THAT ARE NOT PROTECTED BY THE FIRE ALARM SYSTEM, SMOKE DETECTION SIGNAL SHALL FIRST BE SENT TO THE HVAC CONTROL PANEL ASSOCIATED WITH THE ACTIVATED SMOKE DETECTOR, AND THE HVAC CONTROL PANEL SHALL THEN:
A. SHUT DOWN THE INDICATED HVAC EQUIPMENT (SEE SEQUENCE OF OPERATION
B. SEND A SIGNAL TO SCADA

THE HVAC CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING DELIVERY OF ALL HVAC ALARMS AND CONTROLS BETWEEN THE HVAC CONTROL PANEL AND SCADA WITH THE I&C AND ELECTRICAL CONTRACTOR.

EQUIPMENT IN CLASSIFIED AREAS REQUIRING VERIFICATION OF FAN AIR FLOW SHALL BE PROVIDED WITH FLOW SENSORS UNLESS OTHERWISE NOTED.

CONDUITS FOR ALL HVAC CONTROL WIRING SHALL BE PROVIDED BY DIVISION 16. IT IS RESPONSIBILITY OF DIVISION 15 HVAC CONTRACTOR TO COORDINATE ALL THE REQUIRED CONDUITS WITH DIVISION 16 CONTRACTOR.

WIRING OF ALL HVAC CONTROLS INCLUDING 120 VOLTS CONTROLS SHALL BE PROVIDED BY DIVISION 15 HVAC CONTRACTOR.

CONDUIT AND WIRING BETWEEN THE HVAC CONTROL PANELS AND THE SCADA DCS SHALL BE PROVIDED BY DIVISION 16 CONTRACTOR.

HVAC AUTOMATIC TEMPERATURE CONTROL PANELS SHALL CONTAIN ALL ACCESSORIES NECESSARY TO PROVIDE THE CONTROL SEQUENCES DESCRIBED HEREIN.

ALL AUTOMATIC TEMPERATURE CONTROL PANELS (ATCs) SHALL INCLUDE HOA SWITCHES, AND EXTRA DRY CONTACTS FOR SENDING SIGNALS TO SCADA

ATC CONTROL PANEL CONSTRUCTION:
PANELS SHALL BE 316 STAINLESS STEEL, NEMA 4X CONSTRUCTION, AND INCLUDE A HINGED FRONT DOOR WITH LOCKING HANDLE.

ALL MANUAL SWITCHES AND DIRECT READING GAUGES SHALL BE FLUSH-MOUNTED ON THE FRONT FACE, AND BE IDENTIFIED BY ENGRAVED AND RIVETED BAKELITE OR LAMINATED PLASTIC NAMEPLATES WITH BLACK LETTERS ON WHITE BACKGROUND.

MANUAL SWITCHES AND PILOT LIGHTS SHALL BE HEAVY DUTY, OIL TIGHT CONSTRUCTION.

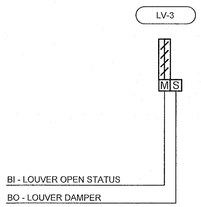
ATC PANEL CONSTRUCTION AND COMPONENTS SHALL CONFORM TO DIVISION 16 SPECIFICATIONS.

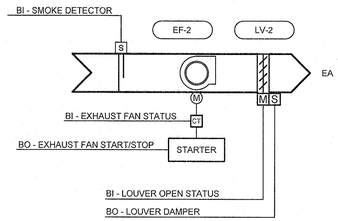
120 VAC POWER FEED SHALL BE PROVIDED TO EACH HVAC CONTROL PANELS (ATC) BY DIVISION 16.

DIVISION 15 HVAC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HVAC CONTROL PANELS AND WIRING TO AND FROM THE ATCs AND HVAC EQUIPMENT. DIVISION 15 HVAC CONTRACTOR SHALL COORDINATE WITH FIRE ALARM CONTRACTOR FOR COMPATIBILITY BETWEEN SMOKE DETECTORS AND FIRE ALARM CONTROL UNIT, AS WELL AS COMPATIBILITY BETWEEN FIRE ALARM CONTROL UNIT AND ATCS.

ALL ATC PANELS SHALL BE PROVIDED WITH AN ALARM RESET BUTTON.

SEQUENCE OF OPERATION FOR EXHAUST FAN EF-2 CONTROLLED VIA CONTROL PANEL ATC-1



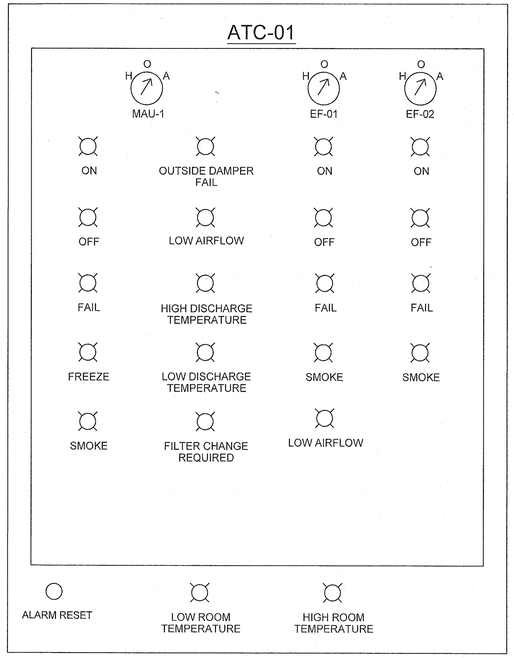


EXHAUST FAN EF-2 RUN CONDITION
EXHAUST FAN EF-2 SHALL BE COMMANDED TO RUN WHEN ROOM TEMPERATURE INCREASES TO 1 °F (ADJ) ABOVE COOLING SETPOINT. COOLING SET POINT SHALL BE 100 °F (ADJ). ROOM THERMOSTAT IS SHOWN IN MAU-1'S SEQUENCE OF OPERATION.

EF-2 SHALL STOP WHEN ROOM TEMPERATURE DECREASES 2 °F BELOW THE COOLING SETPOINT.

EF-2 AND LOUVERS LV-2 & 3 SHALL BE INTERLOCKED. WHEN EF-2 IS COMMANDED TO RUN, LV-2'S AND LV-3'S MOTORIZED DAMPERS SHALL OPEN FIRST AND WHEN THERE IS PROOF THAT BOTH DAMPERS ARE OPEN, EF-2 SHALL START TO RUN. BOTH MOTORIZED DAMPERS SHALL CLOSE 5 SECONDS (ADJ) AFTER EF-2 STOPS.

ALARMS
THE ATC PANEL SHALL GENERATE A LOCAL VISUAL AND AUDIBLE ALARM, AND SEND A COMMON ALARM SIGNAL TO SCADA FOR THE FOLLOWINGS:
- EF-2 SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS
- LV-2 AND LV-3 DAMPER FAILURE:
  - COMMANDED OPEN, BUT THE STATUS IS CLOSED
  - COMMANDED CLOSED, BUT THE STATUS IS OPEN
- EXHAUST FAN, EF-2, FAILURE:
  - COMMANDED ON, BUT THE STATUS IS OFF.
  - EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.



SEQUENCE OF OPERATION FOR MAKE UP AIR UNIT MAU-01 AND EXHAUST FAN EF-1 CONTROLLED VIA CONTROL PANEL ATC-1

MAU-1 SHALL BE PROVIDED WITH HAND-AUTO-OFF (HOA) SWITCH.

MAU-1 RUN CONDITION:
WHEN HOA SWITCH IS IN "A" (AUTO) POSITION, THE UNIT, AND ITS SUPPLY FAN, SHALL START AND RUN CONTINUOUSLY. THE UNIT'S SUPPLY FAN SHALL PROVIDE THE HIGH AIRFLOW AS LISTED IN MAU-1 EQUIPMENT SCHEDULE, EXCEPT AS FOLLOWS:
- WHEN OUTSIDE AIR TEMPERATURE IS BELOW 50 °F, ZONE TEMPERATURE IS BELOW 48 °F(ADJ) AND THE DEWATERING ROOM IS UNOCCUPIED, SUPPLY FAN SHALL PROVIDE LOW AIR FLOW AS LISTED IN MAU-1 EQUIPMENT SCHEDULE.

WHEN HOA SWITCH IS IN "H" (HAND) POSITION, MAU-1 SHALL START AND RUN CONTINUOUSLY. THE UNIT'S SUPPLY FAN SHALL PROVIDE THE HIGH AIRFLOW AS LISTED IN THE MAU-1 EQUIPMENT SCHEDULE.

WHEN HOA SWITCH IS IN "O" (OFF) POSITION, MAU-1 SHALL STOP.

OUTSIDE AIR DAMPER:
MAU-1'S OUTSIDE AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE SUPPLY FAN SHALL START ONLY AFTER THE DAMPER STATUS HAS PROVEN THE DAMPER IS OPEN. THE OUTSIDE AIR DAMPER SHALL CLOSE 4SEC (ADJ.) AFTER THE SUPPLY FAN STOPS.

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE SENSOR.

ELECTRIC HEATING WITH SCR:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT. INITIAL HEATING SETPOINT TO BE 40 °F (ADJ).

THE HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 50°F (ADJ.).
- AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE FAN STATUS IS ON.

FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER.

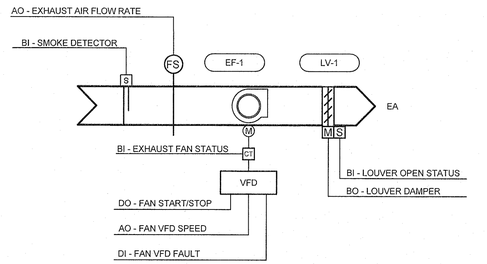
DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

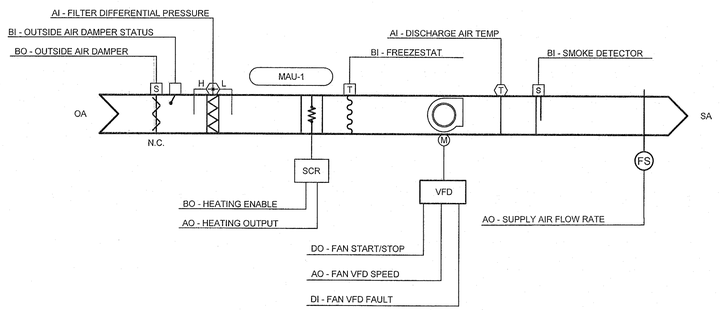
EXHAUST FAN EF-1 RUN CONDITION
EXAHSUT FAN EF-1 SHALL BE COMMANDED TO RUN WHENEVER MAU-1 IS COMMANDED TO RUN.

EF-1 AND LOUVER LV-1 SHALL BE INTERLOCKED. WHEN EF-1 IS COMMANDED TO RUN, LV-1'S MOTORIZED DAMPER SHALL OPEN FIRST AND WHEN THERE IS PROOF THAT LV-1 IS OPEN, EF-1 SHALL START TO RUN. LV-1'S MOTORIZED DAMPER SHALL CLOSE 5 SECONDS (ADJ) AFTER EF-1 STOPS.

WHEN COMMANDED TO RUN, EF-1 SHALL PROVIDE THE HIGH AIRFLOW AS LISTED IN EF-1 EQUIPMENT SCHEDULE EXCEPT AS FOLLOWS:
- WHEN OUTSIDE AIR TEMPERATURE IS BELOW 50 °F, ZONE TEMPERATURE IS BELOW 48 °F(ADJ) AND THE DEWATERING ROOM IS UNOCCUPIED, EF-1 SHALL PROVIDE LOW AIR FLOW AS LISTED IN EF-1 EQUIPMENT SCHEDULE.

ALARMS
THE ATC PANEL SHALL GENERATE A LOCAL VISUAL AND AUDIBLE ALARM, AND SEND A COMMON ALARM SIGNAL TO SCADA FOR THE FOLLOWINGS:
- MAU-1 EMERGENCY SHUT DOWN EMERGENCY SHUTDOWN SIGNAL
- MAU-1 RECEIVING A FREEZESTAT STATUS
- BOTH MAU-1 AND EF-1 SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS FROM ANY OF THE SMOKE DETECTORS ASSOCIATED WITH THESE UNITS
- OUTSIDE AIR DAMPER FAILURE:
  - COMMANDED OPEN, BUT THE STATUS IS CLOSED
  - OUTSIDE AIR DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN
- MAU-1'S SUPPLY FAN FAILURE:
  - COMMANDED ON, BUT THE STATUS IS OFF.
  - SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- EXHAUST FAN, EF-1, FAILURE:
  - COMMANDED ON, BUT THE STATUS IS OFF.
  - EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FILTER CHANGE REQUIRED: FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).
- HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).
- HIGH ROOM TEMP: IF THE ROOM TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ROOM TEMP: IF THE ROOM TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW FLOW: WHEN FLOW RATE OF MAU-1 OR EF-1 DECREASES TO 10% OF ITS SETPOINT.





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STATE OF TEXAS
12/2/2024
SAWAS HADJ SAWAS
88293
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING SEQUENCE OF OPERATION - I 2M-602

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
-	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 171 OF 255	

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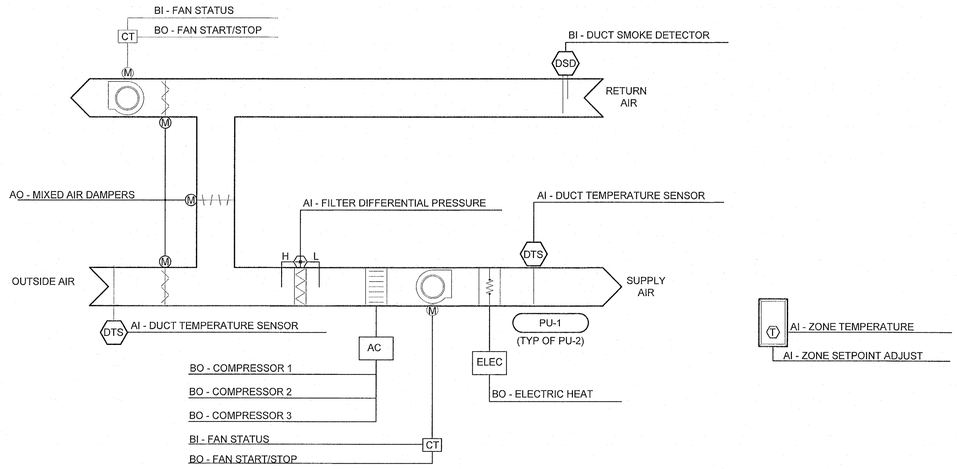
SEQUENCE OF OPERATION PF PU-1 AND PU-2 CONTROLLED VIA CONTROL PANEL ATC-2



OVERVIEW:

THE ELECTRICAL ROOM IS EQUIPPED WITH TWO PACKAGED HEAT PUMP UNITS CONTROLLED IN A LEAD-LAG ARRANGEMENT TO PROVIDE COOLING AND HEATING.

THE ELECTRICAL ROOM WILL INCLUDE A HVAC CONTROL PANEL, ATC-02, FOR MONITORING THE ROOM TEMPERATURE, SWITCH THE LEAD/LAG OPERATION OF THE UNITS, AND SENDING ALARM SIGNALS TO SCADA.

A ROOM THERMOSTAT SHALL CYCLE THE AC UNIT ON A CALL FOR COOLING OR HEATING MODE.

ONCE EVERY 24 HOURS THE LEAD AC UNIT WILL SWITCH TO LAG.

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

FAN:
THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES.

HEAT PUMP UNITS - COOLING:

WHEN THE ROOM TEMPERATURE INCREASES TO 76 DEGREES F (ADJ), THE LEAD UNIT SHALL TURN ON.

WHEN THE ROOM TEMPERATURE DECREASES TO 72 DEGREES F (ADJ), THE LEAD UNIT SHALL STOP.

WHEN THE ROOM TEMPERATURE INCREASES TO 82 DEGREES F (ADJ), THE LAG UNIT SHALL TURN ON.

WHEN THE ROOM TEMPERATURE DECREASES TO 78 DEGREES F (ADJ), THE LAG UNIT SHALL STOP.

THE COOLING SHALL BE ENABLED ONLY WHEN THE FAN IS ON.

COMPRESSOR STAGING:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND CYCLE EACH UNIT'S COMPRESSORS TO MAINTAIN THE SETPOINT. TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME. THE COMPRESSORS SHALL RUN SUBJECT TO THEIR OWN INTERNAL SAFETIES AND CONTROLS.

ECONOMIZER

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN THE ZONE COOLING SETPOINT.

THE ECONOMIZER AND THE UNIT'S EXHAUST FAN SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE SUPPLY FAN STATUS IS ON.

THE ECONOMIZER SHALL CLOSE WHENEVER:
- MIXED AIR TEMPERATURE DROPS FROM 45°F TO 40°F (ADJ.).
- OR ON LOSS OF SUPPLY FAN STATUS.
- OR THE FREEZESTAT IS ON.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF.

WHEN ECONOMIZER IS ACTIVE BUT THE ZONE SETPOINT IS NOT SATISFIED, THE CONTROLLER SHALL ENERGIZE, MODULATE, AND STAGE THE COMPRESSORS TO MAINTAIN THE ZONE SETPOINT.

HEAT PUMP UNITS - HEATING:

WHEN THE ROOM TEMPERATURE DECREASES TO 64 DEGREES F (ADJ), THE LEAD UNIT SHALL BE SWITCHED TO HEATING MODE AND MODULATE ITS CAPACITY TO MAINTAIN THE ROOM'S HEATING SETPOINT.

MONITORING

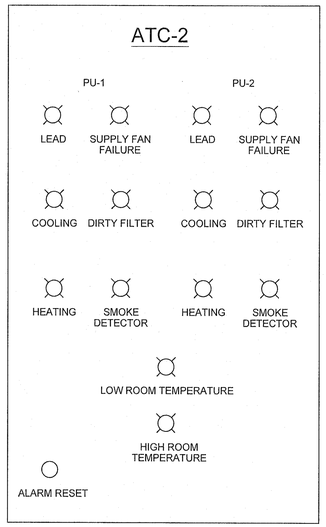
FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER.

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.

ALARMS
THE ATC PANEL SHALL GENERATE A LOCAL VISUAL AND AUDIBLE ALARM AND SEND A COMMON ALARM SIGNAL TO SCADA FOR THE FOLLOWINGS:

1. HIGH ROOM TEMP: IF THE ROOM TEMPERATURE IS GREATER THAN THE TEMPERATURE SET POINT BY 5 °F (ADJ) FOR MORE THAN 10 MINUTES, A SIGNAL SHALL BE SENT TO SCADA.
2. LOW ROOM TEMP: IF THE ROOM TEMPERATURE IS LESS THAN THE TEMPERATURE SET POINT BY 5 °F (ADJ) FOR MORE THAN 10 MINUTES A SIGNAL SHALL BE SENT TO SCADA.
3. SMOKE: IF EITHER OF AIR CONDITIONING UNITS' DUCT SMOKE DETECTORS INDICATES SMOKE, BOTH UNITS SHALL SHUT DOWN.
4. HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
5. LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.)
6. FILTER CHANGE REQUIRED: FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).
7. FAN FAILURE:
   - 7.1. COMMANDED ON, BUT THE STATUS IS OFF.
   - 7.2. FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
   - 7.3. FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).
8. CONDENSATE OVERFLOW SWITCH.



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STATE OF TEXAS
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PROFESSIONAL ENGINEER

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING SEQUENCE OF OPERATION - II 2M-603

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
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CITY OF HOUSTON PM	
S/E SHAHIDUR RAHMAN, P.E.	
SHEET NO. 172 OF 255	

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GENERAL SYMBOLS

SECTION SYMBOL
SECTION LOCATION → 1 / P301
DRAWING NUMBER WHERE DETAILED →

DETAIL SYMBOL
DETAIL LOCATION → 1 / P501
DRAWING NUMBER WHERE DETAILED →

EQUIPMENT SYMBOLS

XX-## (XX = LETTERS REFER TO THE EQUIPMENT TYPE; ## = NUMBERS REFER TO SPECIFIC EQUIPMENT)
SYMBOL INDICATES EQUIPMENT IDENTIFIED IN EQUIPMENT SCHEDULE

SECTION AND DETAIL TITLES
SECTION LETTER LOCATION → 1 / P301 SECTION SCALE
DRAWING NUMBER WHERE DETAILED →

DETAIL NUMBER LOCATION → 1 / P501 DETAIL SCALE
DRAWING NUMBER WHERE DETAILED →

PLUMBING FIXTURE MARK

LV-1 — FIXTURE TYPE
REFER TO SCHEDULE
FOR ADDITIONAL INFORMATION

P-1 / 2" — P-1 VENT NUMBER; 2" VENT SIZE

GENERAL NOTES

1. OBTAIN ALL NECESSARY PERMITS, PAY LEGAL FEES AND COMPLY WITH ALL NATIONAL, STATE AND MUNICIPAL LAWS, CODES, AND ORDINANCES RELATING TO BUILDING AND PUBLIC SAFETY.
2. IT IS THE INTENTION OF THESE DRAWINGS TO CALL FOR FINISHED WORK, I.E., FULLY ADJUSTED, TESTED, AND READY FOR OPERATION. WHEREVER THE WORK "PROVIDE" IS USED. IT SHALL MEAN, "FURNISH AND INSTALL COMPLETE AND READY FOR USE".
3. PROTECT EQUIPMENT AND WORK FROM DAMAGE DURING HANDLING AND INSTALLATION UNTIL COMPLETION OF CONSTRUCTION.
4. REMOVE ALL EXCESS MATERIAL AND DEBRIS AND CLEAN ALL EQUIPMENT UPON COMPLETION OF WORK. TOUCH UP WITH PAINT WHERE REQUIRED.
5. ALL SYSTEMS SHALL BE COMPLETE AND WORKING AT COMPLETION OF CONSTRUCTION.
6. CONTRACTOR SHALL COORDINATE EQUIPMENT CONNECTIONS WITH EQUIPMENT DRAWINGS AND SUPPLIER. INSTALL EQUIPMENT AND MAKE FINAL CONNECTIONS, FURNISHING CUTOFF VALVES, P-TRAPS, P.R.V'S, AND PIPING AS REQUIRED.
7. ALL CONNECTIONS BETWEEN PIPES OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC UNIONS. PROVIDE ACCESS PANELS WHERE REQUIRED.
8. COORDINATE WATER, WASTE AND VENT PIPING WITH OTHER TRADES TO AVOID SPACING OR ROUTING PROBLEMS.
9. CONTRACTOR SHALL COORDINATE ALL WORK CLOSELY WITH NEW MECHANICAL, ELECTRICAL, ARCHITECTURAL AND STRUCTURAL.
10. SUBMIT SHOP DRAWINGS OF PROPOSED NEW DEVICES PRIOR TO INSTALLATION.
11. FURNISH OWNER WITH COMPLETE OPERATING MANUALS AND INSTRUCTIONS FOR ALL EQUIPMENT FURNISHED.
12. FIXTURES, EQUIPMENT AND CONNECTIONS, AND PIPING SHALL BE FURNISHED AND INSTALLED TO MEET OR EXCEED STATE AND LOCAL CODES AND REQUIREMENTS.
13. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL OFFSETS. INSTALL PIPING AS CLOSE AS POSSIBLE TO LOCATIONS SHOWN. WHERE INTERFERENCES WITH COMPONENTS OF OTHER TRADE'S WORK (STRUCTURAL FOUNDATIONS OR OTHER BUILDING ELEMENTS) REQUIRE ROUTINGS AND LOCATIONS THAT VARY FROM THOSE SHOWN, THE CONTRACTOR SHALL OBTAIN PROJECT ENGINEER'S APPROVAL PRIOR TO INSTALLATION. NO ADDITIONAL COST SHALL BE GRANTED FOR THESE CHANGES.
14. THE PLUMBING DRAWINGS DO NOT NECESSARILY SHOW EVERY COMPONENT AND/OR ACCESSORY REQUIRED FOR A COMPLETE INSTALLATION. THE CONTRACTOR SHALL INCLUDE SUCH ITEMS AS ARE REQUIRED TO ENSURE THAT THE ENTIRE SYSTEM IS FUNCTIONING IN COMPLIANCE WITH APPLICABLE CODES, ACCEPTED INDUSTRY STANDARDS, AND MANUFACTURER'S INSTALLATION REQUIREMENTS UPON COMPLETION OF THE WORK.
15. FURNISH AND INSTALL WATER HAMMER ARRESTORS IN COLD WATER LINES AT CONNECTIONS TO FLUSH VALVES AND QUICK CLOSING VALVES AND AT ALL HOT AND COLD WATER CONNECTIONS TO FIXTURES.
16. ROUGH-IN PLUMBING PIPING USING DIMENSIONS SHOWN ON ARCHITECTURAL DRAWINGS. LOCATION OF ALL PIPING SHALL ALLOW INSTALLATION OF FIXTURES WITHOUT THE NEED TO FURR-OUT WALLS.
17. PROVIDE CLEANOUTS IN EXCESS OF THOSE SHOWN WHICH ARE REQUIRED BY THE PLUMBING CODE.
18. INDIVIDUAL FIXTURE SUPPLY AND DRAIN SERVICES ARE NOT SHOWN IN PLAN VIEW DUE TO DRAWING SPACE LIMITATIONS. THE CONTRACTOR SHALL PROVIDE ALL SERVICES FOR A COMPLETE FUNCTIONAL INSTALLATION.
19. DO NOT INSTALL PIPING AT LOCATIONS THAT INTERFERE WITH SERVICE ACCESSIBILITY TO EQUIPMENT.
20. A.D.A. ACCESSIBLE LAVATORIES AND SINKS: INSULATE ALL EXPOSED DRAIN PIPING AND WATER SUPPLY PIPING BENEATH A.D.A. COMPLIANT LAVATORIES & SINKS WITH FULLY MOLDED CLOSED CELL VINYL INSULATION KIT AS MANUFACTURED BY TRUEBRO, BROCAR OR MCGUIRE.
21. ALL CONFLICTS, WHICH MAY PREVENT THE COMPLETION OF WORK AS INTENDED, SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION. THE CONTRACTOR SHALL PROCEED AT THEIR OWN RISK UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR BY THE ARCHITECT.
22. THE SUPPLY OF BOTH HOT AND COLD WATER TO EACH FIXTURE SHALL BE EQUIPPED WITH STOP VALVE. ALL EXPOSED VALVES AND COCKS SHALL BE CHROMIUM PLATED TO CORRESPOND TO PIPE FINISH.
23. CONTRACTOR WILL BE RESPONSIBLE FOR RELOCATING DOMESTIC WATER LINES IN CONFLICT WITH OTHER TRADES

NOTE: NOT ALL THE ABBREVIATIONS OR SYMBOLS APPLY TO THIS PROJECT

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	HD	HEAD
AFG	ABOVE FINISHED GRADE	HE	HEAT EXCHANGER
ARV	AIR RELIEF VALVE	HP	HORSEPOWER
BOP	BOTTOM OF PIPE	IM	ICE MAKER
BS	BIRD SCREEN	IN	INCHES
BFF	BELOW FINISH FLOOR	INV	INVERT
BFG	BELOW FINISH GROUND	JP	JOCKEY PUMP
CI	CAST IRON	KW	KITCHEN WASTE, or, KILOWATT
CO	CLEAN OUT	LV	LAVATORY
CP	CIRCULATION PUMP	MB	MOP BASIN
DCO	DOUBLE CLEANOUT	NA	NOT APPLICABLE
DCOTG	DOUBLE CLEANOUT TO GRADE	NC	NORMALLY CLOSED
DCW	DOMESTIC COLD WATER	NIC	NOT IN CONTRACT
DHW	DOMESTIC HOT WATER	NO	NORMALLY OPEN
DHWR	DOMESTIC HOT WATER RETURN	No. #	NUMBER
CWM	CLOTHES WASHING MACHINE	OW	OIL WASTE
DF	DRINKING FOUNTAIN	OWV	OIL WASTE VENT
DN	DOWN	PC	PLUMBING CONTRACTOR
DS	DOWNSPOUT	PRV	PRESSURE REDUCING VALVE
DWBP	DOMESTIC WATER BOOSTER PUMP	PH	PHASE
ECO	EXTERIOR CLEANOUT	PSAN	PUMPED SANITARY
EL	ELEVATION	PSB	PLUMBING SERVICE BOX
EWH	ELECTRIC WATER HEATER	PSIG	POUNDS PER SQ. INCH GAUGE
EWC	ELECTRIC WATER COOLER	PV	PRIMING VALVE
EEW	EMERGENCY EYEWASH	SE	SEWAGE EJECTOR
EM	EMERGENCY	SH	SHOWER
EPP	ELEVATOR PIT PUMP	SK	SINK
ES	EMERGENCY SHOWER	SP	SUMP PUMP
ESEW	EMERGENCY SHOWER EYE WASH	SV	SOLENOID VALVE
EX	EXISTINGCP	SS	SERVICE SINK, or, STAINLESS STEEL
(E)	EXISTING	TD	TRENCH DRAIN
°F	DEGREES FAHRENHEIT	TMV	THERMOSTATIC MIXING VALVE
FCO	FLOOR CLEANOUT	TP	TRAP PRIMER
FD	FLOOR DRAIN	TYP	TYPICAL
FFE	FINISHED FLOOR ELEVATION	UR	URINAL
FP	FIRE PUMP	V	VENT
FS	FLOOR SINK	VTR	VENT THROUGH ROOF
FT	FEET	VB	VACUUM BREAKER
FV	FLUSH VALVE	YB	YARD BOX
GC	GENERAL CONTRACTOR	YH	YARD HYDRANT
GI	GREASE INTERCEPTOR	W	WASTE
GPH	GALLONS PER HOUR	WCO	WALL CLEANOUT
GPM	GALLONS PER MINUTE	WC	WATER CLOSET
GWH	GAS WATER HEATER	WH	WALL HYDRANT
GPR	GAS PRESSURE REDUCER	WHA	WATER HAMMER ARRESTOR
HB	HOSE BIBB		

PIPING SYMBOLS

SYMBOL AND ABBREVIATION	DESCRIPTION
CD	CONDENSATE DRAIN
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
SV	SANITARY VENT
SAN	SANITARY SEWER
SD	STORM DRAIN
OD	OVERFLOW STORM DRAIN
NG	NATURAL GAS-LOW PRESSURE
	DIRECTION OF FLOW
	REDUCER OR INCREASER
	ECCENTRIC REDUCER
	RISE IN PIPE
	UNION
	WYE TYPE STRAINER
	THERMOMETER
	PRESSURE GAUGE AND GAUGE COCK
WHA	WATER HAMMER ARRESTOR
	TOP CONNECTION, 45° OR 90°
	BOTTOM CONNECTION, 45° OR 90°
	SIDE CONNECTION
	CAPPED OUTLET
	DROP IN PIPE
	FLEXIBLE CONNECTION
A	AUTOMATIC AIR VENT (AAV)
FD	FLOOR DRAIN
FS	FLOOR SINK
AD	AREA DRAIN
FCO	FLOOR CLEANOUT
ECO	EXTERIOR CLEAN OUT
	TWO WAY OR DOUBLE CLEANOUT TO GRADE
RD	ROOF DRAIN
OD	OVERFLOW DRAIN
DD	DECK DRAIN
	EXTEND NEW FROM THIS POINT
	DEMO TO THIS POINT

VALVE SYMBOLS

SYMBOL	DESCRIPTION
	GATE VALVE
	CHECK VALVE
	GLOBE VALVE
	PLUG VALVE
	WATER PRESSURE REDUCING VALVE
	BALANCING VALVE/CIRCUIT SETTER MEASURING DEVICE
S	SOLENOID VALVE
	BALL VALVE
	DRAIN VALVE
	OS&Y VALVE
	BUTTERFLY VALVE
	FUEL GAS PRESSURE REGULATOR
	PRESSURE RELIEF VALVE
	TEMPERATURE AND PRESSURE RELIEF VALVE
	2-WAY CONTROL VALVE
	3-WAY MODULATING CONTROL VALVE
	FLOW SWITCH
	DIAPHRAGM VALVE (PROCESS SYSTEMS)
	AUTO BALL DRIP VALVE
	VALVE IN VERTICAL
	REDUCED PRESSURE BACKFLOW PREVENTER(RPBP
	DOUBLE CHECK BACKFLOW PREVENTER (DCBP)
	DOUBLE DETECTOR CHECK ASSEMBLY (DDCA)
	ATMOSPHERIC VACCUM BREAKER
	PRESSURE STYLE VACUUM BREAKER

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Texas Registered Engineering Firm F-14781
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FB NO. P-6232

STATE OF TEXAS — KRISTEN OWEN — 93869 — LICENSED PROFESSIONAL ENGINEER

12-12-2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION PLUMBING SYMBOLS NOTES & ABBREVIATION 1P-001

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	173 OF 255

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GENERAL NOTES

A. REFER TO SHEET 1P-101 FOR ADDITIONAL INFORMATION FOR UNDERFLOOR PLUMBING WORK

KEYED NOTES

1. UP TO FIRE DEPARTMENT CONNECTION VALVE (3 WAY - FDC)
2. FIRE HYDRANT REQUIRED 100' FROM FIRE DEPARTMENT CONNECTION (FDC)

NO.	DATE	REVISION	APP.

PIPE MATERIAL LIST

A. DOMESTIC COLD AND HOT WATER BELOW SLAB:
   a. TYPE "K" COPPER (ASTM B88) WITH WROUGHT COPPER SOLDER FITTINGS ANSI (B16.22) USING 95/5 SOLDER.

B. DOMESTIC COLD AND HOT WATER ABOVE SLAB:
   a. TYPE "L" COPPER (ASTM B88) WITH WROGHT COPPER SOLDER FITTINGS ANSI (B16.22) USING 95/5 SOLDER.

C. SANITARY WASTE AND VENT BELOW SLAB:
   a. SCHEDULE 40 PVC PIPE AND FITTINGS WITH SOLVENT WELD CONNECTIONS.

D. SANITARY WASTE AND VENT ABOVE SLAB:
   a. SCHEDULE 40 PVC PIPE AND FITTINGS WITH SOLVENT WELD CONNECTIONS.

E. FIRE PROTECTION PIPING:
   a. SCHEDULE 40, ASTM A53, BLACK STEEL PIPE WITH MALLEABLE IRON FITTINGS.

F. STORM DRAIN PIPING BELOW SLAB:
   a. SCHEDULE 40 PVC PIPE AND FITTINGS WITH SOLVENT WELD CONNECTIONS.

G. STORM DRAIN PIPING ABOVE SLAB:
   a. SCHEDULE 40 PVC PIPE AND FITTINGS WITH SOLVENT WELD CONNECTIONS.

H. PROVIDE ISOLATION FITTINGS WHEREVER DISSIMILAR MATERIALS ARE USED.

NOTE:
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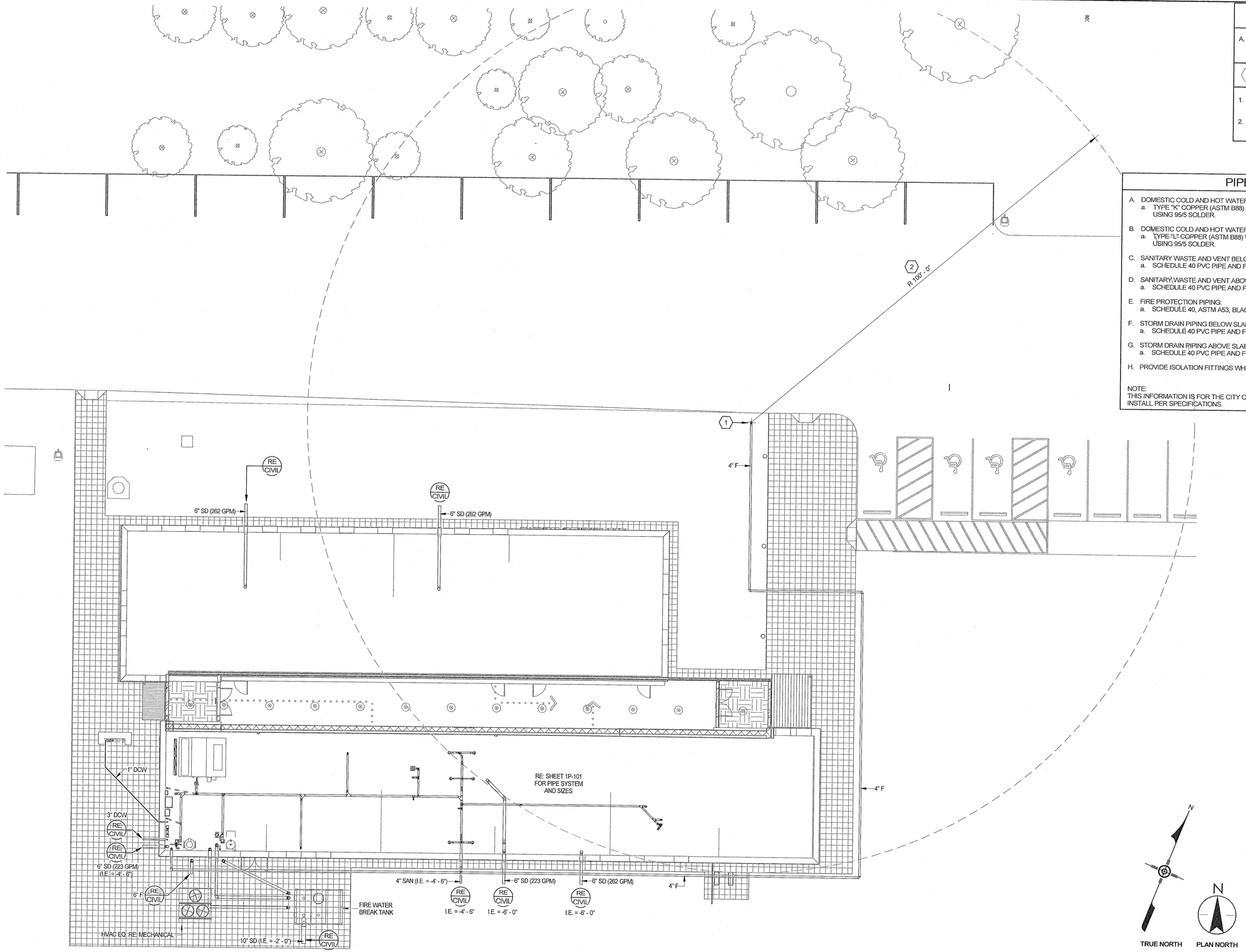

1 / 1P-002 **PLUMBING PARTIAL SITE PLAN**
SCALE: 3/32" = 1'-0"

TRUE NORTH PLAN NORTH

SCALE: 3/32" = 1'-0"

0' 5' 10' 20'

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION PLUMBING SITE PLAN

1P-002

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DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	S/E SHAHIDUR RAHMAN, P.E.
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HOUSTON, TEXAS

PLOTTED: 11/8/2024 11:44:47 AM
PLOT STYLE: COH.ctb
FILE PATH:

GENERAL NOTES

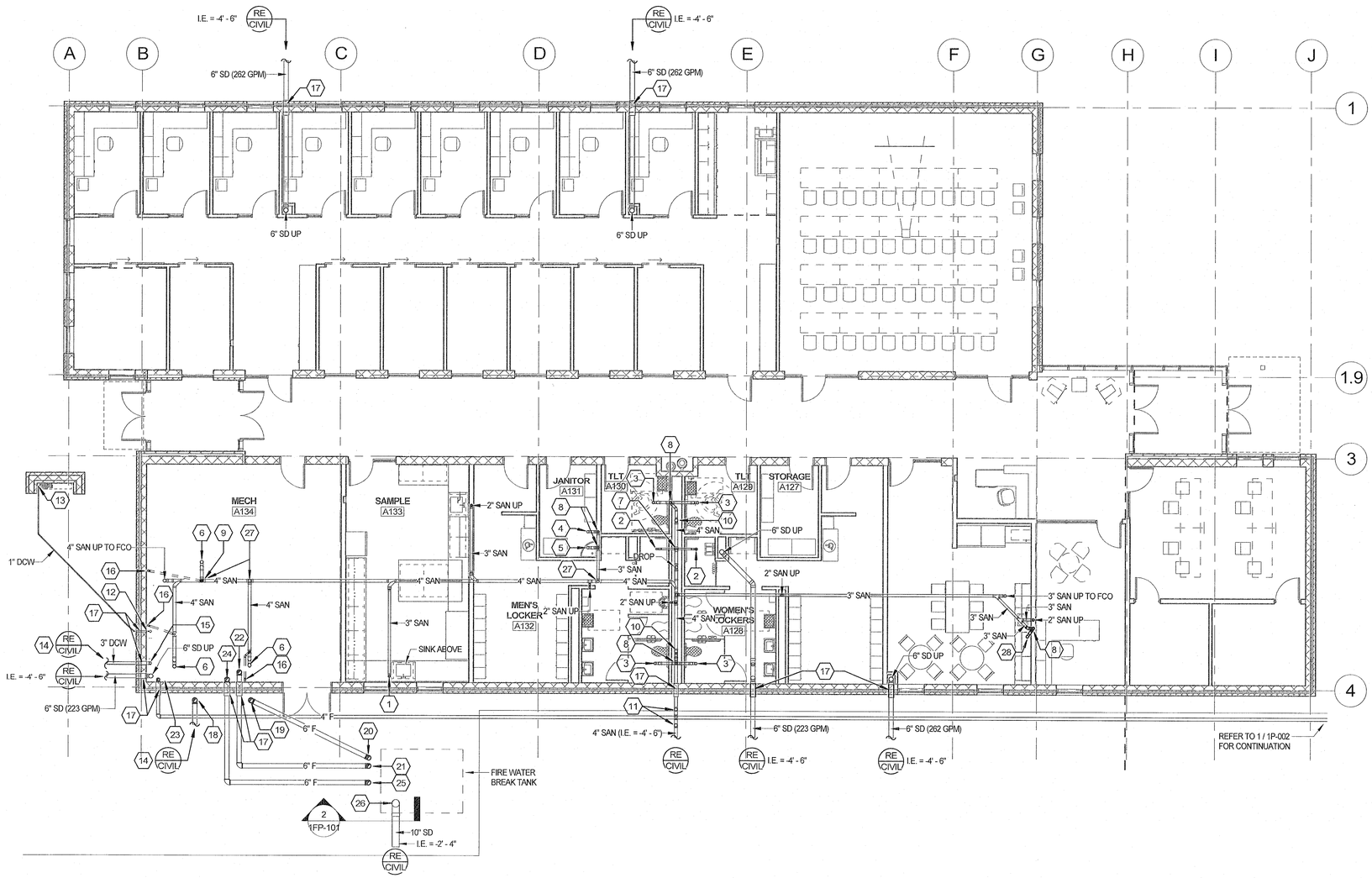
A. REFER TO SHEET P001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

SHEET KEYED NOTES

27. ROLL DROP INTO TOP OF GRAVITY LINE.
28. TRAPPED 3" SANITARY DRAIN UP TO FLOOR DRAIN WITH FUNNEL ABOVE FOR MECHANICAL CONDENSATE DRAIN.

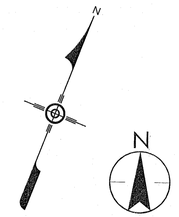
SHEET KEYED NOTES

1. UP TO BELOW CABINET BASE TO CLEAR CONCRETE FOOTING
2. TRAPPED 2" SS UP TO FLOOR DRAIN ABOVE
3. TRAPPED 3" SS UP TO FLOOR DRAIN ABOVE
4. TRAPPED 3" SS UP TO FLOOR SINK ABOVE
5. TRAPPED 3" SS UP TO MOP SINK ABOVE
6. TRAPPED 4" SS UP TO FLOOR SINK ABOVE
7. 2" SS DROP WITH 2" SV UP
8. 3" SS DROP WITH 2" SV UP
9. 4" SS DROP WITH 2" SV UP
10. 4" SS UP
11. 4" SS UP TO TWO WAY EXTERIOR CLEAN OUT
12. 1" DCW FROM ABOVE AND DOWN
13. 1" DCW UP TO HOSE REEL ABOVE FINISH GRADE. COORDINATE FINAL LOCATION, PROVIDE SHUT-OFF VALVE, ROGH-IN AND CONNECT
14. REFER TO CIVIL PLANS FOR FIRE WATER PROTECTION METER AND DOMESTIC WATER METER
15. 3" DCW UP TO BFP-1 ABOVE
16. 2" SV UP TO ABOVE FINISH FLOOR
17. PROVIDE FOUNDATION PIPE SLEEVE. REFER TO 1/P501 SLEEVE DETAIL FOR ADDITIONAL INFORMATION
18. 6" FIRE WATER UP TO FIRE WATER FILL STATION ABOVE
19. 6" FIRE WATER FROM FILL STATION ABOVE AND ROUTE TO BREAK TANK FIRE PROTECTION COMPARTMENT
20. 6" FIRE WATER UP TO ABOVE FINISH GRADE AND UP OVER BREAK TANK
21. 6" FIRE WATER FROM BREAK TANK FIRE PROTECTION COMPARTMENT ABOVE THEN ROUTE TO BUILDING FIRE PUMP
22. 6" FIRE WATER UP TO FIRE PUMP ABOVE FINISH FLOOR
23. 4" FIRE WATER FROM, FDC, FIRE DEPARTMENT CONNECTION
24. 6" FIRE PUMP BY-PASS FROM ABOVE FINISH FLOOR.
25. 6" FIRE PUMP BY-PASS UP TO ABOVE FINISH GRADE AND UP OVER BREAK TANK.
26. 10" SD UP TO 12" HUB DRAIN ABOVE FINISH GRADE AND BELOW BREAK TANK. FIELD COORDIANTE FINAL LOCATION.



1 PLUMBING UNDERFLOOR PLAN

1P-101 — SCALE: 1/8" = 1'-0"



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

0' 4' 8' 16'

NO.	DATE	REVISION	APP.

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

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Houston, TX 77002

SURVEYED BY:
FB NO. P-6232

STATE OF TEXAS
KRISTEN OWEN
93869
LICENSED ARCHITECT

12-12-2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION UNDER FLOOR PLAN

1P-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	175 OF 255

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CITY DRAWING NUMBER
HOUSTON, TEXAS

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GENERAL NOTES

A. REFER TO SHEET P001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

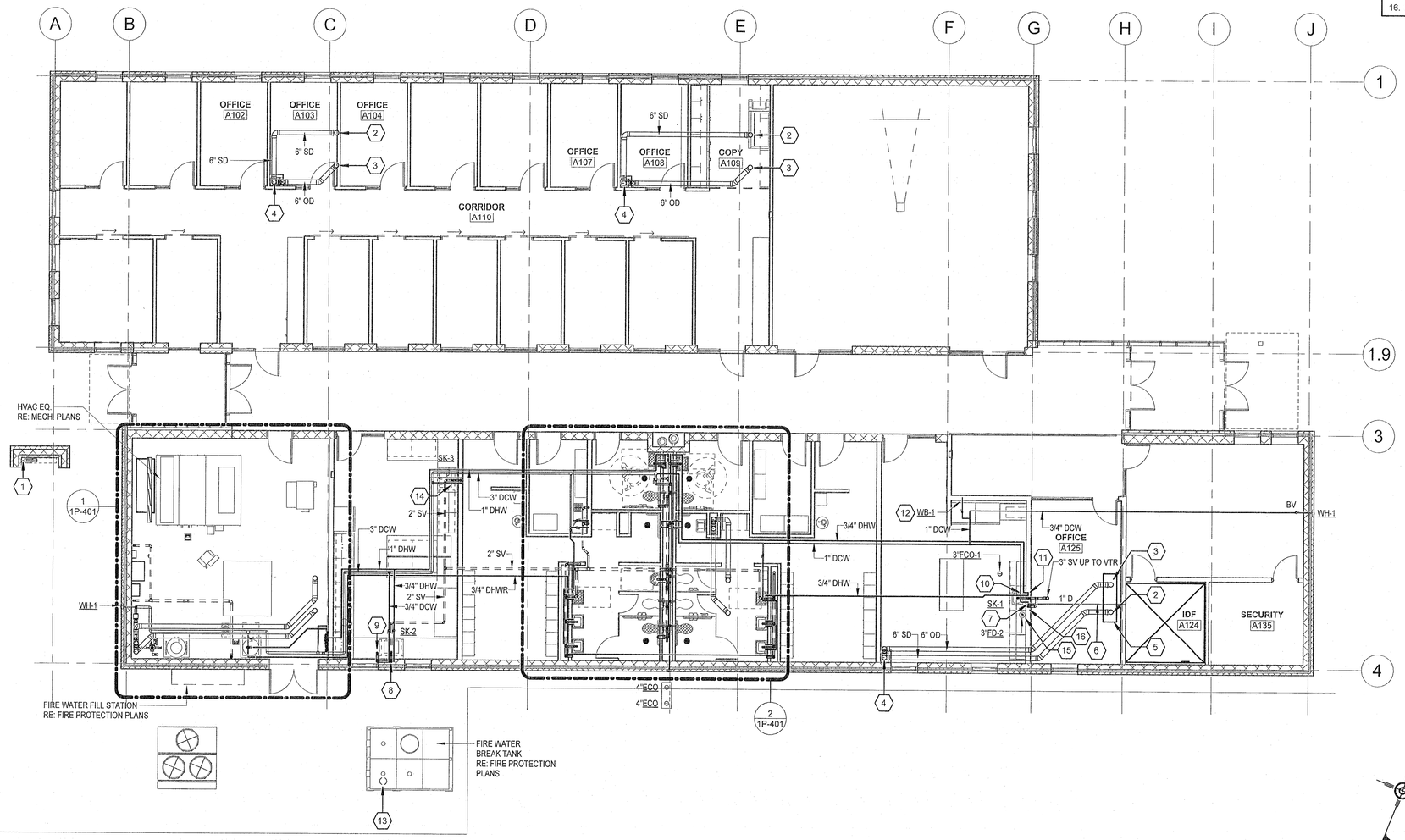
B. PROVIDE HEAT TRACE CABLE, INSULATION, AND ALUMINUM METAL JACKET ON ALL EXPOSED FIRE PROTECTION WATER PIPING AND EQUIPMENT

C. UNLESS OTHERWISE NOTED, ROUTE NO PLUMBING PIPING OVER ELECTRICAL ROOMS AND DATA ROOMS. FIELD COORDINATE

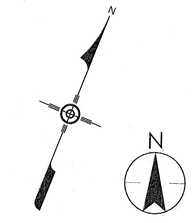
KEYED NOTES

1. 1" DCW FROM B.F.G. AND UP TO HOSE REEL
2. STORM DRAIN UP TO ROOF DRAIN ABOVE
3. OVERFLOW DRAIN UP TO OVER FLOW ROOF DRAIN ABOVE
4. STORM DRAIN DOWN TO BELOW FINISH FLOOR
5. PROVIDE GALVANIZED DRAIN PAN BELOW STORM DRAIN PAN. PROVIDE WITH WATER REMOTE DETECTOR. COORDIANATE POWER WITH ELECTRICAL.
6. PROVIDE 1" DRAIN FROM DRAIN PAN
7. DROP 1" DRAIN FROM DRAIN PAN TO SINK TAIL PIECE CONNECTION
8. 3/4" DCW AND 3/4" DHW DROP TO SINK WITH 2" SAN DROP TO A.F.F. AND UP WITH A 2" SV
9. ROUTE 2" SAN BELOW BASE CABINET AND DOWN TO B.F.F.
10. 3/4" DCW DROP TO SINK WITH 2" SAN DOWN TO B.F.F. AND 2" SV UP
11. 3/4" DHW DROP TO SERVE SINK THEN UP AND CONTINUE TO THE RESTROOM
12. 1/2" DCW DROP TO WATER SUPPLY BOX AND PROVIDE WITH BFP-3
13. 10" SD FROM BELOW FINISH GRADE AND UP TO 12" HUB DRAIN. HUB DRAIN LOCATED BETWEEN FINISH GRADE AND BREAK TANK
14. 3/4" DCW AND 3/4" DHW DROP TO SINK WITH 2" SAN DOWN TO B.F.F. AND UP WITH 2" SV UP
15. TERMINATE FLOOR DRAIN WITH FUNNEL ABOVE BOTTOM OF CABINET BASE TO RECEIVE MECHANICAL CONDENSATE DRAIN. REFER TO MECHANICAL PLAN FOR ROUTING OF CONDENSATE DRAIN.
16. 2" SANITARY VENT DOWN TO BELOW FINISH FLOOR

NO.	DATE	REVISION	APP.



1 / 1P-102 **PLUMBING FLOOR PLAN**
SCALE: 1/8" = 1'-0"



SCALE: 1/8" = 1'-0"
0' 4' 8' 16'

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
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KRISTEN OWEN
93869
LICENSED PROFESSIONAL ENGINEER
11-11-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FLOOR PLAN

1P-102

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	176 OF 255

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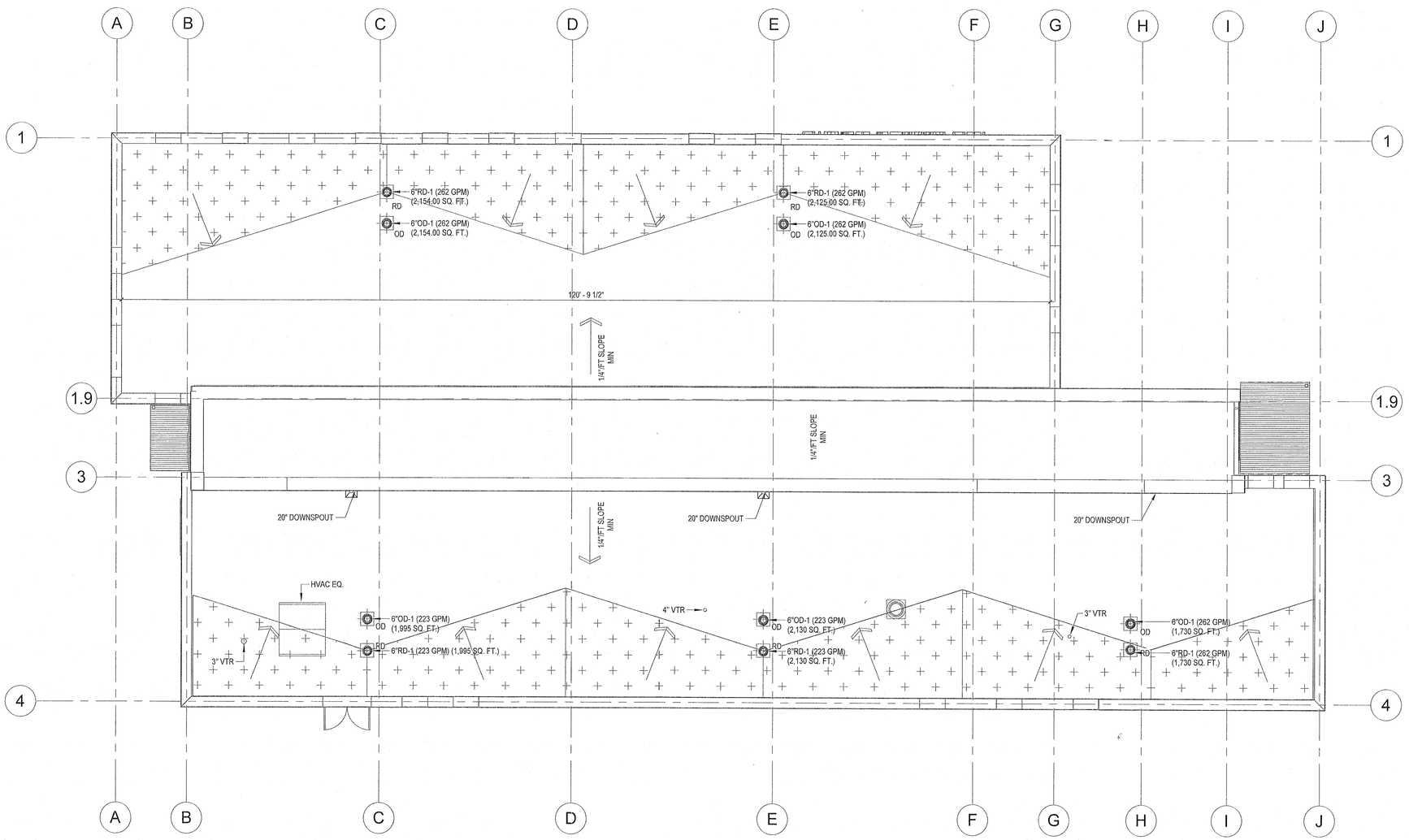
GENERAL NOTES

A. REFER TO SHEET P001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

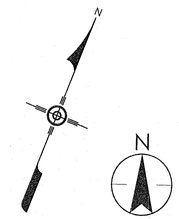
B. REFER TO MECHANICAL / ELECTRICAL PLANS FOR EQUIPMENT LOCATIONS AND ADDITIONAL INFORMATION.

NO.	DATE	REVISION	APP.



1 / 1P-103 **PLUMBING ROOF PLAN**

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



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

0' 4' 8' 16'

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ROOF PLAN

1P-103

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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SHEET NO. 177 OF 255	

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GENERAL NOTES

A. REFER TO PLUMBING FIXTURE SCHEDULE, ROUGH-IN SIZE, FOR FINAL PIPE SIZES FOR INDIVIDUAL PLUMBING FIXTURES

SHEET KEYED NOTES

1. 3" DCW FROM BELOW FINISH GROUND AND UP TO BFP
2. 3" SV UP TO 3" VTR ON ROOF
3. DROP 1 1/2" DHW TO SERVE LAVATORIES
4. RISE UP WITH DHW TO CONTINUE DOMESTIC HOT WATER DISTRIBUTION
5. DROP DHW TO SERVE LAVATORIES
6. RISE UP WITH DHWR TO CEILING SPACE AND BACK TO WATER HEATER
7. DROP WITH 2" DCW TO SERVE LAVATORIES, WATER CLOSETS, SHOWERS, AND URINAL. COORDINATE DROP AND DISTRIBUTION
8. STORM DRAIN DOWN TO BELOW FINISH FLOOR
9. OVERFLOW STORM DRAIN DROP
10. 2" SANITARY VENT DOWN TO BELOW FINISH FLOOR TO SERVE FLOOR SINK
11. 3/4" DCW DROP TO SERVE LAVATORIES
12. 3/4" DCW AND 3/4" DHW DROP TO TO SERVE MOP SINK WITH 2" SANITARY VENT DOWN TO B.F.F.
13. 2 1/2" DCW RISE WITH 1" DCW DROP TO HOSE BIBB IN MECHANICAL ROOM. CONTINUE DOWN TO BELOW FINISH FLOOR WITH 1" DCW TO SERVE HOSE REEL OUTSIDE THE BUILDING. REFER TO UNDERFLOOR PLAN FOR CONTINUATION
14. 4" SANITARY VENT DOWN TO SERVE PLUMBING FIXTURES AND UP TO 4" VTR ABOVE
15. 4" SANITARY WASTE DOWN TO B.F.F.
16. 2" SANITARY WASTE DOWN WITH 2" SV UP
17. 2" SV DROP TO SERVE LAVATORIES
18. 3/4" DCW AND 3/4" DHW DROP TO SHOWER VALVE
19. BACKFLOW PREVENTER FOR DOMESTIC WATER SERVICE
20. 2" SAN DOWN TO B.F.F.
21. 2" SV DOWN TO B.F.F.
22. 2" SV DROP TO WATER CLOSET AND/OR LATARY
23. 2" SANITARY DRAIN STUB UP FOR DRINKING FOUNTAIN WITH 1/2" DOMESTIC COLD WATER.

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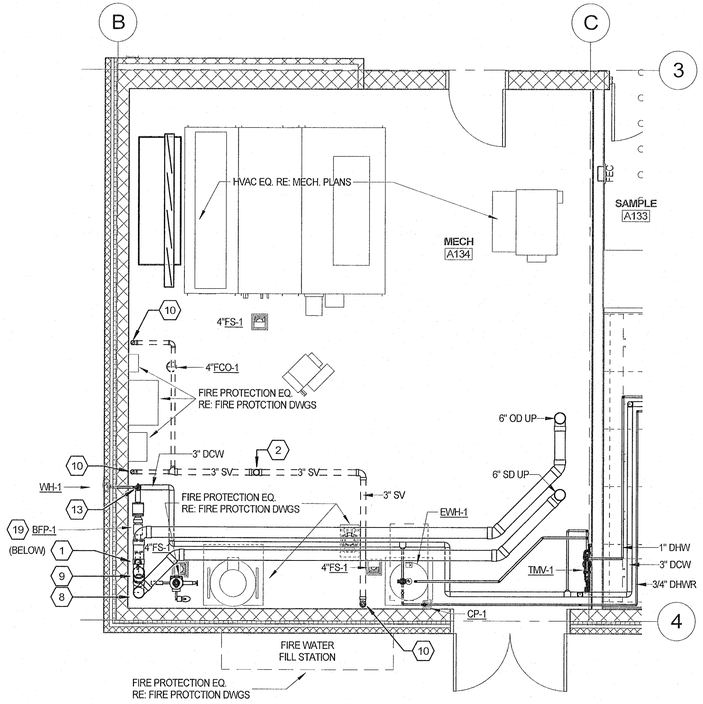
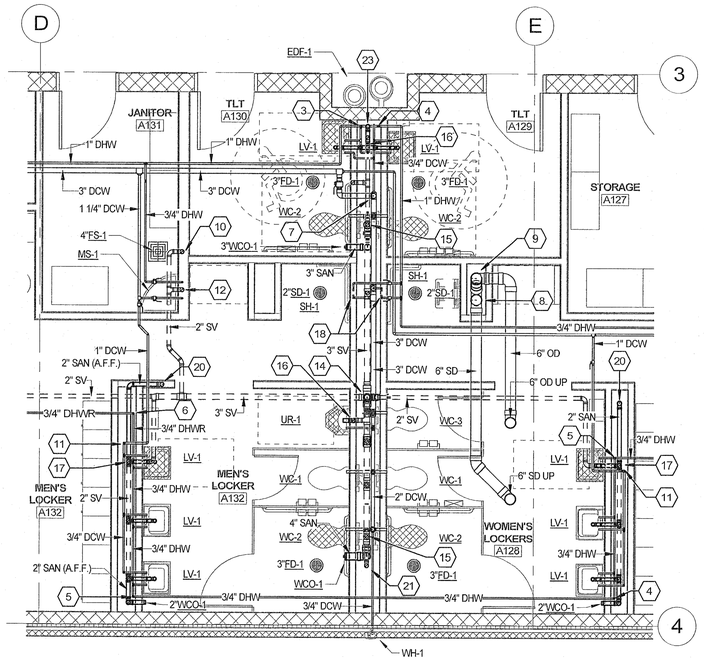
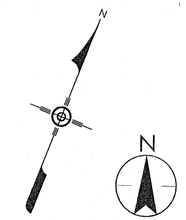


1 1P-401 **PLUMBING ENLARGED PLAN - MECH. ROOM**
SCALE: 1/4" = 1'-0"



2 1P-401 **PLUMBING ENLARGED PLAN - RESTROOMS**
SCALE: 1/4" = 1'-0"



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

0' 2' 4' 8'

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ENLARGED PLANS

1P-401

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	178 OF 255

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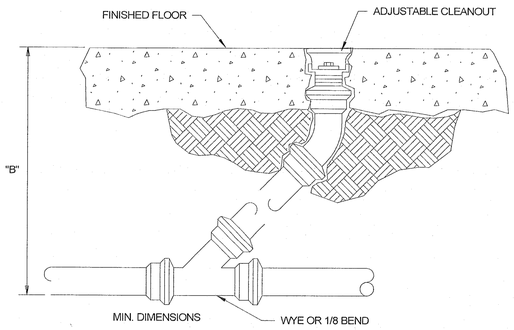
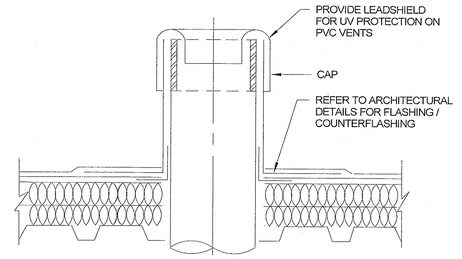
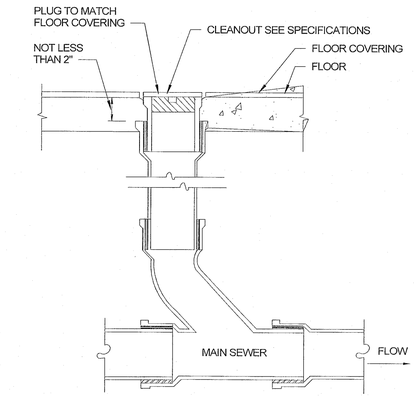


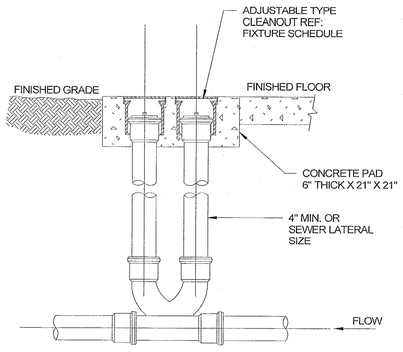
6 1P-501 **GRADE CLEANOUT DETAIL**
SCALE: N.T.S.



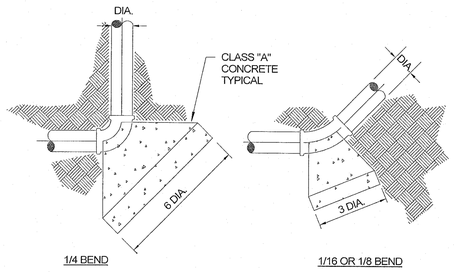
4 1P-501 **VENT THRU ROOF DETAIL**
SCALE: N.T.S.



2 1P-501 **INTERIOR FLOOR CLEANOUT DETAIL**
SCALE: N.T.S.



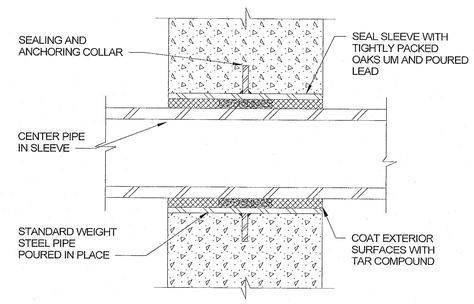
5 1P-501 **TWO WAY CLANOUT DETAIL**
SCALE: N.T.S.



NOTES:

1. THRUST BLOCKING TO PREVENT MOVEMENT OF LINES UNDER PRESSURE AT BENDS, TEES, CAPS, VALVES, HYDRANTS AND AT POINTS SPECIFIED BY THE ENGINEER SHALL BE PORTLAND CEMENT CONCRETE, A MINIMUM OF 12" THICK PLACED BETWEEN SOLID GROUND AND FITTING. THRUST BLOCK SHALL BE ACCESSIBLE FOR REPAIRS. ALL BENDS OF 1 1/4" OR MORE, ALL TEES AND ALL PLUGS SHALL BE THRUST PROTECTED AS SHOWN. WHERE CONDITIONS PREVENT THE USE OF CONCRETE THRUST BLOCKS, ANCHORED JOINTS OF A TYPE APPROVED BY THE ENGINEER MAY BE USED.
2. THRUST BLOCK SIZES SHALL BE DESIGNED BASED UPON THE SOIL AND OPERATING PRESSURE.

3 1P-501 **THRUST BLOCK DETAIL**
SCALE: N.T.S.



1 1P-501 **TYPICAL FOUNDATION PIPE SLEEVE DETAIL**
SCALE: N.T.S.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - I

1P-501

WBS NUMBER
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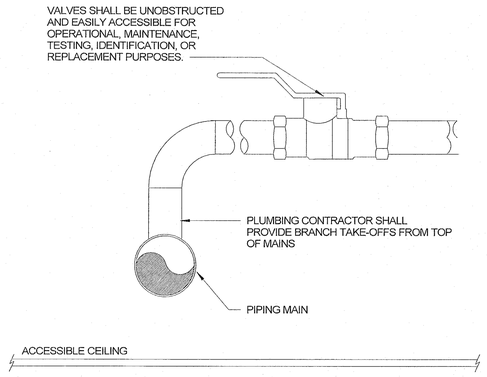
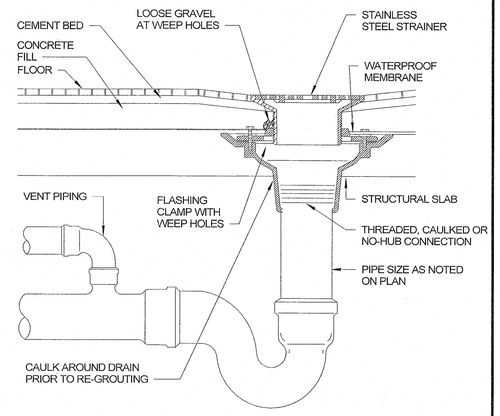
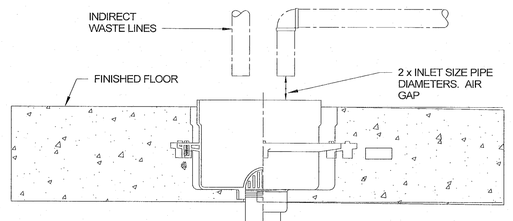


6 / 1P-503 TYPICAL BRANCH TAKE-OFF DETAIL
SCALE: N.T.S.

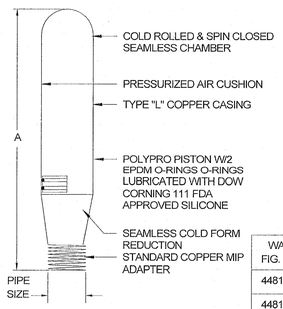


4 / 1P-502 TYPICAL FLOOR DRAIN DETAIL
SCALE: N.T.S.



NOTES:
1. INDIRECT WASTE PIPING EXCEEDING 5' IN LENGTH SHALL BE TRAPPED WITH THE EXCEPTION OF CLEAR WATER WASTES.

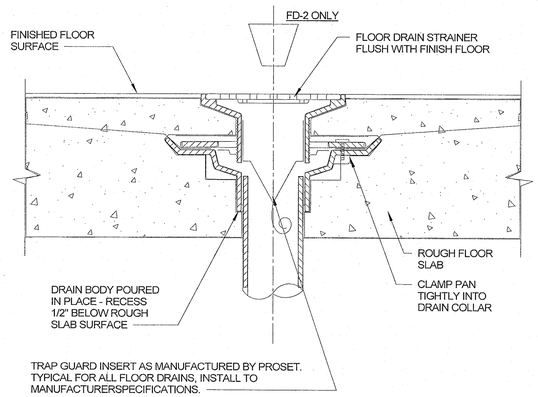
2 / 1P-502 12" x 12" x 12" FLOOR SINK DETAIL
SCALE: N.T.S.



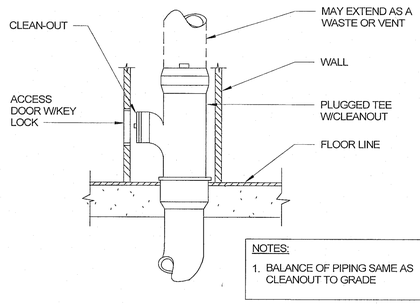
WADE FIG. NO	P.D.I. SYMB.	FIXTURE UNITS	PIPE SIZE	A
4481-A	A	1-11	1/2"	6-1/2"
4481-B	B	12-32	3/4"	8-3/4"
4481-C	C	33-60	1"	11"
4481-D	D	61-113	1"	10-1/8"
4481-E	E	114-154	1"	12-5/8"
4481-F	F	155-330	1"	15-1/8"

NOTES:
1. ALWAYS INSTALL IN UPRIGHT POSITION
2. INSTALL AT AN ACCESSIBLE LOCATION PROVIDE ACCESS PANEL WHERE REQUIRED

5 / 1P-503 TYP. WATER HAMMER ARRESTOR (WHA)
SCALE: N.T.S.



3 / 1P-502 FLOOR DRAIN W/ TRAP GUARD DETAIL
SCALE: N.T.S.



NOTES:
1. BALANCE OF PIPING SAME AS CLEANOUT TO GRADE

1 / 1P-502 WALL CLEANOUT DETAIL
SCALE: N.T.S.

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Houston, TX 77002

SURVEYED BY:
FB NO. P-6232

STATE OF TEXAS
KRISTEN OWEN
93869
LICENSED PROFESSIONAL ENGINEER
12-12-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - II

1P-502

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
AS NOTED
CITY OF HOUSTON PM
S/E SHAHIDUR RAHMAN, P.E.
SHEET NO. 180 OF 255

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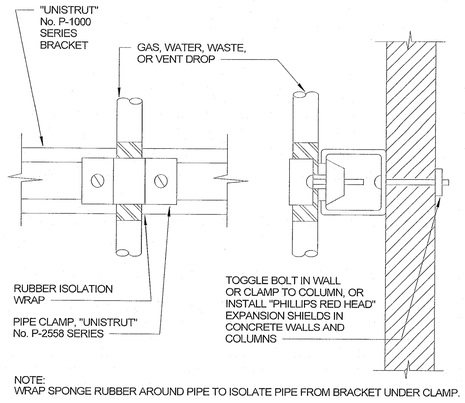
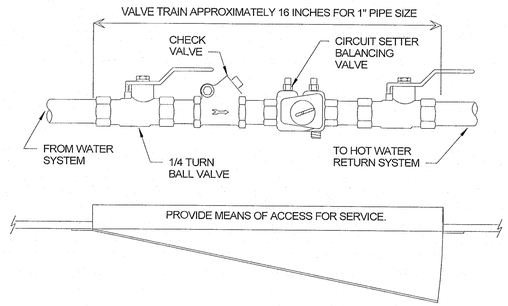


NOTE:
WRAP SPONGE RUBBER AROUND PIPE TO ISOLATE PIPE FROM BRACKET UNDER CLAMP.

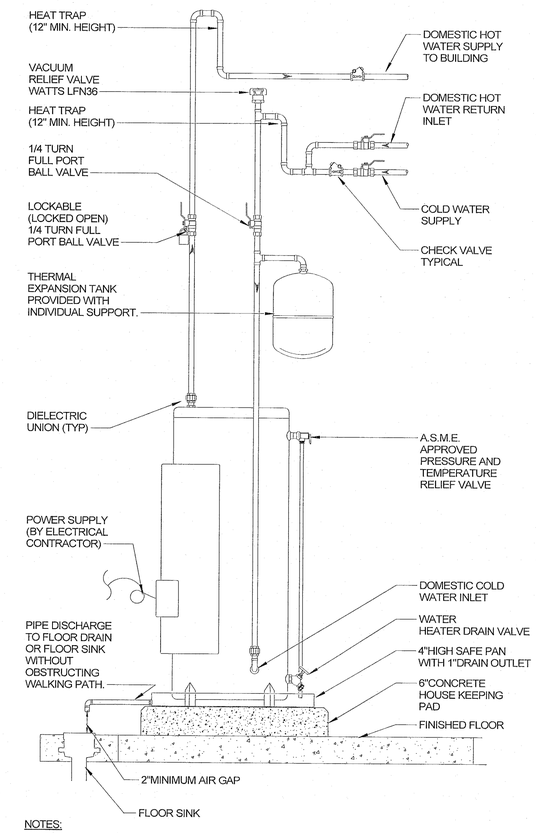
5 / 1P-503 **TYPICAL PIPING DROP DETAIL**
SCALE: N.T.S.

NOTES:

1. EACH VALVE SHALL BE FURNISHED WITH A PRE-FORMED REMOVABLE PVC INSULATION JACKET.
2. MARK THE BALANCING VALVE WITH AN ARROW ON THE VALVE BODY TO FLOW.
3. PROVIDE EASY AND UNOBSTRUCTED ACCESS TO THE VALVE FOR ADJUSTMENT AND MEASUREMENT.
4. SEE FLOOR PLAN FOR BALANCING VALVE LOCATION AND PIPE SIZE.



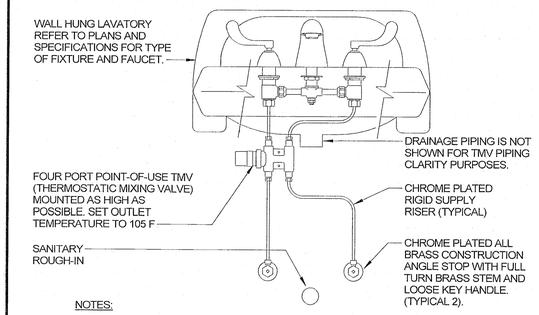
3 / 1P-504 **HOT WATER BALANCING VALVE DETAIL**
SCALE: N.T.S.



NOTES:

1. SEE PLUMBING SCHEDULE FOR WATER HEATER AND THERMAL EXPANSION TANK MODELS .
2. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR PROPER INSTALLATION.
3. PLUMBING CONTRACTOR RESPONSIBLE FOR THE PURCHASE OF THE DISCONNECT SWITCH, AND THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ITS INSTALLATION.
4. COORDINATE INSTALLATION WITH STRUCTURAL, ELECTRICAL, MECHANICAL AND FIRE PROTECTION TRADES.

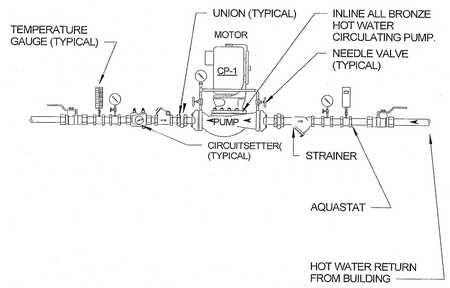
1 / 1P-504 **ELECRTICAL WATER HEATER DETAIL**
SCALE: N.T.S.



NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR HAND WASH SINK MOUNTING HEIGHTS.
2. P-TRAP, TAIL PIECE, AND WASTE ARM NOT SHOWN FOR CLARITY..
3. FOR HANDICAP LAVATORY INSTALLATION ALL WASTE PIPING UNDER SINK SHALL BE WRAPPED WITH PROTECTIVE PIPE COVERS.
4. FOR HANDICAP LAVATORY INSTALLATION ANGLE STOP VALVES AND SUPPLY RISERS SHALL BE WRAPPED WITH PROTECTIVE PIPE COVERS. SUPPLY RISERS SHALL BE WRAPPED FROM STOP VALVES TO MIXING VALVE. ENDS OF PROTECTIVE WRAP SHALL BE CUT SQUARE AND TIE WRAPPED CLOSED.

4 / 1P-504 **TYP HAND WASH SINK/LAV W/ TMV DETAIL**
SCALE: N.T.S.



2 / 1P-504 **IN-LINE DHW RETURN PUMP**
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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - III

1P-503

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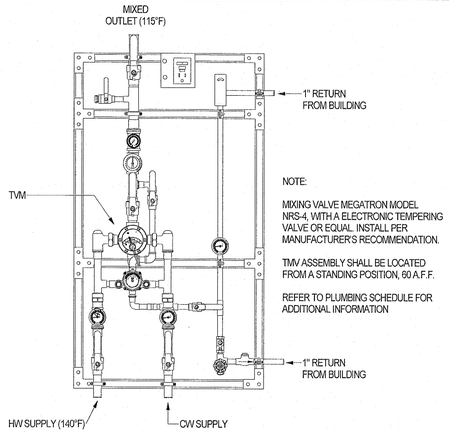

3 1P-505 TEMPERATURE MIXING VALVE DETAIL

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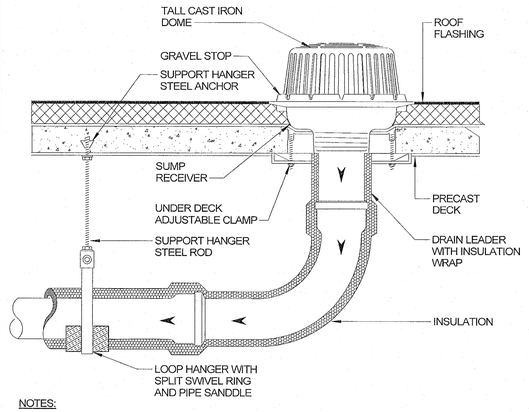
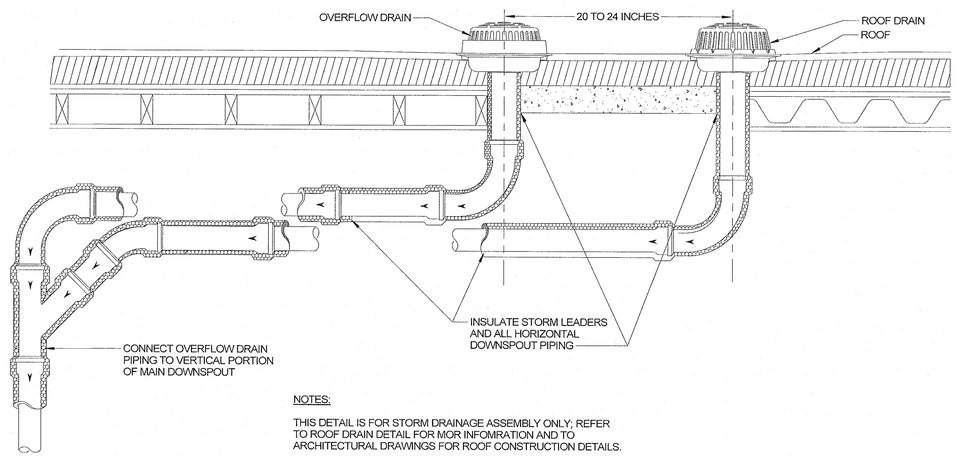


NOTES:

1. EFER TO ARCHITECTS DRAWINGS FOR ROOF MATERIALS INSULATION TAPING.
2. REFER TO STRUCTURAL DRAWINGS FOR ROOF SUPPORT TYPE AND ANCHORING.

2 1P-505 TYPICAL ROOF DRAIN DETAIL

SCALE: N.T.S.



NOTES:

THIS DETAIL IS FOR STORM DRAINAGE ASSEMBLY ONLY; REFER TO ROOF DRAIN DETAIL FOR MOR INFOMRATION AND TO ARCHITECTURAL DRAWINGS FOR ROOF CONSTRUCTION DETAILS.

1 1P-505 TYPICAL ROOF DRAIN AND OVERFLOW ROOF DRAIN DETAIL

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - IV

1P-504

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ELECTRIC WATER HEATER SCHEDULE

TAG	MANUFACTURER & MODEL No.	LOCATION	CAPACITY GAL.	RECOVERY GPH	TEMPERATURE RISE (F)	ELECTRICAL				REMARKS
						KW	VOLTS	PH	HZ	
EWH-1	BRADFORD WHITE #CEHD50(A) 13.5 3CF	MECH A134	50	56 GPH	100	13.5	480	3	60	1-3

NOTES:

1. SET WATER HEATER TEMPERATURE TO 140° F DEGREES.
2. ELECTRICAL DISCONNECT TO BE PROVIDED BY DIVISION 26.
3. PROVIDE EXPANSION TANK ET-1

EXPANSION TANK SCHEDULE

TAG	TYPE	MANUFACTURER	MODEL	STORAGE GAL.
ET-1	POTABLE WATER	AMTROL	ST-12C	6.4

THERMOSTATIC MIXING VALVE

TAG	TEMPERATURE INLET (°F)	TEMPERATURE OUTLET (°F)	MINIMUM FLOW (GPM)	DESIGN FLOW (GPM)	MAX PRESSURE DROP (PSI)	MANUFACTURER MODEL
TMV-1	140	115	0.5	9.2	5	HI/LO RECIRCULATION STATION NRS-4 / S59-3045

BACKFLOW PREVENTER SCHEDULE

TAG	DEVISE	TYPE	MANUFACTURER	MODEL	SERVING	MATERIAL	NOTES
BFP-1	BACKFLOW PREVENTER	REDUCED PRESSURE ZONE	WATTS	LF009	INCOMING SERVICE	CAST COPPER	1-4
BFP-2	BACKFLOW PREVENTER	DUAL CHECK	WATTS	SD-2	COFFEE MAKER & TEA MAKER	BODY AND ADAPTERS 316 STAINLESS STEEL	1-4
BFP-3	BACKFLOW PREVENTER	DUAL CHECK VALVE WITH INTERMEDIATE ATMOSPHERIC VENT	WATTS	LF9D	ICE MAKER	LEAD FREE BRASS BODY W/ STAINLESS STEEL PARTS	1-4

NOTES:

1. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE WITH LEAD FREE INLINE STRAINER AND ISOLATION VALVES FOR SERVICE.
3. INSTALL IN AN ACCESSIBLE LOCATION. (NOT FOR CONCEALED INSTALLATION).
4. REFER TO CONSTRUCTION DOCUMENTS FOR ACTUAL PIPE SIZE.

PLUMBING PUMP SCHEDULE

MARK	EQUIPMENT	TYPE	LOCATION	GPM PER PUMP	TOTAL HEAD (FEET)	DESIGN PRESSURE (PSI)	MOTOR			RPM	REMARKS	
							HP	VOLTS	PH			
CP-1	BUILDING HOT WATER CIRCULANG PUMP	IN-LINE CENTRIFUGAL	MECHANICAL ROOM	5.0	25	--	-	120	1	1725	BELL & GOSSET UP SERIES PIPE MOUNTED WITH ISOLATION VALVES, INLET SIDE STRAINER, AND CHECK VALVE ON OUTLET	1, 2, 3, 4

NOTES:

1. FURNISH AND INSTALL PUMP COMPLETE WITH AQUASTAT AND TIMER.
2. MOTOR RATED SWITCH TO BE PROVIDED BY DIVISION 26.
3. PROVIDE CONTROLS & CONTROL PANEL AS DETAILED.
4. PROVIDE VIBRATION RATED HANGERS ON EACH SIDE OF THE PUMP VALVE ASSEMBLY.
5. PROVIDE INTEGRAL VFD ON EACH PUMP OR IF EXTERNAL DRIVES THEY SHALL BE CONTAINED WITHIN A SINGLE ELECTRICAL ENCLOSURE (MIN. NEMA 3R UNLESS NOTED OTHERWISE), PANEL SHALL HAVE MAIN DISCONNECT AND SINGLE POINT CONNECTION.
6. PROVIDE REDUNDANT DISCHARGE PRESSURE TRANSDUCER AND CONTROL CAPABILITY TO MONITOR BOTH SENSOR AND AUTOMATICALLY SWITCH TO SECONDARY SENSOR IN THE EVENT OF A PRIMARY SENSOR FAILURE
7. PROVIDE SURGE PROTECTION, BATTERY BACKUP, SERVICE DISCONNECTS, INDIVIDUAL PUMP RUN INDICATION, AUDIBLE & VISUAL ALARM, BACNET COMMUNICATION INTERFACE.
8. HEADERS SHALL BE CONSTRUCTED OF 316 SS WITH FLANGED CONNECTIONS ON ALL ENDS, PROVIDE: SUCTION & DISCHARGE ISOLATION VALVES AND DISCHARGE CHECK VALVES ON EACH PUMP.
9. CONTRACTOR TO ROUTE A PIPE OFF THE SYSTEM DISCHARGE LINE TO THE BLADDER TANK PROVIDING A BLOCK & BLEED PIPING ARRANGEMENT THAT ALLOWS THE TANK TO BE ISOLATED FROM THE SYSTEM AND DRAINED.
10. WHEN REQUIRED, SYSTEM SUPPLIER TO PROVIDE 150# FLANGED X 150# FLANGED REDUCING FLEX CONNECTORS, OF ALL STAINLESS STEEL CONSTRUCTION (RE: PLANS FOR PIPE CONNECTION SIZES).
11. FOR PACKAGES BEING FED FROM A BREAK TANK, PACKAGE TO BE WIRED INTO THE LEVEL CONTROL PANEL'S LOW LEVEL ALARM FOR DRY RUN PROTECTION (NOTE: DRY RUN PROTECTION BY SUCTION PRESSURE SENSOR IS NOT ACCEPTABLE).

PLUMBING FIXTURE SCHEDULE

TYPE	MINIMUM ROUGH-IN SIZE					MANUFACTURER/ MODEL	DESCRIPTION	NOTES
	WASTE	VENT	DCW	DHW	LP			
WC-1	4"	2"	1-1/2"	--		SLOAN WETS-2450.1010	WATER CLOSET AND FLUSHOMETER COMBO, VITREOUS CHINA, FLUSH VALVE: SLOAN ROYAL #111.128 FLUSH VALVE 1.28GPF, TOP SPUD, ELONGATED BOWL, LEFT HAND TRIP LEVER, AMERICAN STANDARD #59001.100 HEAVY DUTY OPEN FRONT LESS COVER. PROVIDE WITH BACK TO BACK, HORIZONTAL ADJUSTABLE CARRIER.	
WC-2 (ADA)	4"	2"	1-1/2"	--		SLOAN WETS-2450.1010	WATER CLOSET AND FLUSHOMETER COMBO, VITREOUS CHINA, FLUSH VALVE: SLOAN ROYAL #111.128 FLUSH VALVE 1.28GPF, TOP SPUD, ELONGATED BOWL, LEFT HAND TRIP LEVER, RIM HEIGHT 17" AFF.AMERICAN STANDARD #59001.100 HEAVY DUTY OPEN FRONT LESS COVER. PROVIDE WITH BACK TO BACK VERTICAL, ADJUSTABLE CARRIER WITH WITH SIDE CONNECTIONS AND BOTTOM DISCHARGE CARRIER.	
WC-3	4"	2"	1-1/2"	--		SLOAN WETS-2450.1010	SAME AS WC-1, EXCEPT PROVIDE WITH LEFT HAND, HORIZONTAL ADJUSTABLE CARRIER.	
LV-1 (ADA)	2"	2"	3/4"	3/4"		SLOAN SS-3003	LAVATORY - WALL-HUNG VITREOUS CHINA WITH BACKSPLASH. FAUCET: SLOAN #EBF-650-4-BAT-BDT-CP-0.5GPM-MLM-IR-BT-FCT. SUPPLY WITH STOP: MCGUIRE #BV2165CC LOSE KEY SUPPLY AND STOP KIT. DRAIN/TAIL PIECE: MCGUIRE #155WC OFFSET LIFT AND TURN PLUG. TRAP: MCGUIRE #8090 CAST P-TRAP WITH CLEANOUT. INSULATION: TRUEBRO #LAV SHIELD PROTECTIVE ENCLOSURE ON TRAP, DRAIN, AND BOTH HOT AND COLD SUPPLY. LAVATORY SUPPORTS: JAY R. SMITH #0700.	5
SK-1 (ADA)	2"	2"	3/4"	3/4"		ELKAY LRAD252160	ELKAY LUSTERTONE CLASSIC STAINLESS STEEL 25"X21-1/4"X6", SINGLE BOWL DROP-IN ADA SINK. ELKYA #LKGT1041 GOURMET SINGLE HCLE KITCHEN FAUCET WITH SPRAY AND LEVER HANDLE WITH HI AND MID-RISE 1.75GPM. SUPPLY WITH STOP: MCGUIRE #BV2165CC LOSE KEY SUPPLY AND STOP KIT. DRAIN/TAIL PIECE: MCGUIRE #155WC OFFSET LIFT AND TURN PLUG. TRAP: MCGUIRE #8090 CAST P-TRAP WITH CLEANOUT. INSULATION: TRUEBRO #LAV SHIELD PROTECTIVE ENCLOSURE ON TRAP, DRAIN, AND BOTH HOT AND COLD SUPPLY. PROVIDED WITH PT-1, PROVIDE AND INSTALL TMV-2.	5
UR-1 (ADA)	2"	2"	3/4"	--		SLOAN WEUS-1000.1007	URINAL - FLUSHOMETER COMBO WITH SLOAN ROYAL #186.05 GPF. MOUNT PER ADA HEIGHT. PROVIDE WITH URINAL CARRIER.	
MS-1	3"	2"	3/4"	3/4"		STERN-WILLIAMS SB-803	SERVICEPTOR 24"X24"X12" FLOOR MOUNTED SERVICE SINK. FAUCET: #SC-5812 COMMANDER WALL MOUNTED FAUCET, 4" WRIST BLADE HANDLES, INTEGRAL VACUUM BREAKER. PROVIDE 3" QUICK DRAIN CONNECTOR MODEL T-35 HOSE AND WALL BRACKET MODEL T-40 SS MOP HANGER, MODEL 1453-BB STAINLESS STEEL STRAINER DRAIN AND WALL GUARD.	
FCO-1	4"					JAY R. SMITH 4120A	DUCO CAST IRON GRADE CLEANOUT WITH ROUND ADJUSTABLE SCORIATED CAST IRON TOP.	
ECO-1	4"					JAY R. SMITH 4220	EXTERIOR YARD CLEAN OUT, DUCO CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORIATED SECURED CAST ITON TOP, HEAVY DUTY CAST IRON TOP	
WCO-1	SEE PLAN					JAY R. SMITH 4710	DUCO CAST IRON GRADE CLEANOUT WITH ROUND ADJUSTABLE SCORIATED CAST IRON TOP.	
FD-1	SEE PLAN	2"				JAY R. SMTIH 2005Y02B	5" SQUARE TOP STRAINER HEAD FLOOR DRAIN WITH ADJUSTABLE STRAINER HEAD. PROVIDE TRAP GUARD.	1, 2, 3, 4
FD-2	SEE PLAN	2"				JAY R. SMTIH 2005YXF37V-3581	7" DIAMETER FUNNEL TYPE ADJUSTABLE STRAINER WITH DUCO CAST IRON EXTENSION AND 6" DIAMETER FUNNEL	2
SD-1	SEE PLAN	2"				JAY R. SMTIH 2005Y02B	5" SQUARE TOP STRAINER HEAD FLOOR DRAIN WITH ADJUSTABLE STRAINER HEAD.	1, 2, 3, 4
FS-1	SEE PLAN	2"				JAY R. SMTIH 3150	SANI-CEPTOR FLOOR SINK, 8" DEEP. PROVIDE DRAIN WITH 3/4 GRATE.	1, 2, 3, 4
SH-1 (ADA)	--	--	3/4"	3/4"		SYMMONS TEPMPTROL C-96-500-B30-V-X	SHOWER SYSTEM WITH HAND SHOWER, ADA COMPLIANT, PRESSURE BALANCING MIXING VALVE WITH LEVER HANDLE, INTEGRAL SERVICE STOPS AND ADJUSTABLE STOP SCREW TO LIMIT HANDLE TURN. 2.0 GPM FLOW RATE RESTRICTOR, DUAL OUTLET DIVERTER VALVE, IN-LINE VACUUM BREAKER, FLEXIBLE METAL HOSE, SHOWER HEAD WITH ARM AND FLANGE. PROVIDED WITH SD-1 SHOWER DRAIN. ROUGH IN SHOWER HEAD AT 7'-0" AFF.	
WB-1			3/4"			IPS CORPORATION 87967	PLASTIC SQUARE REFRIGERATOR OUTLET BOX WITH LEAD FREE QUARTER TURN HAMMER VALVE.	
WH-1			3/4"			WOODFORD B67	BOX TYPE BACKFLOW PROTECTED FREEZELESS WALL HYDRANT	
SK-2	2"	2"	1/2"	1/2"		LABORATORY SINK	LABORATORY SINK 22" X 18" X 12" DEEP SELF RIMMING SINGLE COMPARTMENT SINK, 18" GAUGE TYPE 304 STAINLESS STEEL WITH UNDERCOATING AND SINGLE HOLE FOR SINGLE WHOLE FAUCET. CHICAGO FAUCET MODEL No. LVM1-A11-H SINGLE HOLE DECK MOUNT DUAL INLET TAILPIECE: ELKAY LKAD-35 CP BRASS OFFSET DRAIN, BASKET STRAINER, 1-1/2" TAILPIECE AND #LK-53 CONTINUOUS WASTE PIPING. SUPPLIES: MCGUIRE 2165LK SUPPLY, ESCUTCHEON, 1/2" IPS X 3/8" FLEXIBLE TUBE RISER AND LOOSE-KEY STOP, ALL WITH CHROME FINISH. TRAP: MCGUIRE NO. 8912, 1-1/2" WITH ADJUSTABLE CAST BRASS P-TRAP AND 17-GAUGE TUBING DRAIN TO WALL, GROUND SWIVEL JOINT, CLEAN OUT PLUG AND CAST BRAS ESCUTCHEON, ALL WITH CHROME FINISH. INSULATION KIT: TRUEBRO 102 E-Z AND 107 E-Z, P-TRAP AND SUPPLY INSULATION KIT.	
SK-3	2"	2"	1/2"	1/2"		SAME AS SK-2	SAME AS SK-2 EXCEPT WITH HAWS Model 7610 SINK MOUNT EYE/FACE WASH CHICAGO FAUCET MODEL No. LVM1-A11-H SINGLE HOLE DECK MOUNT DUAL INLET	
RD-1						JR SMITH 1015	CAST IRON BODY WITH FLASHING RING, GRAVEL STOP, AND CAST IRON DOME STRAINER, EQUIP WITH SUMP RECIEVER, UNDERDECK CLAMP AND EXTENSION AS REQUIRED.	
OD-1						JR SMITH 1037	CAST IRON BODY WITH FLASHING RING, GRAVEL STOP, AND CAST IRON DOME STRAINER, AND 2" TALL CAST IRON WATER DAM COLLAR. EQUIP WITH SUMP RECIEVER, UNDERDECK CLAMP AND EXTENSION AS REQUIRED.	
TMV-2			1/2"	1/2"		WATTS SERIES LFMMV	LEAD FREE, THERMOSTATIC MIXING VALVE. REFER TO MANUFACTURER INSTALLATION REQUIREMENTS 0.25 TO 2.20 GPM.	
EDF-1	2"	2"	1/2"	-		ELKAY LZSTL8WSLK	BOTTLE FILLING STATION, BI-LEVEL ADA COOLER, 8.0 GPH OF 50F DRINKING WATER COMPLETE WITH FILTER AND CARRIER.	

NOTES:

1. PROVIDE WITH VANDAL RESISTANT SCREWS.
2. PROVIDE WITH DEEP SEAL TRAP.
3. FLOOR DRAINS IN TOILET ROOMS SHALL BE PROVIDED WITH TRAP GUARD.
4. FLUSH VALVE SHALL BE LOCATED ON THE OPEN SIDE OF THE WATER CLOSET FOR ALL ADA FIXTURES.
5. PROVIDE WITH TMV-2

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1P-601

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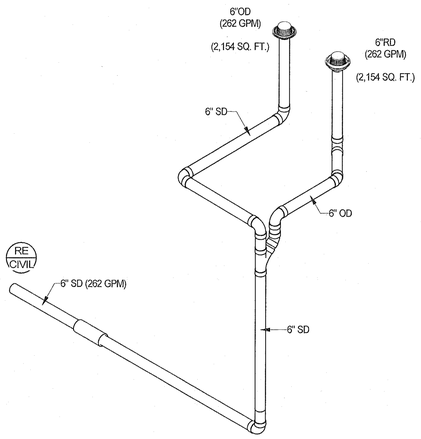

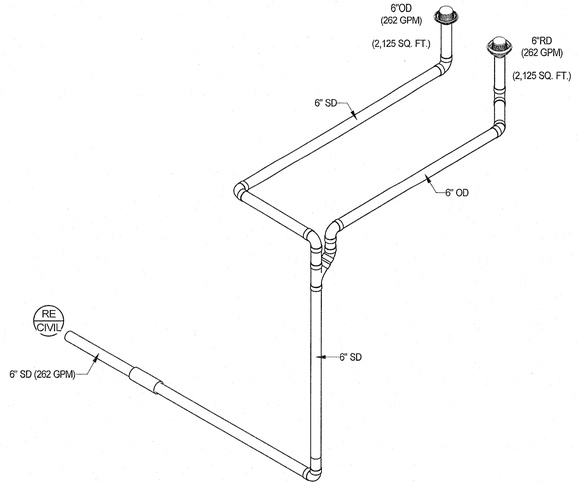

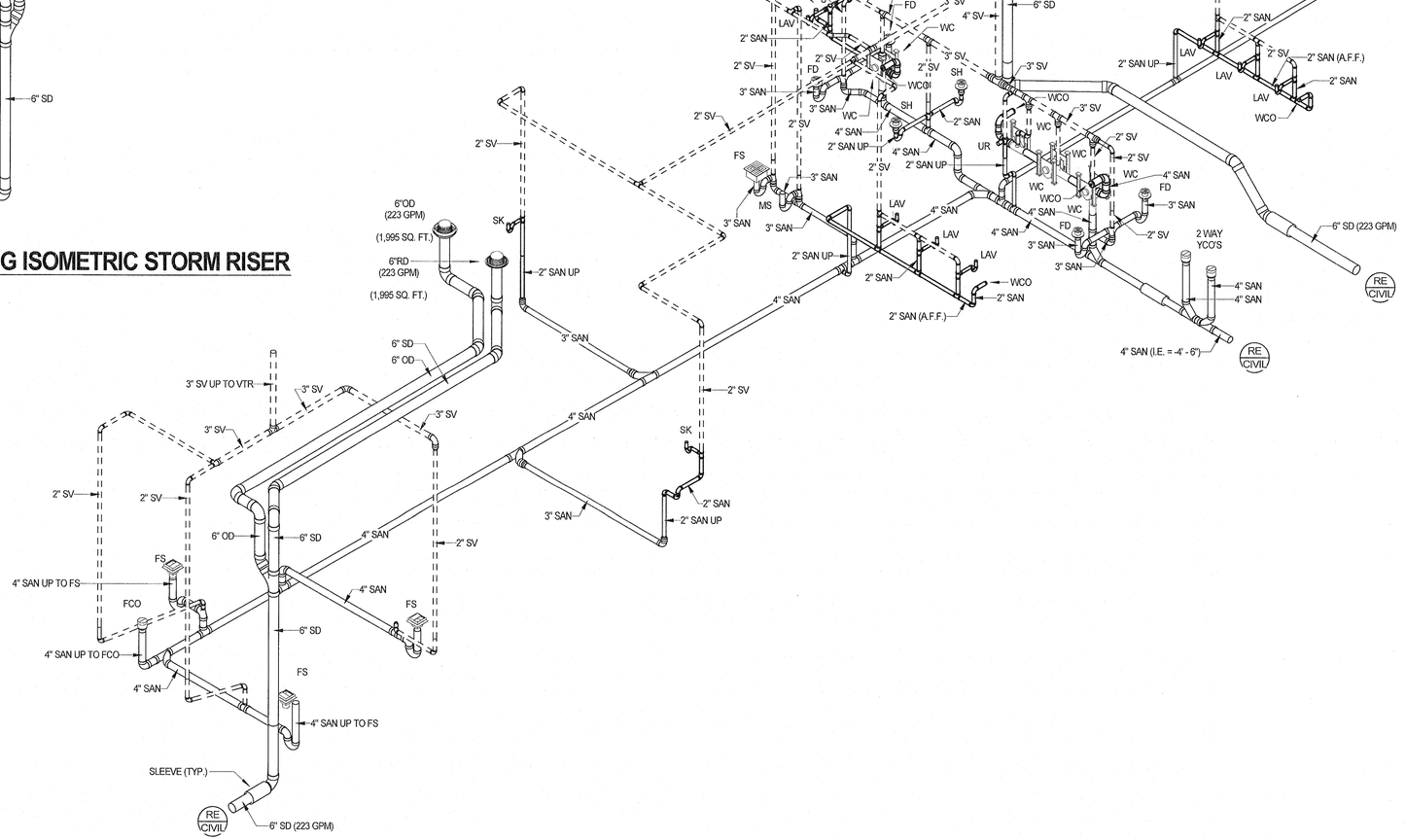

2 1P-701 PLUMBING ISOMETRIC STORM RISER

NTS

1 1P-701 PLUMBING ISOMETRIC RISER

NTS

NO.	DATE	REVISION	APP.

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
9805 Whithorn Dr. | Houston, TX 77095
Office: 832.261.1420

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KRISTEN OWEN
93869
LICENSED
PROFESSIONAL ENGINEER

12-12-2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION PLUMBING RISERS - I 1P-701

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KEYED NOTES

1. SEE "A" ON SHEET 2 / 1P-702 FOR CONTINUATION
2. SEE "B" ON SHEET 2 / 1P-702 FOR CONTINUATION
3. SEE "C" ON SHEET 2 / 1P-702 FOR CONTINUATION
4. SEE "A" ON SHEET 1 / 1P-702 FOR CONTINUATION
5. SEE "B" ON SHEET 1 / 1P-702 FOR CONTINUATION
6. SEE "C" ON SHEET 1 / 1P-702 FOR CONTINUATION

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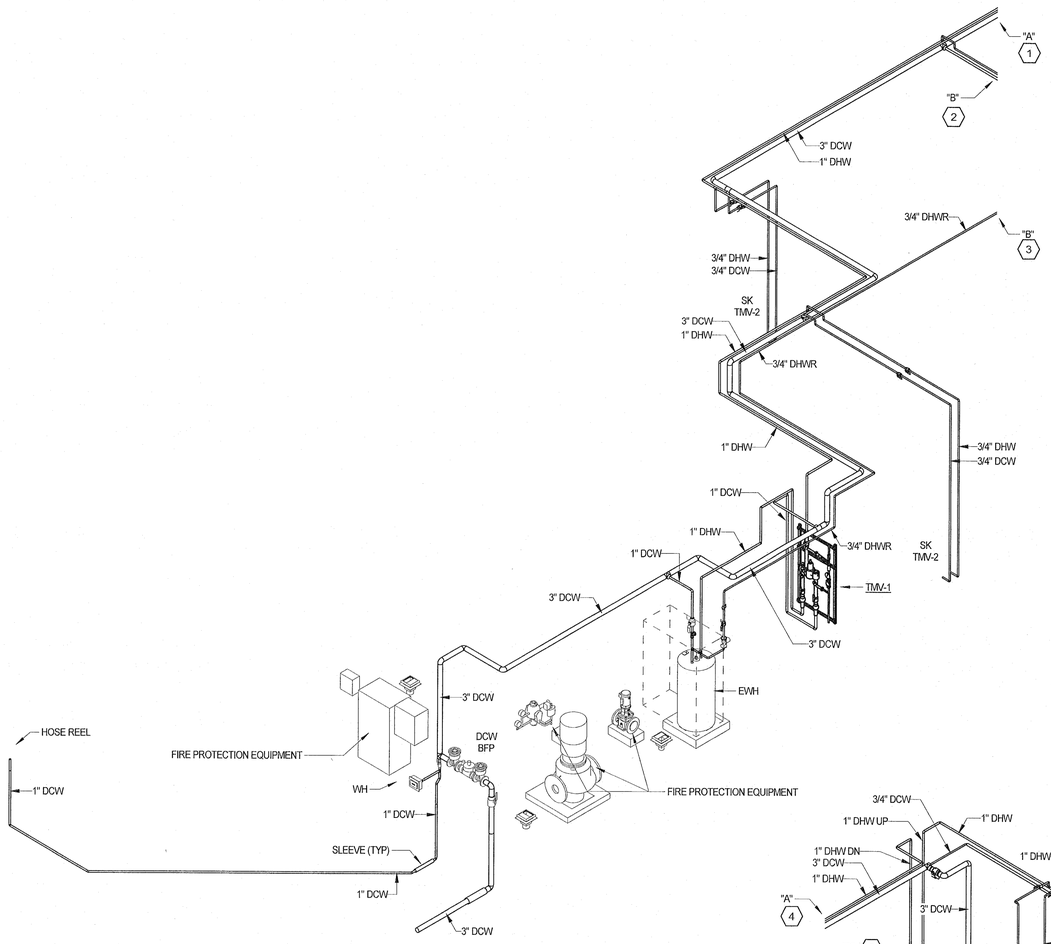
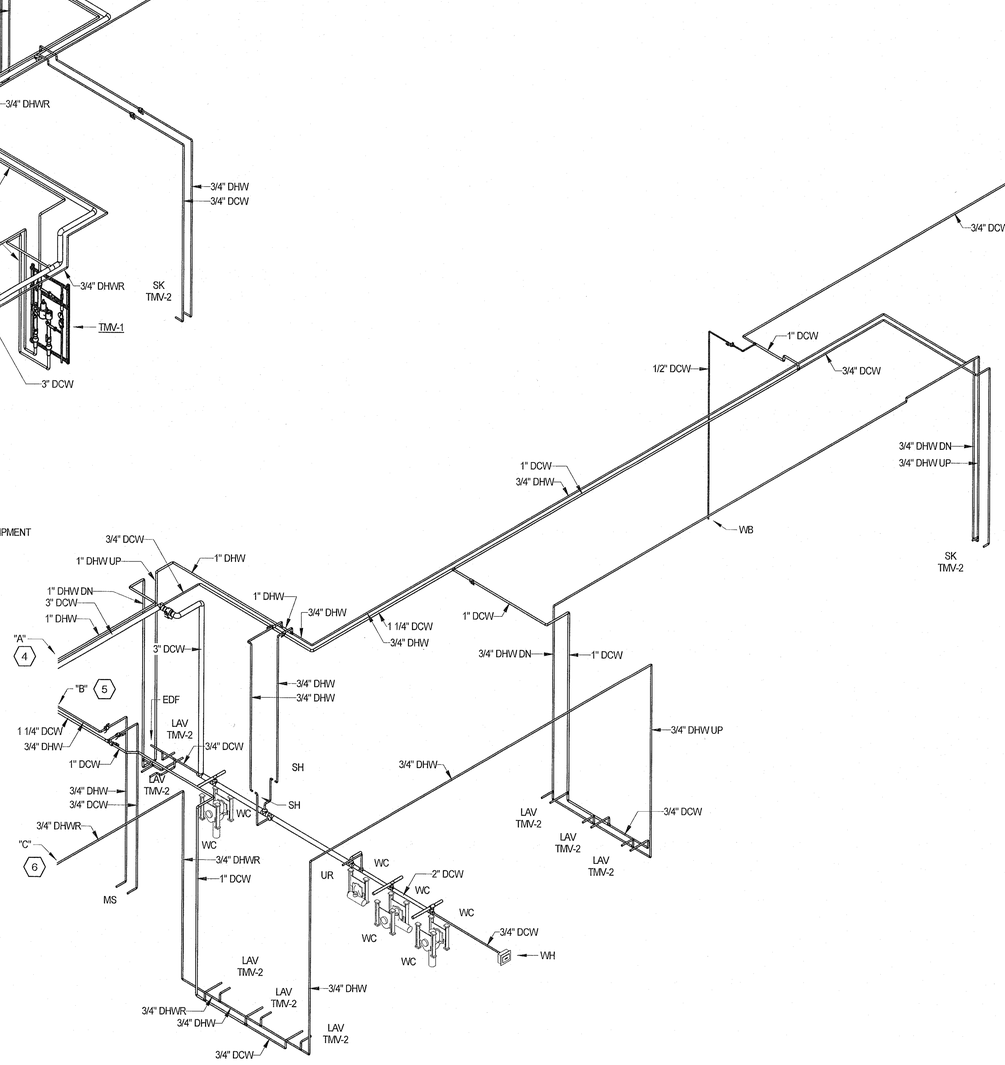


1 / 1P-702 PLUMBING DOMESTIC WATER ISOMETRIC RISER
NTS



2 / 1P-702 PLUMBING DOMESTIC WATER ISOMETRIC RISER
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ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
CFH	CUBIC FEET PER HOUR
CO	CLEAN OUT
CP	CIRCULATING PUMP
DCW	DOMESTIC COLD WATER SUPPLY
DHWR	DOMESTIC HOT WATER RETURN
DHWS	DOMESTIC HOT WATER SUPPLY
DS	DRENCH SHOWER
ECR	ENGINE COOLING WATER RETURN
ECS	ENGINE COOLING WATER SUPPLY
ES/EW	EMERGENCY SHOWER AND EYE WASH
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FW	FIRE PROTECTION WATER
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LAV	LAVATORY
MSB	MOP SERVICE BASIN
NG	NATURAL GAS
NPW	NON-POTABLE WATER
PW	POTABLE WATER
RPBFP	REDUCED PRESSURE BACK FLOW PREVENTER
SD	SANITARY DRAIN
SH	SHOWER
SK	SINK
THW	TEMPERED HOT WATER
TMV	THERMOSTATIC MIXING VALVE
TW	TEMPERED WATER
U	URINAL
UW	UTILITY WATER
VTR	VENT THROUGH ROOF
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WH	WATER HEATER

REV 010119

LEGEND

- POTABLE COLD WATER
- POTABLE HOT WATER
- POTABLE HOT CIRCULATION WATER
- NG — NATURAL GAS
- FLOOR CLEANOUT
- WALL CLEANOUT
- BUTTERFLY VALVE
- GLOBE VALVE
- BALL VALVE
- BACKFLOW PREVENTER
- SD — SANITARY DRAIN
- V — VENT PIPING
- CHECK VALVE
- DOWN PIPE
- VALVE IN RISER
- FLOOR DRAIN

GENERAL PLUMBING NOTES

1. THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL STANDARD PLUMBING CODE REGULATIONS AND LOCAL PLUMBING INSPECTOR.
2. THE PIPING INDICATED ON THESE PLANS ARE DIAGRAMATIC. ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. SUBCONTRACTOR SHALL COORDINATE ROUTING OF ALL PIPING WITH EXISTING CONDITIONS AND SHALL PROVIDE ANY NECESSARY OFFSETS, REROUTING, TEES, ELBOWS, ETC. REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION.
3. SUBCONTRACTOR SHALL COORDINATE ANY PLUMBING OR PIPING SYSTEM SHUTDOWN WITH THE MWHC 48 HOURS IN ADVANCE.
4. ALL DOMESTIC WATER, PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD AND WITHIN WALLS UNLESS OTHERWISE NOTED.
5. ALL SANITARY WASTE PIPING SHOWN IS BELOW SLAB, BELOW FLOOR, OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, OR WITHIN WALLS UNLESS OTHERWISE NOTED.
6. SUBCONTRACTOR SHALL COORDINATE AND PROVIDE ALL NECESSARY PIPING & PLUMBING FITTINGS, PIPING, MISCELLANEOUS ITEMS REQUIRED FOR A COMPLETE INSTALLATION OF ALL LAB PLUMBING RELATED ITEMS.
7. THE SUBCONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL UNDER SLAB PIPING WITH EXISTING STRUCTURAL FOUNDATIONS. UNDERGROUND UTILITY LOCATIONS SHALL BE VERIFIED PRIOR TO ANY WORK BEING PERFORMED. SUBCONTRACTOR SHALL REPAIR OR REPLACE ALL PIPING NOT IN PROPER WORKING ORDER OR DAMAGED DURING INSTALLATION OF THE NEW UNDERGROUND PIPING.
8. ALL PLUMBING & PIPING SYSTEMS SHALL BE SUPPORTED AS REQUIRED BY THE LOCAL CODE REQUIREMENTS AND PER MANUFACTURER'S RECOMMENDATIONS.
9. ALL PIPING PENETRATIONS THROUGH NEW, EXISTING WALL, OR FLOOR SHALL BE SEALED TO EQUAL THE RATING OF THE NEW, EXISTING WALL OR FLOOR.
10. THE PLUMBING SYSTEM SHALL BE TESTED AS REQUIRED BY LOCAL CODE OR BY THE REQUIREMENTS OF THE LOCAL PLUMBING INSPECTOR.
11. THE BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER LOCAL CODE & PER AUTHORITY HAVING JURISDICTION REQUIREMENTS.
12. ALL (VTR'S) VENT THRU ROOF PENETRATIONS INDICATED ON PLANS ARE PRELIMINARY. FINAL LOCATIONS SHALL BE COORDINATED WITH ALL TRADES. ALL VTR'S SHALL BE A MINIMUM OF 10'-0" FROM ALL FRESH AIR INTAKE OPENINGS.
13. PVC DRAIN & VENT PIPING SHALL NOT BE PERMITTED TO BE INSTALLED IN THE RETURN AIR PLENUMS.

PLUMBING FIXTURE CONNECTION SCHEDULE

ID	DESCRIPTION	WASTE	VENT	DCW	DHWS
WC-1	TANK TYPE WATER CLOSET	3"	1-1/2"	1/2"	-
LAV-1	LAVATORY	2"	1-1/2"	1/2"	1/2"
FD-1	FLOOR DRAIN	3"	1-1/2"	-	-
FD-2	FLOOR DRAIN WITH TRAP PRIMER	3"	1-1/2"	-	-
HB-1	HOSE BIBB	-	-	3/4"	-
HB-2	HOSE BIBB (NON-FREEZE)	-	-	3/4"	-
ESEW-1	EMERGENCY SHOWER AND EYEWASH	3"	2"	1"	-
SK-1	SINK	3"	2"	1/2"	3/4"
DF-1	DUAL HEIGHT DRINKING FOUNTAIN	3"	2"	1/2"	3/4"

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING NOTES, SYMBOLS, AND ABBREVIATIONS 2P-001

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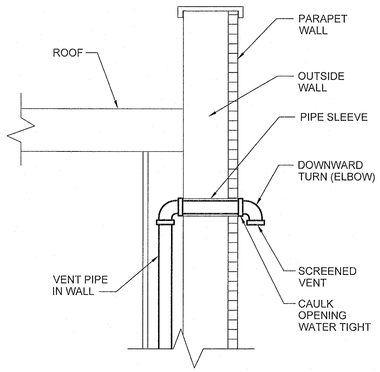
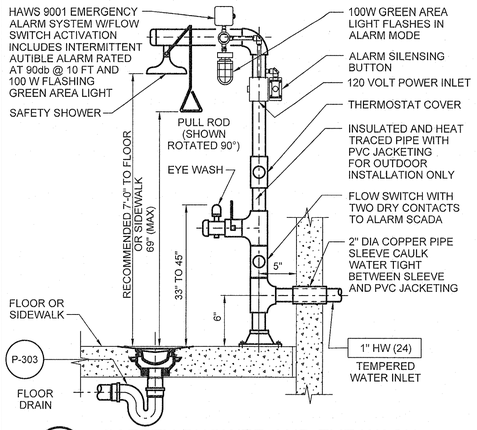
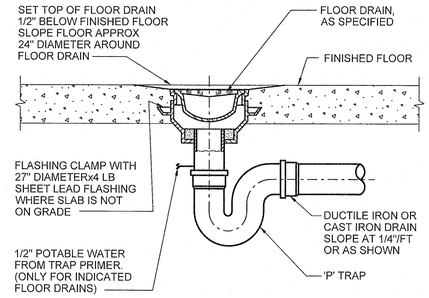


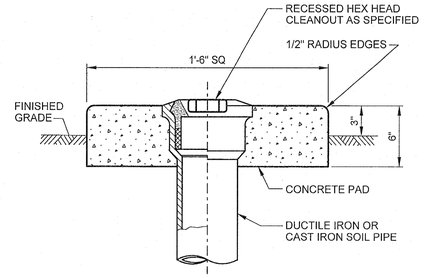
P-205 VENT TERMINATION THRU WALL
REV 010119



P-241 SAFETY SHOWER AND EYE WASH
REV 010119

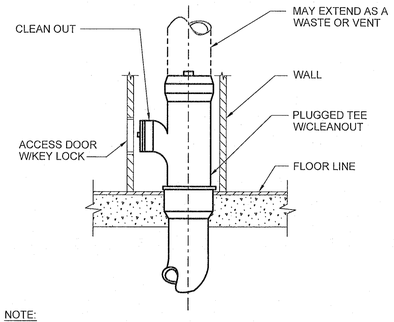


P-303 FLOOR DRAIN
REV 010119



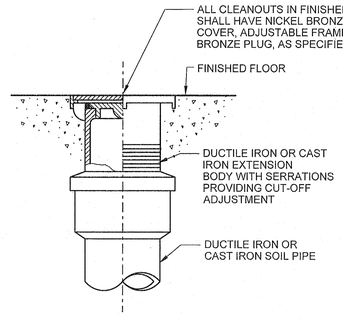
NOTE:
IN TRAFFIC AREAS PROVIDE FLUSH FINISH WITH 10" ID CAST IRON COVER AND FRAME AS SPECIFIED.

P-314 CLEANOUT TO GRADE
REV 010119

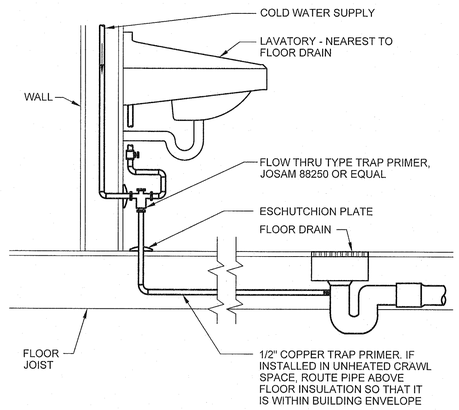


NOTE:
BALANCE OF PIPING SAME AS CLEANOUT TO GRADE.

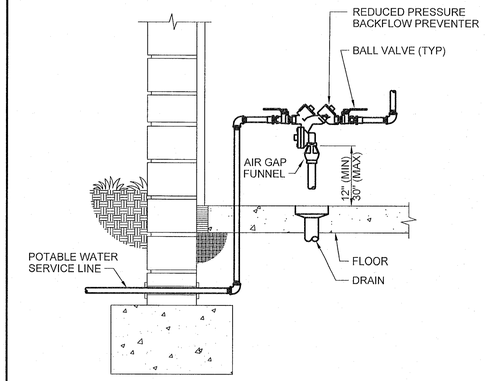
P-315 WALL CLEANOUT DETAIL
REV 010119



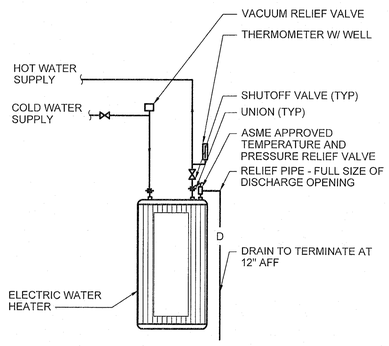
P-316 CLEANOUT IN FINISHED FLOOR
REV 010119



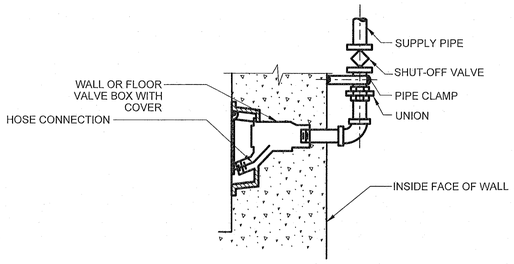
P-510 FLOOR DRAIN TRAP PRIMER
REV 010119



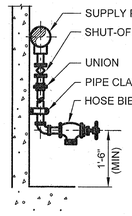
P-551 HORIZONTAL REDUCED PRESSURE (BACKFLOW PREVENTER)
REV 010119



P-901 ELECTRICAL WATER HEATER



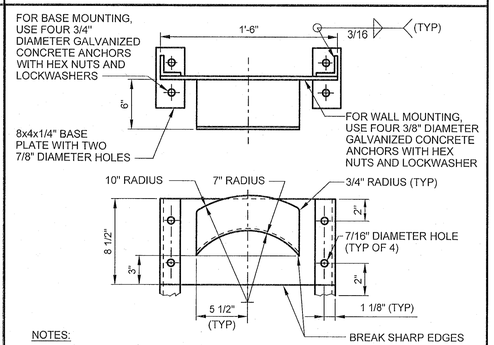
HB-2
NON-FREEZE WALL HYDRANT



HB-1
HOSE HYDRANT INSTALLATION METHOD C

NOTES:
1. FOR SIZE AND LOCATION SEE DRAWINGS.
2. PROVIDE WARNING SIGN PER STANDARD DETAIL M-904 WHEN USED FOR NON-POTABLE WATER.

P-902 HOSE BIBBS
REV 010119



NOTES:
1. WHERE HOSE RACK IS FREE-STANDING, PROVIDE TWO 2x2x1/4" STEEL ANGLES WITH BASEPLATES. WHERE BASEPLATES ARE ATTACHED TO CONCRETE, A MINIMUM OF 1" OF NON-SHRINK GROUT SHALL BE PROVIDED BETWEEN THE BASEPLATES AND THE CONCRETE.
2. HOSE RACK SHALL BE CONSTRUCTED OF WELDED 8-GAUGE STEEL SHEET, HOT DIP GALVANIZED AFTER FABRICATION.

P-903 HOSE RACK
REV 010119

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12/12/2024
SAWAS HADI SAWAS
85293
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING STANDARD DETAILS - I 2P-002

WBS NUMBER	R-000265-0117-4
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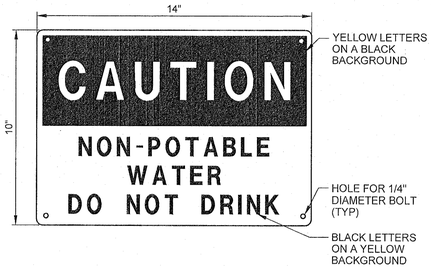

NOTES:

1. PROVIDE SIGN AT ALL HOSE BIBB LOCATIONS WHERE WATER IS NON-POTABLE.
2. SEE SPECIFICATIONS SECTION 'BUILDING SIGNAGE' FOR FURTHER REQUIREMENTS.

P-904 WARNING SIGN FOR NON-POTABLE WATER

REV 010119

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DEWATERING STANDARD DETAILS - II 2P-003

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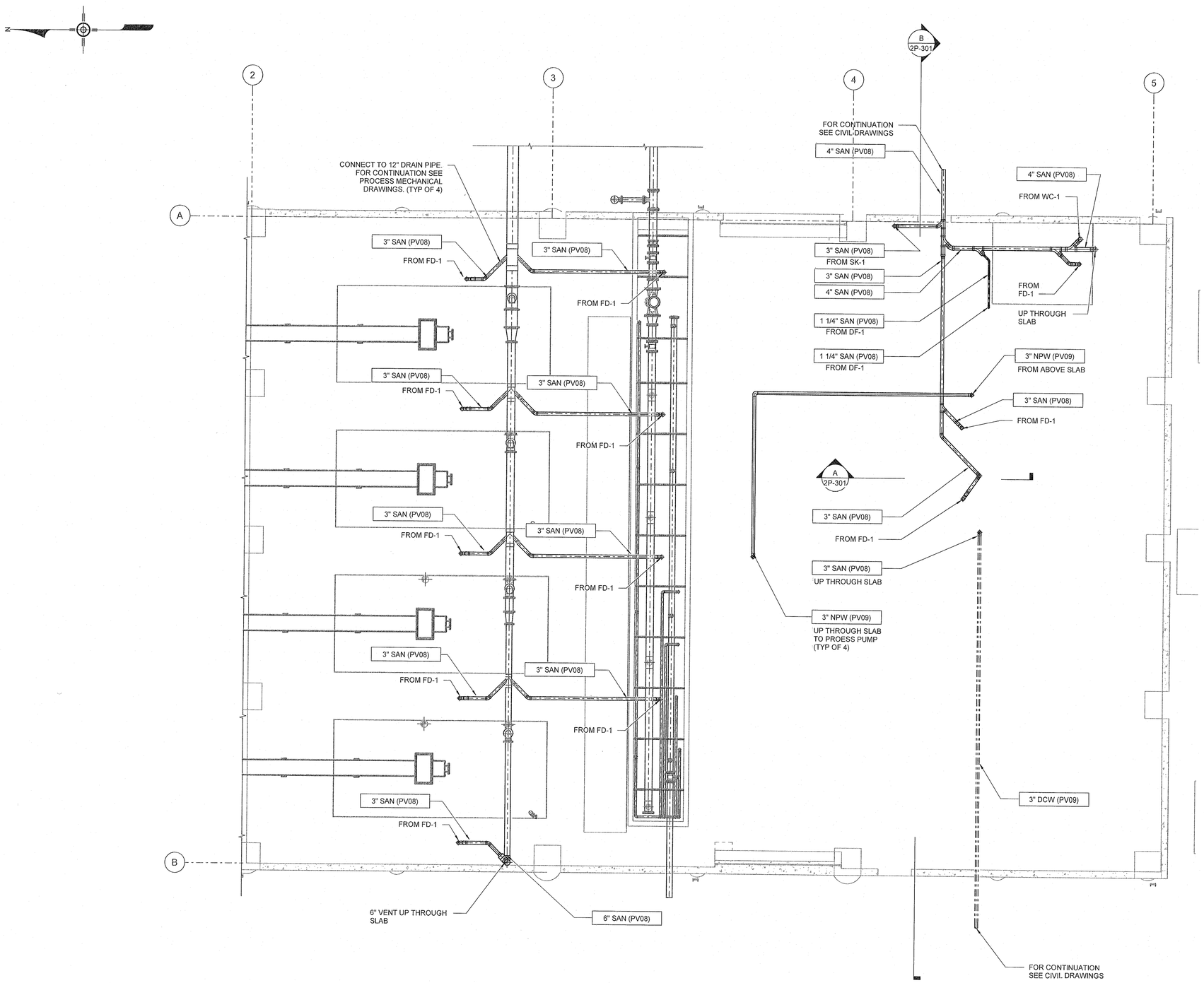

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING BELOW SLAB PLUMBING

2P-101

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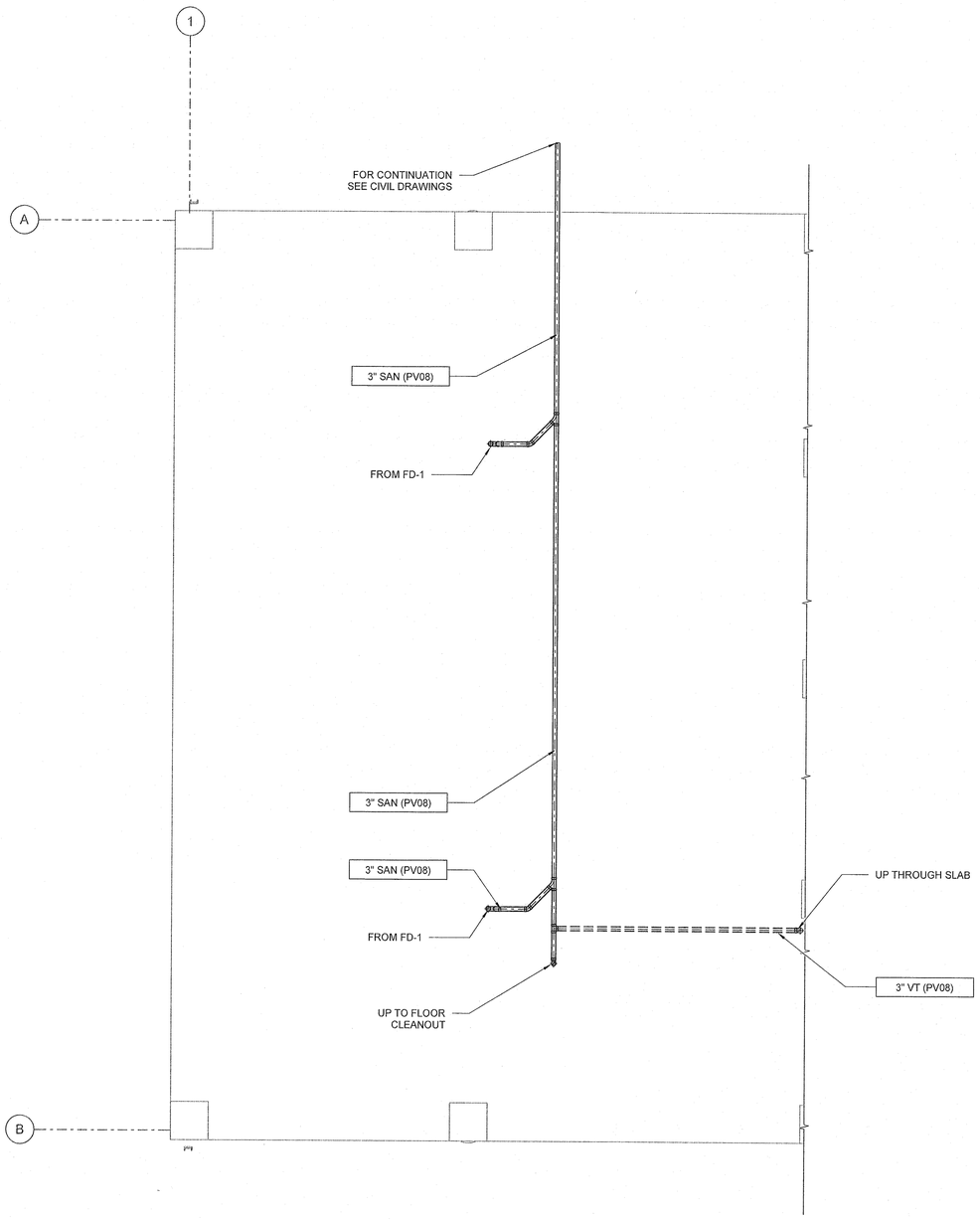

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING TRUCK LOADING AREA BELOW SLAB PLUMBING 2P-102

WBS NUMBER
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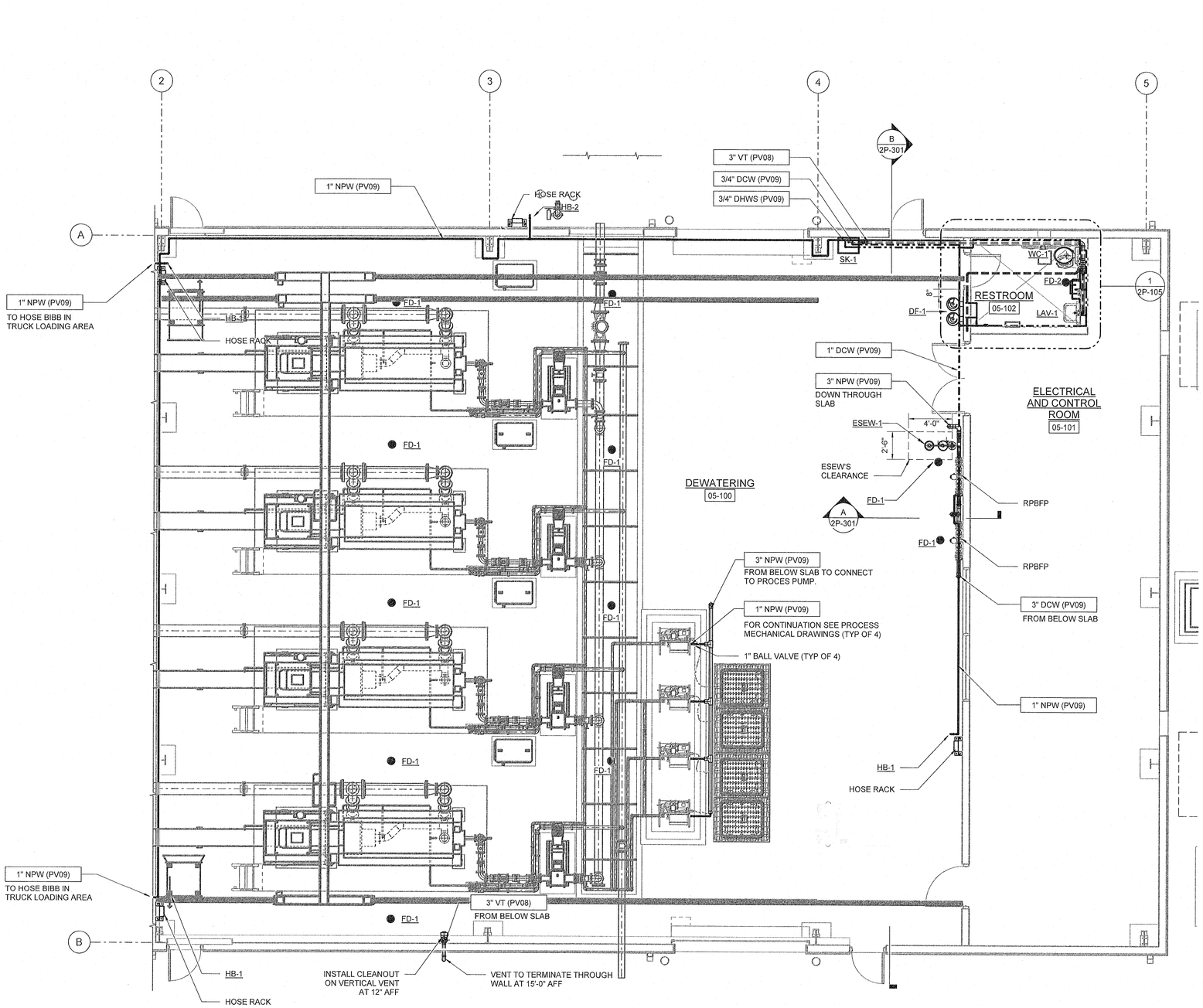

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING BELOW SLAB PLUMBING

2P-103

WBS NUMBER
R-000265-0117-4
DRAWING SCALE
3/16" = 1'-0"
CITY OF HOUSTON PM
SHAHIDUR RAHMAN, P.E.
SHEET NO. 191 OF 255

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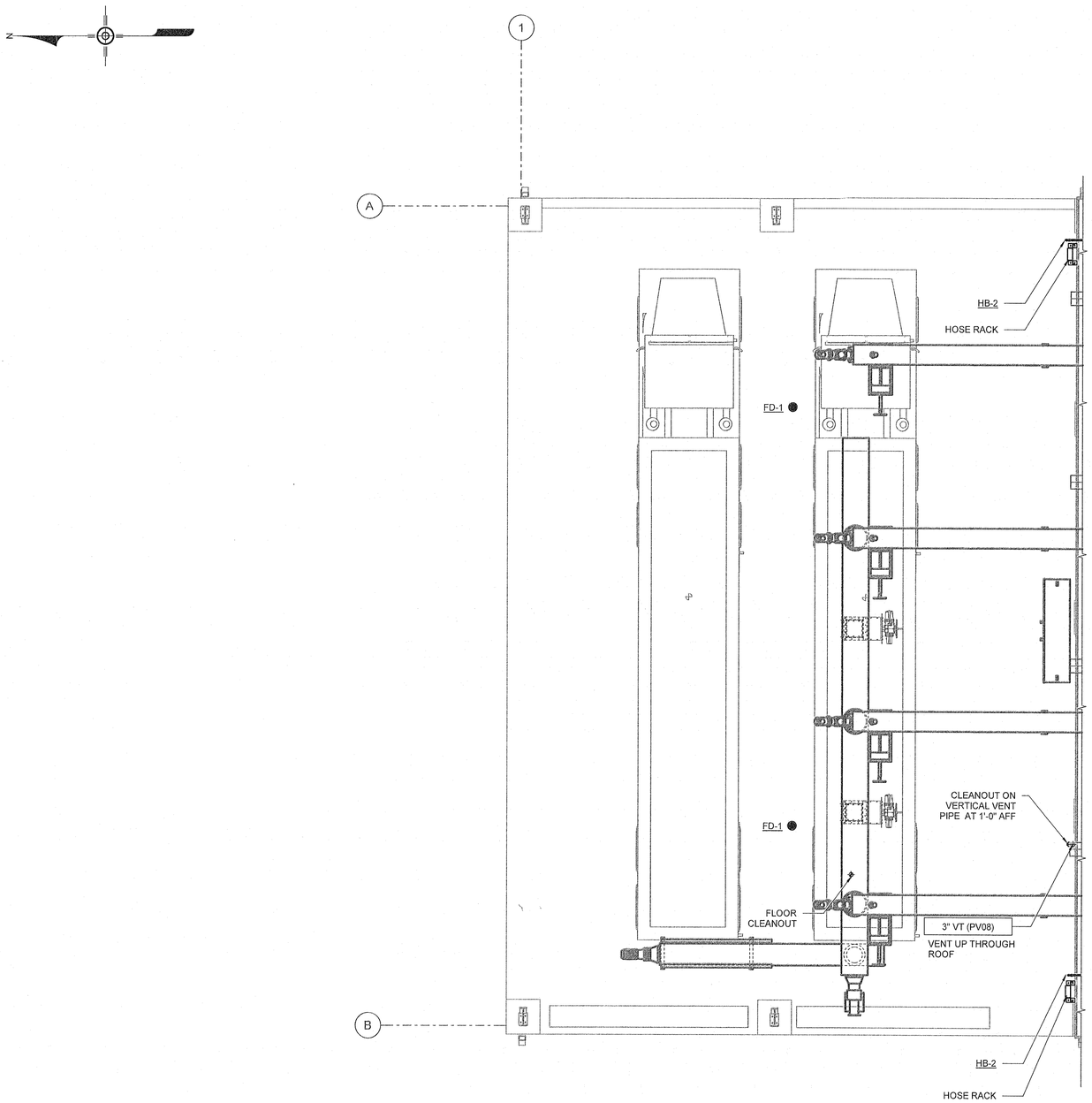

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Houston, Texas 77002
Tel: 713.548.5700
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88293
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING TRUCK LOADING AREA ABOVE SLAB PLUMBING 2P-104

WBS NUMBER
R-000265-0117-4
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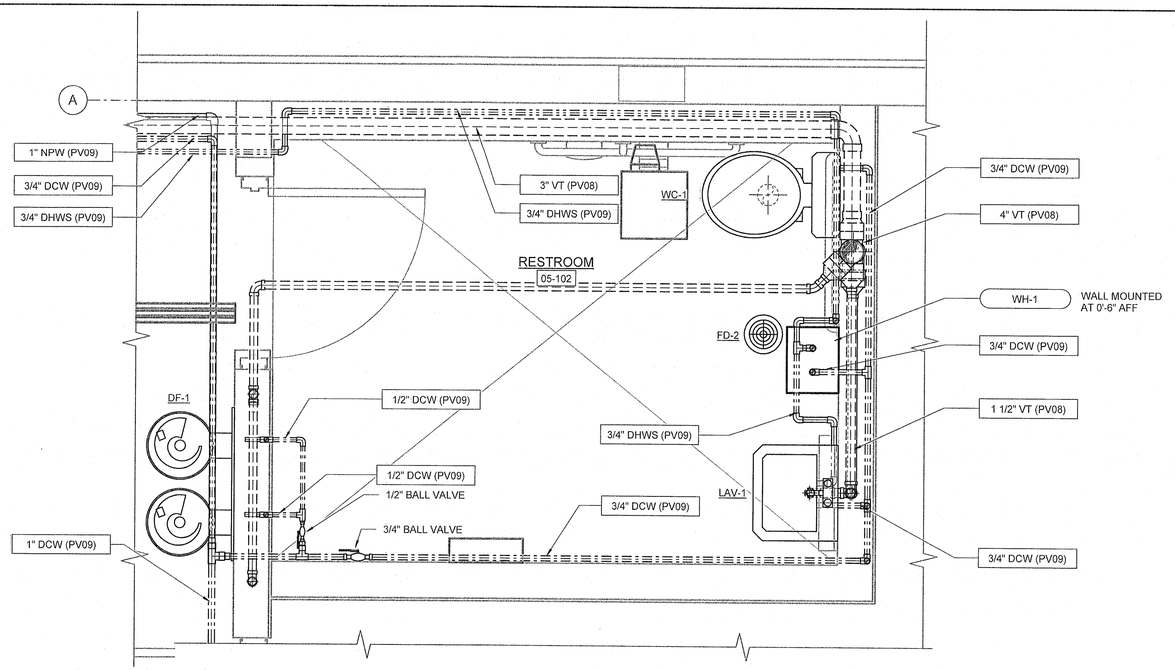
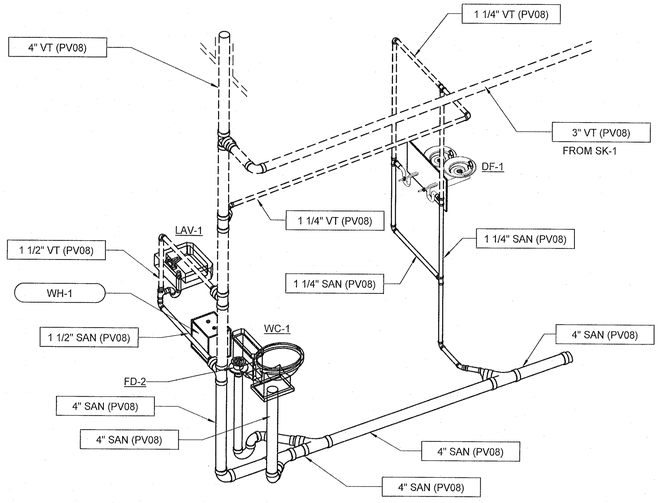


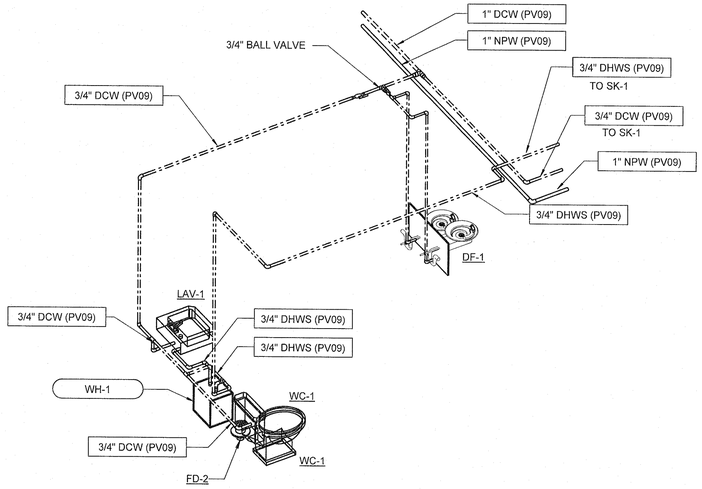
1 / 2P-103 RESTROOM ABOVE SLAB PLUMBING ENLARGED PLAN

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



RESTROOM DRAINAGE ISOMETRIC

NO SCALE



RESTROOM POTABLE WATER ISOMETRIC

NO SCALE

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DEWATERING RESTROOM PLANS AND ISOMETRICS 2P-105

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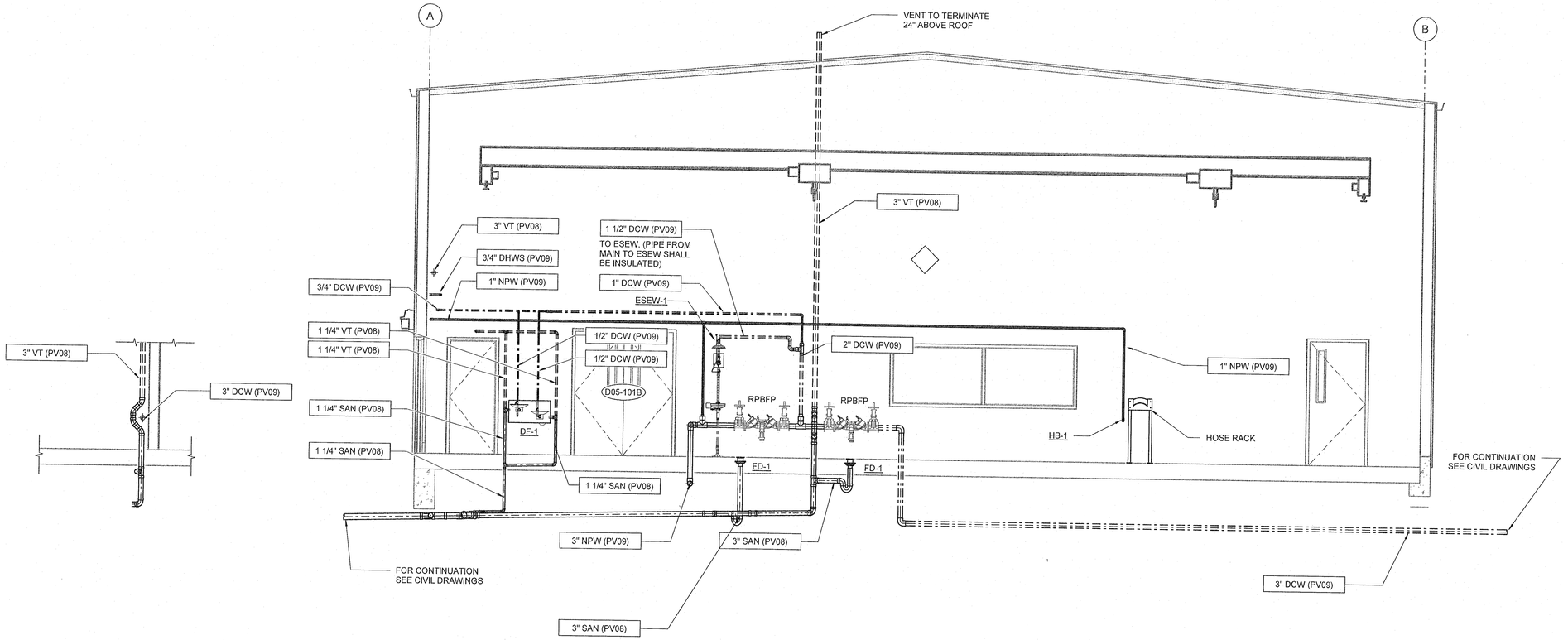

A 2P-101 SECTION - I
SCALE: 1/4" = 1'-0"

B 2P-101 SECTION - II
SCALE: 1/4" = 1'-0"

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING PLUMBING SECTIONS 2P-301

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FIRE ALARM SYMBOLS

SYMBOL	DESCRIPTION	MOUNTING LOC.	MOUNTING HT.
FACP	CONTROL PANEL	WALL	-
FAA	ANNUNCIATOR PANEL	WALL	+44"
F	PULL STATION		
	SPEAKER/HORN WITH STROBE LIGHT	WALL	+80" UPON
	STROBE LIGHT ONLY		
	PHOTOELECTRIC SMOKE DETECTOR	CEILING	SURFACE
DD	DUCT DETECTOR	AT DUCT	SEE PLANS
TS	TAMPER SWITCH	PIPE	VARIES
FS	FLOW SWITCH		
PIV	POST INDICATOR VALVE		
CM	CONTROL MODULE	VARIES	SEE PLANS
MM	MONITOR MODULE		
R	ADDRESSABLE/SUPERVISED RELAY		

GENERAL NOTES

A. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR MONITORING AND/OR CONTROLLING OF ALL REQUIRED ELEMENTS ASSOCIATED WITH THE FOLLOWING SYSTEMS: HVAC, SECURITY INTERFACE, AND EMERGENCY SHUT DOWNS.

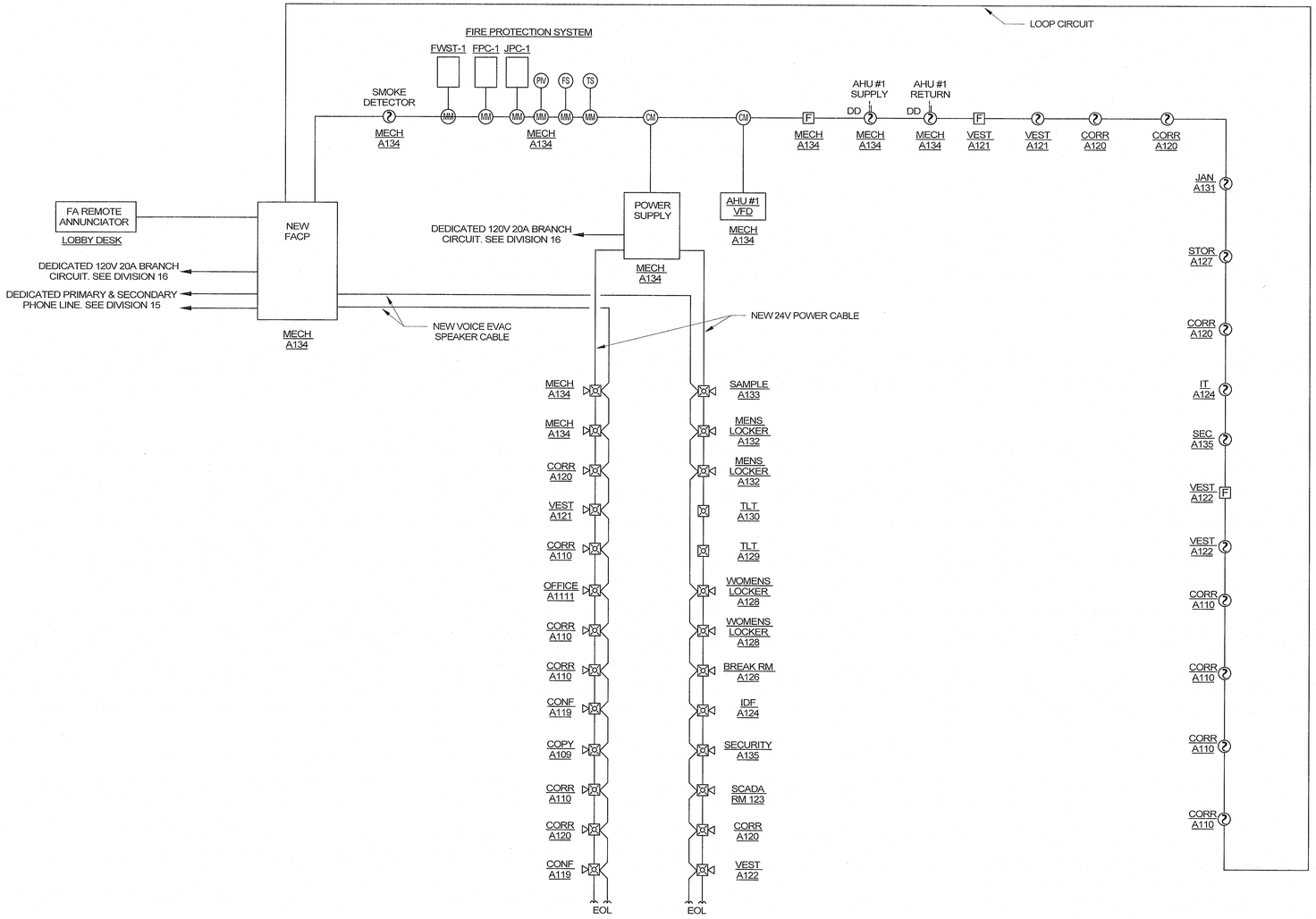
B. ALL HORNS, STROBES, OR COMBINATION OF THE THREE SHALL BE SYNCHRONIZED. CONTRACTOR SHALL PROVIDE TWO SEPARATE CIRCUITS FOR HORNS AND STROBES TO PROVIDE THE CAPABILITY OF TURNING OFF HORNS, BUT NOT STROBES.

C. ALL DEVICES (SMOKE DETECTORS, SPEAKERS, ETC.) MOUNTED IN LAY-IN CEILING SHALL BE CENTERED IN TILE.

D. ALL FIRE/SECURITY RACEWAY SHALL BE 3/4"C MINIMUM UNLESS OTHERWISE NOTED.

E. FIRE ALARM DEVICES SHOWN ON THIS DRAWINGS ARE TO IDENTIFY GENERAL REQUIREMENTS OF THE FIRE ALARM SYSTEM. A NICET CERTIFIED FIRE ALARM CONSULTANT IS TO DESIGN A SYSTEM IN COMPLIANCE WITH NFPA, LOCAL CODES, UNIVERSITY DESIGN STANDARDS AND AUTHORITY HAVING JURISDICTION. THE NICET CERTIFIED FIRE ALARM CONSULTANT WILL CREATE SHOP DRAWINGS AND EQUIPMENT SUBMITTAL PACKAGE THAT INCLUDES ALL REQUIRED COMPONENTS AND CALCULATIONS FOR A COMPLETE WORKING SYSTEM.

F. REFER TO FIRE ALARM SPECIFICATIONS FOR COMPLETE SYSTEM DESCRIPTION AND REQUIREMENTS.



1 / 1F-001 **FIRE ALARM RISER DIAGRAM**
NTS

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION GENERAL INFO & RISER

1F-001

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CITY OF HOUSTON PM	
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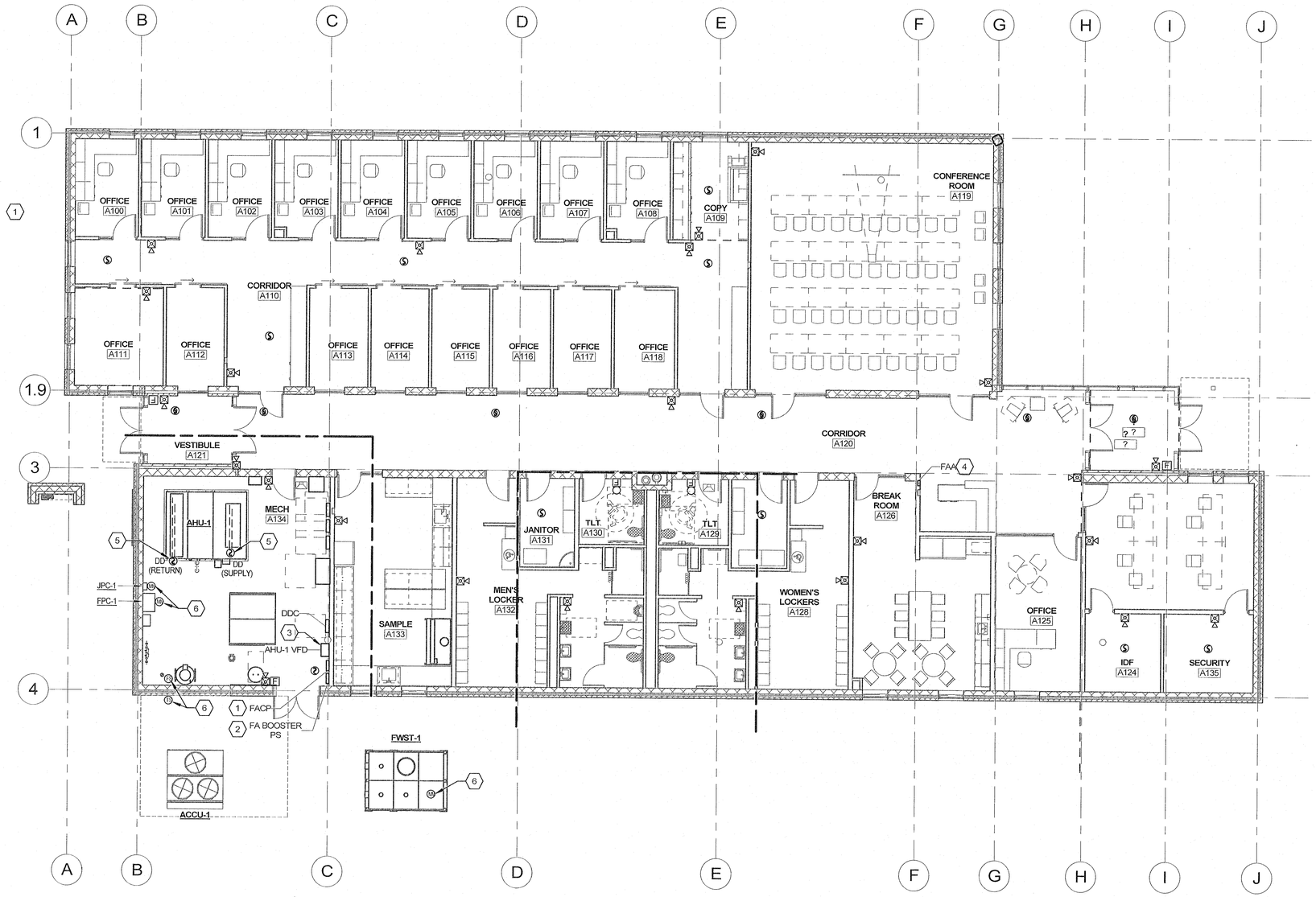

1 1F-101 **ADMINISTRATION - FIRE ALARM FLOOR PLAN**
SCALE: 1/8" = 1'-0"

TRUE NORTH PLAN NORTH

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

0' 4' 8' 16'

GENERAL NOTES

A. REFER TO PROJECT GENERAL NOTES ON SHEET 1F-001 FOR ADDITIONAL INFORMATION.

B. REFER TO FIRE ALARM ONE LINE RISER DIAGRAM ON SHEET 1F-0091 FOR FIRE ALARM SYSTEM LAYOUT.

KEYED NOTES

1. PROVIDE NEW ADDRESSABLE FIRE ALARM CONTROL PANEL SURFACE MOUNTED ON WALL. COORDINATE PANEL LOCATION WITH DIVISION 15. REFER TO ELECTRICAL DRAWINGS FOR BRANCH CIRCUIT ASSIGNMENT.
2. PROVIDE NEW FIRE ALARM BOOSTER POWER SUPPLY SURFACE MOUNTED ON WALL. COORDINATE PANEL LOCATION WITH DIVISION 15. REFER TO ELECTRICAL DRAWINGS FOR BRANCH CIRCUIT ASSIGNMENT.
3. CONNECT FIRE ALARM SYSTEM VFD CONTROL MODULE TO AHU VFD AUXILIARY REMOTE SHUTDOWN CONTACT. COORDINATE TERMINATION WITH VFD MANUFACTURERS INSTALLATION MANUAL.
4. PROVIDE FIRE ALARM REMOTE ANNUCNICATOR PANEL.
5. COORDINATE INSTALLATION OF SMOKE DUCT DETECTORS WITH DIVISON 15.
6. PROVIDE A MONTORING MODULE ON EQUIPMENT SHOWN.

NO.	DATE	REVISION	APP.

Ramirez - Simon Engineering, LLC
Mechanical • Electrical • Plumbing
Texas Registered Engineering Firm F-14781
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12-12-2024

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FIRE ALARM FLOOR PLAN

1F-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	AS NOTED
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
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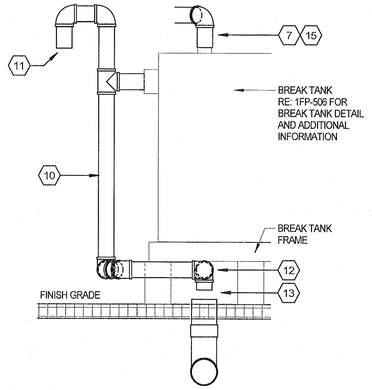


2 / 1FP-101 BREAK TANK SECTION
SCALE: 3/8" = 1'-0"

GENERAL NOTES

A. REFER TO SHEET P001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

B. PROVIDE HEAT TRACE CABLE, INSULATION, AND ALUMINUM METAL JACKET ON ALL EXPOSED FIRE PROTECTION WATER PIPING AND EQUIPMENT

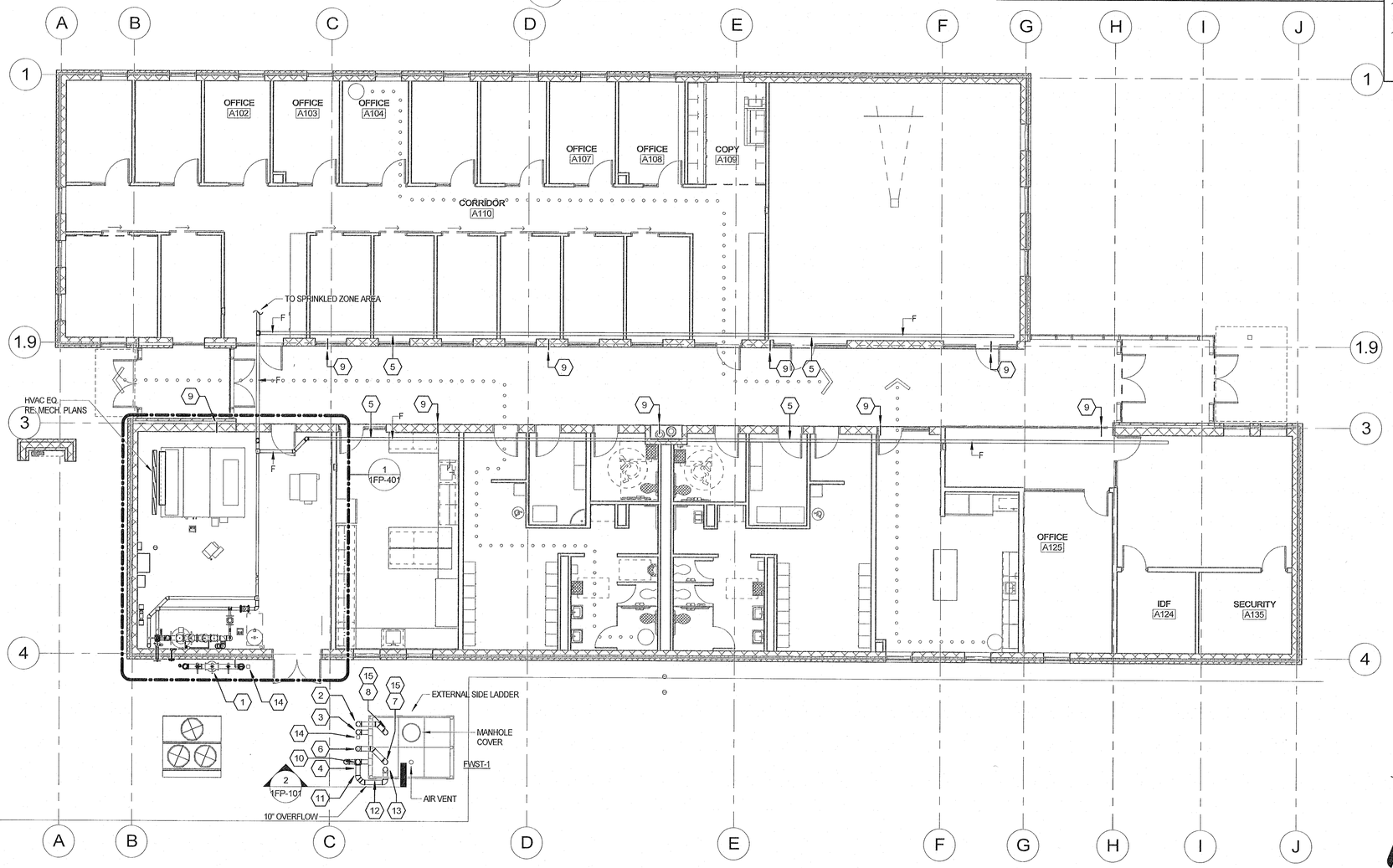
C. REFER TO 1P-101 FOR UNDERGROUND FIRE PROTECTION PIPING RISING TO FIRE WATER FILL STATION, FIRE WATER STORAGE TANK, AND UP TO FIRE PUMP.

D. THE BREAK TANK (WATER TANK) SHALL COMPLY WITH SECTION 607.8-11 OF THE 2012 UNIFORM PLUMBING CODE AND THE CITY OF HOUSTON AMENDMENTS.

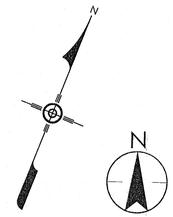
SHEET KEYED NOTES

1. FIRE WATER FILL STATION
2. FIRE PROTECTION FROM FILL STATION B.F.G. AND THEN UP. RISE, OFFSET, AND CONNECT TO TOP OF TANK INLET CONNECTION
3. 6" FIRE WATER FROM BOTTOM SIDE OF TANK THEN DOWN TO B.F.G.
4. FIRE PROTECTION TANK OVER FLOW DRAIN
5. FIRE WATER LINE FOR SIDE SPRINKLER HEADS, COORDINATE LOCATION, AND QUANTITY WITH FIRE PROTECTION CONTRACTOR
6. 6" FIRE PROTECTION WATER BY-PASS FROM BELOW FINISH GRADE AND UP
7. 6" FIRE PROTECTION WATER BY-PASS ABOVE BREAK TANK. DROP TO TOP OF TANK AND CONNECT.
8. 6" FIRE WATER PROTECTION FROM FILL STATION. DROP TO THE TOP OF TANK AND CONNECT TO FIRE WATER INLET CONNECTION.
9. SIDEWALL SPRINKLER HEADS ARE SHOWN FOR INFORMATION ONLY. SPRINKLER CONTRACTOR TO COMPLY WITH NFPA-13 RECOMMENDATIONS. -TYPICAL-
10. DROP WITH 10" BREAK TANK OVERFLOW DRAIN TO ABOVE FINISH GRADE
11. OVERFLOW DRAIN VENT. PROVIDE WITH STAINLESS STEEL SCREEN OF NO LESS THAN 100 MESH BIRD AND BUG SCREEN AT VENT OPENING.
12. ROUTE 10" BREAK TANK OVER FLOW DRAIN TO BELOW BREAK TANK. FIELD COORDINATE, SLOPE, AND FINISH ABOVE 12" HUB DRAIN
13. 10" SD FROM BELOW FINISH GRADE AND UP TO 12" HUB DRAIN. HUB DRAIN LOCATED BETWEEN FINISH GRADE AND BREAK TANK
14. PCA-COM CIRCUIT FABRICATION KIT FOR HEAT TRACE CABLE. INSTALL PER MANUFACTURER RECOMMENDATIONS. COORDINATE WITH ELECTRICAL.
15. POTABLE WATER INLET TO THE TANK SHALL TERMINATE A DISTANCE OF NOT LESS THANK 1 1/2 TIMES THE HEIGHT TO WHICH WATER CAN RISE IN THE TANK ABOVE THE TOP OF THE OVERFLOW.

NO.	DATE	REVISION	APP.



1 / 1FP-101 FIRE PROTECTION FLOOR PLAN
SCALE: 1/8" = 1'-0"



SCALE: 1/8" = 1'-0"
0' 4' 8' 16'

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93869
LICENSED PROFESSIONAL ENGINEER

12-12-2024

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FIRE PROTECTION FLOOR PLAN 1FP-101

WBS NUMBER	R-000265-0117-4
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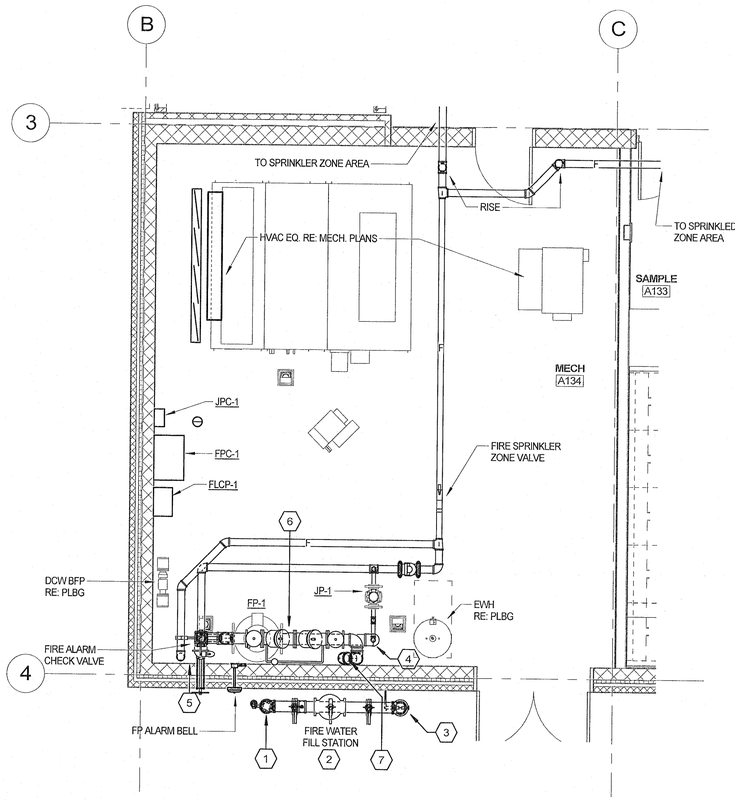
GENERAL NOTES

A. PROVIDE HEAT TRACE CABLE, INSULATION, AND ALUMINUM METAL JACKET ON ALL EXPOSED FIRE PROTECTION WATER PIPING AND EQUIPMENT

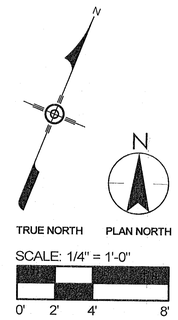
SHEET KEYED NOTES

1. 6" FIRE WATER PROTECTION FROM BELOW FINISH GROUND AND UP TO FIRE WATER FILL STATION
2. FIRE WATER PROTECTION FILL STATION. REFER TO DETAIL FOR ADDITIONAL INFORMATION. PROVIDE WITH HEAT TRACE CABLE, INSULATION, AND ALUMINUM METAL JACKET FOR ALL OUTDOOR PIPING (TANK AND VALVES)
3. 6" FIRE PROTECTION WATER DOWN TO BELOW FINISH GRADE THEN ROUTE TO BRAKE TANK
4. 6" FIRE PROTECTION WATER FROM, BREAK TANK, BELOW FINISH FLOOR AND UP
5. 4" FIRE WATER PROTECTION FROM FIRE DEPARTMENT CONNECTION, FDC, FROM BELOW FINISH FLOOR AND UP
6. 6" BACKFLOW PREVENTER FOR FIRE PUMP BY-PASS
7. 6" FIRE WATER PROTECTION BY PASS DOWN TO BELOW FINISH FLOOR

NO.	DATE	REVISION	APP.



1 / 1FP-401 **FIRE PROTECTION ENLARGED PLAN**
SCALE: 1/4" = 1'-0"



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

0' 2' 4' 8'

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FIRE PROTECTION ENLARGED PLAN 1FP-401

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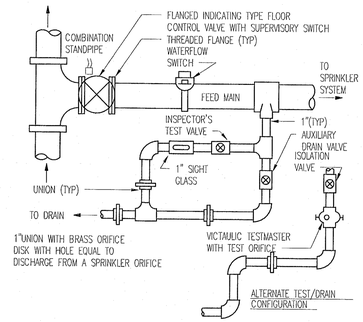
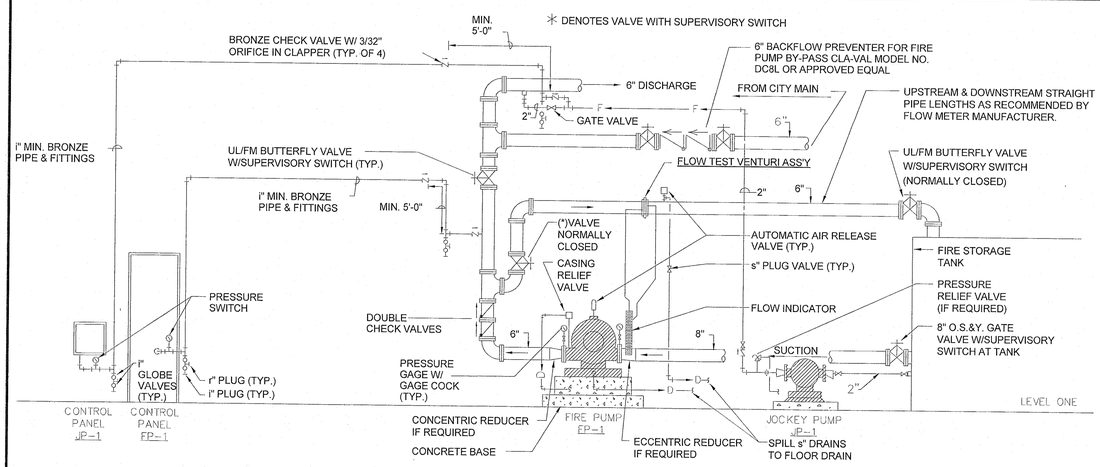


2 / 1P-506 FIRE SPRINKLER ZONE VALVE
SCALE: N.T.S.



1 / 1P-506 FIRE PUMP DETAIL
SCALE: N.T.S.

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - I

1FP-501

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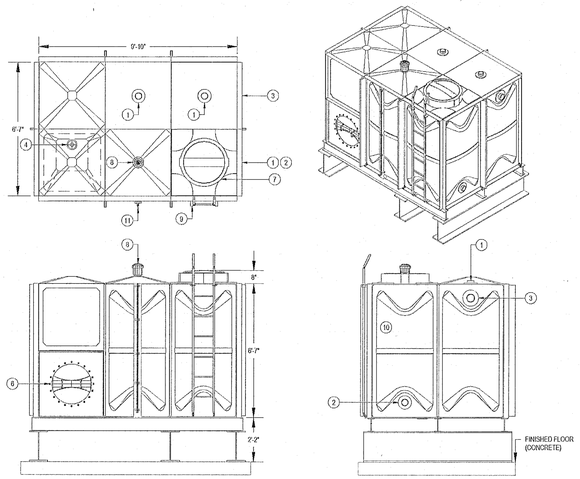


WATER STORAGE TANK COORDINATION SCHEDULE

NO.	DESCRIPTION	QTY.	SIZE	TYPE
1	FIRE TANK INLET CONNECTION	2	TBD	GROOVED
2	FIRE TANK VORTEX OUTLET CONNECTION	1	TBD	GROOVED
3	FIRE OVERFLOW CONNECTION	1	TBD	GROOVED
4	FIRE DRAIN CONNECTION	1	2"	GROOVED
5	LEVEL CONTROL CONNECTIONS	0	-	FLANGE
6	SIDE MANWAY COVER	2	24"	FIBERGLASS COVER
7	TOP MANHOLE COVER	2	24"	FIBERGLASS COVER
8	COWL TYPE AIR VENT	1	-	VENT
9	EXTERNAL LADDER	1	-	LADDER
10	INTERNAL LADDER	1	-	SS LADDER
11	WATER LEVEL GUGE	1	-	FLOAT AND BOARD TYPE

NOTES
1. ALLOW FOR A MINIMUM OF 2" CLEARANCE AROUND TANK FOUNDATION.
2. OVERFLOWS SHALL FLOW FREELY TO THE GROUND AND BE DIRECTLY ROUTED TO A DRAIN.

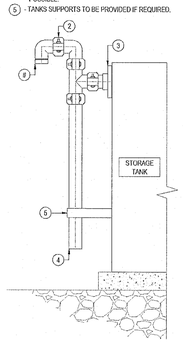
WATER STORAGE TANK SCHEDULE

TAG	USEABLE CAPACITY (GALLONS)	DIMENSIONS (L x W x H)	TYPE	MODEL	NOTES
ST-1	FIRE - 317G	FIRE - 9'-10" x 6'-7" x 6'-7"	FIELD BUILT BOLTED FIBERGLASS	FTC-317G	1, 2, 3, 4, 5, 6, 7

NOTES
1. FOR TANK CONNECTIONS AND INSTALLATION DIMENSIONS, REFER TO STORAGE TANK DETAIL AND COORDINATION SCHEDULE.
2. TANK TO BE INSTALLED BY SUPPLIER.
3. TANK TO BE INSTALLED ON ENGINEERED STEEL BASE WITH MODULAR STEEL PEDESTAL FOOTING OR CONCRETE DUNNAGE. SEE DETAIL FOR PLATFORM INSTALLATION HEIGHT.
4. TANK MUST BE COMPLIANT WITH AWWA D12-101 AND NSF 61 WITHOUT A LINER.
5. SHEET MOLDING COMPOUND TO BE HOT PRESSED AT 300° F AND 3000 PSI.
6. TANK SEALANT TO BE A SOLID SYNTHETIC RUBBER SEALANT RIBBED IN NO LESS THAN 4 LOCATIONS.
7. ALL HARDWARE TO BE 316 STAINLESS STEEL.

CONSTRUCTION NOTES

1. - OVERFLOW VENT INSTALLED WITH SS BIRD AND INSECT SCREEN.
2. - RECOMMENDED OVERFLOW PIPE FITTINGS TO BE INSTALLED USING VICTAULIC POS-300 AND STYLE 307 RIGID COUPLINGS. SEE SPEC FOR APPROVED PIPE MATERIALS.
3. - OVERFLOW TO BE INSTALLED ON SITE BY CONTRACTOR. TANK WILL INCLUDE AN INSTALLED VICTAULIC GROOVED FITTING OVERFLOW CONNECTION POINT.
4. - OVERFLOW TO BE FIELD ROUTED TO NEAREST FLOOR DRAIN, RECOMMENDED TO BE AS SHORT AS POSSIBLE.
5. - TANKS SUPPORTS TO BE PROVIDED IF REQUIRED.



1 FIRE WATER STORAGE TANK DETAIL AND SCHEDULES
SCALE: 3/8" = 1'-0"

2 STORAGE TANK OVERFLOW DETAIL
SCALE: 1" = 1'-0"

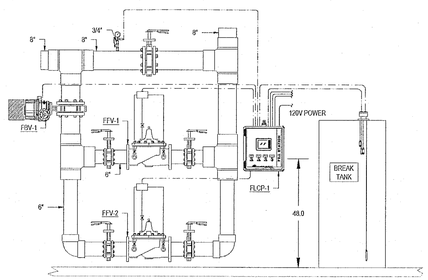
FIRE FILL STATION SCHEDULE

TAG	TYPE	DESCRIPTION	SIZE	MODEL	NOTES
FFV-1	FILL VALVE	SOLENOID ACTUATED FILL VALVE	6"	CLA-VAL 136-02BYC-KC-SS	1, 2, 7, 8
FFV-2	FILL VALVE	SOLENOID ACTUATED FILL VALVE	6"	CLA-VAL 136-02BYC-KC-SS	1, 2, 7, 8
FBV-1	FLOOD PROTECTION BLOCK VALVE	MOTORIZED BUTTERFLY VALVE	8"	OIL-VAL 809	1, 3, 7, 8
FLCP-1	CONTROL PANEL	PLC BASED LEVEL CONTROL PANEL	-	COUGAR SYSTEMS ET12F2B1T1	1, 4, 5, 6, 7, 8

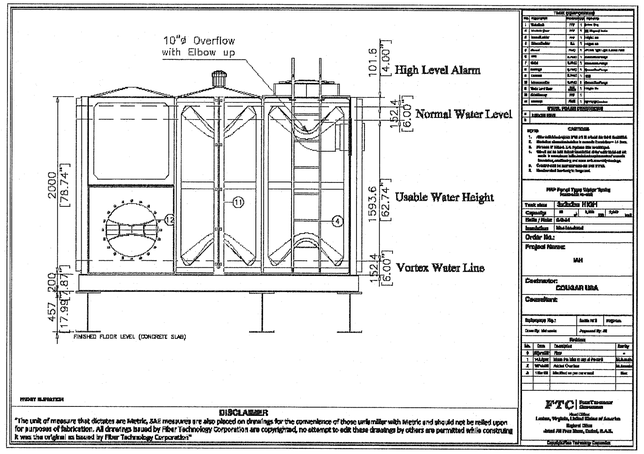
NOTES:
1. REFER TO FIRE WATER STORAGE TANK FILL STATION DETAIL.
2. VALVE TRIM TO INCLUDE CLOSING SPEED, STRAINER, EPOXY COATED AND STAINLESS STEEL TRIM.
3. COMPLETE WITH A 120V ACTUATOR.
4. LEVEL CONTROL DONE BY PRESSURE TRANSDUCER WITH BACK UP HIGH LEVEL PROBE.
5. TANK LEVEL & SET POINTS DISPLAYED IN INCHES.
6. MONITOR CITY PRESSURE WITH PRESSURE TRANSMITTER.
7. START-UP DONE BY SYSTEM SUPPLIER.
8. FIELD WIRING FROM CONTROL PANEL TO VALVES AND LEVEL SENSOR ASSEMBLY BY SYSTEM SUPPLIER.

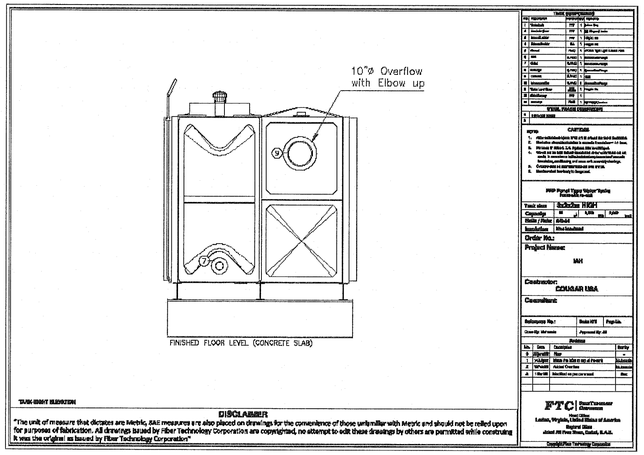
FIRE FILL STATION CONSTRUCTION NOTES

1. - MODULATING FILL VALVE TO BE NORMALLY CLOSED AND CONTROL BY COUGAR PANEL.
2. - COUGAR PLC BASED LEVEL CONTROL PANEL MUST USE INCHES AS THE UNIT OF MEASURE FOR TANK LEVEL, LEVEL TRANSDUCER, AND VALVE SET-POINTS.
3. - CITY SUPPLY PRESSURE TRANSMITTER AND PRESSURE GAUGE, WINTERS LF SERIES.
4. - SUBMERSIBLE PRESSURE TRANSDUCER AND BACK UP HIGH/LOW LEVEL PROBE INSTALLED IN STORAGE TANK. (TANK IS NOT DRAWN TO SCALE)
5. - THREE (3) ALARMS TO BAS, TANK HIGH, TANK LOW, AND WATER SUPPLY LOWER.



5 FIRE FILL STATION
SCALE: 1/2" = 1'-0"





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SHEET TITLE: FIRE STORAGE TANK AND FILL STATION SYSTEM DETAILS

ISSUED FOR SUBMISSION, APPROVAL / DISTRIBUTION

SHEET NOTES

ALL RELATED LOCAL CONTROL WIRE & CONDUIT BY SYSTEM SUPPLIER TO ENSURE A COMPLETE, COORDINATED AND FUNCTIONAL SYSTEM

- - - - - - - - - - - INDICATES COORDINATE WITH OTHER DISCIPLINES
- - - - - - - - - - - INDICATES FIELD WIRING BY SYSTEM SUPPLIER
- - - - - - - - - - - INDICATES SHIELDED FIELD WIRING BY SYSTEM SUPPLIER

SHEET NO. P-1

NO.	DATE	REVISION	APP.

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12-12-2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION DETAILS - II

1FP-502

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CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
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FIRE WATER STORAGE TANK SCHEDULE

MARK	USUALLY CAPACITY (GALLONS)	DIMENSIONS (L x W x H)	TYPE	MODEL	EMPTY WEIGHT (LBS.)	NOTES
FWST-1	2,500	7'-1" x 10'-5" x 8'-10"	FIELD BUILT BOLTED FIBERGLASS	FTC - 2500	4,400 INCLUDING W18 I BEAMS	ALL

NOTES:

1. FOR TANK CONNECTIONS REFER TO FIRE WATER STORGAGE TANK DETAIL
2. TANK TO BE INSTALLED BY SUPPLIER
3. TANK TO BE INSTALLED ON W18 BEAMS, PROVIDED BY TANK SUPPLIER.
4. SCHEDULED TANK DIMENSIONS INCLUDES TOTAL FOOTPRINT AND HEIGHT WITH CONCRETE DUNNAGE.
5. TANK MUST BE COMPLIANT WITH AWWA D12-121 AND NSF 61 WITHOUT A LINER.
6. SHEET MOLDING COMPOUND TO BE HOT PRESSED AT 300° F AND 3,000 PSI
7. TANK SEALANT TO BE A SOLID SYNTHETIC RUBBER SEALANT RIBBED IN NO LESS THAN 4 LOCATIONS
8. ALL HARDWARE TO BE 316 STAINLESS STEEL

FREEZE PROTECTION - HEAT TRACE CABLE SCHEDULE

MARK	MAXIMUM CIRCUIT LENGTH (FEET)	BREAKER SIZE	VOLTAGE	MODEL	-	NOTES
HTC-1	146	20 A	240 V	5-FLX-2-OJ	-	ALL

NOTES:

1. PROVIDE WITH 2 CIRCUIT FABRICATION KITH (PCA-COM) WITH JB-K JUNTION BOX
2. PROVIDE WITH CL "ELECTRIC HEAT TRACING" LABEL
3. PROVIDE WITH FT-1L FIXING TAPE SECURES HEAT TRACE TO PIPE
4. PROVIDE WITH 2 ET-6 TERMINATION END CAPS
5. PROVIDE HEAT TRACE CABLE, INSULATION, AND ALUMINUM METAL JACKET ON ALL EXPOSED FIRE PROTECTION WATER PIPING AND EQUIPMENT

FIRE PROTECTION EQUIPMENT SCHEDULE

MARK	EQUIPMENT	PROVIDE THE FOLLOWING SIZE BRANCH CONNECTION TO THE DISTRIBUTION MAIN UNLESS SPECIFIED OTHERWISE			REMARKS
		F	FS	REMARKS	
FPC-1	FIRE PUMP CONTROLLER	-	-	-	TORNATECH MODEL GPA 480V / 3 PH
JPC-1	JOCKEY PUMP CONTROLLER	-	-	-	TORNATECH MODEL JPA 480V / 3 PH
FDC-1	FIRE DEPARTMENT CONNECTION	6"	-	4 WAY	POTTER ROEMER MODEL NO. 5548, 4 INPUTS WITH 6" OUTLET
FSZV-1	FIRE SPRINKLER ZONE VALVE	-	-	-	

FIRE PROTECTION PUMP SCHEDULE

MARK	EQUIPMENT	TYPE	LOCATION	GPM	DESIGN PRESSURE (PSI)	MOTOR			REMARKS
						HP	VOLTS	PHASE	
FP-1	FIRE PUMP	VERTICAL SPLIT CASE	MECHANICAL ROOM	750	120	75	460	3	AURORA MODEL No. 4-383-10B
JP-1	JOCKEY PUMP	VERTICAL MULTI-STAGE	MECHANICAL ROOM	7.5	130	1.5	460	3	AURORA MODEL No. PVM1-12

**THE FIRE AND JOCKEY PUMP FINAL SIZES SHALL BE CONFIRMED BY THE FIRE PROTECTION SUB-CONTRACTOR ONCE THE HYDRAULIC CALCULATIONS HAVE BEEN COMPLETED.

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION SCHEDULES

1FP-601

WBS NUMBER
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GENERAL NOTES

A. FILL STATION, BREAK TANK, AND COMPONENTS DETAILS PROVIDED BY COUGAR USA.

SHEET KEYED NOTES

1. 6" FIRE WATER UP TO FIRE WATER FILL STATION ABOVE.
2. 6" FIRE WATER FROM FILL STATION ABOVE AND ROUTE TO BREAK TANK FIRE PROTECTION COMPARTMENT.
3. 6" FIRE WATER UP TO ABOVE FINISH GRADE AND UP OVER BREAK TANK.
4. 6" FIRE WATER FROM FIRE PROTECTION COMPARTMENT ABOVE THEN ROUTE TO BUILDING.
5. 6" FIRE WATER UP TO FIRE PUMP ABOVE FINISH FLOOR.
6. 4" FIRE WATER UP FROM, FDC, FIRE DEPARTMENT CONNECTION.
7. 6" FIRE PUMP BY-PASS FROM ABOVE FINISH FLOOR.
8. 6" FIRE PUMP BY-PASS UP TO ABOVE FINISH GRADE.

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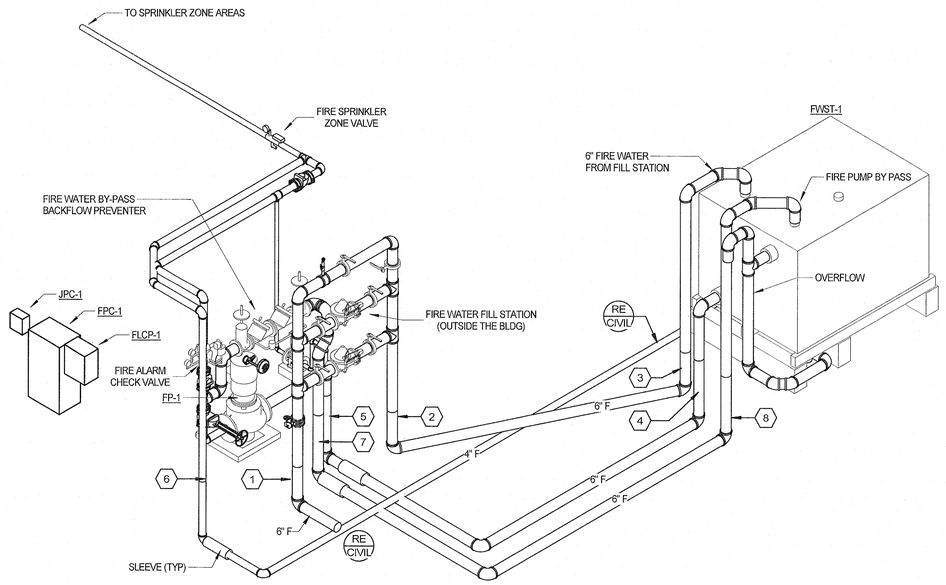

NOTE:

1. REFER TO 1 / 1FP-702 PLAN SOUTH VIEW FOR ADDITIONAL INFORMATION
2. FIRE WATER FILL STATION AND BREAK TANK LOCATED OUTSIDE OF BUILDING
3. FIRE PUMP, JOCKEY PUMP, AND CONTROL PANELS INSIDE BUILDING.

1 / 1FP-701 FIRE PROTECTION ISOMETRIC RISER

NTS

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FIRE PROTECTION RISER - I 1FP-701

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GENERAL NOTES

A. FILL STATION, BREAK TANK, AND COMPONENTS DETAILS PROVIDED BY COUGAR USA.

B. REFER TO PLUMBING PLANS FOR ADDITIONAL UNDERFLOOR FIRE WATER INFORMATION.

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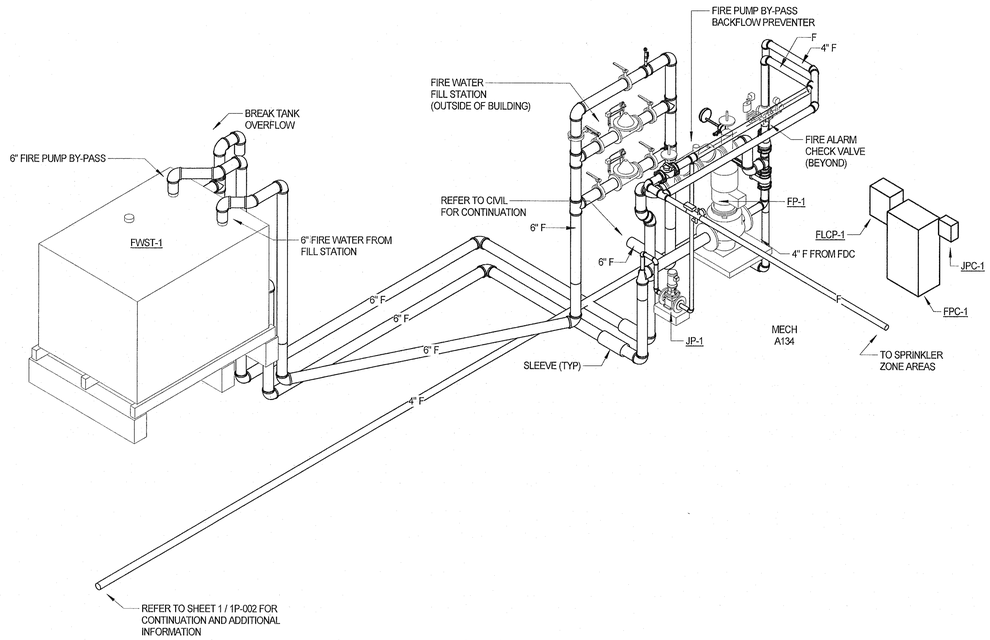

1 / 1FP-702 **FIRE PROTECTION ISOMETRIC RISER - PLAN SOUTH VIEW**

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION FIRE PROTECTION RISER - II 1FP-702

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PLAN SYMBOLS

SYMBOL	DESCRIPTION
A O	4 FOOT FLOURESCENT OR LED
3	BRACKET MOUNTED INCANDESCENT OR LED
	HIGH BAY LIGHT FIXTURE
	WALL PACK OR FLOOD LIGHT FIXTURE
	BATTERY BACKUP LIGHT FIXTURE
	BRACKET MOUNTED EXIT FIXTURE
	BATTERY POWERED EMERGENCY LIGHTING FIXTURE
	UNIT HEATER
	SINGLE CONVENIENCE RECEPTACLE
WP	DUPLEX CONVENIENCE RECEPTACLE (WP INDICATES CAST WEATHER PROOF OUTLET BOX & COVER)
A	SINGLE SPECIAL PURPOSE RECEPTACLE (LETTER INDICATES TYPE PER SCHEDULE)
	240V AC, 20 AMP RECEPTACLE
	TELEPHONE UTILITY SYSTEM OUTLET
	FLOOR RECEPTACLE
FB	FLOOR IT CABLE BOX
	DISTRIBUTION PANELBOARD, LIGHTING PANEL, LOAD CENTER, CABINET OR PULL BOX
	UNFUSED SAFETY SWITCH – 3P, 30A, 600V UNLESS OTHERWISE INDICATED.
30	FUSED SAFETY SWITCH – 3P, 600V, 30A MINIMUM OR AS INDICATED
	OUTLET OR JUNCTION BOX
	COMBINATION PROTECTIVE DEVICE & MAGNETIC STARTER
	PUSHBUTTON STATION
5	ELECTRIC MOTOR – NUMBER INDICATES HORSEPOWER
MS	MOISTURE SWITCH
RTD	REMOTE THERMAL DETECTOR
LS	LIMIT SWITCH
FS	FLOW SWITCH
PS	PRESSURE SWITCH
TS	TEMPERATURE SENSOR
DS	MAGNETIC REED DOOR SWITCH
TB	TERMINAL BOX
	RADIO ANTENNA
	CAMERA
HOA	HAND–OFF–AUTO SWITCH

SYMBOL	DESCRIPTION
PC	PHOTO CELL
FS	FLOAT SWITCH
EP	ELECTRO–PNEUMATIC VALVE
S	SOLENOID VALVE
T	ELECTRIC THERMOSTAT
T	TEMPERATURE ACTUATED DEVICE
$	SINGLE POLE TOGGLE SWITCH
$2	DOUBLE POLE TOGGLE SWITCH
$3	3 – WAY SWITCH
$M	MOTOR RATED TOGGLE SWITCH
$T	MANUAL ROTARY TIMER LIGHT SWITCH
	CONDUIT FITTING (CONDULET)
	CLASS 1, DIV I, CONDUIT SEAL
	EXPOSED CONDUIT
	EXPOSED PUMP CABLE
	CONDUIT CONCEALED IN FLOOR SLAB OR UNDERGROUND (CONDUITS 1–1/2" OR LARGER SHALL BE INSTALLED INSTALLED UNDER FLOOR SLAB). SEE NOTE 2
	HOMERUN TO PANEL OR MCC AS NOTED
A / EO	CONCRETE ENCASED DUCTBANK (SECTION INDICATES CONDUIT CONFIGURATION & DESIGNATIONS)
A / EO	EXPOSED CONDUIT BANK
	AIR TERMINAL
	3/4"x20' GROUND ROD
	3/4"x20' GROUND ROD & TEST WELL
G	4/0 BARE COPPER GROUND LOOP AT 24" BELOW GRADE.
XXX	CONDUIT TAG
GND	GROUND BUS
OH	OVERHEAD ELECTRICAL LINE

WIRE NUMBER USED ON WIRING DIAGRAM & TERMINAL BLOCKS

RELAY DESIGNATION

RM 11 RLL 1A R RRST

CONDUIT SYSTEM NOTES

1. ANY CONDUIT ILLUSTRATED, WITHOUT DESIGNATION, SHALL CONTAIN (3)#10 AWG, (1)#12 AWG GROUND IN 1" CONDUIT.
2. ALL CONDUIT INSTALLED UNDERGROUND SHALL BE CONCRETE ENCASED IN COMPLIANCE WITH SPECIFICATIONS AND DETAILS.
3. CONDUITS IMBEDDED IN STRUCTURAL CONCRETE (FLOOR SLABS, ETC.) SHALL BE SO LOCATED AS NOT TO UNDULY IMPAIR THE STRENGTH OF THE CONSTRUCTION AND SHALL BE SPACED NOT LESS THAN TWO TIMES THE CONDUIT OD BETWEEN ADJACENT CONDUITS EXCEPT WHERE CROSSING OR OTHERWISE APPROVED BY THE ENGINEER.
4. WIRING FOR LIGHTING, RECEPTACLES AND OTHER MISCELLANEOUS CIRCUITS. SHALL CONFORM TO THE CIRCUITING INDICATED ON THE DRAWINGS WITH FIELD ARRANGEMENT AND ROUTING AS REQUIRED. THE WIRING SHALL BE SO ARRANGED THAT NO MORE THAN 6 CURRENT CARRYING CONDUCTORS SHALL BE INSTALLED PER CONDUIT AND CIRCUITS OF DIFFERENT PANELS SHALL BE INSTALLED IN SEPARATE RACEWAYS.

DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
	CONTACT, NORMALLY OPEN
	CONTACT, NORMALLY CLOSED
	PUSHBUTTON, NORMALLY CLOSED
	PUSHBUTTON, NORMALLY OPEN
	SELECTOR SWITCH
OL'S X2	OVERLOADS
	FUSE
G	PILOT LIGHT, PUSH TO TEST
M	AUXILIARY STARTER CONTACTS
	PRESSURE SWITCH, OPENS ON RISE
	PRESSURE SWITCH, CLOSES ON RISE
	LIMIT SWITCH, NORMALLY CLOSED
	LIMIT SWITCH, NORMALLY OPEN
	TEMPERATURE ACTUATED SWITCH, OPENS ON RISE
	TEMPERATURE ACTUATED SWITCH, CLOSES ON RISE
	VACUUM SWITCH, OPENS ON RISE
	VACUUM SWITCH, CLOSES ON RISE
	THERMAL OVERLOAD
	EQUIPMENT SPACE HEATER
	GROUND CONNECTION
	SOLENOID
G / M	MOTORIZED TIME DELAY RELAY
TD	TIME DELAY RELAY
TD O–O–X	TIME DELAY CONTACT (O=OPEN, X=CLOSED, DESIGNATION INDICATES CONTACT POSITION WHEN RELAY IS RESET–TIMING–TIMED OUT)
R	AUXILIARY RELAY
ETM	ELAPSED TIME METER
	CONTROL POWER TRANSFORMER
M	MOTOR STARTER OPERATING COIL
	SEPARABLE CONTACTS
	CIRCUIT BREAKER
	DRAW OUT (BUCKET) MOTOR STARTER
	VACUUM TYPE CONTACTOR
V	VOLTMETER
VS	VOLTMETER SWITCH
A	AMMETER
AS	AMMETER SWITCH
300:5	CURRENT TRANSFORMER (CT) DESIGNATION INDICATES QUANTITY & RATIO
	POTENTIAL TRANSFORMER
	POWER / LIGHTING TRANSFORMER
	POWER FACTOR CORRECTION CAPACITOR
47	PHASE FAILURE/UNDERVOLTAGE MONITOR RELAY
	FUSED DISCONNECT SWITCH
	SURGE PROTECTIVE DEVICE
	FUSED CUTOUT

ABBREVIATIONS

A	AMP
ACLS	ACROSS LINE STARTER
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT
ALT	ALTERNATOR
AO	ANALOG OUTPUT
ASD	ADJUSTABLE SPEED DRIVE
C	CONDUIT
CA	CABLE
CAB	CABINET
CAT	CATALOG
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CNP	CENTERPOINT ENERGY
COMM	COMMUNICATIONS
CONT	CONTINUED
CPT	CONTROL POWER TRANSFORMER
CPU	CENTRAL PROCESSING UNIT
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DISCRETE INPUT
DIREC	DIRECTIONAL
DISC	DISCONNECT SWITCH
DIV	DIVISION
DO	DISCRETE OUTPUT
DWG	DRAWING
ETM	ELAPSED TIME METER
FLA	FULL LOAD AMPS
FM	FLOWMETER
FO	FIBER OPTIC
FOC	FIBER OPTIC CABLE
GFI	GROUND FAULT INTERRUPT
GND	GROUND
HOA	HAND OFF AUTO
HSEB	HIGH SERVICE ELECTRICAL BUILDING
IC	INTERMEDIATE CLASS
JB	JUNCTION BOX
KA SYM	THOUSAND AMPS SYMMETRICAL
KS	KEY SWITCH
KVA	KILO–VOLT–AMPS
L	LINE
LPI	LIGHTNING PROTECTION INSTITUTE
LS	LIMIT SWITCH
LV	LOW VOLTAGE
M	MOTOR RUN CONTACT
MA	MILLIAMPERE
MADC	MILLIAMPERE DIRECT CURRENT
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MIN	MINUTES
MOR	MOTOR OVERLOAD RELAY
mS	MILLISECOND
MV	MEDIUM VOLTAGE
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEUT	NEUTRAL
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OL	OVERLOAD
OD	OUTER DIAMETER
OH	OVERHEAD
P	POLE
PFCC	POWER FACTOR CORRECTION CAPACITOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
POS	POSITION
PS	PRESSURE SWITCH
PVC	POLYVINYL CHLORIDE
PVC RAC	PVC COATED RIGID ALUMINUM CONDUIT
PWR	POWER
R	RELAY
RAC	RIGID ALUMINUM CONDUIT
RALM	PUMP ALARM RELAY
REE	ELEC BLDG ENTRY AUX RELAY
RGS	RIGID GALVANIZED STEEL CONDUIT
RHLA	HIGH LEVEL ALARM RELAY
RM	PUMP RUN AUX RELAY
RMOR	MOTOR OVERLOAD AUX RELAY
R.O.W.	RIGHT OF WAY
RPLC	PLC MODE AUX RELAY
RPLCOR	PLC OVERRIDE
RPLM	PLC PUMP RUN RELAY
RPLMP	BACKUP SYSTEM RUN RELAY
RR	REMOTE RADIO
RRST	PUMP RESET AUX RELAY
RTAH	TEMPERATURE ALARM AUX RELAY
RTD	REMOTE THERMAL DETECTOR
RUV	UNDERVOLTAGE AUX RELAY
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
RWD	WATCHDOG RELAY
SE	SERVICE ENTRANCE
SEC	SECONDS
SL	SEAL LEAK
SN	SOLID NEUTRAL
SPD	SURGE PROTECTIVE DEVICE
SPST	SINGLE POLE SINGLE THROW
SS	STAINLESS STEEL
SW	SWITCH
SWGR	SWITCHGEAR
TB	TERMINAL BOX
TEMP	TEMPERATURE
TD	TIME DELAY RELAY
TDLP	LOSS OF POWER TIME DELAY RELAY
TDRM	PUMP TIME DELAY RELAY
TRANS	TRANSITION
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT–AMP
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VT	VOLTAGE TRANSFORMER
W	WATT OR WIRE
XFMR	POWER TRANSFORMER

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F–665
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Tel: 713.548.5700
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STATE OF TEXAS
Z.M. SIDDIQUI
77702
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON

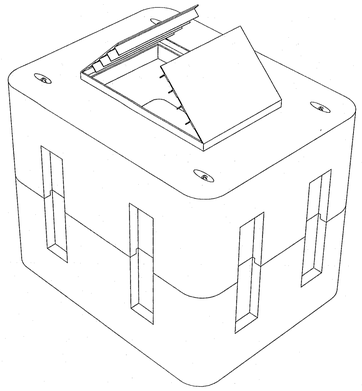
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

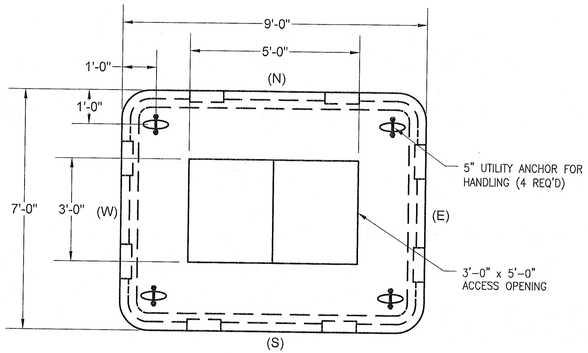
OVERALL SYMBOLS & ABBREVIATIONS E-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 204 OF 255	

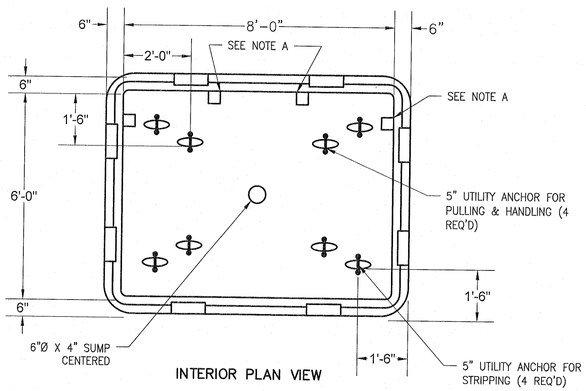
ACCEPTED AS NOTED
80341



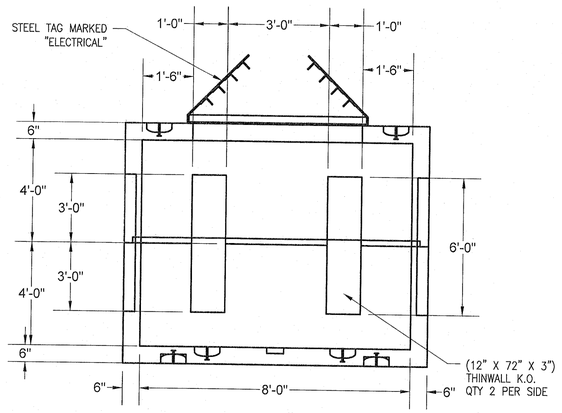
MEDIUM VOLTAGE UNDERGROUND PULLBOX – TYPE E6
ISOMETRIC VIEW



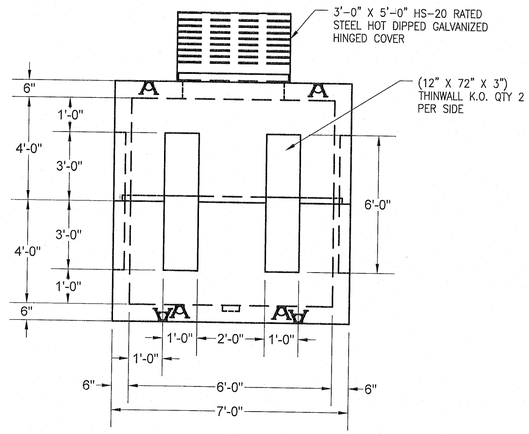
TOP PLAN VIEW



INTERIOR PLAN VIEW



SIDE ELEVATION



END ELEVATION

MEDIUM VOLTAGE UNDERGROUND PULLBOX – TYPE E6

DETAILS

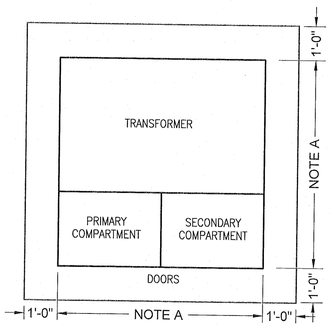
NTS

TYPE E6 PULL BOX NOTES:

A. PROVIDE A MINIMUM OF TWO RACKS, ON EACH SIDE WALL, TO SUPPORT CABLES AS THEY PASS THROUGH PULL BOX. PROVIDE UNDERGROUND DEVICES, INC. NO. 36 VERTICAL RACK WITH 14" OR 20" ARMS, AS REQUIRED. SECURE RACKS TO PULL BOX WALLS WITH 316 SS HARDWARE.

B. BUNDLE AND SECURE CABLE BUNDLES TO RACK ARMS WITH "TY-RAP #TY5277MX" OR APPROVED EQUAL CABLE TIES.

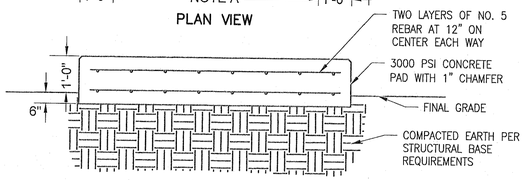
C. BOX AND HINGED COVER TO BE MINIMUM RATED FOR HS-20 LOADING.



PLAN VIEW

TRANSFORMER NOTES:

A. DIMENSIONS OF BRAND TRANSFORMERS MAY VARY. FOR BID PURPOSES THIS DIMENSION IS APPROXIMATLY 8'-0".



SECTION VIEW
PAD MOUNT TRANSFORMER FOUNDATION

DETAILS

NTS

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
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77702
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL DETAILS SHEET - I
E-002

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	205 OF 255

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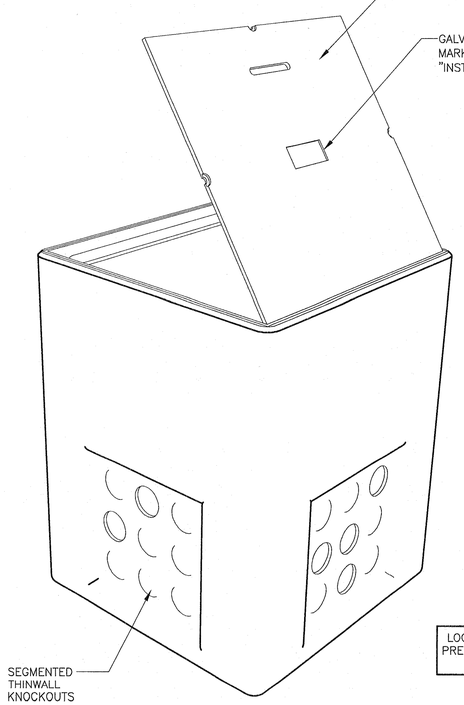
ACCEPTED AND FILED
PUBLIC WORKS AND ENGINEERING
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

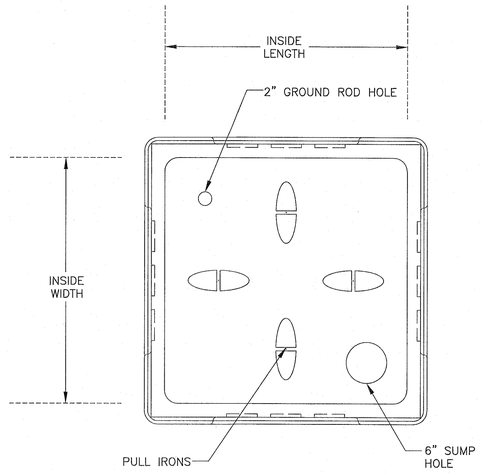
PULL BOX SIZES			
DESIGANTION	INSIDE WIDTH (W)	INSIDE LENGTH (L)	INSIDE DEPTH (D)
E1	12"	24"	22"
E2	24"	24"	42"
E3	36"	36"	48"
E4	48"	48"	48"
I1	12"	24"	22"
I2	24"	24"	42"
I3	36"	36"	48"
I4	48"	48"	48"

NOTES:

1. COVERS FOR ALL PULL BOXES TO BE HOT-DIP GALVANIZED AND DESIGNED FOR AASHTO HS-20 LOADING.
2. "E" PULL BOXES TO HAVE "ELEC" TAG ON THE COVER.
3. "I" PULL BOXES TO HAVE "INSTR" TAG ON THE COVER.

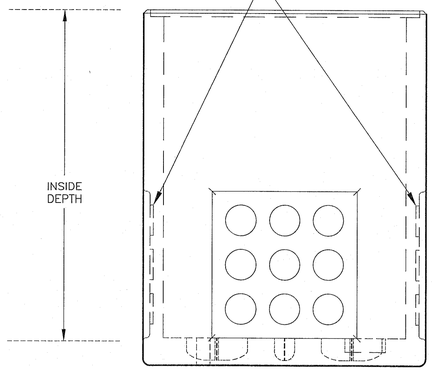
FOR E-6 MEDIUM VOLTAGE CONCRETE PULL BOXES SEE DRAWING E-002





PLAN VIEW
NTS

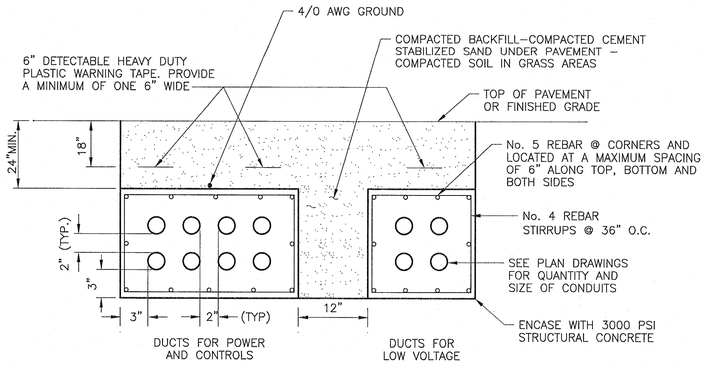
ATTACH STAMPED STAINLESS STEEL IDENTIFICATION TAGS TO CABLES, AT EACH LOCATION WHERE CABLES ENTER THE PULL BOX. ATTACH STAINLESS STEEL TAGS WITH NYLON TY-WRAPS. STAINLESS STEEL TAGS SHALL BE STAMPED 3/16" CHARACTERS TAG IDENTIFICATION FROM CONDUIT SCHEDULE.



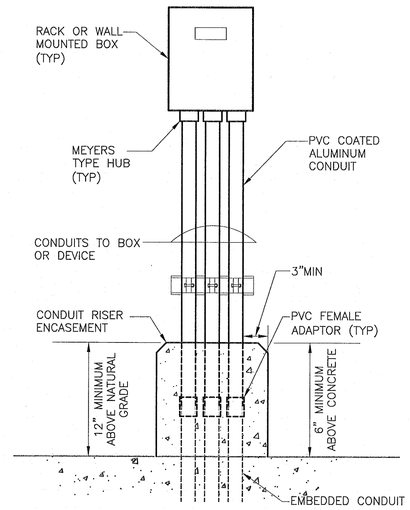
LOCKE SOLUTIONS PRECAST CONCRETE PULL BOX

ELEVATION VIEW
NTS

TYPICAL UNDERGROUND PULL BOX
DETAIL 1
NTS



TYPICAL DUCT BANK INSTALLATION
DETAIL 2
NTS



CONDUIT RISER CONCRETE ENCASEMENT
DETAIL 3
NTS

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
Z.M. SIDDIQUI
77702
REGISTERED
PROFESSIONAL ENGINEER
12/12/2024

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

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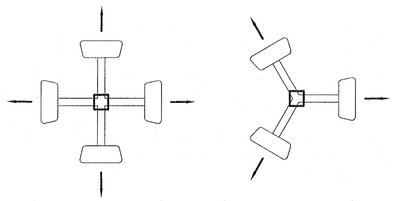
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

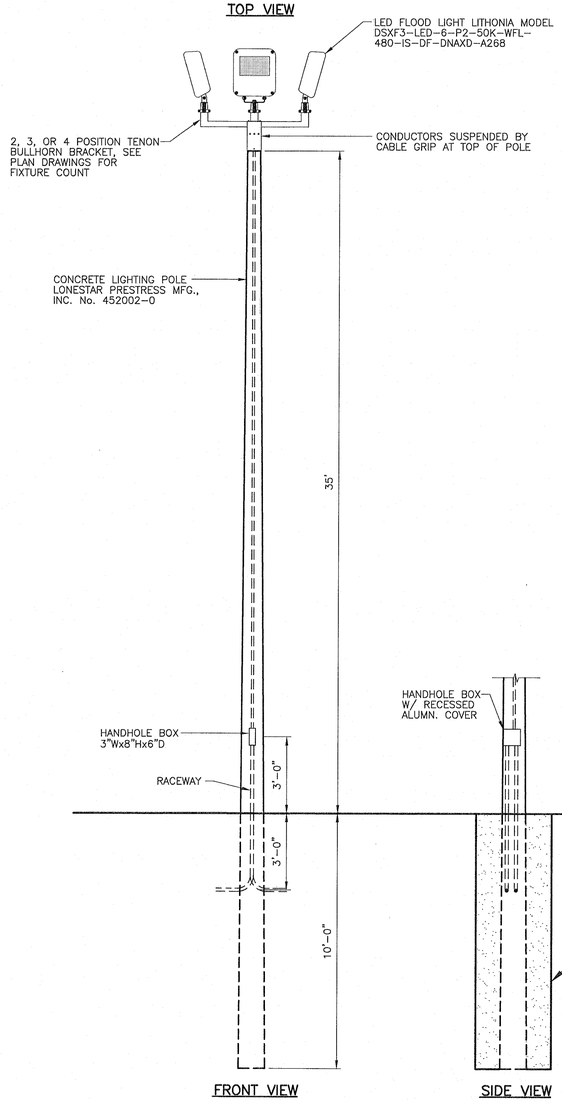
OVERALL DETAILS SHEET - II E-003

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 206 OF 255	

CARL W. KUO AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND SURVEYORS
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

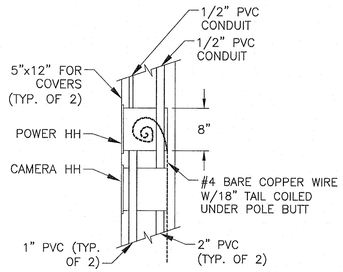


TOP VIEW

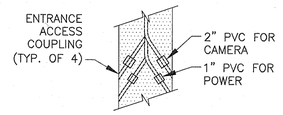


FRONT VIEW SIDE VIEW

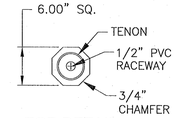
SITE LIGHT DETAIL 1 NTS



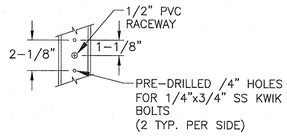
HANDHOLE W/ RECESSED COVER DETAIL NTS



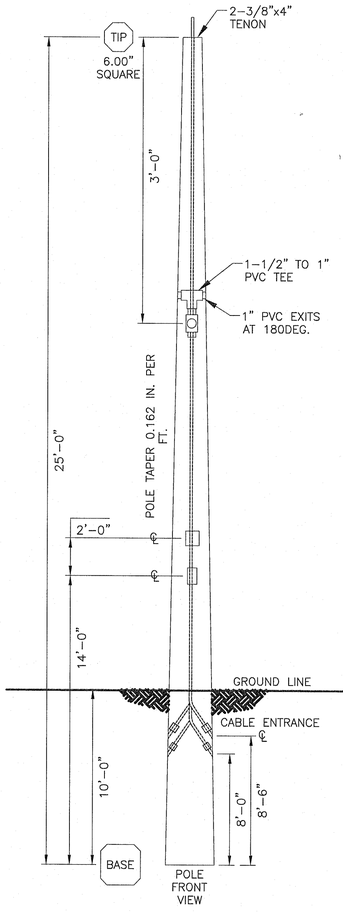
CABLE ENTRANCE DETAIL NTS

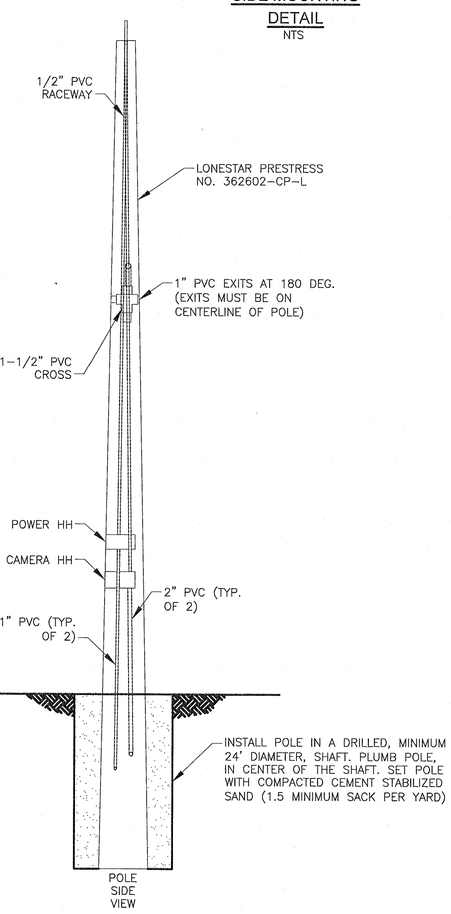


TOP DETAIL NTS



SIDE MOUNTING DETAIL NTS





SITE LIGHT AND CAMERA POLE DETAIL 2 NTS

NO.	DATE	REVISION	APP.

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STATE OF TEXAS Z.M. SIDDIQUI 77702 REGISTERED PROFESSIONAL ENGINEER 12/2024

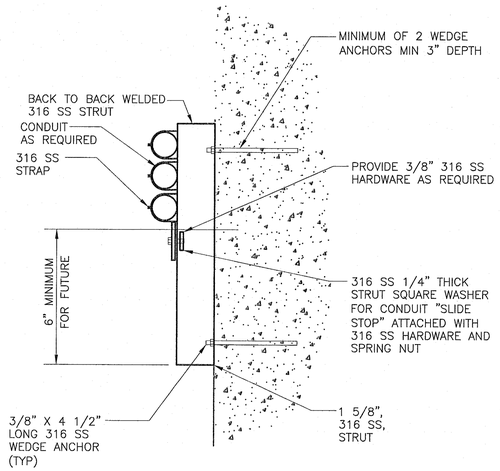
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL DETAILS SHEET - III E-004

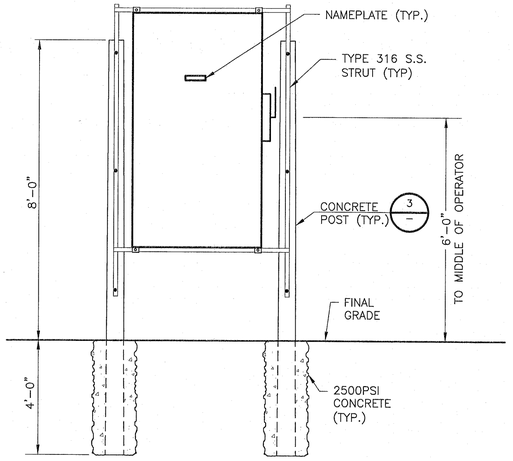
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
S/E SHAHIDUR RAHMAN, P.E.	
SHEET NO. 207 OF 255	

PUBLIC WORKS WATER & WASTEWATER ACCEPTED AS NOTED 80341 CITY DRAWING NUMBER HOUSTON, TEXAS



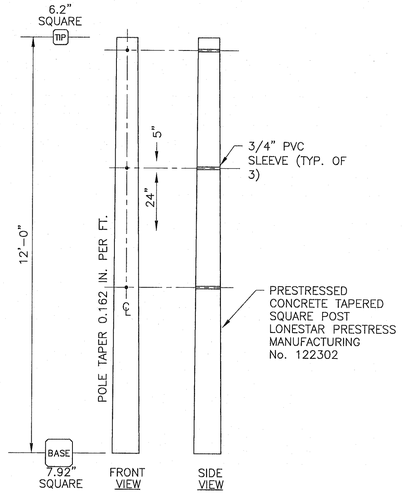
SIDE VIEW
WALL OF STRUCTURE CONDUIT SUPPORT

DETAIL 1 / NTS



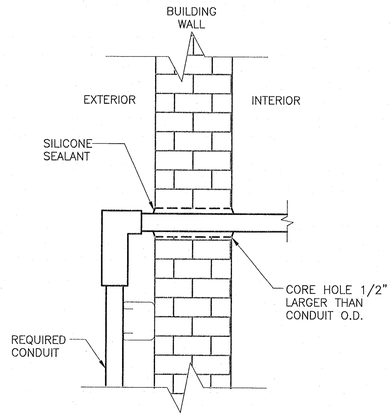
MOBILE GENERATOR SUPPORT CONNECTION CABINET

DETAIL 2 / NTS



CONCRETE POST DETAIL

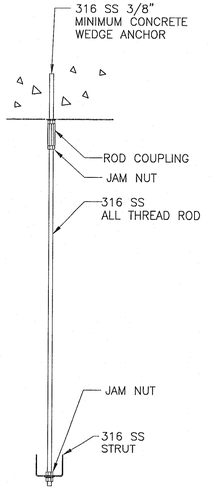
DETAIL 3 / NTS



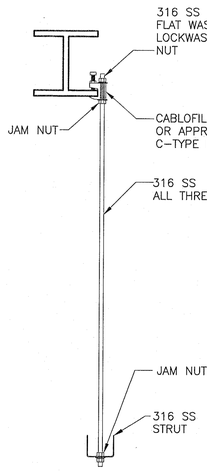
TYPICAL WALL PENETRATION

DETAIL 4 / NTS

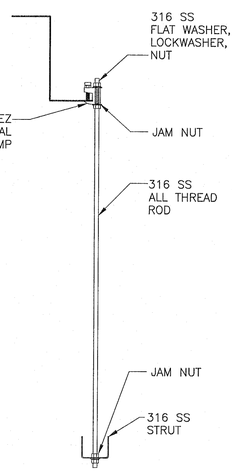
NO.	DATE	REVISION	APP.



CONCRETE STRUCTURE



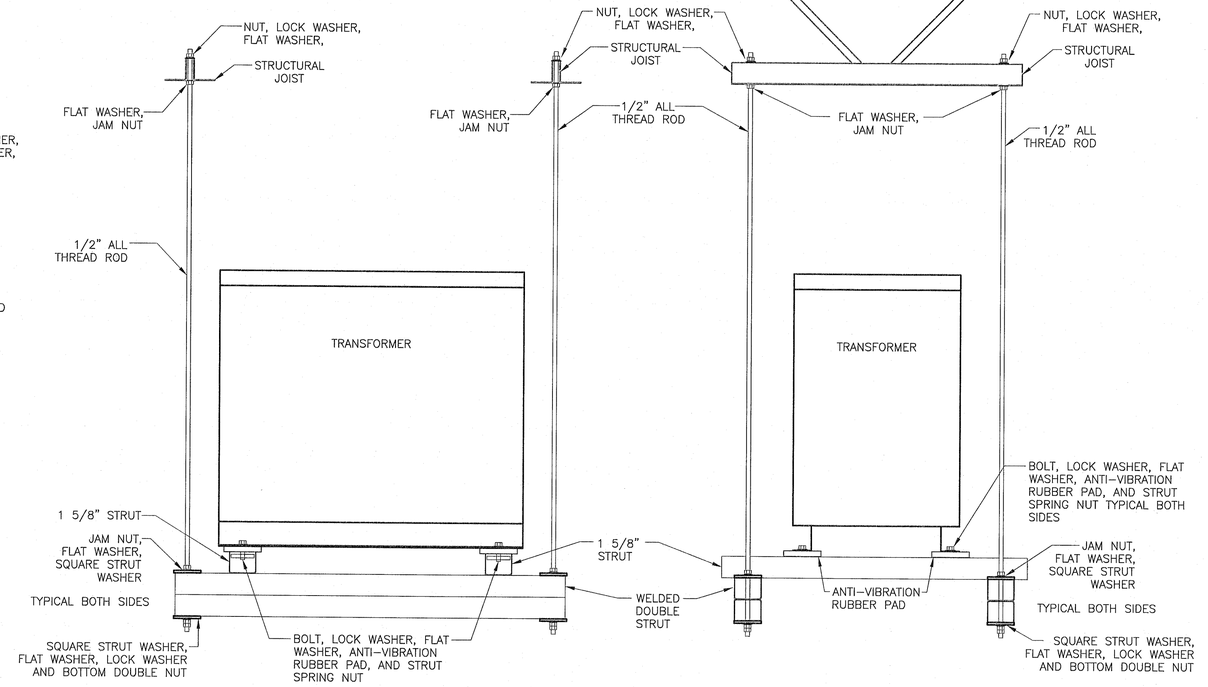
STRUCTURAL STEEL



STRUCTURAL FRAMING

ACCEPTABLE TRAPEZE CONDUIT SUPPORTS

DETAIL 5 / NTS



TRANSFORMER SUPPORT SHALL BE SUBMITTED TO STRUCTURAL ENGINEER FOR ACCEPTANCE PRIOR TO INSTALLATION

ACCEPTABLE TRANSFORMER SUPPORT CONCEPT

DETAIL 6 / NTS

FOR TRANSFORMER SUSPENDED FROM STRUCTURAL FRAMEWORK, DISREGARD SPECIFICATION 16461 WINDING AND INSULATION TEMPERATURE REQUIREMENTS. PROVIDE AN ALUMINUM WOUND, 115C DEGREE RISE, DOE 2016 EFFICIENT DRY TYPE TRANSFORMER.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS — ZM. SOOIQUI — 77702 — REGISTERED PROFESSIONAL ENGINEER — 12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL DETAILS SHEET - IV E-005

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	208 OF 255

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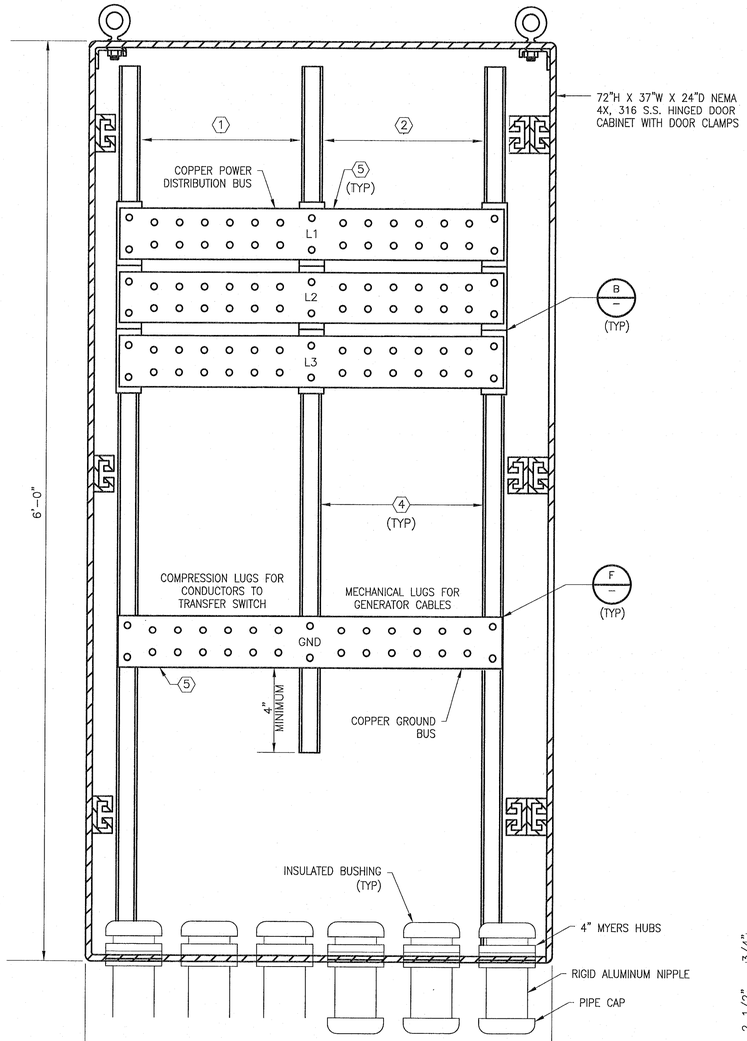
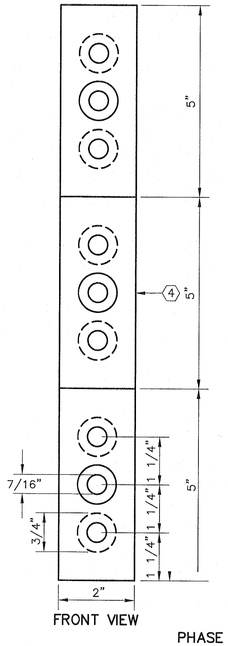


MOBILE GENERATOR CONNECTION CABINET ELEVATION

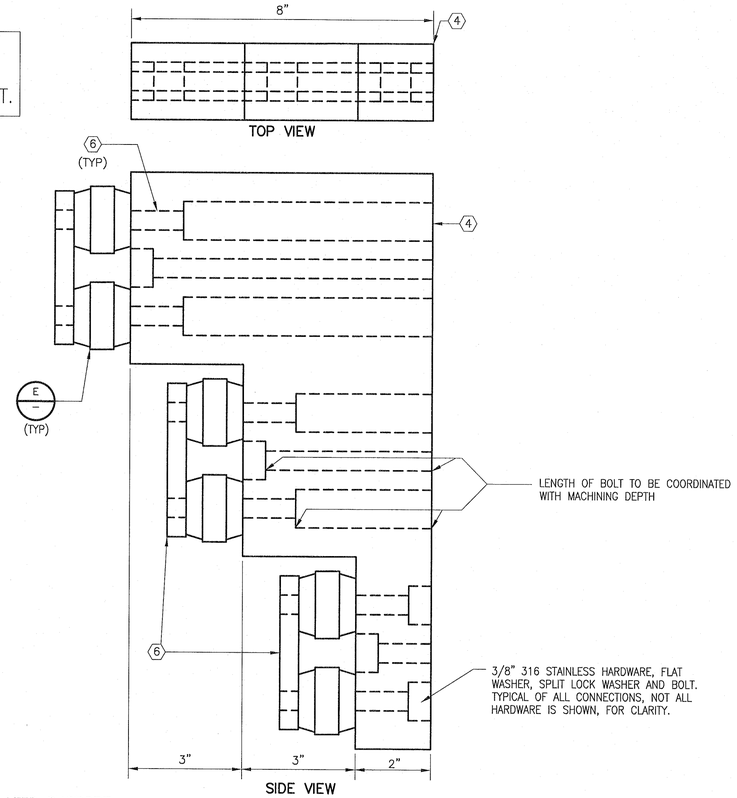
MOBILE GENERATOR CONNECTION CABINET BOTTOM VIEW

DETAIL A
NTS

CONTRACTOR SHALL PROVIDE A SHOP DRAWING FOR THE GENERATOR CONNECTION CABINET.



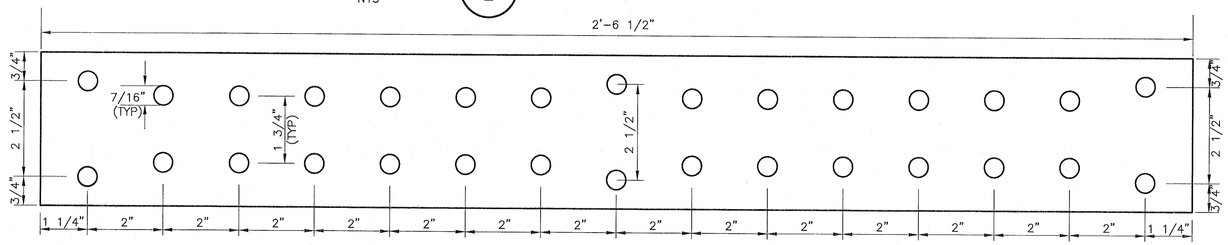
FRONT VIEW



SIDE VIEW

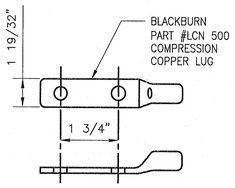
PHASE BUS INSULATED SUPPORT

DETAIL B
NTS



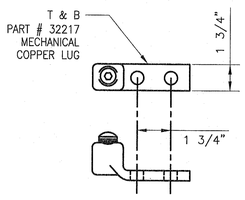
TYPICAL BUS HOLE LAYOUT

DETAIL G
NTS



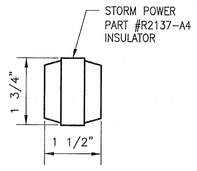
LUGS FOR CABLES TO TRANSFER SWITCH

DETAIL C
NTS



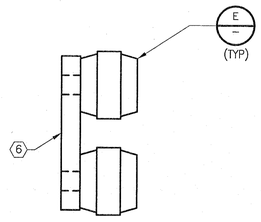
LUGS FOR CABLES TO PORTABLE GENERATOR

DETAIL D
NTS



INSULATOR

DETAIL E
NTS



GROUND BUS INSULATED SUPPORT

DETAIL F
NTS

NOTES:

1. CABLES CONNECTED TO TRANSFER SWITCH.
3. PROVISIONS TO CONNECT PORTABLE GENERATOR CABLES.
4. TYPE 316 STAINLESS STEEL 1 5/8" 12 GUAGE STRUT.
5. 2" THICK MICARTA INSULATING BOARD.
6. 1/2" X 4" COPPER BAR FOR 2000A CABINET AND 3/4" X 4" COPPER BAR FOR 3000A CABINET.
7. TYPE 316 STAINLESS STEEL BOLTS.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
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16300 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

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910 Louisiana Street Suite 2600
Houston, Texas 77002
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www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
Z.M. SODIQUI
77702
REGISTERED PROFESSIONAL ENGINEER
12/20/2021

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

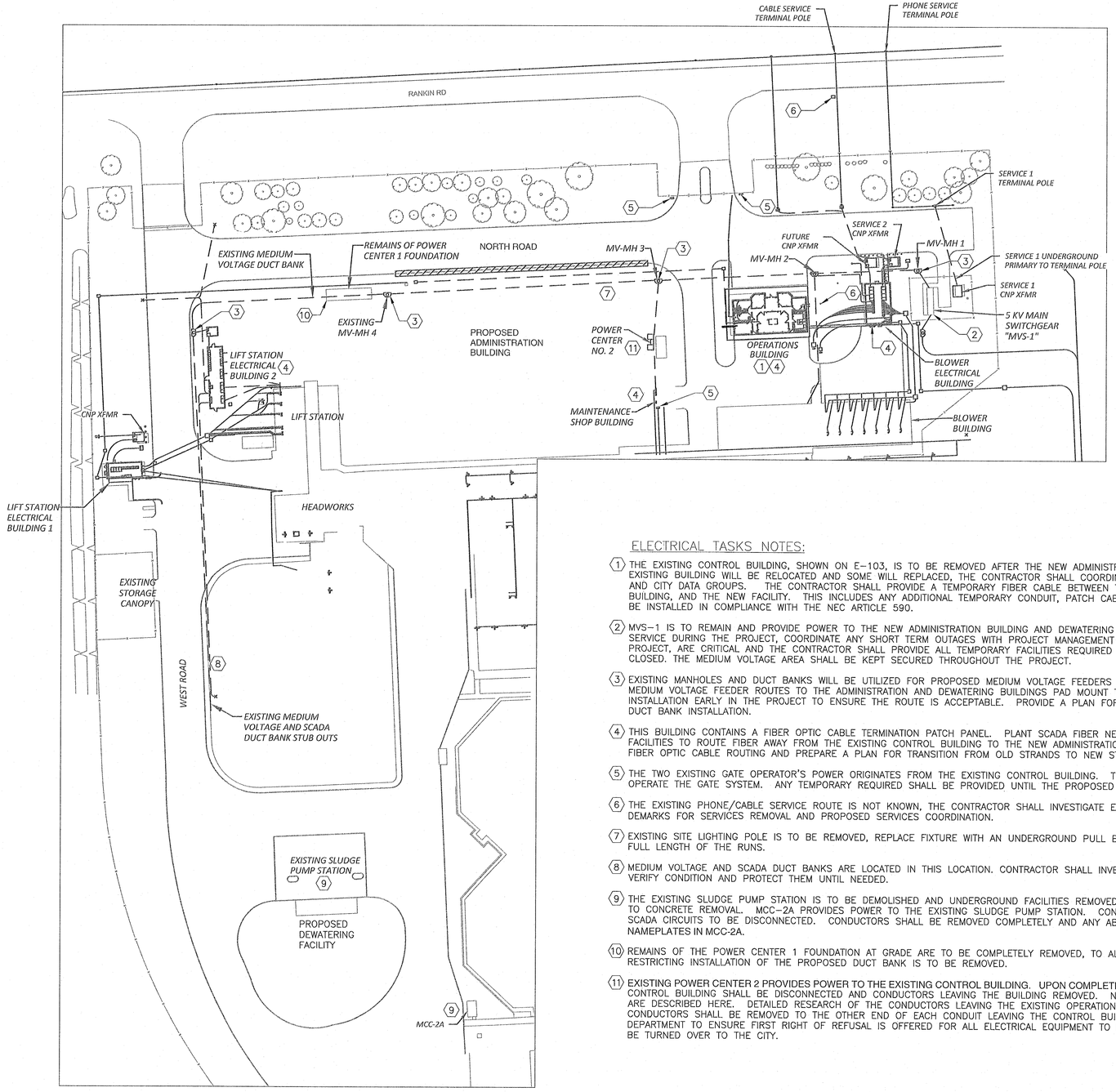
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL DETAILS SHEET - V
E-006

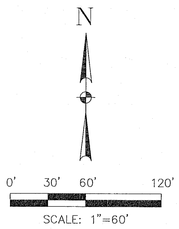
WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	209 OF 255

FOR CITY OF HOUSTON USE ONLY

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS NOTED
80341
CITY DRAWING CONTROL
HOUSTON, TEXAS



OVERALL EXISTING SITE PLAN
1"= 60'-0"



GENERAL NOTES:

A. CONTRACTOR SHALL BE PERFORMING TASKS IN THIS PROJECT IN NEAR PROXIMITY TO OVERHEAD POWER LINES. CONTRACTOR SHALL FOLLOW NEC AND CNP STANDARDS FOR SAFE WORKING DISTANCE, TEMPORARY SIGNAGE AND PROCEDURES.

B. THERE ARE CLASSIFIED AREAS ONSITE, HOWEVER THERE ARE NO TASKS IN THE SCOPE OF THIS PROJECT LOCATED IN CLASSIFIED AREAS. CONTRACTOR SHALL FOLLOW ALL APPLICABLE SAFETY STANDARDS INCLUDING BUT NOT LIMITED TO NEC, NESC, NFPA,OSHA AND CITY OF HOUSTONSTANDARDS FOR SAFE WORKING PRACTICES.

C. PROVIDE ALL TEMPORARY FACILITIES IN ACCORDANCE WITH NEC CHAPTER 590, TEMPORARY INSTALLATIONS.

EQUIPMENT REMOVAL NOTES:

1. THIS DRAWING ILLUSTRATES THE WORK AREAS OF THE EXISTING PLANT. AND IT DESCRIBES TASKS TO BE PERFORMED, EQUIPMENT TO BE REMOVED AND OR REPLACED IN THIS PROJECT. SEE SPECIFICATION 16060 FOR REQUIREMENTS.

2. CONTRACTOR SHALL DOCUMENT THE OPERATIONAL STATUS OF ALL EQUIPMENT TO BE REMOVED PRIOR TO SCHEDULING REMOVAL. THE STATUS, SOURCE AND PATH OF POWER, CONTROL AND SCADA CIRCUITS SHALL BE CONFIRMED.

3. CONTRACTOR SHALL SHALL INVESTIGATE TASKS IN THIS DRAWING EARLY IN THE PROJECT AND NOTIFY THE CITY CONSTRUCTION REPRESENTATIVE UPON DISCOVERY OF ANY DEVIATIONS FROM THE DRAWINGS.

ELECTRICAL TASKS NOTES:

(1) THE EXISTING CONTROL BUILDING, SHOWN ON E-103, IS TO BE REMOVED AFTER THE NEW ADMINISTRATION BUILDING IS IN SERVICE. SOME SCADA EQUIPMENT LOCATED IN THE EXISTING BUILDING WILL BE RELOCATED AND SOME WILL REPLACED, THE CONTRACTOR SHALL COORDINATE ALL TEMPORARY SCADA WORK ACTIVITIES WITH THE WASTEWATER SCADA AND CITY DATA GROUPS. THE CONTRACTOR SHALL PROVIDE A TEMPORARY FIBER CABLE BETWEEN THE EXISTING SCADA EQUIPMENT, LOCATED IN THE EXISTING OPERATIONS BUILDING, AND THE NEW FACILITY. THIS INCLUDES ANY ADDITIONAL TEMPORARY CONDUIT, PATCH CABLES AND MISCELLANEOUS CONDUCTORS. ALL TEMPORARY FACILITIES ARE TO BE INSTALLED IN COMPLIANCE WITH THE NEC ARTICLE 590.

(2) MVS-1 IS TO REMAIN AND PROVIDE POWER TO THE NEW ADMINISTRATION BUILDING AND DEWATERING BUILDING. REFER TO DRAWING E-602 FOR DETAIL. MVS-1 IS TO REMAIN IN SERVICE DURING THE PROJECT, COORDINATE ANY SHORT TERM OUTAGES WITH PROJECT MANAGEMENT STAFF. SOME PLANT PROCESS EQUIPMENT POWER IMPACTED, IN THIS PROJECT, ARE CRITICAL AND THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY FACILITIES REQUIRED TO PERFORM TASKS. THE MVS-1 ENCLOSURE SHALL BE KEPT CLEAN AND CLOSED. THE MEDIUM VOLTAGE AREA SHALL BE KEPT SECURED THROUGHOUT THE PROJECT.

(3) EXISTING MANHOLES AND DUCT BANKS WILL BE UTILIZED FOR PROPOSED MEDIUM VOLTAGE FEEDERS IN THIS PROJECT. THE CONTRACTOR SHALL INVESTIGATE THE PROPOSED MEDIUM VOLTAGE FEEDER ROUTES TO THE ADMINISTRATION AND DEWATERING BUILDINGS PAD MOUNT TRANSFORMERS. CLEAN THE MANHOLES AND PREPARE THE DUCTS FOR CABLE INSTALLATION EARLY IN THE PROJECT TO ENSURE THE ROUTE IS ACCEPTABLE. PROVIDE A PLAN FOR CABLE INSTALLATION, TESTING AND TERMINATION OUTAGE, PRIOR TO NEW DUCT BANK INSTALLATION.

(4) THIS BUILDING CONTAINS A FIBER OPTIC CABLE TERMINATION PATCH PANEL. PLANT SCADA FIBER NETWORK COMMUNICATION MODIFICATIONS WILL REQUIRE WORKING IN EXISTING FACILITIES TO ROUTE FIBER AWAY FROM THE EXISTING CONTROL BUILDING TO THE NEW ADMINISTRATION BUILDING. THE CONTRACTOR SHALL MAKE THEMSELVES FAMILIAR WITH THE FIBER OPTIC CABLE ROUTING AND PREPARE A PLAN FOR TRANSITION FROM OLD STRANDS TO NEW STRANDS.

(5) THE TWO EXISTING GATE OPERATOR'S POWER ORIGINATES FROM THE EXISTING CONTROL BUILDING. THE CONTRACTOR SHALL RESEARCH AND IDENTIFY THE CIRCUITS REQUIRED TO OPERATE THE GATE SYSTEM. ANY TEMPORARY REQUIRED SHALL BE PROVIDED UNTIL THE PROPOSED ADMINISTRATION FACILITY IS IN SERVICE.

(6) THE EXISTING PHONE/CABLE SERVICE ROUTE IS NOT KNOWN, THE CONTRACTOR SHALL INVESTIGATE EARLY IN THE PROJECT TO LOCATE BOXES AND SERVICE OUTLETS OR SERVICE DEMARKS FOR SERVICES REMOVAL AND PROPOSED SERVICES COORDINATION.

(7) EXISTING SITE LIGHTING POLE IS TO BE REMOVED, REPLACE FIXTURE WITH AN UNDERGROUND PULL BOX. SPLICES ARE NOT ALLOWED BELOW GRADE, PULL NEW CONDUCTORS FULL LENGTH OF THE RUNS.

(8) MEDIUM VOLTAGE AND SCADA DUCT BANKS ARE LOCATED IN THIS LOCATION. CONTRACTOR SHALL INVESTIGATE EARLY IN THE PROJECT TO LOCATE THE EXISTING DUCT BANKS, VERIFY CONDITION AND PROTECT THEM UNTIL NEEDED.

(9) THE EXISTING SLUDGE PUMP STATION IS TO BE DEMOLISHED AND UNDERGROUND FACILITIES REMOVED. DUCT BANKS SHALL BE LOCATED AND ALL CONDUCTORS REMOVED PRIOR TO CONCRETE REMOVAL. MCC-2A PROVIDES POWER TO THE EXISTING SLUDGE PUMP STATION. CONTRACTOR SHALL RESEARCH TO ENSURE KNOWLEDGE OF POWER, CONTROL AND SCADA CIRCUITS TO BE DISCONNECTED. CONDUCTORS SHALL BE REMOVED COMPLETELY AND ANY ABANDONED BREAKERS AND BUCKETS SHALL BE PROVIDED NEW "SPARE" NAMEPLATES IN MCC-2A.

(10) REMAINS OF THE POWER CENTER 1 FOUNDATION AT GRADE ARE TO BE COMPLETELY REMOVED, TO ALLOW EXTENSION OF MV DUCT BANK TO PROPOSED FACILITIES. ALL CONCRETE RESTRICTING INSTALLATION OF THE PROPOSED DUCT BANK IS TO BE REMOVED.

(11) EXISTING POWER CENTER 2 PROVIDES POWER TO THE EXISTING CONTROL BUILDING. UPON COMPLETION OF THE PROPOSED ADMINISTRATION BUILDING THE POWER TO THE EXISTING CONTROL BUILDING SHALL BE DISCONNECTED AND CONDUCTORS LEAVING THE BUILDING REMOVED. NOT ALL CONDUCTORS TO BE REMOVED FROM THE EXISTING CONTROL BUILDING ARE DESCRIBED HERE. DETAILED RESEARCH OF THE CONDUCTORS LEAVING THE EXISTING OPERATIONS BUILDING SHALL BE THE RESPONSIBILITY OF THE CONTRACTORS. CONDUCTORS SHALL BE REMOVED TO THE OTHER END OF EACH CONDUIT LEAVING THE CONTROL BUILDING. COORDINATE WITH PROJECT MANAGEMENT AND WASTEWATER ELECTRICAL DEPARTMENT TO ENSURE FIRST RIGHT OF REFUSAL IS OFFERED FOR ALL ELECTRICAL EQUIPMENT TO BE REMOVED. CONTRACTOR SHALL EXERCISE DISASSEMBLY OF EQUIPMENT TO BE TURNED OVER TO THE CITY.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
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STATE OF TEXAS
Z.M. SIDDIQUI
77702
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

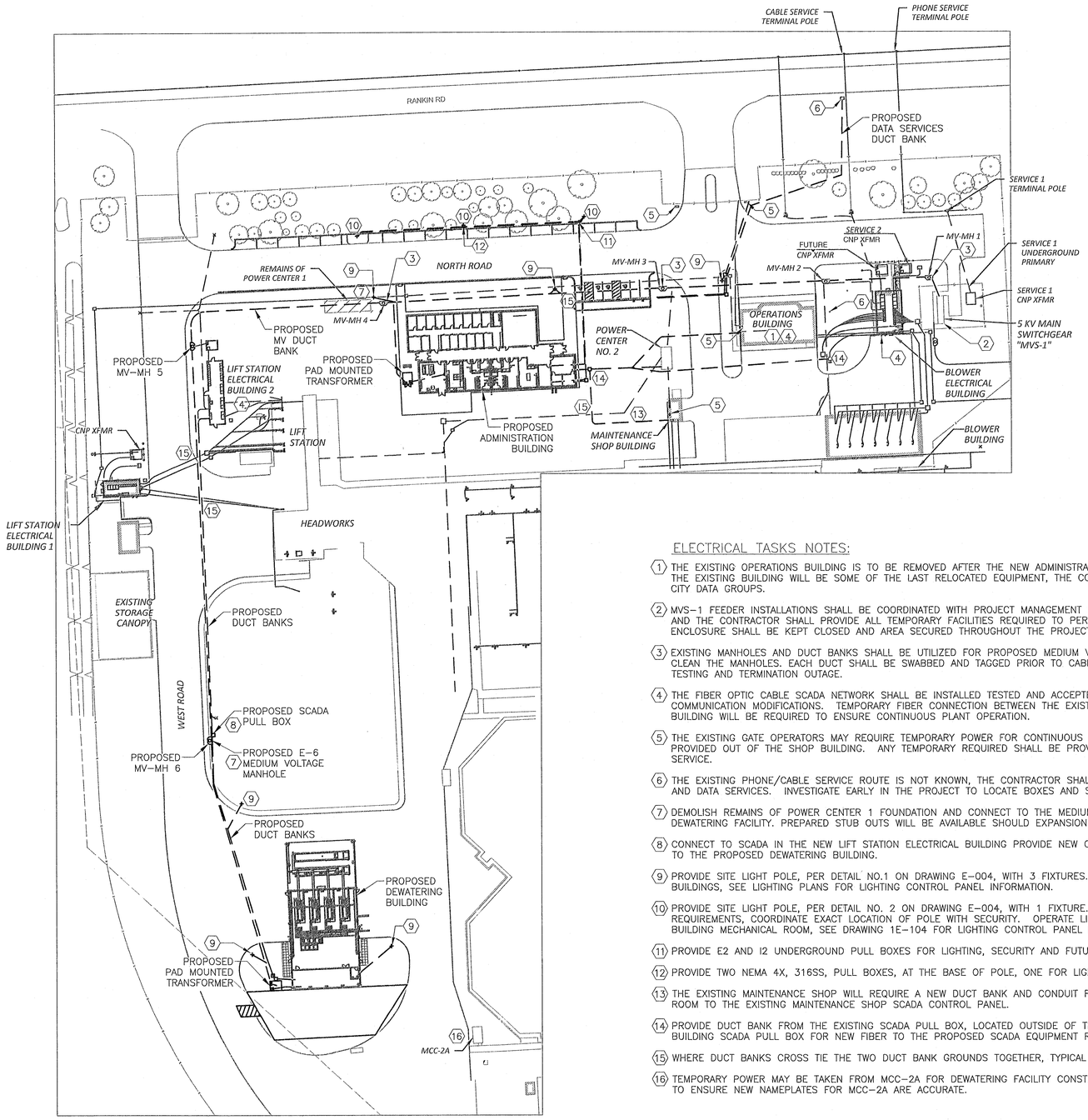
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL EXISTING SITE PLAN
E-101

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 210 OF 255	

ACCEPTED AND FILED
PUBLIC WORKS AND ENGINEERING
80341
CITY OF HOUSTON, TEXAS



OVERALL PROPOSED SITE PLAN
1"= 60'-0"

N

0 60 120
SCALE IN FEET

GENERAL NOTES:

A. CONTRACTOR SHALL BE PERFORMING TASKS IN THIS PROJECT IN NEAR PROXIMITY TO OVERHEAD POWER LINES. CONTRACTOR SHALL FOLLOW NEC AND CNP STANDARDS FOR SAFE WORKING DISTANCE, TEMPORARY SIGNAGE AND PROCEDURES.

B. THERE ARE CLASSIFIED AREAS ONSITE, HOWEVER THERE ARE NO TASKS IN THE SCOPE OF THIS PROJECT LOCATED IN CLASSIFIED AREAS. CONTRACTOR SHALL FOLLOW ALL APPLICABLE SAFETY STANDARDS INCLUDING BUT NOT LIMITED TO NEC, NESC, NFPA,OSHA AND CITY OF HOUSTONSTANDARDS FOR SAFE WORKING PRACTICES.

C. PROVIDE ALL TEMPORARY FACILITIES IN ACCORDANCE WITH NEC CHAPTER 590, TEMPORARY INSTALLATIONS.

EQUIPMENT REMOVAL NOTES:

1. THIS DRAWING ILLUSTRATES AND DESCRIBES ELECTRICAL EQUIPMENT TO BE REMOVED AND OR REPLACED IN THIS PROJECT. SEE SPECIFICATION 16050 FOR REQUIREMENTS.
2. CONTRACTOR SHALL DOCUMENT THE OPERATIONAL STATUS OF ALL EQUIPMENT TO BE REMOVED PRIOR TO SCHEDULING REMOVAL. THE STATUS, SOURCE AND PATH OF POWER, CONTROL AND SCADA CIRCUITS SHALL BE CONFIRMED.
3. CONTRACTOR SHALL NOTIFY THE CITY CONSTRUCTION REPRESENTATIVE UPON DISCOVERY OF ALL DEVIATIONS FROM THE DRAWINGS.

ELECTRICAL TASKS NOTES:

(1) THE EXISTING OPERATIONS BUILDING IS TO BE REMOVED AFTER THE NEW ADMINISTRATION BUILDING IS IN SERVICE. SCADA EQUIPMENT LOCATED IN THE EXISTING BUILDING WILL BE SOME OF THE LAST RELOCATED EQUIPMENT, THE CONTRACTOR SHALL COORDINATE WITH THE WASTEWATER SCADA AND CITY DATA GROUPS.

(2) MVS-1 FEEDER INSTALLATIONS SHALL BE COORDINATED WITH PROJECT MANAGEMENT STAFF. SOME LOADS IMPACTED IN THIS PROJECT ARE CRITICAL AND THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY FACILITIES REQUIRED TO PERFORM TASKS AND KEEP THE PROCESS OPERATING. THE MVS-1 ENCLOSURE SHALL BE KEPT CLOSED AND AREA SECURED THROUGHOUT THE PROJECT.

(3) EXISTING MANHOLES AND DUCT BANKS SHALL BE UTILIZED FOR PROPOSED MEDIUM VOLTAGE FEEDERS. THE CONTRACTOR SHALL INVESTIGATE AND CLEAN THE MANHOLES. EACH DUCT SHALL BE SWABBED AND TAGGED PRIOR TO CABLE INSTALLATION. PROVIDE A PLAN FOR CABLE INSTALLATION, TESTING AND TERMINATION OUTAGE.

(4) THE FIBER OPTIC CABLE SCADA NETWORK SHALL BE INSTALLED TESTED AND ACCEPTED PRIOR TO SCHEDULING RELOCATION OF INVOLVED SCADA COMMUNICATION MODIFICATIONS. TEMPORARY FIBER CONNECTION BETWEEN THE EXISTING OPERATIONS BUILDING AND THE NEW ADMINISTRATION BUILDING WILL BE REQUIRED TO ENSURE CONTINUOUS PLANT OPERATION.

(5) THE EXISTING GATE OPERATORS MAY REQUIRE TEMPORARY POWER FOR CONTINUOUS OPERATION THROUGH THE PROJECT. TEMPORARY POWER MAY BE PROVIDED OUT OF THE SHOP BUILDING. ANY TEMPORARY REQUIRED SHALL BE PROVIDED UNTIL THE PROPOSED ADMINISTRATION FACILITY POWER IS IN SERVICE.

(6) THE EXISTING PHONE/CABLE SERVICE ROUTE IS NOT KNOWN, THE CONTRACTOR SHALL PROVIDE DUCT BANK AND PULL ROPE FOR PROPOSED SCADA AND DATA SERVICES. INVESTIGATE EARLY IN THE PROJECT TO LOCATE BOXES AND SERVICE OUTLETS FOR PROPOSED SERVICES COORDINATION.

(7) DEMOLISH REMAINS OF POWER CENTER 1 FOUNDATION AND CONNECT TO THE MEDIUM VOLTAGE DUCT BANK (MANHOLE) FOR EXTENSION TO THE DEWATERING FACILITY. PREPARED STUB OUTS WILL BE AVAILABLE SHOULD EXPANSION PROJECT PROCEED THE DEWATERING BUILDING CONSTRUCTION.

(8) CONNECT TO SCADA IN THE NEW LIFT STATION ELECTRICAL BUILDING PROVIDE NEW CONDUIT, DUCT BANK, AND PULL BOXES FOR EXTENSION OF FIBER TO THE PROPOSED DEWATERING BUILDING.

(9) PROVIDE SITE LIGHT POLE, PER DETAIL NO.1 ON DRAWING E-004, WITH 3 FIXTURES. OPERATE LIGHT FIXTURES FROM LCPS LOCATED IN THE BUILDINGS, SEE LIGHTING PLANS FOR LIGHTING CONTROL PANEL INFORMATION.

(10) PROVIDE SITE LIGHT POLE, PER DETAIL NO. 2 ON DRAWING E-004, WITH 1 FIXTURE. PROVIDE POLE WITH CAMERA PROVISIONS, FOR WITH SECURITY REQUIREMENTS, COORDINATE EXACT LOCATION OF POLE WITH SECURITY. OPERATE LIGHT FIXTURES FROM LCP-A LOCATED IN THE ADMINISTRATION BUILDING MECHANICAL ROOM, SEE DRAWING 1E-104 FOR LIGHTING CONTROL PANEL INFORMATION.

(11) PROVIDE E2 AND I2 UNDERGROUND PULL BOXES FOR LIGHTING, SECURITY AND FUTURE CONDUITS.

(12) PROVIDE TWO NEMA 4X, 316SS, PULL BOXES, AT THE BASE OF POLE, ONE FOR LIGHTING AND ONE FOR SECURITY CONDUITS.

(13) THE EXISTING MAINTENANCE SHOP WILL REQUIRE A NEW DUCT BANK AND CONDUIT FROM THE PROPOSED ADMINISTRATION BUILDING, SCADA EQUIPMENT ROOM TO THE EXISTING MAINTENANCE SHOP SCADA CONTROL PANEL.

(14) PROVIDE DUCT BANK FROM THE EXISTING SCADA PULL BOX, LOCATED OUTSIDE OF THE BLOWER ELECTRICAL BUILDING, TO THE NEW ADMINISTATION BUILDING SCADA PULL BOX FOR NEW FIBER TO THE PROPOSED SCADA EQUIPMENT ROOM.

(15) WHERE DUCT BANKS CROSS TIE THE TWO DUCT BANK GROUNDS TOGETHER, TYPICAL ALL LOCATIONS.

(16) TEMPORARY POWER MAY BE TAKEN FROM MCC-2A FOR DEWATERING FACILITY CONSTRUCTION. CONTRACTOR SHALL RESEARCH THE MCC-2A CIRCUITS TO ENSURE NEW NAMEPLATES FOR MCC-2A ARE ACCURATE.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
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Houston, Texas 77094
Phone: (713)-385-9288

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Houston, Texas 77002
Tel: 713.548.5700
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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
Z.M. SIDDIQUI
77702
REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL PROPOSED SITE PLAN E-102

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 211 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS NOTED
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

PANEL "A"

BUS AMPS 100 MLO ____
MAIN BRKR. AMPS ____ WIRE SIZE ____
VOLTS 120/208V AIC ____
PHASE 3 WIRE 4 SN ✓

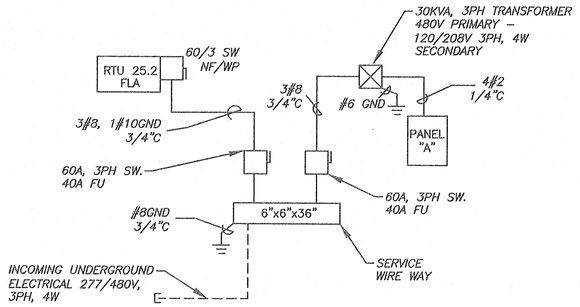
CKT. DESCRIPTION	WIRE	LOAD	BKR.			BKR.	LOAD	WIRE	CKT. DESCRIPTION
LIGHTS		1400	20	1	2	20	1600		LIGHTS
LIGHTS		1700	20	3	4	20	1500		LIGHTS
LIGHTS		1800	20	5	6	20	600		EXTERIOR LTS
7-RECEPT.		1260	20	7	8	20	1080		6-RECEPT.
7-RECEPT.		1260	20	9	10	20	830		EDF
6-RECEPT.		1080	20	11	12	20	500		1-RECEPT.
TOILET EXH.		200	20	13	14	20	500		1-RECEPT.
TEL. EQUIP		500	20	15	16	20	830		REFRIG
PLUGMOLD		900	20	17	18	20	200		1-RECEPT.
		900	20	19	20	20	1200		
		900	20	21	22	20	200		
		900	20	23	24	20	200		
				25	26	20	1200		
				27	28				
SPACE				29	30	20			TEMPORARY
				31	32	20			TEMPORARY ③
				33	34				SPACE
				35	36				
				37	38				
				39	40				
				41	42				

N

TOTAL LOAD = XX KVA

* USE 1"C. UNLESS STATED OTHERWISE.

LOCATION: XXXX



EXISTING CONTROL BUILDING ONE LINE

NTS

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE THE EXISTING CONTROL BUILDING, THE EXISTING CONTROL BUILDING IS TO BE DEMOLISHED UPON ACCEPTANCE OF THE PROPOSED ADMINISTRATION BUILDING.

B. ELECTRICAL CONTRACTOR SHALL COORDINATE, EARLY IN THE PROJECT WITH WW OPS, TO UTILIZE THE EXISTING FACILITIES FOR CONSTRUCTION ACTIVITIES. UNTIL THE CONTROL ROOM IN THE PROPOSED ADMINISTRATION BUILDING IS FULLY FUNCTIONAL AND ACCEPTED THE PLANT SHALL CONTINUE OPERATION OF THE PLANT PROCESS FROM THE EXISTING CONTROL BUILDING.

C. POWER FROM THE EXISTING CONTROL BUILDING MAY BE UTILIZED FOR TEMPORARY POWER, TO CONTINUE OPERATION OF THE EXISTING FACILITIES.

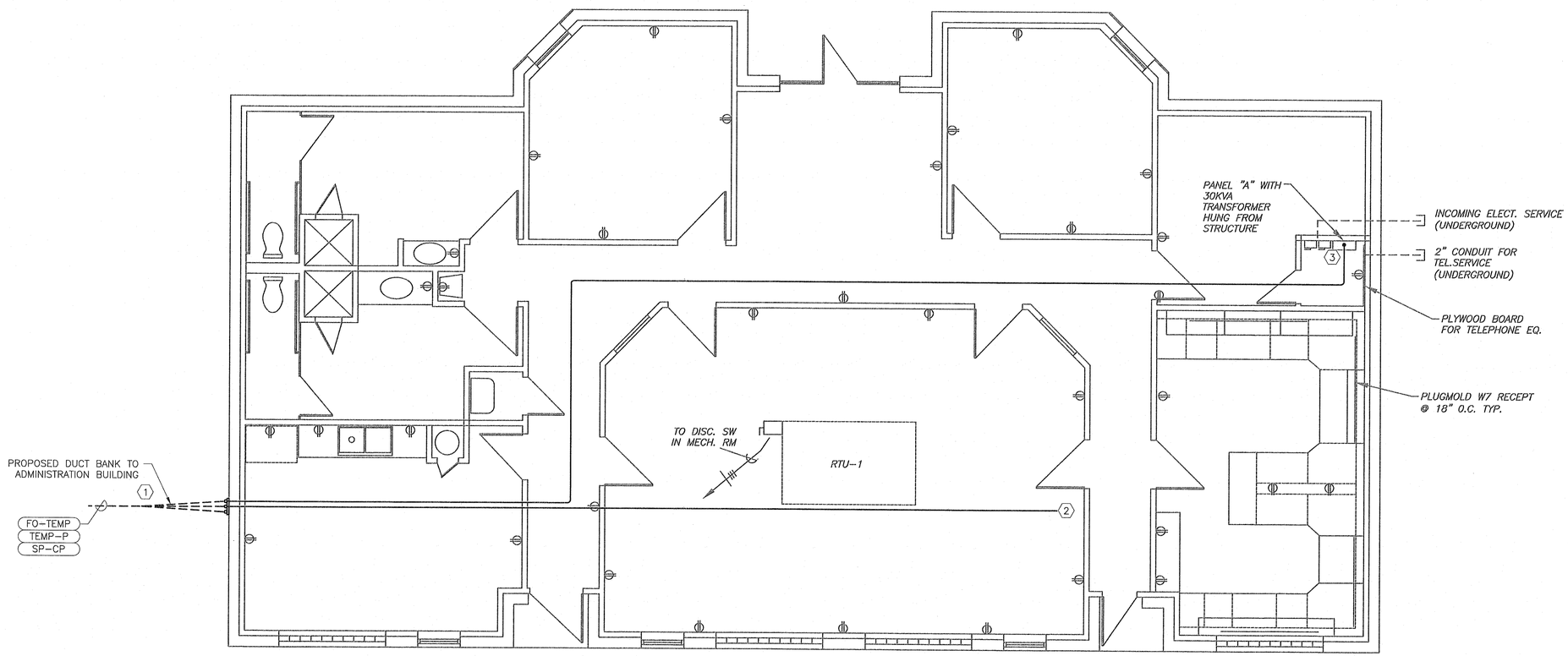
D. TEMPORARY FIBER SHALL BE INSTALLED BETWEEN THE EXISTING FIBER OPTIC PATCH PANEL AND THE PROPOSED SCADA RACK IN THE PROPOSED ADMINISTRATION BUILDING TO ESTABLISH FUNCTIONALITY OF THE PROPOSED CONTROL ROOM SYSTEMS.

NOTES:

(1) UNDERGROUND DUCT BANK TO THE PROPOSED ADMINISTRATION BUILDING SHALL BE UTILIZED FOR TEMPORARY PROVISIONS DURING CONSTRUCTION OF THE PROPOSED ADMINISTRATION BUILDING. UPON ACCEPTANCE OF THE PROPOSED ADMINISTRATION BUILDING THIS UNDERGROUND DUCT BANK SHALL BE UTILIZED TO SERVE THE PROPOSED COVERED PARKING FACILITY.

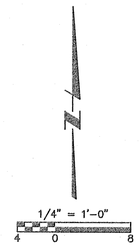
(2) COORDINATE WITH PCSI TO ROUTE A 2" FLEXIBLE METALLIC CONDUIT TO THE EXISTING FIBER OPTIC CABLE PATCH PANEL FOR TEMPORARY CONNECTION TO THE PROPOSED SCADA FIBER PATCH PANEL, IN THE PROPOSED ADMINISTRATION BUILDING.

(3) UTILIZE THE EXISTING CONTROL BUILDING PANEL "A" FOR TEMPORARY POWER TO THE PROPOSED ADMINISTRATION BUILDING FOR SCADA AND IT PURPOSES.



EXISTING CONTROL BUILDING PLAN

1/4"=1'-0"



NO.	DATE	REVISION	APP.

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Houston, Texas 77094
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www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

THE STATE OF TEXAS
Z.M. SIDDIQUI
77702
REGISTERED
PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL EXISTING CONTROL BUILDING PLAN E-103

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 212 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AS NOTED
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

NOTES

1. EXISTING POWER CENTER 2 PROVIDES POWER TO THE EXISTING OPERATIONS BUILDING. UPON COMPLETION OF THE PROPOSED ADMINISTRATION BUILDING POWER TO THE EXISTING OPERATIONS BUILDING SHALL BE DISCONNECTED. CONDUCTORS TO THE OPERATIONS BUILDING SHALL BE REMOVED. DETAILED RESEARCH OF THE CONDUCTORS TO THE EXISTING OPERATIONS BUILDING SHALL BE THE RESPONSIBILITY OF THE CONTRACTORS. PROVIDE A "SPARE" NAMEPLATE FOR THE BREAKER THAT FED THE OPERATIONS BUILDING.

2. MVS-1 IS TO BE UTILIZED FOR THE NEW ADMINISTRATION BUILDING AND DEWATERING BUILDING TRANSFORMER PRIMARY FEEDERS. MVS-1 IS TO REMAIN IN SERVICE DURING THE PROJECT. COORDINATE ANY SHORT TERM OUTAGES WITH PROJECT MANAGEMENT STAFF. SOME PLANT PROCESS EQUIPMENT POWER IMPACTED, IN THIS PROJECT, ARE CRITICAL AND THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY FACILITIES REQUIRED TO PERFORM TASKS. THE MVS-1 ENCLOSURE SHALL BE KEPT CLEAN, CLOSED AND THE HIGH MEDIUM VOLTAGE AREA SECURED THROUGHOUT THE PROJECT.

3. CONTRACTOR SHALL PROVIDE FUSES AND ANCILLARY COMPONENTS COORDINATED WITH THE PROPOSED AND ACCEPTED SHOP DRAWINGS. SEE PROPOSED ONE LINE DIAGRAMS FOR DETAILED ILLUSTRATION OF THE SWITCHGEAR.

4. EXISTING MCC-2A CIRCUITS PROVIDE POWER TO THE EXISTING SLUDGE PUMPING STATION. CIRCUITS ARE TO BE REMOVED COMPLETELY AND "SPARE" NAMEPLATES PROVIDED FOR THE BREAKERS TAKEN OUT OF SERVICE.

GENERAL ELECTRICAL NOTES:

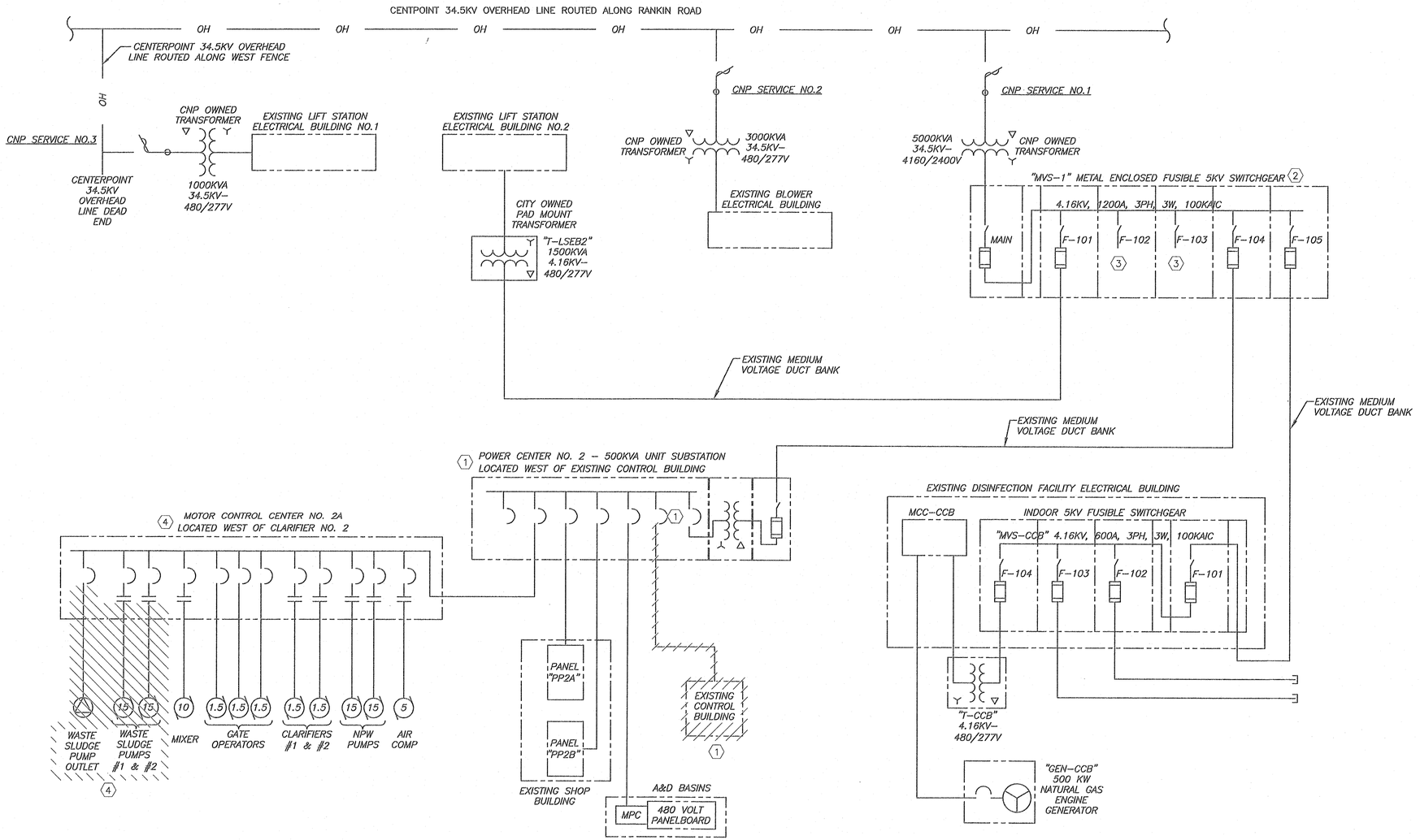
A. THIS DRAWING ILLUSTRATES THE THREE EXISTING CENTERPOINT (CNP) SERVICES ON THE SITE, OVERALL POWER DISTRIBUTION IN THE PLANT AND GENERALLY DESCRIBES POWER EQUIPMENT TO BE REMOVED IN THIS PROJECT. DETAILED DESCRIPTIONS OF WORK ARE PROVIDED ON ENLARGED DRAWINGS OF THE SPECIFIC EQUIPMENT TO BE MODIFIED OR PROVIDED, SEE ADDITIONAL ONE LINES E-602 AND E-603 FOR MORE INFORMATION.

B. CONTRACTOR SHALL DOCUMENT THE OPERATIONAL STATUS OF EQUIPMENT TO BE REMOVED PRIOR TO SCHEDULING REMOVAL. THE STATUS, SOURCE AND PATH OF POWER, CIRCUITS TO BE DISCONNECTED SHALL BE CONFIRMED.

C. CONTRACTOR SHALL INVESTIGATE TASKS IN THIS DRAWING EARLY IN THE PROJECT AND NOTIFY THE CITY CONSTRUCTION REPRESENTATIVE UPON DISCOVERY OF ANY DEVIATIONS FROM THE DRAWINGS.

EQUIPMENT REMOVAL NOTES:

1. SEE SPECIFICATION 16060 FOR EQUIPMENT REMOVAL REQUIREMENTS.
2. COORDINATE WITH PROJECT MANAGEMENT AND WASTEWATER ELECTRICAL DEPARTMENT TO ENSURE FIRST RIGHT OF REFUSAL IS OFFERED FOR ALL ELECTRICAL EQUIPMENT TO BE REMOVED.
3. CONTRACTOR SHALL EXERCISE DISASSEMBLY OF EQUIPMENT TO BE TURNED OVER TO THE CITY.



OVERALL EXISTING SIMPLIFIED ONE LINE DIAGRAM

NTS

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
Z.M. SIDDIQUI
77702
REGISTERED PROFESSIONAL ENGINEER
12/12/2024

CITY OF HOUSTON

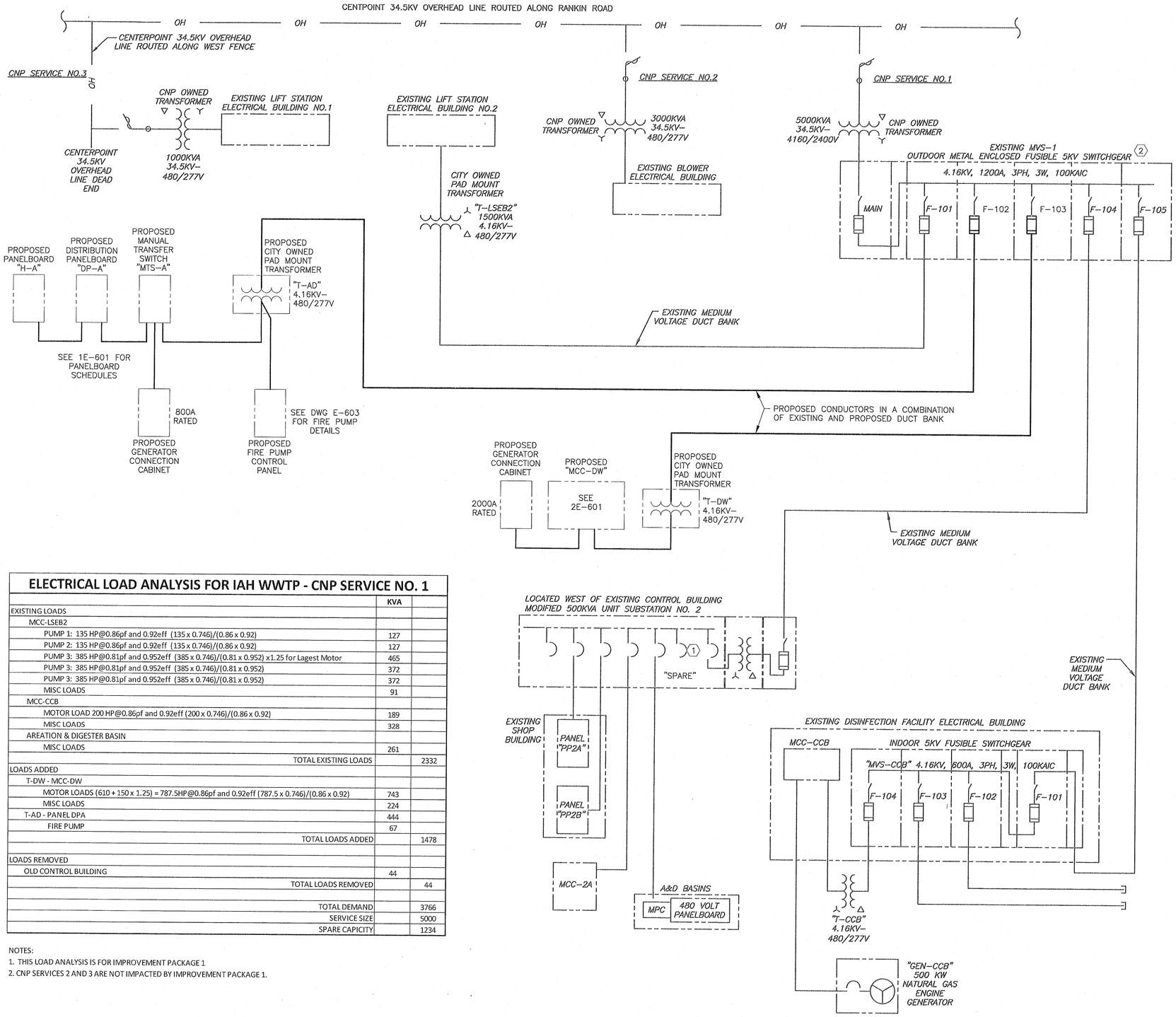
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL EXISTING SIMPLIFIED ONE LINE DIAGRAM E-601

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SE SHAHIDUR RAHMAN, P.E.	
SHEET NO. 213 OF 255	

PUBLIC WORKS & ENGINEERING
ACCEPTED AS NOTED
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS



ELECTRICAL LOAD ANALYSIS FOR IAH WWTP - CNP SERVICE NO. 1

	KVA	
EXISTING LOADS		
MCC-LSEB2		
PUMP 1: 135 HP@0.86pf and 0.92eff (135 x 0.746)/(0.86 x 0.92)	127	
PUMP 2: 135 HP@0.86pf and 0.92eff (135 x 0.746)/(0.86 x 0.92)	127	
PUMP 3: 385 HP@0.81pf and 0.952eff (385 x 0.746)/(0.81 x 0.952) x1.25 for Lagest Motor	465	
PUMP 3: 385 HP@0.81pf and 0.952eff (385 x 0.746)/(0.81 x 0.952)	372	
PUMP 3: 385 HP@0.81pf and 0.952eff (385 x 0.746)/(0.81 x 0.952)	372	
MISC LOADS	91	
MCC-CCB		
MOTOR LOAD 200 HP@0.86pf and 0.92eff (200 x 0.746)/(0.86 x 0.92)	189	
MISC LOADS	328	
AREATION & DIGESTER BASIN		
MISC LOADS	261	
TOTAL EXISTING LOADS		2332
LOADS ADDED		
T-DW - MCC-DW		
MOTOR LOADS (610 + 150 x 1.25) = 787.5HP@0.86pf and 0.92eff (787.5 x 0.746)/(0.86 x 0.92)	743	
MISC LOADS	224	
T-AD - PANEL DPA	444	
FIRE PUMP	67	
TOTAL LOADS ADDED		1478
LOADS REMOVED		
OLD CONTROL BUILDING	44	
TOTAL LOADS REMOVED		44
TOTAL DEMAND		3766
SERVICE SIZE		5000
SPARE CAPICITY		1234

NOTES:
1. THIS LOAD ANALYSIS IS FOR IMPROVEMENT PACKAGE 1
2. CNP SERVICES 2 AND 3 ARE NOT IMPACTED BY IMPROVEMENT PACKAGE 1.

NOTES

(1) UPON COMPLETION OF THE PROPOSED ADMINISTRATION BUILDING POWER TO THE EXISTING CONTROL BUILDING SHALL BE DISCONNECTED. PROVIDE A "SPARE" NAMEPLATE FOR THE BREAKER THAT FED THE OPERATIONS BUILDING.

(2) MVS–1 IS TO BE MODIFIED TO SERVE THE NEW ADMINISTRATION BUILDING AND DEWATERING BUILDING TRANSFORMER PRIMARY FEEDERS. SEE DRAWING E–603 FOR MVS–1 MODIFICATION DETAILS. THE MVS–1 ENCLOSURE SHALL BE KEPT CLEAN, CLOSED AND THE MEDIUM VOLTAGE AREA SECURED THROUGHOUT THE PROJECT.

GENERAL NOTES

A. THIS DRAWING ILLUSTRATES SCHEMATIC OF THE THREE EXISTING CNP SERVICES ON THE SITE. EXISTING POWER DISTRIBUTION IN THE PLANT IS SHOWN IN LIGHT LINE WORK AND ITALICS TEXT. THE PROPOSED IS SHOWN IN DARK LINE WORK AND STANDARD TEXT.

C. PROPOSED PAD MOUNT TRANSFORMERS AND 480 VOLT DISTRIBUTION EQUIPMENT IS ALSO ILLUSTRATED.

D. SEE OTHER ONE LINE DIAGRAMS FOR MORE DETAIL.

OVERALL PROPOSED SIMPLIFIED ONE LINE DIAGRAM
NTS

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STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED PROFESSIONAL ENGINEER
07.01.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL PROPOSED SIMPLIFIED ONE LINE DIAGRAM E–602

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 214 OF 255	

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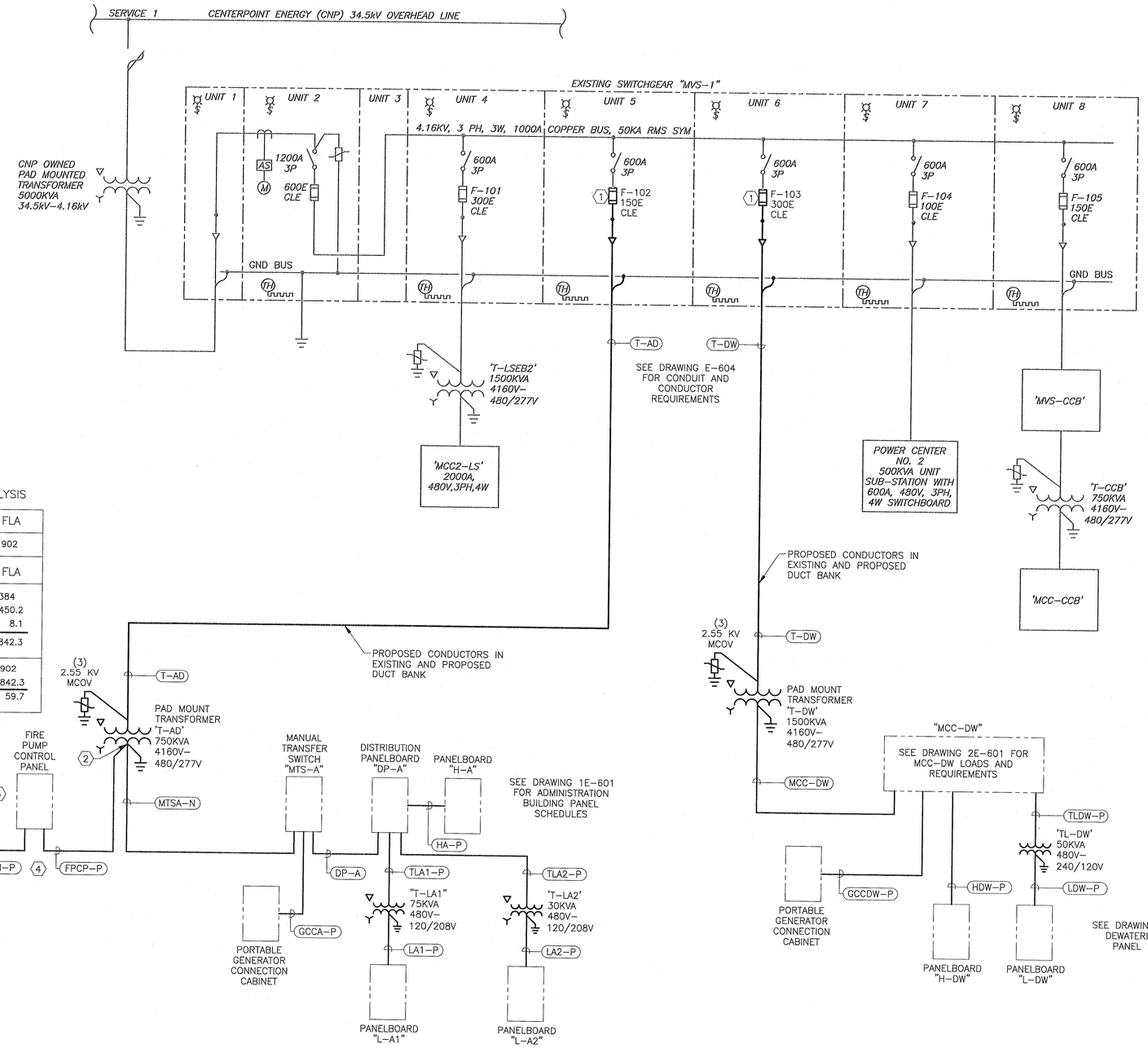
ACCEPTED NOTED
80341
CITY DRAWING NO. (IF REQ.)
HOUSTON, TEXAS

SEE E-601 AND E-602
FOR ADDITIONAL CNP
SERVICES ON THE SITE



TRANSFORMER T–AD "FIRE PUMP" LOAD ANALYSIS

TRANSFORMER T–AD	KVA	FLA
T–AD = 750 KVA	750	902
CONNECTED LOADS	KVA	FLA
DP–A	319	384
FIRE PUMP 75HP LRA	374.3	450.2
JOCKEY PUMP 1.5 HP LRA	1.4	8.1
TOTAL	694.7	842.3
T–AD = 750 KVA	750	902
CONNECTED LOAD AND LOCK ROTOR	–694.7	–842.3
TRANSFORMER SPARE CAPACITY	55.3	59.7

OVERALL MODIFIED MVS-1 ONE LINE DIAGRAM
NTS

GENERAL NOTES

A. THIS DRAWING ILLUSTRATES CNP SERVICE NO.1 EXISTING MVS–1 5KV SWITCHGEAR WITH LIGHT LINE WORK AND ITALICS TEXT. THE PROPOSED MODIFICATIONS, PROPOSED EQUIPMENT, AND PROPOSED POWER PATH ARE SHOWN IN DARK LINE WORK AND STANDARD TEXT. SEE THE PANELBOARD SCHEDULES AND CONDUIT AND CONDUCTOR SCHEDULES FOR MORE DETAILED CONDUCTOR INFORMATION.

B. THERE ARE NO GENERATORS TO BE PROVIDED IN THIS PROJECT, ONLY PORTABLE GENERATOR CONNECTION CABINETS.

C. CONTRACTOR SHALL COORDINATE FIRE PUMP INSTALLATION WITH OTHER TRADES FOR IBC COMPLIANCE.

NOTES:

1. PROVIDE FUSES AND ALL MOUNTING PROVISIONS.
2. CONTRACTOR SHALL PROVIDE LUGS FOR FIRE PUMP CONTROL PANEL TO BE PARALLEL CONNECTED TO TRANSFORMER T–AD SECONDARY, WITH ADMINISTRATION BUILDING FEEDERS.
3. CONTRACTOR SHALL COORDINATE ALL ASPECTS OF THE FIRE PUMPS SYSTEM TO COMPLY WITH NEC 695.
4. CONDUCTORS ARE SIZED TO COMPLY WITH THE DESIGN FIRE PUMP REQUIREMENTS. CONTRACTOR SHALL ENSURE PROVIDED FIRE PUMP CONDUCTOR REQUIREMENTS, ARE MET.

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED PROFESSIONAL ENGINEER
07.01.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL MODIFIED MVS-1 ONE LINE DIAGRAM E-603

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 215 OF 255	

ACCEPTED AS NOTED
PUBLIC WORKS AND ENGINEERING
80341
CITY DRAWING NUMBER
DRAWING NO. E-603

TAG	DESCRIPTION	ROUTING		CONDUIT & WIRE SIZES	REMARKS
		FROM	TO		
T-AD	TRANSFORMER T-AD PRIMARY FEEDER	SWITCHGEAR "MVS-1"	TRANSFORMER T-AD PRIMARY	4"C, 3-2/0 8KV, 1-#1 GND	THROUGH EXISTING AND PROPOSED MV DUCT BANK
FPCP-P	FIRE PUMP CONTROL PANEL FEEDER	TRANSFORMER T-AD SECONDARY	FIRE PUMP CONTROL PANEL	(2)2"C, EA/ RHH RATED 3-4/0 AWG, #2 GND	
FPM-P	FIRE PUMP MOTOR FEEDER	FIRE PUMP CONTROL PANEL	FIRE PUMP MOTOR	(2)2"C, EA/ RHH RATED 3-4/0 AWG, #2 GND	
MTSA-N	MTS-A NORMAL FEEDER	TRANSFORMER T-AD SECONDARY	MANUAL TRANSFER SWITCH MTS-A (NORMAL)	(2)4"C, EA/4-500 KCMIL, #1 GND	
GCCA-P	MTS-A PORTABLE GENERATOR FEEDER	GENERATOR CONNECTION CABINET GCC-A	MANUAL TRANSFER SWITCH MTS-A (STANDBY)	(2)4"C, EA/4-500 KCMIL, #1 GND	
DP-A	DISTRIBUTION PANELBOARD DP-A FEEDER	MANUAL TRASFER SWITCH MTS-A (LOAD)	PANELBOARD DP-A MAIN BREAKER	(2)4"C, EA/4-500 KCMIL, #1 GND	
HA-P	PANELBOARD H-A FEEDER	PANELBOARD DP-A	PANELBOARD H-A MLO	2"C, SEE PANELBOARD SCHEDULE FOR CONDUCTORS	
TLA1-P	TRANSFORMER T-LA1 FEEDER	PANELBOARD DP-A	TRANSFORMER T-LA1 PRIMARY	2"C, SEE PANELBOARD SCHEDULE FOR CONDUCTORS	
LA1-P	PANELBOARD L-A1 FEEDER	TRANSFORMER T-LA1 SECONDARY	L-A1 MAIN BREAKER	2 1/2"C, 4-4/0 AWG, 1/0 GND	
TLA2-P	TRANSFORMER T-LA2 FEEDER	PANELBOARD DP-A	TRANSFORMER T-LA2 PRIMARY	1 1/2"C, SEE PANELBOARD SCHEDULE FOR CONDUCTORS	
LA2-P	PANELBOARD L-A2 FEEDER	TRANSFORMER T-LA2 SECONDARY	L-A2 MAIN BREAKER	1 1/2"C, 4-#1 AWG, #1 GND	
FO-LS	LIFT STATION SCADA FIBER OPTIC CABLE	LIFT STATION ELECTRICAL BLDG 1	PROPOSED ADMINISTRATION BLDG	2"C W/ 2-6 STRAND FIBER	
FO-MS	MAINTENANCE SHOP SCADA FIBER OPTIC CABLE	PROPOSED ADMINISTRATION BLDG	EXISTING MAINTENANCE SHOP	2"C W/ 2-6 STRAND FIBER	
FO-BB	BLOWER BUILDING SCADA FIBER OPTIC CABLE	PROPOSED ADMINISTRATION BLDG	EXISTING BLOWER BUILDING CONTROL PANEL	2"C W/ 2-6 STRAND FIBER	
FO-UV	CCB DISINFECTION FACILITY SCADA FIBER OPTIC CABLE	PROPOSED ADMINISTRATION BLDG	EXISTING CCB FACILITY CONTROL PANEL	2"C W/ 2-6 STRAND FIBER	
FO-TEMP	TEMPORARY FIBER FOR STARTUP AND COMMISSIONING	EXISTING CONTROL BUILDING	PROPOSED ADMINISTRATION BLDG	2"C W/ 2-6 STRAND FIBER	
TEMP-P	TEMPORARY POWER FOR STARTUP AND COMMISSIONING	EXISTING CONTROL BUILDING PANEL A	PROPOSED ADMINISTRATION BLDG	2"C W/ 3-#10, #10 GND	
SP-CP	SPARE PROPOSED ADMIN TO EXISTING CONTROL BUILDING	EXISTING CONTROL BUILDING	PROPOSED ADMINISTRATION BLDG	2"C W/ 2-6 STRAND FIBER	
FO-DW	DEWATERING FACILITY SCADA FIBER OPTIC CABLE	LIFT STATION ELECTRICAL BLDG 1	DEWATERING BUILDING CONTROL PANEL	2"C W/ 2-6 STRAND FIBER	THROUGH EXISTING AND PROPOSED MV DUCT BANK
T-DW	TRANSFORMER "T-DW" FEEDER	SWITCHGEAR "MVS-1"	TRANSFORMER "T-DW"	4"C, EACH WITH 3-350 KCMIL, 8KV, #1 GND	
MCCDW-P	"MCC-DW" FEEDER	"T-DW"	"MCC-DW"	6-4"C EA/4-500 KCMIL, #1/0 GND	
GCCDW-P	PORTABLE GENERATOR CONNECTION CABINET GCC-DW	PORTABLE GENERATOR CONNECTION CABINET	"MCC-DW"	6-4"C EA/4-500 KCMIL, #1/0 GND	
HDW-P	PANELBOARD "H-DW" FEEDER	"MCC-DW"	PANELBOARD "H-DW"	3"C, 3-350 KCMIL, 1-#2 GND	
TLDW-P	TRANSFORMER "T-LDW" FEEDER	"MCC-DW"	TRANSFORMER "T-LDW"	2"C, 2-#1/0, 1-#6 GND	
LDW-P	PANELBOARD "LDW" FEEDER	TRANSFORMER "T-LDW"	PANELBOARD "LDW"	3"C, 2-#4/0, 1-#4/0 NEUTRAL, #2 GND	
PF-S	"MCC-DW" POWER MONITORING	"MCC-DW"	"PLC-DW"	3/4"C, 1-CAT 6, 2-#14, #12 GND	
PS104-P	POLYMER SYSTEM NO. 1 POWER FEEDER	"MCC-DW"	POLYMER SYSTEM NO. 1 CONTROL PANEL	1"C, 3-#10, 1-#10 GND.	
PS204-P	POLYMER SYSTEM NO. 2 POWER FEEDER	"MCC-DW"	POLYMER SYSTEM NO. 2 CONTROL PANEL	1"C, 3-#10, 1-#10 GND.	
PS304-P	POLYMER SYSTEM NO. 3 POWER FEEDER	"MCC-DW"	POLYMER SYSTEM NO. 3 CONTROL PANEL	1"C, 3-#10, 1-#10 GND.	
PS404-P	POLYMER SYSTEM NO. 4 POWER FEEDER	"MCC-DW"	POLYMER SYSTEM NO. 4 CONTROL PANEL	1"C EMPTY CONDUIT	
PS104-C	POLYMER SYSTEM NO. 1 CONTROL	"PLC-DW"	POLYMER SYSTEM NO. 1 CONTROL PANEL	2"C, 4-#16 TSP, 12-#14, #12 GND	
PS204-C	POLYMER SYSTEM NO. 2 CONTROL	"PLC-DW"	POLYMER SYSTEM NO. 2 CONTROL PANEL	2"C, 4-#16 TSP, 12-#14, #12 GND	
PS304-C	POLYMER SYSTEM NO. 3 CONTROL	"PLC-DW"	POLYMER SYSTEM NO. 3 CONTROL PANEL	2"C, 4-#16 TSP, 12-#14, #12 GND	
PS404-C	POLYMER SYSTEM NO. 4 CONTROL	"PLC-DW"	POLYMER SYSTEM NO. 4 CONTROL PANEL	2"C EMPTY CONDUIT	
PST1-SS	POLYMER TOTE NO. 1 SUBMERSIBLE SENSOR	POLYMER SYSTEM NO. 1 CONTROL PANEL	POLYMER TOTE NO. 1	FACTORY CORD	
PST2-SS	POLYMER TOTE NO. 2 SUBMERSIBLE SENSOR	POLYMER SYSTEM NO. 2 CONTROL PANEL	POLYMER TOTE NO. 2	FACTORY CORD	
PST3-SS	POLYMER TOTE NO. 3 SUBMERSIBLE SENSOR	POLYMER SYSTEM NO. 3 CONTROL PANEL	POLYMER TOTE NO. 3	FACTORY CORD	
PST4-SS	POLYMER TOTE NO. 4 SUBMERSIBLE SENSOR	POLYMER SYSTEM NO. 4 CONTROL PANEL	POLYMER TOTE NO. 4	FACTORY CORD	
ASD103-P	SLUDGE PUMP NO. 1 ASD FEEDER	"MCC-DW"	SLUDGE PUMP NO. 1 ASD	2"C, 3-#4, 1-#8 GND.	
ASD203-P	SLUDGE PUMP NO. 2 ASD FEEDER	"MCC-DW"	SLUDGE PUMP NO. 2 ASD	2"C, 3-#4, 1-#8 GND.	
ASD303-P	SLUDGE PUMP NO. 3 ASD FEEDER	"MCC-DW"	SLUDGE PUMP NO. 3 ASD	2"C, 3-#4, 1-#8 GND.	
ASD403-P	SLUDGE PUMP NO. 4 ASD FEEDER	"MCC-DW"	SLUDGE PUMP NO. 4 ASD	2"C EMPTY CONDUIT	
SLPMP103-P	SLUDGE PUMP NO. 1 FEEDER	SLUDGE PUMP NO. 1 ASD	SLUDGE PUMP NO. 1	2"C, 3-#4, 2-#12, 1-#8 GND.	
SLPMP203-P	SLUDGE PUMP NO. 2 FEEDER	SLUDGE PUMP NO. 2 ASD	SLUDGE PUMP NO. 2	2"C, 3-#4, 2-#12, 1-#8 GND.	
SLPMP303-P	SLUDGE PUMP NO. 3 FEEDER	SLUDGE PUMP NO. 3 ASD	SLUDGE PUMP NO. 3	2"C, 3-#4, 2-#12, 1-#8 GND.	
SLPMP403-P	SLUDGE PUMP NO. 4 FEEDER	SLUDGE PUMP NO. 4 ASD	SLUDGE PUMP NO. 4	2"C EMPTY CONDUIT	
SLP1-COM	SLUDGE PUMP NO. 1 ASD COMMUNICATION	"PLC-DW"	SLUDGE PUMP NO. 1 ASD	1"C, W/ 1-CAT 6	
SLP2-COM	SLUDGE PUMP NO. 2 ASD COMMUNICATION	"PLC-DW"	SLUDGE PUMP NO. 2 ASD	1"C, W/ 1-CAT 6	
SLP3-COM	SLUDGE PUMP NO. 3 ASD COMMUNICATION	"PLC-DW"	SLUDGE PUMP NO. 3 ASD	1"C, W/ 1-CAT 6	
SLP4-COM	SLUDGE PUMP NO. 4 ASD COMMUNICATION	"PLC-DW"	SLUDGE PUMP NO. 4 ASD	1"C EMPTY CONDUIT	
SLP1-S	SLUDGE PUMP NO. 1 ASD STATUS	"PLC-DW"	SLUDGE PUMP NO. 1 ASD	1 1/2"C, W/ 3-#16 TSP, 20-#14, #12 GND	
SLP2-S	SLUDGE PUMP NO. 2 ASD STATUS	"PLC-DW"	SLUDGE PUMP NO. 2 ASD	1 1/2"C, W/ 3-#16 TSP, 20-#14, #12 GND	
SLP3-S	SLUDGE PUMP NO. 3 ASD STATUS	"PLC-DW"	SLUDGE PUMP NO. 3 ASD	1 1/2"C, W/ 3-#16 TSP, 20-#14, #12 GND	
SLP4-S	SLUDGE PUMP NO. 4 ASD STATUS	"PLC-DW"	SLUDGE PUMP NO. 4 ASD	1 1/2"C EMPTY CONDUIT	
SLPMP103-C	SLUDGE PUMP NO. 1 LCP CONTROLS	SLUDGE PUMP NO.1 ASD	SLUDGE PUMP NO. 1 LCP	1 1/2"C, W/ 16-#14, #12 GND	
SLPMP103-A	SLUDGE PUMP NO. 1 LCP CONTROLS	SLUDGE PUMP NO.1 ASD	SLUDGE PUMP NO. 1 LCP	1"C, W/ 2-#16 TSP, #12 GND	
SLPMP203-C	SLUDGE PUMP NO. 2 LCP CONTROLS	SLUDGE PUMP NO.2 ASD	SLUDGE PUMP NO. 2 LCP	1 1/2"C, W/ 16-#14, #12 GND	
SLPMP203-A	SLUDGE PUMP NO. 2 LCP CONTROLS	SLUDGE PUMP NO.2 ASD	SLUDGE PUMP NO. 2 LCP	1"C, W/ 2-#16 TSP, #12 GND	
SLPMP303-C	SLUDGE PUMP NO. 3 LCP CONTROLS	SLUDGE PUMP NO.3 ASD	SLUDGE PUMP NO. 3 LCP	1 1/2"C, W/ 16-#14, #12 GND	
SLPMP303-A	SLUDGE PUMP NO. 3 LCP CONTROLS	SLUDGE PUMP NO.3 ASD	SLUDGE PUMP NO. 3 LCP	1"C, W/ 2-#16 TSP, #12 GND	
SLPMP403-C	SLUDGE PUMP NO. 4 LCP CONTROLS	SLUDGE PUMP NO.4 ASD	SLUDGE PUMP NO. 4 LCP	1 1/2"C EMPTY CONDUIT	
SLPMP403-A	SLUDGE PUMP NO. 4 LCP CONTROLS	SLUDGE PUMP NO.4 ASD	SLUDGE PUMP NO. 4 LCP	1"C EMPTY CONDUIT	
SLPMP103-C1	SLUDGE PUMP NO. 1 INSTRUMENTS	SLUDGE PUMP NO. 1 LCP	SLUDGE PUMP NO. 1 HIGH PRESSURE SWITCH	3/4"C, W/ 4-#14, #12 GND	
SLPMP103-C2	SLUDGE PUMP NO. 1 INSTRUMENTS	SLUDGE PUMP NO. 1 LCP	SLUDGE PUMP NO. 1 LOW PRESSURE SWITCH	3/4"C, W/ 4-#14, #12 GND	
SLPMP103-A1	SLUDGE PUMP NO. 1 INSTRUMENTS	SLUDGE PUMP NO. 1 LCP	SLUDGE PUMP NO. 1 SENSORS	3/4"C, W/ 2-#16 TSP, #12 GND	
SLPMP203-C1	SLUDGE PUMP NO. 2 INSTRUMENTS	SLUDGE PUMP NO. 2 LCP	SLUDGE PUMP NO. 2 HIGH PRESSURE SWITCH	3/4"C, W/ 4-#14, #12 GND	
SLPMP203-C2	SLUDGE PUMP NO. 2 INSTRUMENTS	SLUDGE PUMP NO. 2 LCP	SLUDGE PUMP NO. 2 LOW PRESSURE SWITCH	3/4"C, W/ 4-#14, #12 GND	
SLPMP203-A1	SLUDGE PUMP NO. 2 INSTRUMENTS	SLUDGE PUMP NO. 2 LCP	SLUDGE PUMP NO. 2 SENSORS	3/4"C, W/ 2-#16 TSP, #12 GND	
SLPMP303-C1	SLUDGE PUMP NO. 3 INSTRUMENTS	SLUDGE PUMP NO. 3 LCP	SLUDGE PUMP NO. 3 HIGH PRESSURE SWITCH	3/4"C, W/ 4-#14, #12 GND	
SLPMP303-C2	SLUDGE PUMP NO. 3 INSTRUMENTS	SLUDGE PUMP NO. 3 LCP	SLUDGE PUMP NO. 3 LOW PRESSURE SWITCH	3/4"C, W/ 4-#14, #12 GND	
SLPMP303-A1	SLUDGE PUMP NO. 3 INSTRUMENTS	SLUDGE PUMP NO. 3 LCP	SLUDGE PUMP NO. 3 SENSORS	3/4"C, W/ 2-#16 TSP, #12 GND	
SLPMP403-C1	SLUDGE PUMP NO. 4 INSTRUMENTS	SLUDGE PUMP NO. 4 LCP	SLUDGE PUMP NO. 4 HIGH PRESSURE SWITCH	3/4"C EMPTY CONDUIT	
SLPMP403-C2	SLUDGE PUMP NO. 4 INSTRUMENTS	SLUDGE PUMP NO. 4 LCP	SLUDGE PUMP NO. 4 LOW PRESSURE SWITCH	3/4"C EMPTY CONDUIT	
SLPMP403-A1	SLUDGE PUMP NO. 4 INSTRUMENTS	SLUDGE PUMP NO. 4 LCP	SLUDGE PUMP NO. 4 SENSORS	3/4"C EMPTY CONDUIT	
FIT103-A	SLUDGE PUMP NO. 1 FLOW METER	"PLC-DW"	SLUDGE PUMP NO. 1 FLOW TRANSMITTER	1"C, W/ 1-#16 TSP, #12 GND	
FIT203-A	SLUDGE PUMP NO. 2 FLOW METER	"PLC-DW"	SLUDGE PUMP NO. 2 FLOW TRANSMITTER	1"C, W/ 1-#16 TSP, #12 GND	
FIT303-A	SLUDGE PUMP NO. 3 FLOW METER	"PLC-DW"	SLUDGE PUMP NO. 3 FLOW TRANSMITTER	1"C, W/ 1-#16 TSP, #12 GND	
FIT403-A	SLUDGE PUMP NO. 4 FLOW METER	"PLC-DW"	SLUDGE PUMP NO. 4 FLOW TRANSMITTER	1"C EMPTY CONDUIT	
SLGR-CP-P	SLUDGE GRINDER CONTROL PANEL POWER	"MCC-DW"	SLUDGE GRINDER CONTROL PANEL	1"C, W/ 3-#10, #12 GND	
SLGR-CP-C	SLUDGE GRINDER CONTROL PANEL COMMUNICATION	"PLC-DW"	SLUDGE GRINDER CONTROL PANEL	1"C, W/ 8-#14, #12 GND	
SLGR-P	SLUDGE GRINDER POWER FEEDER	SLUDGE GRINDER CONTROL PANEL	SLUDGE GRINDER MOTOR	1"C, W/ 3-#10, #12 GND	
SLGR-C	SLUDGE GRINDER CONTROL	SLUDGE GRINDER CONTROL PANEL	SLUDGE GRINDER CONTROL BOX	1"C, W/ 8-#14, #12 GND	

OVERALL CONDUIT & CONDUCTOR SCHEDULE

NTS

NO.	DATE	REVISION	APP.

GENERAL NOTES

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STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
07.01.2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL CONDUIT & CONDUCTOR SCHEDULE SHEET 1

E-604

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
S/S SHAHIDUR RAHMAN, P.E.	
SHEET NO. 216 OF 255	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AND FILED
80341
CITY DRAWING NUMBER

TAG	DESCRIPTION	ROUTING		CONDUIT & WIRE SIZES	REMARKS
		FROM	TO		
CONV-C1	CONVEYOR CONTROL PANEL CONTROLS	"PLC-DW" CABINET	CONVEYOR CONTROL PANEL	2"C, W/ 50-#14, #12 GND	
CONV-C2	CONVEYOR CONTROL PANEL CONTROLS	"PLC-DW" CABINET	CONVEYOR CONTROL PANEL	2"C, W/ 50-#14, #12 GND	
CONV-P	CONVEYOR CONTROL PANEL POWER	"MCC-DW"	CONVEYOR CONTROL PANEL	2"C, W/ 3-#1 AWG, #4 GND	
ICV1-P	INCLINE CONVEYOR 1 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 1 MOTOR	1"C, W/ 3-#12, #12 GND	
ICV1-C	INCLINE CONVEYOR 1 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 1 CONTROL BOX	1"C, W/ 10-#14, 4-#12, #12 GND	
ICV2-P	INCLINE CONVEYOR 2 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 2 MOTOR	1"C, W/ 3-#12, #12 GND	
ICV2-C	INCLINE CONVEYOR 2 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 2 CONTROL BOX	1"C, W/ 10-#14, 4-#12, #12 GND	
ICV3-P	INCLINE CONVEYOR 3 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 3 MOTOR	1"C, W/ 3-#12, #12 GND	
ICV3-C	INCLINE CONVEYOR 3 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 3 CONTROL BOX	1"C, W/ 10-#14, 4-#12, #12 GND	
ICV4-P	INCLINE CONVEYOR 4 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 4 MOTOR	1"C EMPTY CONDUIT	
ICV4-C	INCLINE CONVEYOR 4 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	INCLINE CONVEYOR 4 CONTROL BOX	1"C EMPTY CONDUIT	
HCV1-P	HORIZONTAL CONVEYOR 1 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	HORIZONTAL CONVEYOR 1 MOTOR	1"C, W/ 3-#12, #12 GND	
HCV1-C	HORIZONTAL CONVEYOR 1 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	HORIZONTAL CONVEYOR 1 CONTROL BOX	1"C, W/ 8-#14, #12 GND	
HCV2-P	HORIZONTAL CONVEYOR 2 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	HORIZONTAL CONVEYOR 2 MOTOR	1"C, W/ 3-#12, #12 GND	
HCV2-C	HORIZONTAL CONVEYOR 2 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	HORIZONTAL CONVEYOR 2 CONTROL BOX	1"C, W/ 8-#14, #12 GND	
HCV1-SG1-P	HORIZONTAL CONVEYOR 1 SLIDE GATE NO. 1 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	HCV-1 SLIDE GATE NO. 1 MOTOR	1"C, W/ 3-#10, #12 GND	
HCV1-SG1-C	HORIZONTAL CONVEYOR 1 SLIDE GATE NO. 1 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	HCV-1 SLIDE GATE NO. 1 CONTROL BOX	1"C, W/ 6-#14, #12 GND	
HCV1-SG2-P	HORIZONTAL CONVEYOR 1 SLIDE GATE NO. 2 POWER FEEDER	CONVEYOR SYSTEM CONTROL PANEL	HCV-1 SLIDE GATE NO. 2 MOTOR	1"C, W/ 3-#10, #12 GND	
HCV1-SG2-C	HORIZONTAL CONVEYOR 1 SLIDE GATE NO. 2 CONTROL	CONVEYOR SYSTEM CONTROL PANEL	HCV-1 SLIDE GATE NO. 2 CONTROL BOX	1"C, W/ 6-#14, #12 GND	
CCP101-P	CENTRIFUGE NO. 1 CONTROL PANEL FEEDER	"MCC-DW"	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	2-3"C, EA/ 3-#250 KCMIL, 1-#1 GND.	
CF1-CCP-COM	CENTRIFUGE NO. 1 CONTROL PANEL COMMUNICATION	"PLC-DW"	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	1"C, W/ 1-CAT 6	
BD101-P	CENTRIFUGE NO. 1 BOWL DRIVE FEEDER	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE NO. 1 BOWL DRIVE	1-4"C, 3-250 KCMIL, 1-#2 GND.	
SD101-P	CENTRIFUGE NO. 1 SCROLL DRIVE FEEDER	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE NO. 1 SCROLL DRIVE	2"C, 3-#3, 1-#8 GND.	
CF1-A	CENTRIFUGE NO. 1 ANALOG SIGNALS	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE INSTRUMENTS	1-1/2"C, W/ 5-#16 TSP	FROM J-BOX TO CONTROL PANEL
CF1-C1	CENTRIFUGE NO. 1 CONTROLS AND DISCRETE	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CONTROL DEVICES	1"C, W/ 16-#14, 4-#12, #12 GND	FROM J-BOX TO CONTROL PANEL
CF1-C2	CENTRIFUGE NO. 1 CONTROLS	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE OPERATING PANEL COP-101	1"C, W/ 16-#14, 4-#12, #12 GND	CONTROL SIGNALS
C101-P	CENTRIFUGE NO. 1 OPERATOR PANEL POWER	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE OPERATING PANEL COP-101	1"C, W/ 2-#12, #12 GND	
MOV1-P	CENTRIFUGE NO. 1 WATER VALVE POWER	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE NO. 1 WATER VALVE	1"C, W/ 3-#10, #12 GND	
MOV1-C	CENTRIFUGE NO. 1 WATER VALVE CONTROL	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE NO. 1 WATER VALVE	1"C, W/ 8-#14, #12 GND	
MOV103-P	CENTRIFUGE NO. 1 SLUDGE VALVE POWER	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE NO. 1 SLUDGE VALVE	1"C, W/ 3-#10, #12 GND	
MOV103-C	CENTRIFUGE NO. 1 SLUDGE VALVE CONTROL	CENTRIFUGE NO. 1 CONTROL PANEL CCP-101	CENTRIFUGE NO. 1 SLUDGE VALVE	1"C, W/ 8-#14, #12 GND	
CCP201-P	CENTRIFUGE NO. 2 CONTROL PANEL FEEDER	"MCC-DW"	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	2-3"C, EA/ 3-#250 KCMIL, 1-#1 GND.	
CF2-CCP-COM	CENTRIFUGE NO. 2 CONTROL PANEL COMMUNICATION	"PLC-DW"	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	1"C, W/ 1-CAT 6	
BD201-P	CENTRIFUGE NO. 2 BOWL DRIVE FEEDER	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE NO. 2 BOWL DRIVE	1-4"C, 3-250 KCMIL, 1-#2 GND.	
SD201-P	CENTRIFUGE NO. 2 SCROLL DRIVE FEEDER	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE NO. 2 SCROLL DRIVE	2"C, 3-#3, 1-#8 GND.	
CF2-A	CENTRIFUGE NO. 2 ANALOG SIGNALS	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE INSTRUMENTS	1-1/2"C, W/ 5-#16 TSP	FROM J-BOX TO CONTROL PANEL
CF2-C1	CENTRIFUGE NO. 2 CONTROLS AND DISCRETE	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CONTROL DEVICES	1"C, W/ 16-#14, 4-#12, #12 GND	FROM J-BOX TO CONTROL PANEL
CF2-C2	CENTRIFUGE NO. 2 CONTROLS	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE OPERATING PANEL COP-201	1"C, W/ 16-#14, 4-#12, #12 GND	CONTROL SIGNALS
C201-P	CENTRIFUGE NO. 2 OPERATOR PANEL POWER	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE OPERATING PANEL COP-201	1"C, W/ 2-#12, #12 GND	
MOV2-P	CENTRIFUGE NO. 2 WATER VALVE POWER	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE NO. 2 WATER VALVE	1"C, W/ 3-#10, #12 GND	
MOV2-C	CENTRIFUGE NO. 2 WATER VALVE CONTROL	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE NO. 2 WATER VALVE	1"C, W/ 8-#14, #12 GND	
MOV203-P	CENTRIFUGE NO. 2 SLUDGE VALVE POWER	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE NO. 2 SLUDGE VALVE	1"C, W/ 3-#10, #12 GND	
MOV203-C	CENTRIFUGE NO. 2 SLUDGE VALVE CONTROL	CENTRIFUGE NO. 2 CONTROL PANEL CCP-201	CENTRIFUGE NO. 2 SLUDGE VALVE	1"C, W/ 8-#14, #12 GND	
CCP301-P	CENTRIFUGE NO. 3 CONTROL PANEL FEEDER	"MCC-DW"	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	2-3"C, EA/ 3-#250 KCMIL, 1-#1 GND.	
CF3-COP-COM	CENTRIFUGE NO. 3 CONTROL PANEL COMMUNICATION	"PLC-DW"	CENTRIFUGE 3 CONTROL PANEL CCP-301	1"C, W/ 1-CAT 6	
BD301-P	CENTRIFUGE NO. 3 BOWL DRIVE FEEDER	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE NO. 3 BOWL DRIVE	1-4"C, 3-250 KCMIL, 1-#2 GND.	
SD301-P	CENTRIFUGE NO. 3 SCROLL DRIVE FEEDER	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE NO. 3 SCROLL DRIVE	2"C, 3-#3, 1-#8 GND.	
CF3-A	CENTRIFUGE NO. 3 ANALOG SIGNALS	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE INSTRUMENTS	1-1/2"C, W/ 5-#16 TSP	FROM J-BOX TO CONTROL PANEL
CF3-C1	CENTRIFUGE NO. 3 CONTROLS AND DISCRETE	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CONTROL DEVICES	1"C, W/ 16-#14, 4-#12, #12 GND	FROM J-BOX TO CONTROL PANEL
CF3-C2	CENTRIFUGE NO. 3 CONTROLS	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE OPERATING PANEL COP-301	1"C, W/ 16-#14, 4-#12, #12 GND	CONTROL SIGNALS
C301-P	CENTRIFUGE NO. 3 OPERATOR PANEL POWER	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE OPERATING PANEL COP-301	1"C, W/ 2-#12, #12 GND	
MOV3-P	CENTRIFUGE NO. 3 WATER VALVE POWER	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE NO. 3 WATER VALVE	1"C, W/ 3-#10, #12 GND	
MOV3-C	CENTRIFUGE NO. 3 WATER VALVE CONTROL	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE NO. 3 WATER VALVE	1"C, W/ 8-#14, #12 GND	
MOV303-P	CENTRIFUGE NO. 3 SLUDGE VALVE POWER	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE NO. 3 SLUDGE VALVE	1"C, W/ 3-#10, #12 GND	
MOV303-C	CENTRIFUGE NO. 3 SLUDGE VALVE CONTROL	CENTRIFUGE NO. 3 CONTROL PANEL CCP-301	CENTRIFUGE NO. 3 SLUDGE VALVE	1"C, W/ 8-#14, #12 GND	
CCP401-P	CENTRIFUGE NO. 4 OPERATING PANEL FEEDER	"MCC-DW"	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	2-3"C EMPTY CONDUITS	
CF4-COP-COM	CENTRIFUGE NO. 4 CONTROL PANEL COMMUNICATION	"PLC-DW"	CENTRIFUGE 4 CONTROL PANEL CCP-401	1"C EMPTY CONDUIT	
BD401-P	CENTRIFUGE NO. 4 BOWL DRIVE FEEDER	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE NO. 4 BOWL DRIVE	1-4"C EMPTY CONDUIT	
SD401-P	CENTRIFUGE NO. 4 SCROLL DRIVE FEEDER	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE NO. 4 SCROLL DRIVE	2"C EMPTY CONDUIT	
CF4-A	CENTRIFUGE NO. 4 ANALOG SIGNALS	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE INSTRUMENTS	1-1/2"C EMPTY CONDUIT	FROM J-BOX TO CONTROL PANEL
CF4-C1	CENTRIFUGE NO. 4 CONTROLS AND DISCRETE	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CONTROL DEVICES	1"C EMPTY CONDUIT	FROM J-BOX TO CONTROL PANEL
CF4-C2	CENTRIFUGE NO. 4 CONTROLS	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE OPERATING PANEL COP-401	1"C EMPTY CONDUIT	CONTROL SIGNALS
C401-P	CENTRIFUGE NO. 4 OPERATOR PANEL POWER	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE OPERATING PANEL COP-401	1"C, W/ 2-#12, #12 GND	
MOV4-P	CENTRIFUGE NO. 4 WATER VALVE POWER	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE NO. 4 WATER VALVE	1"C EMPTY CONDUIT	
MOV4-C	CENTRIFUGE NO. 4 WATER VALVE CONTROL	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE NO. 4 WATER VALVE	1"C EMPTY CONDUIT	
MOV403-P	CENTRIFUGE NO. 4 SLUDGE VALVE POWER	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE NO. 4 SLUDGE VALVE	1"C, W/ 3-#10, #12 GND	
MOV403-C	CENTRIFUGE NO. 4 SLUDGE VALVE CONTROL	CENTRIFUGE NO. 4 CONTROL PANEL CCP-401	CENTRIFUGE NO. 4 SLUDGE VALVE	1"C, W/ 8-#14, #12 GND	
DW-EW	EYEWASH ALARM	"PLC-DW"	EYEWASH FLOW ALARM SWITCH	1"C, W/ 4-#14, #12 GND	
SL-DW-1	DEWATERTING POWER PULL BOX SITE LIGHTING FEEDER	480V PANELBOARD H-DW	POWER PULL BOX	1"C, 2-#10, #10 GND.	
SP-DW-1	SPARE NO. 1 TO DEWATERING POWER PULL BOX FEEDER	480V PANELBOARD H-DW	POWER PULL BOX	1"C, W/ PULL STRING.	
SP-DW-2	SPARE NO. 2 TO DEWATERING POWER PULL BOX FEEDER	240V PANELBOARD L-DW	POWER PULL BOX	1"C, W/ PULL STRING.	
SP-DW-3	SPARE NO. 3 TO PASSED HVAC AND CAPPED	"MCC-DW"	PASSED HVAC COND. UNIT	CAPPED 1"C, W/ PULL STRING.	
SP-DW-4	SPARE NO. 4 TO PASSED HVAC AND CAPPED	"MCC-DW"	PASSED HVAC COND. UNIT	CAPPED 1"C, W/ PULL STRING.	
SP-DW-5	SPARE NO. 5 TO PASSED HVAC AND CAPPED	"MCC-DW"	PASSED HVAC COND. UNIT	CAPPED 1"C, W/ PULL STRING.	
SP-DW-6	SPARE NO. 6 TO PASSED HVAC AND CAPPED	"MCC-DW"	PASSED HVAC COND. UNIT	CAPPED 1"C, W/ PULL STRING.	

OVERALL CONDUIT & CONDUCTOR SCHEDULE

NTS

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
05.01.2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

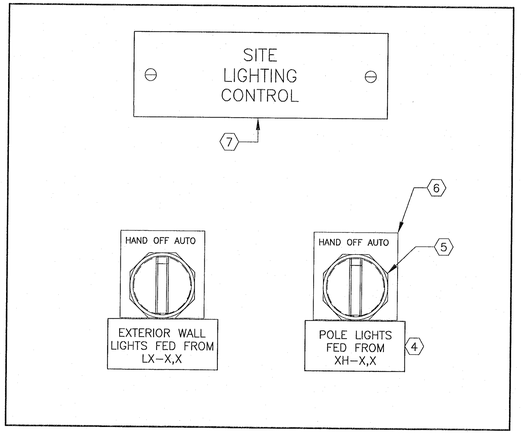
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL CONDUIT & CONDUCTOR SCHEDULE SHEET 2

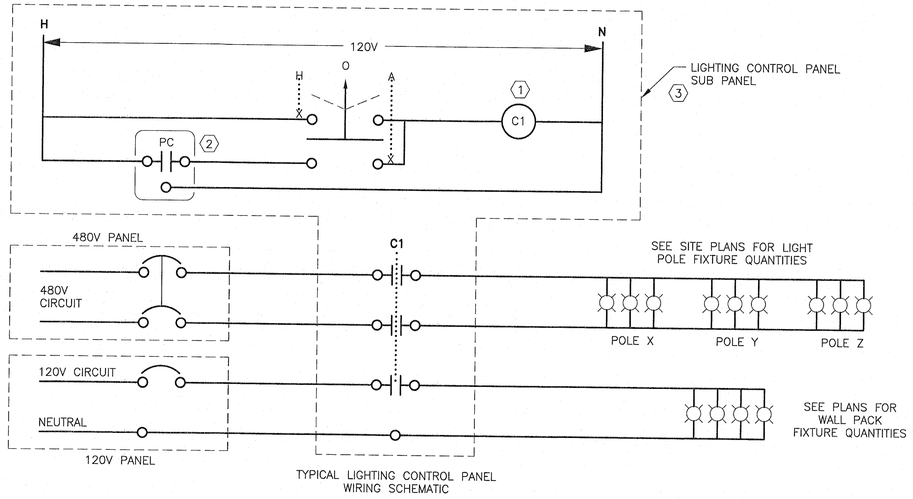
E-605

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 217 OF 255	

ACCEPTED AS NOTED AND EXCEPTED
80341
CITY DRAWING CONTROL
HOUSTON, TEXAS



TYPICAL LIGHTING CONTROL PANEL
FRONT



TYPICAL LIGHTING CONTROL PANEL
WIRING SCHEMATIC

NOTES:

1. PROVIDE EATON "CN35 SERIES" (OR EQUAL) ELECTRICALLY HELD LIGHTING CONTACTOR, WITH MINIMUM OF TWO SPARE CONTACTS PER CONTRACTOR.
2. PROVIDE PHOTOCELL 4' MINIMUM ABOVE ROOF LINE LOCATED WITH NORTHERN EXPOSURE AND PROVEN FUNCTIONAL FOR SUNSET TO SUNRISE OPERATION.
3. INSTALL COMPONENTS ON SUB PANEL, PROVIDE FIELD WIRING AND RAIL MOUNTED TERMINAL BLOCKS (30A MIN.). ALL CONDUCTORS TO/FROM CONTROL PANEL SHALL PASS THROUGH TERMINAL BLOCKS BEFORE CONNECTION TO DEVICE WITHIN THE PANEL. PANEL WIRING SHOP DRAWING SHALL BE SUBMITTED FOR ENGINEER APPROVAL AND A PERMANENT COPY OF APPROVED DRAWING SHALL BE PROVIDE IN POCKET INSIDE ON PANEL DOOR.
4. PHENOLIC THREE LAYER NAMEPLATE WITH 3/16" BLACK LETTERS ON WHITE BACKGROUND, INDICATE CIRCUIT NUMBERS FOR EACH CIRCUIT. SEE PANEL SCHEDULES FOR RELATED CIRCUITS.
5. 3 POSITION SELECTOR SWITCH WITH SEALED MAINTAINED CONTACTS.
6. FACTORY LEGEND PLATE WITH 3/16" BLACK TEXT ON WHITE LABELED AS SHOWN.
7. PHENOLIC THREE LAYER NAMEPLATE WITH 3/8" BLACK LETTERS ON WHITE BACKGROUND.

THE ADMINISTRATION BUILDING AND THE DEWATERING BUILDING HAVE VERY DIFFERENT LIGHT FIXTURE REQUIREMENTS.

IT IS RECOMMENDED THE LIGHT FIXTURE SHOP DRAWING COORDINATION START EARLY IN THE PROJECT. ADMINISTRATION BUILDING LIGHT FIXTURES REQUIRE ARCHITECTURAL ACCEPTANCE.

LIGHT FIXTURE SCHEDULE

TYPE	BRAND / CATALOG NUMBER	DESCRIPTION	LAMPS	INPUT VOLTAGE	INPUT WATTS	REMARKS
T1	LUMENWORX / VEGR-24-MTO-HLO-LED-80-4000-35-UNV-LTEA2W-1	2X4 LAY-IN TROFFER	LED	277	48	INSTALL PER REFLECTED CEILING PLAN. NL FIXTURES SHALL BE PROVIDED BATTERY BACKUP (EB) OPTION
T2	LUMENWORX / VIA4PDI-HLO-0.5D-WIO-LED-80-500-500-35-8FT -UNV-LTEA2W-155WSW18	96" LINEAR PENDANT OFFICE FIXTURE	LED	277	74	INSTALL PER REFLECTED CEILING PLAN. NL FIXTURES SHALL BE PROVIDED BATTERY BACKUP (EB) OPTION
T3	DECO / D952-M-40-35-U-D-PR-C16-W	ROUND PENDANT BAY FIXTURE	LED	277	40	INSTALL PER REFLECTED CEILING PLAN. COORDINATE ACCESSORIES WITH ARCHITECT. NL FIXTURE SHALL BE PROVIDED BATTERY BACKUP
T4	LUMENWORX / V3PERL-HLO-LED-80-750-35-4FT-UNV-LTEA2W-1-DTR-W	LINEAR PERIMETER	LED	277	31	INSTALL (2) 4' FIXTURES PER RESTROOM SOFFIT
T5	VOILA / VO2SR-CP-ADJ-UNV-7W-VO2-SW-90-2-CRI80 -35-LS-VO2SR-SDL-SR-TWM-TRM-TMW	5" SQUARE DOWN LIGHT	LED	MV	7	INSTALL PER REFLECTED CEILING PLAN. NL FIXTURES SHALL BE PROVIDED BATTERY BACKUP
T6	VOILA / VO2SR-CP-ADJ-UNV-7W-VO2-SW-30-2-CRI80 -35-LS-VO2SR-SDL-SR-TWM-TRM-TMW	5" SQUARE DOWN LIGHT, SHOWER AND OUTDOOR ENTRY	LED	277	7	INSTALL PER REFLECTED CEILING PLAN. NL FIXTURES SHALL BE PROVIDED BATTERY BACKUP
T7	LUMENWORX / VIAWETR-TMG-HLO-LED-80-750 -35-4FT-UNV-1-EF-TRM-W	4' RECESS LINEAR	LED	277	34	INSTALL PER REFLECTED CEILING PLAN
EX	HUBBELL DUAL LITE / LE-C&W-S&D-AS REQUIRED-W-E-I	EDGE LIT EMERGENCY EXIT SIGN	LED	277	5	INSTALL PER REFLECTED CEILING PLAN, COORDINATE OPTIONS WITH LOCATION REQUIREMENTS
UL	LITHONIA / CLX-L48-7000LM-HEF-WDL-MVOLT- GZ10-50K-80CRI-WH	WHITE LINEAR 48" LED FIXTURE WITH WIDE DIFFUSE LENS AND HIGH EFFICIENCY PACKAGE	LED	277	45	INSTALL SUSPENDED FIXTURE ROWS ON CONTINUOUS TYPE 316 S.S. 1⅝" X 1⅝" STRUT SUSPENDED BY ¼" TYPE 316 S.S. THREADED RODS. SINGLE FIXTURES TO BE INSTALLED SIMILAR TO THAT DESCRIBED FOR FIXTURE ROWS.
S1	TECH LIGHTING / 7000BTUR-830-42-40-C-B-UNV	42" TALL BOLLARD LIGHT	LED	277	26	COORDINATE WITH ARCHITECTURAL AND INSTALL PER LOCATIONS ON DRAWING 1A-105
W1	LITHONIA / TWX1 LED-P1-40K-MVOLT-DDBXD	WALL PACK	LED	277	22	INSTALL PER ELECTRICAL LIGHTING PLAN
A	LITHONIA CLX-L48-7000LM-HEF-WDL-MVOLT- GZ10-50K-80CRI-WH	WHITE LINEAR 48" LED FIXTURE WITH WIDE DIFFUSE LENS AND HIGH EFFICIENCY PACKAGE	LED	120	45	INSTALL SUSPENDED FIXTURE ROWS ON CONTINUOUS TYPE 316 S.S. 1⅝" X 1⅝" STRUT SUSPENDED BY ¼" TYPE 316 S.S. THREADED RODS. SINGLE FIXTURES TO BE INSTALLED SIMILAR TO THAT DESCRIBED FOR FIXTURE ROWS.
B	LITHONIA WST-LED-P3-50K-VF-MVOLT-DDBXD	DARK BRONZE ALUMINUM WALL PACK LED FIXTURE	LED	120	40	INSTALL FIXTURE WITH TOP AT ONE FOOT BELOW ROOF.
BE	LITHONIA WST-LED-P3-50K-VF-MVOLT-E20WC-DDBXD	DARK BRONZE ALUMINUM WALL PACK LED FIXTURE WITH 90 MINUTE EMERGENCY BATTERY PACK.	LED	120	50	INSTALL FIXTURE WITH TOP AT ONE FOOT BELOW ROOF.
C	LITHONIA ELT24-W-MT-H-A268 WITH ELAMSTS MOUNTING SHELF	EMERGENCY FIXTURE WITH TWO HEADS AND SEALED LEAD ACID 90 MINUTE BATTERY.	HALOGEN	120	20	INSTALL FIXTURE WITH BOTTOM OF FIXTURE AT 10'-0" ABOVE THE FLOOR. ADD A CORD WITH PLUG TO THE FIXTURE AND PLUG THE CORD INTO A RECEPTACLE MOUNTED TO THE SIDE OF THE FIXTURE.
D	LITHONIA JHBL-24000LM-GL-WD-MVOLT-GZ10-50K-80CRI -CS89-DWHXD WITH ACCESSORIES JHBLSCK84 AND HKM	WHITE CAST ALUMINUM HIGH BAY LED FIXTURE WITH GLASS LENS, A HOOK FOR MOUNTING FROM AN EYEBOLT, A 84" SAFETY CABLE AND A 72" CORD FOR CONNECTION TO A JUNCTION BOX.	LED	MV	185	PROVIDE TYPE 316 S.S. STRUT TO MOUNT A TYPE 316 S.S. EYEBOLT AT THE DIMENSIONED LOCATION INDICATED ON PROJECT DRAWINGS. INSTALL SAFETY CABLE TO SECURE FIXTURE. CONNECT FIXTURE POWER CORD TO A JUNCTION BOX NEAR THE FIXTURE.
E	LITHONIA FEM-L48-6000LM-IMAFL-WD-MVOLT-GZ10- 40K-80CRI-SPD-STSL-WLF	WET LOCATION 52" LED FIXTURE WITH FIBERGLASS HOUSING, ACRYLIC LENS, AND STAINLESS STEEL LENS LATCHES.	LED	120	45	INSTALL EACH FIXTURE ON TYPE 316 S.S. 1⅝" X 1⅝" STRUT SUSPENDED BY ¼" TYPE 316 S.S. THREADED ROD. INSTALL BOTTOM OF FIXTURES AT 10' ABOVE THE FLOOR.
X	LITHONIA LQM-S-W-3-R-120/277-ELN	WHITE LED EXIT SIGN FIXTURE IN A THERMOPLASTIC HOUSING WITH RED LETTERS AND NICKEL CADMIUM BATTERY	LED	120	1	INSTALL FIXTURE AS SHOWN.

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STATE OF TEXAS
Z.M. SIDDIQUI
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REGISTERED PROFESSIONAL ENGINEER

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

OVERALL FIXTURE SCHEDULE AND CONTROL DIAGRAM E-701

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 218 OF 255	

PUBLIC WORKS AND ENGINEERING
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80341
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HOUSTON, TEXAS

NOTES:

1. SCADA EQUIPMENT, LOCATED IN THE EXISTING CONTROL BUILDING, WILL BE SOME OF THE LAST EQUIPMENT TO BE REMOVED FROM THE EXISTING CONTROL BUILDING, THE CONTRACTOR SHALL PROVIDE A TEMPORARY FIBER CONNECTION FROM THE EXISTING OPERATIONS BUILDING TO THE PROPOSED ADMINISTRATION BUILDING CONTROL ROOM TO BEGIN TESTING AND TRANSFER OF NETWORK CONNECTIONS, TO EQUIPMENT IN THE PROPOSED ADMINISTRATION BUILDING.
2. NEW MEDIUM VOLTAGE FEEDER DUCT BANKS SHALL BE INSTALLED EARLY IN THE PROJECT.
3. EXISTING MANHOLES AND DUCT BANKS ARE TO BE UTILIZED FOR PROPOSED MEDIUM VOLTAGE FEEDERS. THE CONTRACTOR SHALL INVESTIGATE AND CLEAN THE MANHOLES AND DUCTS. PROVIDE A PLAN FOR CABLE INSTALLATION, TESTING, TERMINATION AND OUTAGE.
4. THE EXISTING GATE OPERATORS MAY REQUIRE TEMPORARY POWER FOR CONTINUOUS OPERATION THROUGH THE PROJECT. TEMPORARY POWER MAY BE PROVIDED OUT OF THE SHOP BUILDING LOW VOLTAGE PANEL. ANY TEMPORARY REQUIRED SHALL BE PROVIDED UNTIL THE PROPOSED ADMINISTRATION FACILITY POWER IS IN SERVICE.

NOTES:

5. THE EXISTING PHONE/CABLE SERVICE ROUTE IS NOT KNOWN, THE CONTRACTOR SHALL PROVIDE DUCT BANK AND PULL ROPE FOR PROPOSED SCADA AND DATA SERVICES. INVESTIGATE EARLY IN THE PROJECT TO LOCATE BOXES AND SERVICE OUTLETS FOR PROPOSED SERVICES COORDINATION.
6. COORDINATE SITE/SECURITY LIGHT POLE INSTALLATION LOCATIONS. PROVIDE POLE IN ACCORDANCE WITH DRAWING E-004 DETAILS.
7. SAW CUT ROAD FOR DUCT BANK INSTALLATION. COORDINATE WITH OTHER TRADES TO ENSURE CONCRETE REPAIR IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS.
8. THREE TYPE S1 BOLLARD FIXTURES, SEE ARCHITECTURAL DRAWINGS FOR LOCATION **COORDINATION**
9. SEE E-603 FOR FIRE PUMP SYSTEM DATA AND CONDUIT AND CONDUCTOR SCHEDULE FOR OTHER REQUIREMENTS.

GENERAL NOTES:

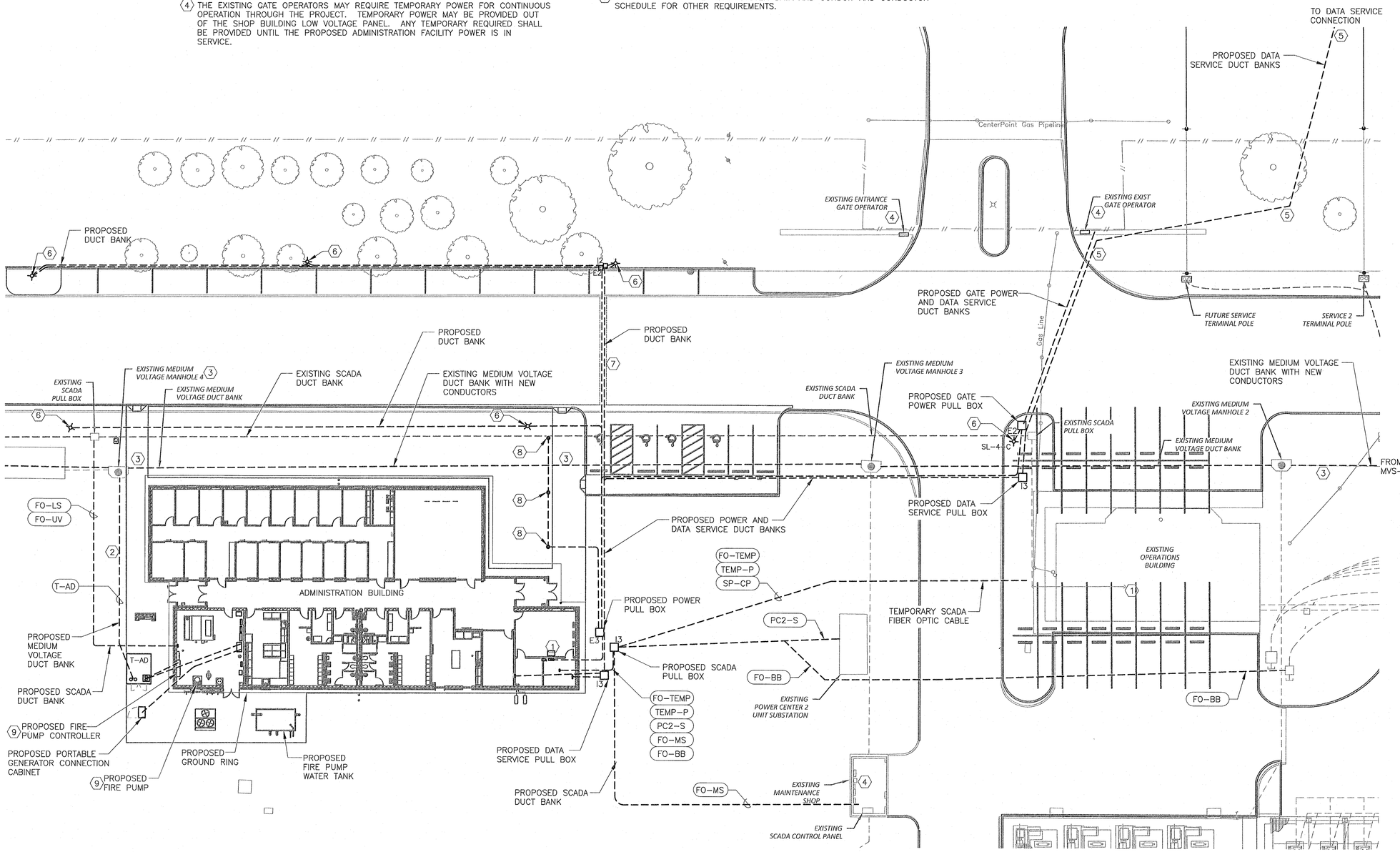
A. THIS DRAWING IS PROVIDED TO ILLUSTRATE ELECTRICAL SITE WORK IN THE PROPOSED ADMINISTRATION BUILDING AREA.

B. SEE ARCHITECTURAL, HVAC, PLUMBING SECURITY AND IT DRAWINGS FOR MORE EQUIPMENT ELECTRICAL REQUIREMENTS INFORMATION.

N

0' 10' 20' 40'

SCALE: 1"=20'



ADMINISTRATION AREA SITE PLAN

1"= 20'-0"

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LICENSED
PROFESSIONAL ENGINEER
07.01.2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION AREA SITE PLAN 1E-101

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DRAWING SCALE	
CITY OF HOUSTON PM	
S/E SHAHIDUR RAHMAN, P.E.	
SHEET NO. 219 OF 255	

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CITY OF HOUSTON, TEXAS

NOTES:

1. 4/0 COPPER GROUND RING AT 24" MINIMUM BELOW GRADE.
2. 3/4"X20' GROUND ROD WITH EXOTHERMIC CONNECTIONS TO GROUND RING.
3. EXOTHERMICALLY WELDED CONNECTION, SEE SPECIFICATIONS FOR REQUIREMENTS.
4. PROVIDE A 4/0 COPPER GROUNDING CONDUCTOR, TO DP–A EQUIPMENT GROUND BAR AND ENCLOSURE STRUCTURE FRAME.
5. PROVIDE A #2 COPPER GROUNDING CONDUCTOR, TO EACH 480V FED MISCELLANEOUS EQUIPMENT ENCLOSURE.
6. PROVIDE ONE, 1 1/2" SCH–40 PVC CONDUIT, FROM 12" BELOW TOP OF WALL TO GROUND RING FOR LIGHTNING PROTECTION DOWN LEAD AT EACH CORNER OF THE BUILDING AND IN THE CENTER OF THE LONG SIDES AS INDICATED.
7. PROVIDE UFFER GROUND IN SLAB OF BUILDING.
8. PROVIDE GROUND TO BUILDING STEEL STRUCTURE.
9. ROUTE CONDUIT IN SLAB AND STUB UP IN WALL. LOCATE JUNCTION BOX 12 INCHES ABOVE CEILING.

NOTES CONT:

10. ROUTE DATA CABLE CONDUITS UNDER SLAB, MAINTAIN SPACE BETWEEN CONDUITS FOR CONNECTORS. STUB CONDUITS UP TO SIX INCHES ABOVE TOP OF WALL.
11. SPARE CONDUIT ACROSS HALL WITH JUNCTION BOX MOUNTED ABOVE 6 INCHES CEILING TO THE BOTTOM.
12. TRANSFORMER T–LA2 IS TO BE INSTALLED IN THE CEILING SPACE. ROUTE CONDUIT UP TO ABOVE THE CEILING AND ROUTE BARE COPPER TO THE GROUND LUG OF THE TRANSFORMER ENCLOSURE.
13. COORDINATE WITH FIRE PROTECTION SYSTEM TO PROVIDE UNDER SLAB CONDUIT FOR THE FIRE PUMP WATER STORAGE SYSTEM.
14. COORDINATE WITH HVAC SYSTEM PROVIDER TO INSTALL UNDER SLAB CONDUIT FOR THE SYSTEM POWER AND CONTROLS.
15. COORDINATE WITH SECURITY AND DATA COMM TO INSTALL CONCEALED CONDUIT FOR THE CARD READER PEDESTAL.
16. PROVIDE FIRE PUMP FEEDER FROM TRANSFORMER SECONDARY DIRECTLY TO FIRE PUMP CONTROL PANEL. PROVIDE RISER CONDUIT PROPER FIRE RATED PROTECTION FROM FLOOR TO BOTTOM OF CONTROL PANEL.

GENERAL NOTES:

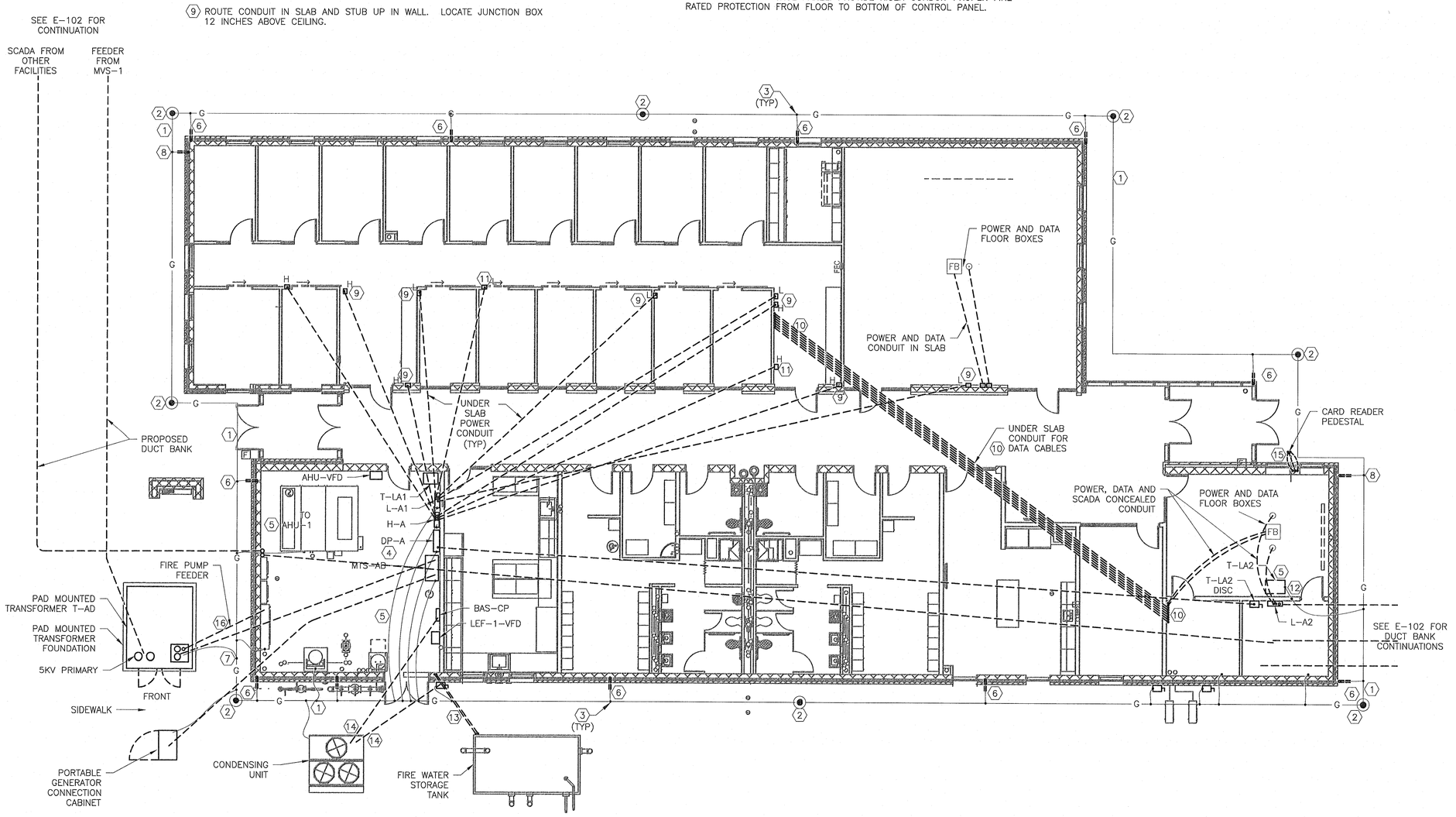
A. THIS DRAWING IS PROVIDED TO ILLUSTRATE THE ADMINISTRATION BUILDING GROUNDING, LIGHTNING PROTECTION AND UNDER SLAB PROVISIONS.

B. CONTRACTOR SHALL COORDINATE AND PROVIDE ENGINEERED LIGHTNING PROTECTION SYSTEM FOR THE ADMINISTRATION BUILDING, SEE SPECIFICATIONS 16675 AND 16170.

C. ELECTRICAL EQUIPMENT, STRUCTURAL STEEL, FOUNDATION REBAR AND LIGHTNING PROTECTION SHALL ALL BE CONNECTED TO THE GROUND RING.

D. NOT ALL CONDUITS REQUIRED ARE DESCRIBED IN THE CONDUIT AND CONDUCTOR SCHEDULE. SEE PANELBOARD SCHEDULES AND OTHER TRADES DRAWINGS FOR COMPLETE CONDUIT REQUIREMENTS. COORDINATE PRIOR TO THE BID TO ENSURE ALL SYSTEMS ARE PROVIDED RACEWAY NEEDED.

1/8" = 1'–0"
4 0 8



ADMINISTRATION UNDERGROUND PLAN
1/8"=1'–0"

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CITY OF HOUSTON
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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION UNDERGROUND PLAN 1E-102

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GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE ELECTRICAL POWER CIRCUITS DISTRIBUTED IN THE ADMINISTRATION BUILDING.

B. SEE ARCHITECTURAL DRAWING 1A–003 FOR COUNTER AND WALL RECEPTACLE HEIGHTS.

C. SUBMIT FINAL FLOOR RECEPTACLE LOCATION DIMENSIONS FOR ARCHITECTURAL AND PROJECT MANAGEMENT ACCEPTANCE.

D. HVAC EQUIPMENT IS ILLUSTRATED FOR LOCATION PURPOSES, SEE PANELBOARD SCHEDULE ON DRAWING 1E–601 FOR ALL CIRCUIT NUMBERS.

F. ALL EXTERIOR CONDUIT SHALL BE RIGID ALUMINUM. EMT MAY BE USED FOR INTERIOR CONDUIT. SEE SPECIFICATION 16111 FOR CONDUIT AND FLEXIBLE CONNECTION REQUIREMENTS.

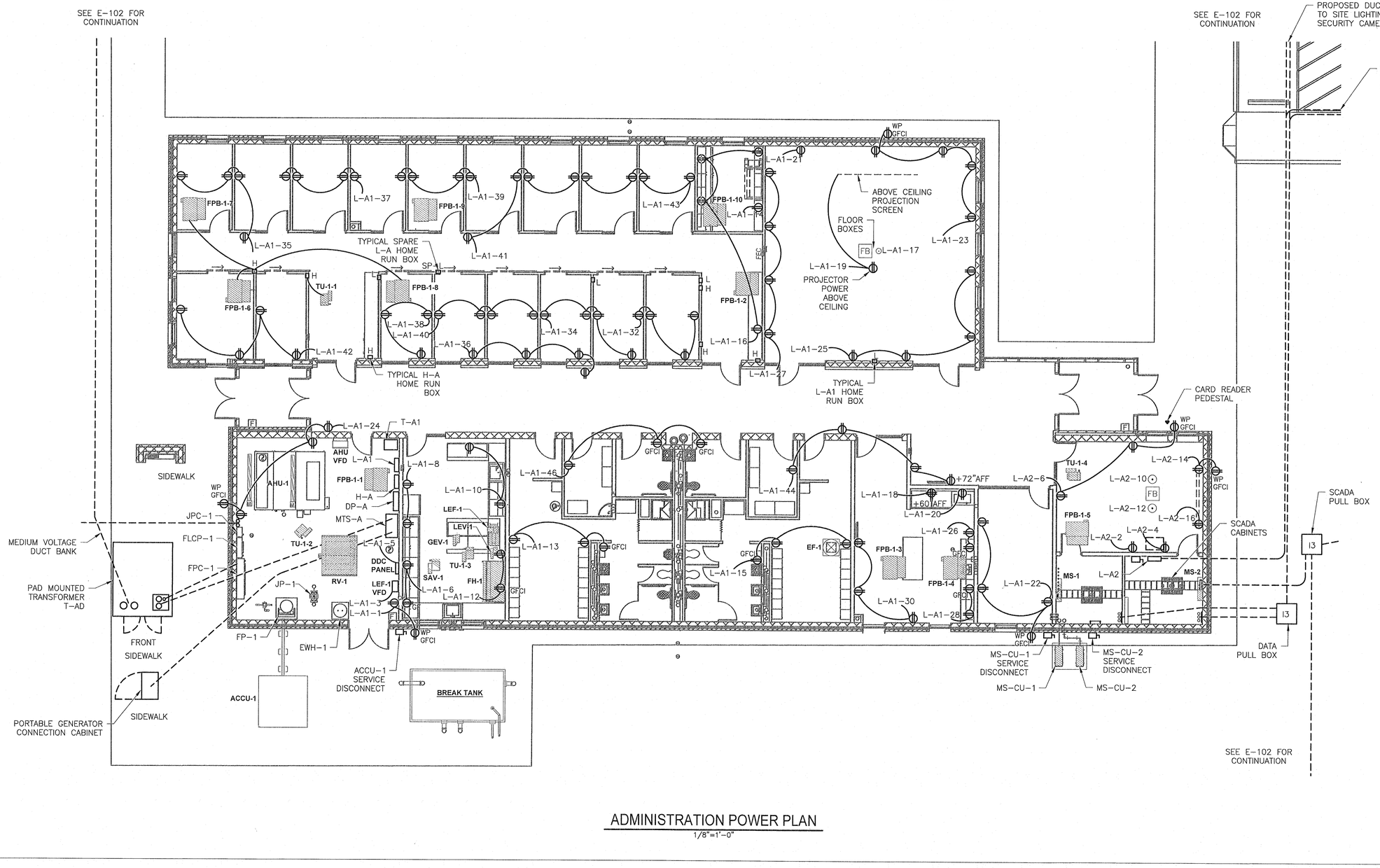
G. LOW VOLTAGE WIRING SHALL NOT BE EXPOSED INSIDE OR OUTSIDE THE ADMINISTRATION BUILDING. ALL LOW VOLTAGE WIRING, OUT OF CEILING SPACE OR WALLS, SHALL BE IN CONDUIT ACCORDING TO DIVISION 16 REQUIREMENTS.

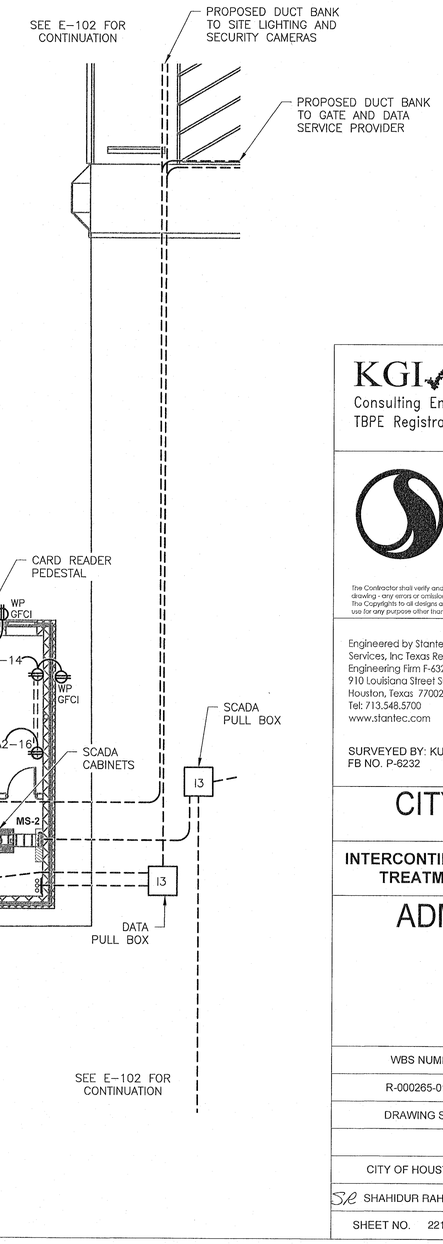
H. SEE UNDERGROUND PLAN, DRAWING E–102, FOR HOME RUN JUNCTION BOX PLAN.

I. PROVIDE IN–USE COVER FOR WP–GFCI RECETACLES.

N

1/8" = 1'–0"
4 0 8





ADMINISTRATION POWER PLAN
1/8"=1'–0"

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION POWER PLAN 1E-103

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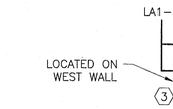
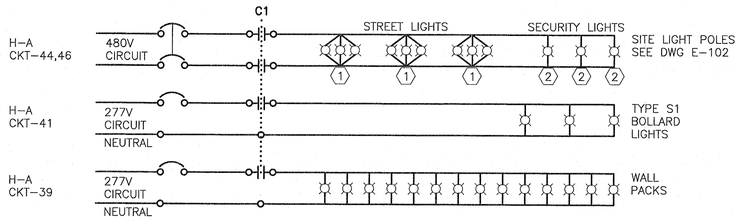
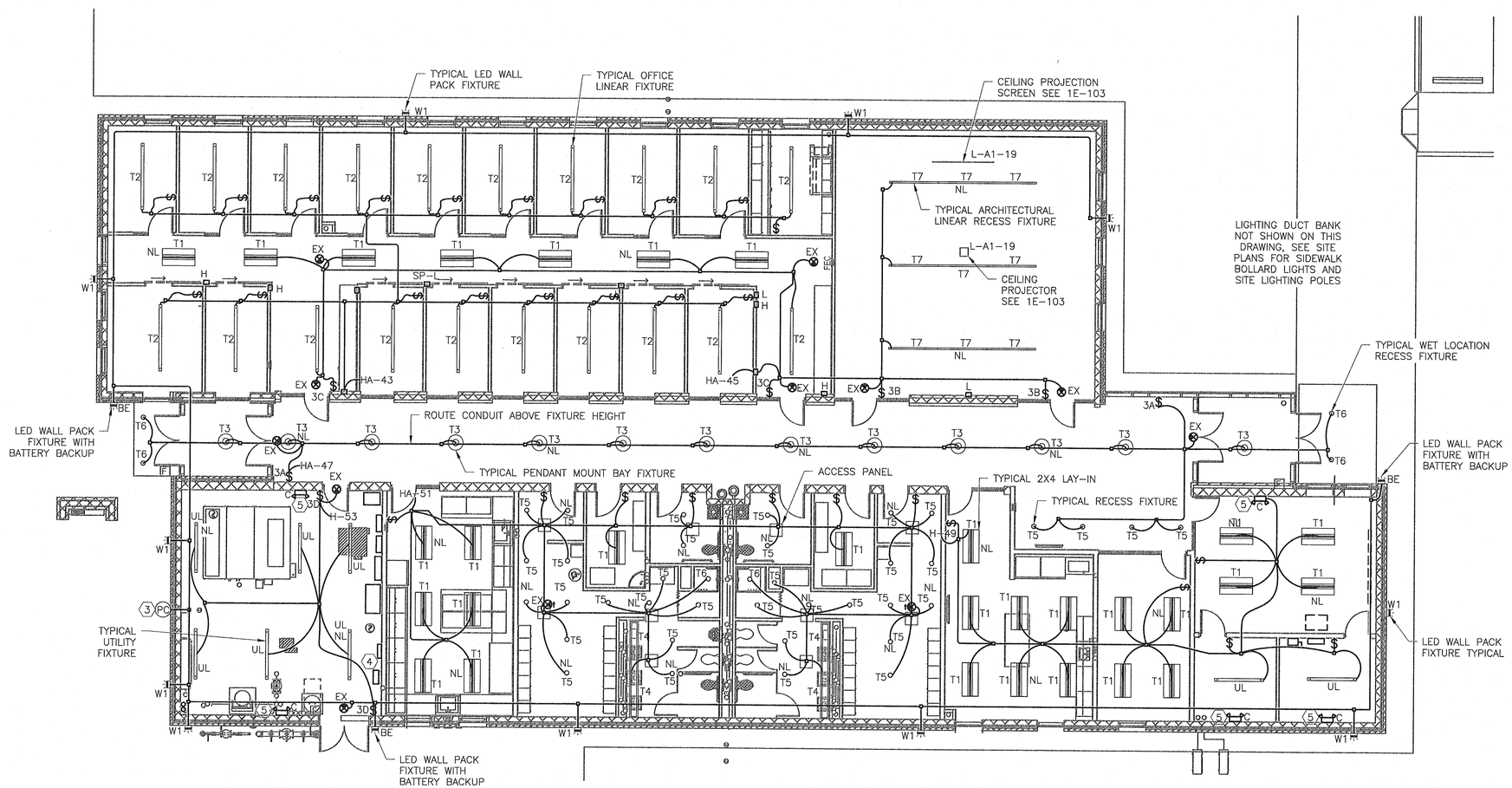




4 ADMINISTRATION BUILDING EXTERIOR LIGHTING CONTROL PANEL WIRING SCHEMATIC

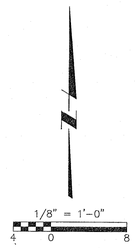
NOTES:

1. PROVIDE STREET LIGHT POLES, PER DETAIL NO.1 ON DRAWING E–004. SEE DRAWING 1E–104 FOR LIGHTING CONTROL PANEL INFORMATION.
2. PROVIDE SECURITY LIGHT POLE, PER DETAIL NO. 2 ON DRAWING E–004, WITH 1 FIXTURE. PROVIDE POLE WITH CAMERA PROVISIONS, FOR WITH SECURITY REQUIREMENTS. SEE DRAWING 1E–104 FOR LIGHTING CONTROL PANEL INFORMATION.
3. INSTALL PHOTOCELL HIGH ON WALL AND ADJUST TO OPERATE PROPERLY.
4. COORDINATE WITH OTHERS TO LOCATE THE ADMINISTRATION LIGHTING CONTROL PANEL ON THE MECHANICAL ROOM WALL, NEXT TO THE BUILDING HVAC CONTROL PANEL. ROUTE SITE LIGHTING CIRCUITS IN DUCT BANK TO STREET AND SECURITY POLE.
5. TYPE C FIXTURES SHALL BE FED FROM CLOSEST COMMON WALL RECEPTACLE ADJACENT TO FIXTURE.



ADMINISTRATION LIGHTING PLAN

1/8"=1'–0"



NO.	DATE	REVISION	APP.

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE LIGHTING IN AND ON THE EXTERIOR OF THE ADMINISTRATION BUILDING.

B. ROUTE CONDUITS UNDERGROUND IF POSSIBLE. IF CONDUITS MUST BE ROUTED OVERHEAD, ROUTE CONDUITS ON STRUT, ATTACHED TO STRUCTURE OR ROUTE ON TRAPEZE TYPE HANGERS.

C. SEE ARCHITECTURAL REFLECTED CEILING DRAWING 1A–109 FOR INTERIOR LIGHTS INFORMATION, HARD LAYOUT MEASUREMENTS AND SWITCH HEIGHTS. EXCEPTION, USE THE MECHANICAL ROOM FIXTURE LAYOUT ON THIS SHEET.

D. FIXTURES WITH NL DESIGNATION ARE EGRESS NIGHT LIGHT FIXTURES AND ARE TO BE PROVIDED BATTERY BACK PACKS, AND FED BY "HOT" CIRCUIT NOT SWITCH LEG.

E. COORDINATE LOCATIONS OF HARD CEILING ACCESS PANELS REQUIRED IN THE RESTROOM AREAS PRIOR TO BID PER MEANS AND METHODS CHOSEN.

F. LIGHTING CONTROLS FUNCTIONAL TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE COH FORM CE–1190 COMMISSIONING STATEMENT.

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12/12/2024

CITY OF HOUSTON

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION LIGHTING PLAN 1E-104

WBS NUMBER
R-000265-0117-4
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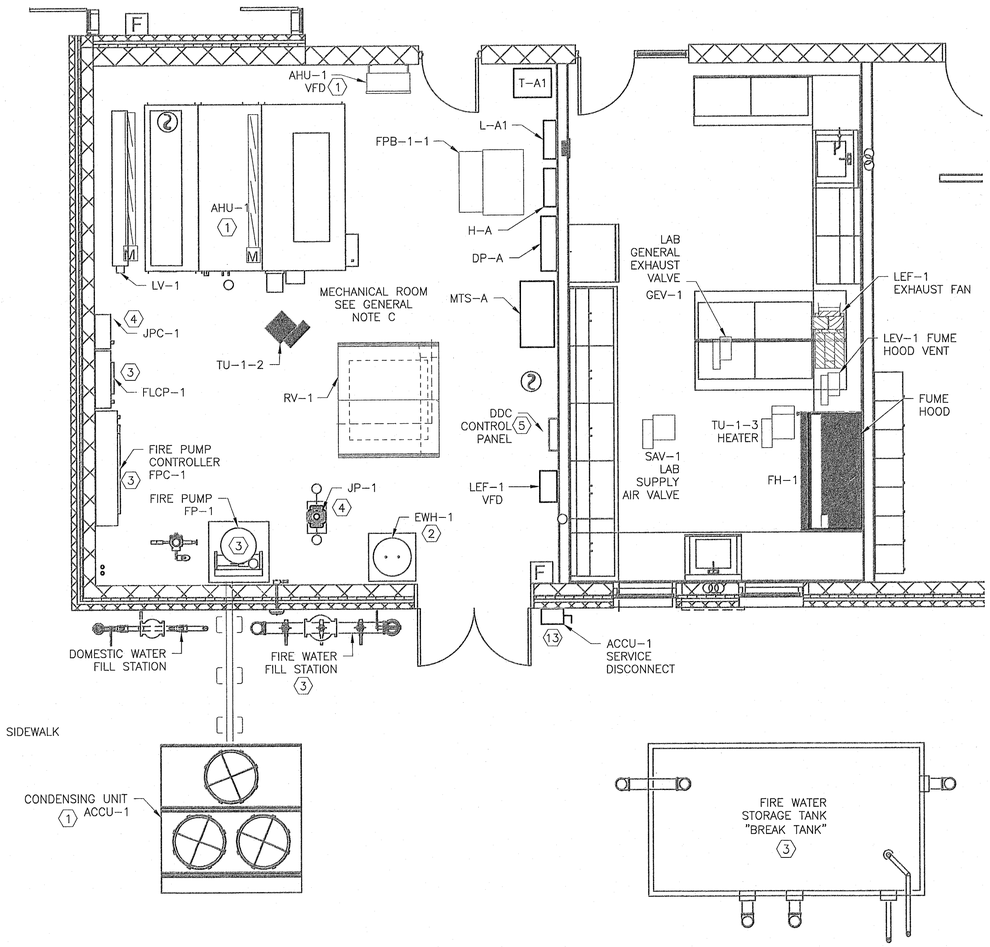
NOTES:

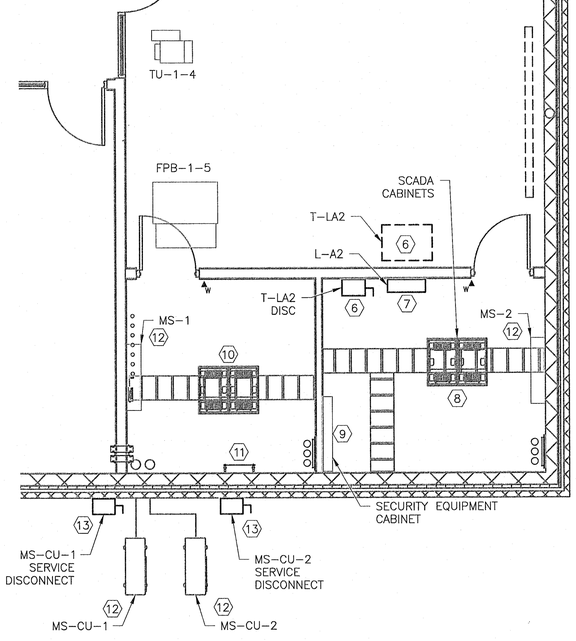
1. AIR HANDLER UNIT AHU-1 IS TO BE PROVIDED A VFD. POWER AND CONTROL CONDUITS TO THE CONDENSING UNIT SHALL BE ALUMINUM RIGID WITH XHHW INSULATED CONDUCTORS. COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE VFD, CONDUIT AND CONDUCTORS ARE INCLUDED IN THE BID.
2. COORDINATE PROPOSED ELECTRIC WATER HEATER POWER REQUIREMENTS AND ENSURE DESIGN BREAKER IS PER MANUFACTURER'S RECOMMENDATIONS.
3. PROVIDE COORDINATION WITH THE PROPOSED FIRE PROTECTION SYSTEM TO ENSURE ALL REQUIRED ELECTRICAL ASPECTS FOR THE FIRE WATER RISER, FIRE WATER STORAGE, FIRE WATER PUMP AND CONTROLS ARE INCLUDED IN THE BID. ALL OUTDOOR EXPOSED CONDUIT SHALL BE RIGID ALUMINUM. SEE PLUMBING AND FIRE PROTECTION DRAWINGS FOR COMPLETE SYSTEM DESCRIPTIONS. HEAT TRACE IS INCLUDED IN THE FIRE PROTECTION SYSTEM FOR THE FIRE WATER RISER. PROVIDE HEAT TRACE TAPE FOR THE POTABLE WATER RISER ON THE SAME CIRCUIT AND CONTROLLER.
4. CONTRACTOR SHALL COORDINATE WITH THE JOCKEY PUMP SYSTEM ELECTRICAL REQUIREMENTS AND ENSURE THE PROPOSED FEEDER BREAKER IS RATED PER MANUFACTURER'S RECOMMENDATIONS.
5. PROVIDE POWER TO THE BAS SYSTEM CONTROL PANEL. COORDINATE WITH THE HVAC SYSTEM PROVIDER TO ENSURE ALL PROPOSED SYSTEM POWER REQUIREMENTS ARE INCLUDED IN THE BID. SEE HVAC DRAWINGS FOR THE COMPLETE EQUIPMENT SCHEDULES AND POWER REQUIREMENTS.

NOTES CONT.:

6. TRANSFORMER TL-A2 SHALL BE MOUNTED ABOVE THE CEILING SEE DRAWING E-105 FOR REQUIREMENTS AND SUBMIT TRANSFORMER SUPPORT PLAN FOR ENGINEER'S ACCEPTANCE PRIOR TO INSTALLATION. WALL MOUNT TRANSFORMER FUSED DISCONNECT AT 72" AFF TO TOP OF THE ENCLOSURE.
7. INSTALL PANELBOARD L-A2 72" AFF, TO TOP OF ENCLOSURE.
8. COORDINATE WITH PCSI DURING THE DIVISION 13 REQUIRED MEETINGS TO ENSURE ALL ASPECTS OF THE SCADA CABINETS, UPS AND CONTROL ROOM EQUIPMENT ARE COMPLIMENTED WITH PROPER RECEPTACLES AND LOCATED CORRECTLY.
9. COORDINATE WITH SECURITY SYSTEM PROVIDER TO ENSURE OUTDOOR CONDUIT IS PROVIDED PER REQUIREMENTS AND PROPOSED SYSTEM'S ELECTRICAL RECOMMENDATIONS.
10. COORDINATE WITH DATA COMM SYSTEMS PROVIDER TO ENSURE PROPOSED SYSTEM PROVIDES ALL UNDER SLAB AND EXTERIOR CONDUIT REQUIRED.
11. COORDINATE TO PROVIDE CONNECTION OF DATA AND SCADA SYSTEM GROUNDS TO BUILDING GROUND RING. SEE DRAWING 1E-102 FOR ILLUSTRATION.
12. EXACT LOCATION OF MINI-SPLIT SYSTEM IS TO BE DETERMINED WITH COORDINATION OF DATA/COMM EQUIPMENT. CONFIRM EXACT LOCATIONS WITH ENGINEER PRIOR TO INSTALLATION OF EQUIPMENT AND POWER PROVISIONS.
13. INSTALL MINI-SPLIT SERVICE DISCONNECTS AT 72" ABOVE FINISH GRADE.



MECHANICAL ROOM PLAN
1/4"=1'-0"



SCADA AND CONTROL ROOM PLAN
1/4"=1'-0"

N

1/4" = 1'-0"
2 0 4

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE HVAC AND PLUMBING EQUIPMENT WORK IN THE ADMINISTRATION BUILDING MECHANICAL ROOM AND CONTROL/DATA CLOSETS.

B. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND RESEARCH SHOP DRAWING SUBMITTALS FOR HVAC AND PLUMBING EQUIPMENT REQUIRING POWER, CONTROL AND INSTRUMENTATION CONDUIT. SEE THE RELATED SPECIFICATIONS FOR ADDITIONAL INFORMATION.

C. THE MECHANICAL ROOM IS TO BE 2 HOUR FIRE RATED AND ALL PENETRATIONS ARE TO BE SEALED WITH FIRE CAULK. COORDINATE WITH OTHERS TOP PROPERLY SEAL ALL PENETRATIONS.

NO.	DATE	REVISION	APP.

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED PROFESSIONAL ENGINEER
07.01.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION ENLARGED EQUIPMENT PLANS 1E-105

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 223 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED AS NOTED
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS

PANELBOARD IS TO BE LOCATED IN THE ADMINISTRATION BUILDING MECHANICAL ROOM

DISTRIBUTION PANELBOARD DP-A

BUS AMPS 800
MAIN BRKR. AMPS 800
VOLTS 480/277 AIC 35 KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE
3. PHASE, NEUTRAL AND GROUND BUS SHALL BE COPPER

	CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION	
(1)	TRANSFORMER T-LA1 (75 KVA)	#1/0	46,855	150	1			2	200	103,638	#3/0	PANELBOARD H-A	(1)(2)
		#1/0			3			4			#3/0		
		#1/0			5			6			#3/0		
	ACCU-1	#1	68,200	110	7			8	60	21,760	#4	TRANSFORMER T-LA2 (30 KVA)	(1)
		#1			9			10			#4		
		#1			11			12			#4		
	TU-1-1	12	7,800	20	13			14	50	27,500	#6	AHU-1 ASD	
		12			15			16			#6		
		12			17			18			#6		
	TU-1-3	10	14,200	30	19			20	30	13,500	10	EWH-1	(1)
		10			21			22			10		
		10			23			24			10		
	SAV-1	12	9,000	15	25			26	200	–	–	SPARE	(1)
		12			27			28			–		
		12			29			30			–		
	TU-1-4	12	6,300	20	31			32	30	–	–	SPARE	
		12			33			34			–		
		12			35			36			–		
(3)	SPD	10	–	30	37			38	200	–	–	SPARE	
		10			39			40			–		
		10			41			42			–		
			152,355							166,398			

N

TOTAL CONNECTED VA = 318,753
318.753 KVA = 383.7 AMPS AT 480 VOLTS
383.7 AMPS X 125% = 479.6 AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS ARE ALL RATED PROPERLY TO SERVE THE LOAD
CONDUCTORS ARE SHOWN IN CONDUIT SCHEDULE

PANELBOARD IS TO BE LOCATED IN THE ADMINISTRATION BUILDING MECHANICAL ROOM

PANELBOARD H-A

BUS AMPS 225
MAIN LUG ONLY YES
VOLTS 480/277 AIC 35 KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE
3. PHASE, NEUTRAL AND GROUND BUS SHALL BE COPPER

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
FPB-1-1	10	9,200	20	1			2	35	15,300	8	FPB-1-2
	10			3			4			8	
	10			5			6			8	
FPB-1-3	10	11,900	25	7			8	20	10,500	10	FPB-1-4
	10			9			10			10	
	10			11			12			10	
FPB-1-5	10	5,100	30	13			14	15	6,600	12	FPB-1-6
FPB-1-7	12	7,200	15	15			16			12	
	12			17			18			12	
	12			19			20	25	11,800	10	FPB-1-8
FPB-1-9	10	8,700	20	21			22			10	
	10			23			24			10	
	10			25			26				
TU-1-2	10	7,100	20	27			28	25			SPARE
	10			29			30				
	10			31			32				
JPC-1 JOCKEY PUMP CONTROLLER	12	1,120	20	33			34	20			SPARE
	12			35			36				
	12			37			38	20	3,100	10	FPB-1-10
BUILDING EXTERIOR LIGHTING	12	590	20	39			40	20			SPARE
SIDEWALK BOLLARD LIGHTS	12	78	20	41			42	20			SPARE
BUILDING INTERIOR LIGHTING	12	1332	20	43			44	20	450	8	STREET AND SECURITY
BUILDING INTERIOR LIGHTING	12	820	20	45			46		450	8	SITE LIGHTING
BUILDING INTERIOR LIGHTING	12	586	20	47			48	20			SPARE
BUILDING INTERIOR LIGHTING	12	810	20	49			50				
BUILDING INTERIOR LIGHTING	12	622	20	51			52	30			SPARE
BUILDING INTERIOR LIGHTING	12	280	20	53			54				
		55,438							48,200		

MLO

N

TOTAL CONNECTED VA = 103,638
103.638 KVA = 124.7 AMPS AT 480 VOLTS
124.7 AMPS X 125% = 155.9 AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS ARE ALL RATED PROPERLY TO SERVE THE LOAD
CONDUCTORS ARE SHOWN IN CONDUIT SCHEDULE

PANELBOARD IS TO BE LOCATED IN THE ADMINISTRATION BUILDING MECHANICAL ROOM

PANELBOARD "L-A1"

BUS AMPS 225
MAIN BREAKER 225A
VOLTS 208/120 AIC 22 KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE
3. PHASE, NEUTRAL AND GROUND BUS SHALL BE COPPER

	CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
	MECH ROOM RECEPTACLES	12	360	20	1			2	20	200	12	RV-1, LEV-1 AND GEV-1
	LEF-1 (ROOF)	10	375	20	3			4	20	360	12	SAMPLE RM HOOD POWER
	HVAC & LTG CONTROL PANEL	12	250	20	5			6	20	720	12	SAMPLE RM 2 RECEPTACLES
	CP-1	12	160	20	7			8	20	720	12	SAMPLE RM 2 RECEPTACLES
(4)	HEAT TRACE	12	390	20	9			10	20	720	12	SAMPLE RM 2 RECEPTACLES
		12			11			12	20	720	12	SAMPLE RM 2 RECEPTACLES
	MENS RR RECEPTACLES	12	1440	20	13			14	20	1520	10	COPIER RM COPIER OUTLET
	WOMENS RR RECEPTACLES	12	1440	20	15			16	20	720	12	COPIER RM RECEPTACLES
	CONF RM RECESSED LIGHTS	12	1440	20	17			18	20	200	12	BREAK RM REFRIDGERATOR
	CONF RM OH A/V EQUIP	12	1440	20	19			20	20	1000	12	BREAK RM MICROWAVE
	CONF RM FRONT A/V RECEPT	12	1440	20	21			22	20	1000	12	THREE RECEPTACLES
	CONF RM 4 RECEPTACLES	12	1440	20	23			24	20	720	12	THREE RECEPTACLES
	CONF RM 4 RECEPTACLES	12	1440	20	25			26	20	720	12	BREAK RM 2 RECEPTACLES
	CONF RM 4 RECEPTACLES	12	1440	20	27			28	20	720	12	BREAK RM 2 RECEPTACLES
	SPARE	–	–	20	29			30	20	720	12	BREAK RM 4 RECEPTACLES
		–	–	20	31			32	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	33			34	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	35			36	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	37			38	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	39			40	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	41			42	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	43			44	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	45			46	20	1440	12	4 RECEPTACLES
	4 RECEPTACLES	12	1440	20	47			48	20	–	–	SPARE
	SPARE	–	–	20	49			50	20	–	–	
		–	–	20	51			52	20	–	–	
		–	–	20	53			54	20	–	–	
			24,575							22,280		

N

TOTAL CONNECTED VA = 46,855
47 KVA = 130 AMPS AT 208 VOLTS
130 AMPS X 125% = 162 AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS ARE ALL RATED PROPERLY TO SERVE THE LOAD
CONDUCTORS ARE SHOWN IN CONDUIT SCHEDULE

PANELBOARD IS TO BE LOCATED IN THE ADMINISTRATION BUILDING MECHANICAL ROOM

PANELBOARD "L-A2"

BUS AMPS 150
MAIN BREAKER 100A
VOLTS 208/120 AIC 22 KA
PHASE 3 WIRE 4 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE
3. PHASE, NEUTRAL AND GROUND BUS SHALL BE COPPER

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C		BKR.	LOAD	WIRE	CKT. DESCRIPTION
SECURITY RM UPS	12	1420	20	1			2	20	1420	12	SCADA RM UPS
SECURITY RM 2 RECEPTACLE	12	720	20	3			4	20	1420	12	SCADA RM UPS
SECURITY RM 2 RECEPTACLE	12	720	20	5			6	20	720	12	SCADA RM 2 RECEPTACLE
SECURITY RM 2 RECEPTACLE	12	720	20	7			8	20	720	12	SCADA RM 2 RECEPTACLE
SPARE	–	–	20	9			10	20	360	12	SCADA RM CONSOLE
IT RM UPS	12	1420	20	11			12	20	360	12	SCADA RM CONSOLE
IT RM 2 RECEPTACLE	12	720	20	13			14	20	200	12	SCADA RM MONITORS
IT RM 2 RECEPTACLE	12	720	20	15			16	20	200	12	SCADA RM MONITORS
IT RM 2 RECEPTACLE	12	720	20	17			18	25	4000	10	MS-CU-1
EF-1	12	560	20	19			20	25	4000	10	MS-CU-2
SPARE	–	–	20	21			22	20	–	–	SPARE
	–	–	20	23			24	20	–	–	
	–	–	20	25			26	20	–	–	
	–	–	20	27			28	20	–	–	
	–	–	20	29			30	20	–	–	
		8,360							13,400		

N

TOTAL CONNECTED VA = 21,760
21.76 KVA = 60.4 AMPS AT 208 VOLTS
60.4 AMPS X 125% = 75.5 AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS ARE ALL RATED PROPERLY TO SERVE THE LOAD
CONDUCTORS ARE SHOWN IN CONDUIT SCHEDULE

NOTES:

(1) BREAKER SHALL BE PROVIDED "FACTORY" PAD LOCK PROVISIONS.

(2) PROVIDE A FULL RATED NEUTRAL BUS IN EACH PANELBOARD, IN THE ADMINISTRATION BUILDING.

(3) SEE SPECIFICATION 16290 FOR SURGE PROTECTION DEVICE REQUIREMENTS.

(4) CONTRACTOR SHALL COORDINATE TO ENSURE HEAT TRACE SYSTEM IS PROTECTED BY GFPE DEVICE.

ADMINISTRATION BUILDING

Panel Name	Calculated Ultimate Available Short Circuit Current	Panel Rating
DP-A	10.5 kA	35 kA
H-A	10.5 kA	35 kA
L-A1	8.7 kA	22 kA
L-A2	4.2 kA	22 kA

SHORT CIRCUIT CURRENT AVAILABLE FROM TRANSFORMER T-AD

ADMINISTRATION PANELBOARD SCHEDULES

NTS

NO.	DATE	REVISION	APP.

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www.stantec.com

SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS — Z.M. SIDDIQUI — 77702 — REGISTERED PROFESSIONAL ENGINEER — 12/31/2020

CITY OF HOUSTON

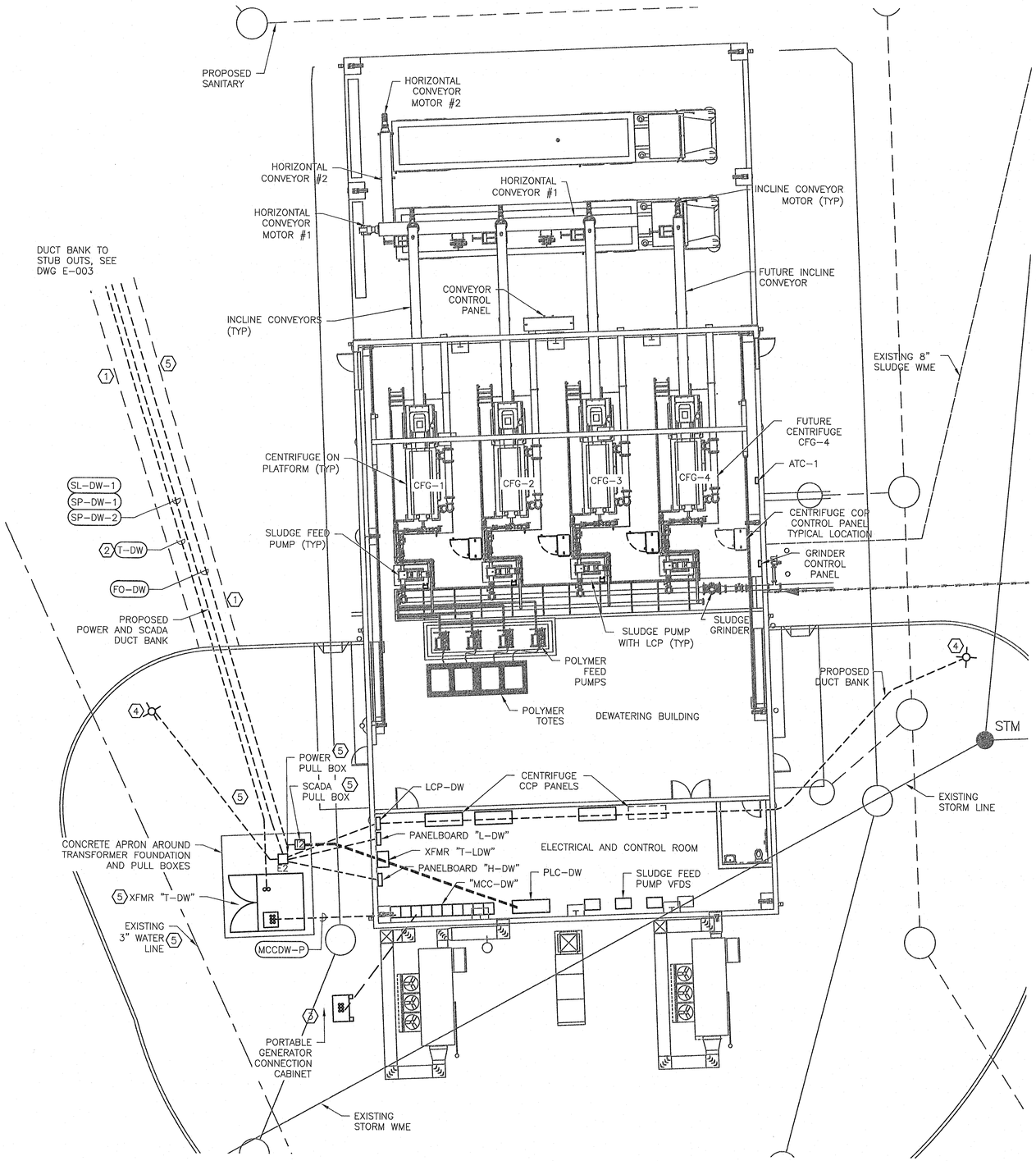
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

ADMINISTRATION PANELBOARD SCHEDULES 1E-601

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 224 OF 255	

ACCEPTED 80341 CITY DRAWING HOUSTON, TEXAS



DEWATERING AREA SITE PLAN

1"= 10'-0"

N

0 10 20

NO.	DATE	REVISION	APP.

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE ELECTRICAL SITE WORK AND EQUIPMENT IN THE DEWATERING BUILDING AND AREA.

NOTES:

1. CONTRACTOR SHALL SAW CUT CONCRETE ROADWAY FOR DUCT BANK INSTALLATION. COORDINATE TO REPLACE CONCRETE UPON DUCT BANK COMPLETION.
2. MEDIUM VOLTAGE FEEDER DUCT BANKS SHALL BE INSTALLED EARLY IN THE PROJECT.
3. NO GENERATOR IS TO BE PROVIDED IN THIS PROJECT, CONNECTION CABINET IS FOR PORTABLE GENERATOR CONNECTION ONLY.
4. PROVIDE STREET LIGHTING POLE WITH 3 FIXTURES ON EACH POLE AS DESCRIBED IN DETAIL 1 ON DRAWING E-004. AIM FIXTURES TO ILLUMINATE THE TRUCK PATH TO THE LOADING CANOPY.
5. CONTRACTOR SHALL COORDINATE DUCT BANKS AND EQUIPMENT INSTALLATION WITH OTHER UTILITIES ENTERING THE BUILDING.

KGL Kalluri Group, Inc.
Consulting Engineers & Project Managers
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Phone: (713)-365-9288

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
PROFESSIONAL ENGINEER
LICENSED
05.01.2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

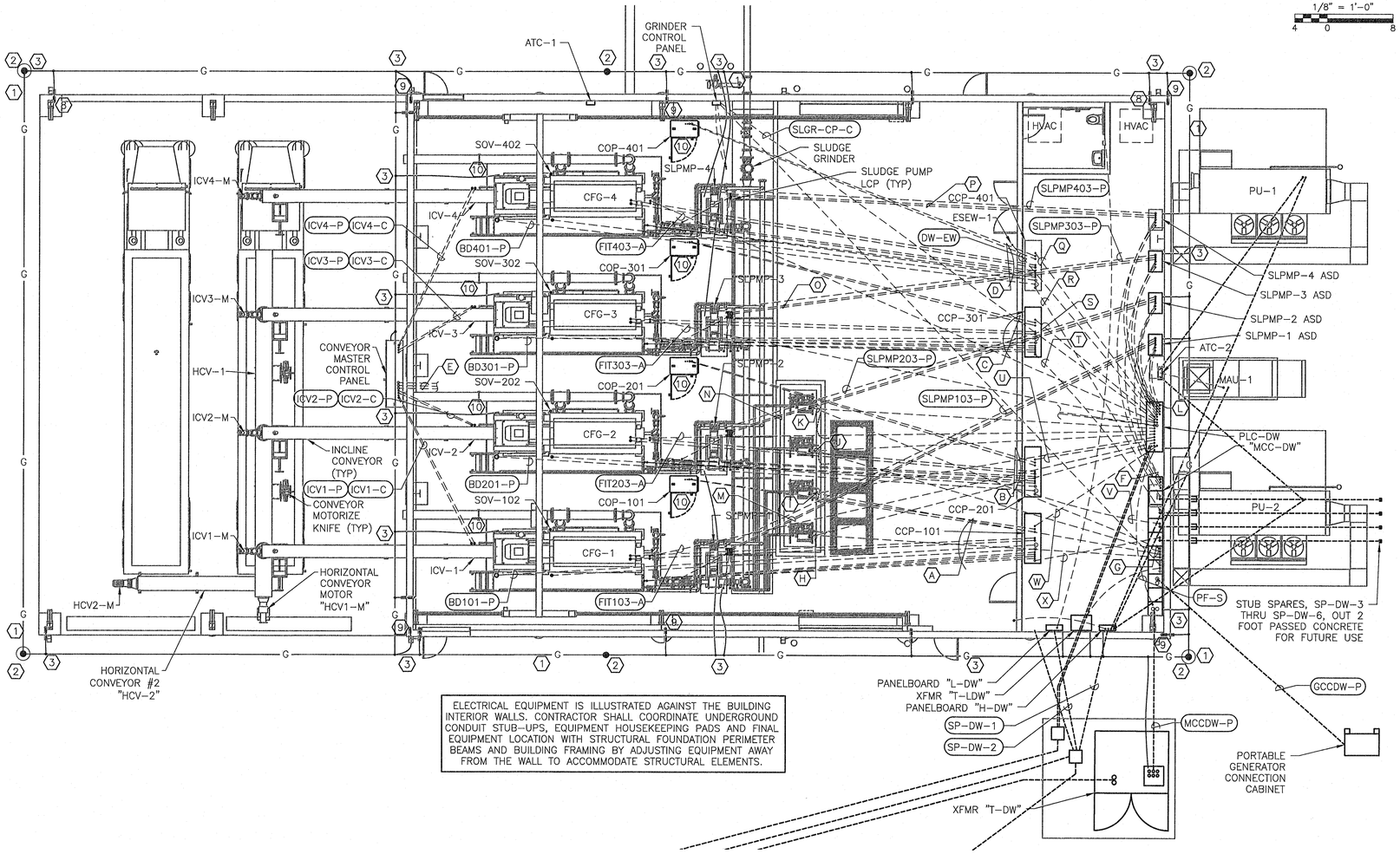
INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING AREA SITE PLAN 2E-101

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 225 OF 255	

P.W. & C.D. ACCEPTED AS NOTED
80341
CITY DRAWING NO.
HOUSTON, TEXAS

THIS DRAWING ILLUSTRATES AN ACCEPTABLE CONCEPT FOR ROUTING THE UNDER SLAB CONDUITS REQUIRED IN THIS BUILDING, NOT ALL TRADES, UNDER SLAB ELECTRICAL OR AREA DUCT BANK REQUIRED IS ILLUSTRATED HERE, FOR CLARITY. THE PIPING TRENCH REQUIRES THE UNDER SLAB CONDUIT TO BE INSTALLED A MINIMUM OF FIVE FEET DEEP, BELOW THE TOP OF SLAB. PROVIDE FLOWABLE FILL OR COMPACTED STABILIZED SAND FOR BACKFILL OF UNDER SLAB CONDUITS. SEE DRAWING 2E-301 FOR BUILDING SECTION.



ELECTRICAL EQUIPMENT IS ILLUSTRATED AGAINST THE BUILDING INTERIOR WALLS. CONTRACTOR SHALL COORDINATE UNDERGROUND CONDUIT STUB-UPS, EQUIPMENT HOUSEKEEPING PADS AND FINAL EQUIPMENT LOCATION WITH STRUCTURAL FOUNDATION PERIMETER BEAMS AND BUILDING FRAMING BY ADJUSTING EQUIPMENT AWAY FROM THE WALL TO ACCOMMODATE STRUCTURAL ELEMENTS.

SEE 2E-101 FOR DUCT BANK CONTINUATION

DEWATERING UNDERGROUND PLAN
1/8"= 1'-0"

NOTES:

1. 4/0 COPPER GROUND RING AT 24" MINIMUM BELOW GRADE.
2. 3/4"X20' GROUND ROD WITH EXOTHERMIC CONNECTIONS TO GROUND RING.
3. EXOTHERMICALLY WELDED CONNECTION, SEE SPECIFICATIONS FOR REQUIREMENTS.
4. PROVIDE A 4/0 COPPER GROUNDING CONDUCTOR, TO MCC-DW EQUIPMENT GROUND BAR AND ENCLOSURE STRUCTURE FRAME.
5. PROVIDE A #2 COPPER GROUNDING CONDUCTOR, TO EACH 480V FED MISCELLANEOUS EQUIPMENT ENCLOSURE.
6. PROVIDE ONE, 1 1/2" SCH-40 PVC CONDUIT, FROM 12" BELOW TOP OF WALL TO GROUND RING FOR LIGHTNING PROTECTION DOWN LEAD AT EACH CORNER OF THE BUILDING AND IN THE CENTER OF THE LONG SIDES AS INDICATED.
7. PROVIDE UFFER GROUND IN SLAB OF BUILDING.
8. PROVIDE GROUND TO BUILDING STEEL STRUCTURE.
9. ROUTE PLASTIC PVC CONDUIT IN SLAB AND STUB UP IN WALL. ROUTE CONDUIT UP INTERIOR WALL TO 12 INCHES BELOW ROOF FOR LIGHTNING PROTECTION DOWN LEAD.
10. CONNECT UFER GROUND TO PLATFORM FRAMEWORK, CENTRIFUGE CHASSIS AND CENTRIFUGE CONTROL PANEL.

CONDUIT TAG NOTES:

THE FOLLOWING CONDUIT TAGS ARE LOCATED AT THE ASSOCIATED KEY TAG:

- A: SD101-P, C101-P, CF1-C1, CF1-C2, BD101-P, CF1-A, MOV103-P, MOV103-C, MOV1-P, MOV1-C
- B: SD201-P, C201-P, CF2-C1, CF2-C2, BD201-P, CF2-A, MOV203-P, MOV203-C, MOV2-P, MOV2-C
- C: SD301-P, C301-P, CF3-C1, CF3-C2, BD301-P, CF3-A, MOV303-P, MOV303-C, MOV3-P, MOV3-C
- D: SD401-P, C401-P, CF4-C1, CF4-C2, BD401-P, CF4-A, MOV403-P, MOV403-C, MOV4-P, MOV4-C
- E: CONV-C1, CONV-C2, CONV-P
- F: ASD103-P, ASD303-P, ASD203-P, ASD403-P
- G: PS104-P, PS304-P, PS204-P, PS404-P
- H: PS104-P, PS104-C
- I: PS204-P, PS204-C
- J: PS304-P, PS304-C
- K: PS404-P, PS404-C
- L: SLP1-COM, SLP1-S, SLP2-COM, SLP2-S, SLP3-COM, SLP3-S, SLP4-COM, SLP4-S
- M: SLPMP103-C, SLPMP103-A
- N: SLPMP203-C, SLPMP203-A
- O: SLPMP303-C, SLPMP303-A
- P: SLPMP403-C, SLPMP403-A
- Q: CF4-CCP-COM
- R: CCP401-P
- S: CF3-CCP-COM
- T: CCP301-P
- U: CF2-CCP-COM
- V: CCP201-P
- W: CF1-CCP-COM
- X: CCP101-P

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE THE DEWATERING BUILDING GROUNDING, LIGHTNING PROTECTION AND UNDER SLAB PROVISIONS.

B. CONTRACTOR SHALL PROVIDE LIGHTNING PROTECTION FOR THE BUILDING, SEE SPECIFICATION 16170.

C. ELECTRICAL EQUIPMENT, STRUCTURAL STEEL, FOUNDATION REBAR AND LIGHTNING PROTECTION SHALL ALL BE CONNECTED TO THE GROUND RING.

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
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Phone: (713)-365-9288

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SURVEYED BY: KUO & ASSOC, FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
05.06.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DETWATERING UNDERGROUND PLAN 2E-102

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	226 OF 255

FOR CITY OF HOUSTON USE ONLY

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NOTES:

1. CENTRIFUGES 1, 2 AND 3 ARE TO BE PROVIDED AND INSTALLED IN THIS CONTRACT. CENTRIFUGE 4 IS ILLUSTRATED FOR THE INSTALLATION OF CONCRETE EMBEDDED CONDUIT AND OVERHEAD CONDUIT DEDICATED TO THE FUTURE NUMBER 4 CENTRIFUGE. ELECTRICAL CONTRACTOR SHALL PARTICIPATE IN MULTI TRADE COORDINATION MEETINGS DEFINED IN DIVISION 13, TO ENSURE ALL CONDUIT AND CONDUCTORS ARE PROVIDED AS DEFINED BY THE CENTRIFUGE MANUFACTURER CHOSEN. AN OIT LOCAL CONTROL PANEL (COP) AND A DRIVES CONTROL PANEL (CCP) SHALL BE CONNECTED. PROVIDE DUAL POWER SOURCE SIGNAGE.

2. HVAC CONTROL PANEL, ELECTRICAL CONTRACTOR SHALL COORDINATE WITH HVAC TO PROVIDE ALL CONDUIT FOR THE LOW VOLTAGE SYSTEMS. INCLUDING BUT NOT LIMITED TO SMOKE SENSORS AND SHUT DOWNS, MOTOR OPERATED DAMPERS, THERMOSTATS, CONTROL WIRING BETWEEN ATC CONTROL PANELS, SCADA AND POWER. SEE MECHANICAL SHOP DRAWINGS SUBMITTED FOR EXACT DEVICES AND EQUIPMENT TO BE PROVIDED.

3. ALL CONCRETE ENCASED CONDUITS PROVIDED FOR CENTRIFUGES 1–3 ARE TO BE INSTALLED FOR FUTURE CENTRIFUGE 4. STUB UPS SHALL BE PROVIDED A COUPLING FLUSH WITH THE TOP OF THE CONCRETE FLOOR AND PROVIDED A THREADED PLUG AND ANTI–SEIZE THREAD COMPOUND.

4. A HIGH PRESSURE SWITCH SHALL BE INSTALLED IN EACH THICKENED SLUDGE FEED LINE. THE SWITCH SHALL BE CONNECTED TO THE SLUDGE ADJUSTABLE SPEED DRIVE FOR THAT CENTRIFUGE.

5. A SLUDGE MAGNETIC FLOW METER SHALL BE PROVIDED AT EACH CENTRIFUGE SLUDGE FEED PUMP AND CONNECTED TO SCADA PLC–DW. EACH METER SHALL BE PROVIDED EARTH GROUND AS REQUIRED BY MANUFACTURER.

6. EACH CENTRIFUGE SHALL BE PROVIDED A MOTOR OPERATED BALL VALVE FOR WATER (MOV) AND A MOTOR OPERATED PLUG VALVE FOR SLUDGE (MOV) TO THE CENTRIFUGE AND THEY ARE TO BE CONNECTED TO THE CCP FOR THAT UNIT.

7. EACH SLUDGE PUMP SHALL BE PROVIDED PRESSURE LIMIT SWITCHES DEPENDANT ON BRAND SELECTED AND APPROVED. CONSIDER ONE LOW AND ONE HIGH PRESSURE SWITCH TO BE ROUTED TO THE SCADA PLC–DW.

NOTES CONT.:

8. EACH SLUDGE PUMP MOTOR SHALL BE FED FROM AN ADJUSTABLE SPEED DRIVE AND PROVIDED A LOCAL CONTROL PANEL FOR MAINTENANCE, STARTING AND STOPPING.

9. INCOMING SLUDGE SHALL BE ROUTED THROUGH A GRINDER, WITH A LOCAL CONTROL PANEL ON THE EAST WALL.

10. EACH VENDOR SUPPLIED SKID MOUNTED POLYMER PUMPING SYSTEM (PPS) SHALL BE PROVIDED A CONTROL PANEL WITH SINGLE POINT CONNECTION AND A CORD CONNECTED TOTE LEVEL DEVICE. THE CONTROL PANELS SHALL BE CONNECTED TO THE SCADA PLC–DW. DEPENDENT ON BRAND A BOOSTER PUMP MAY BE REQUIRED AND FED FROM THE SUPPLIED CONTROL PANEL.

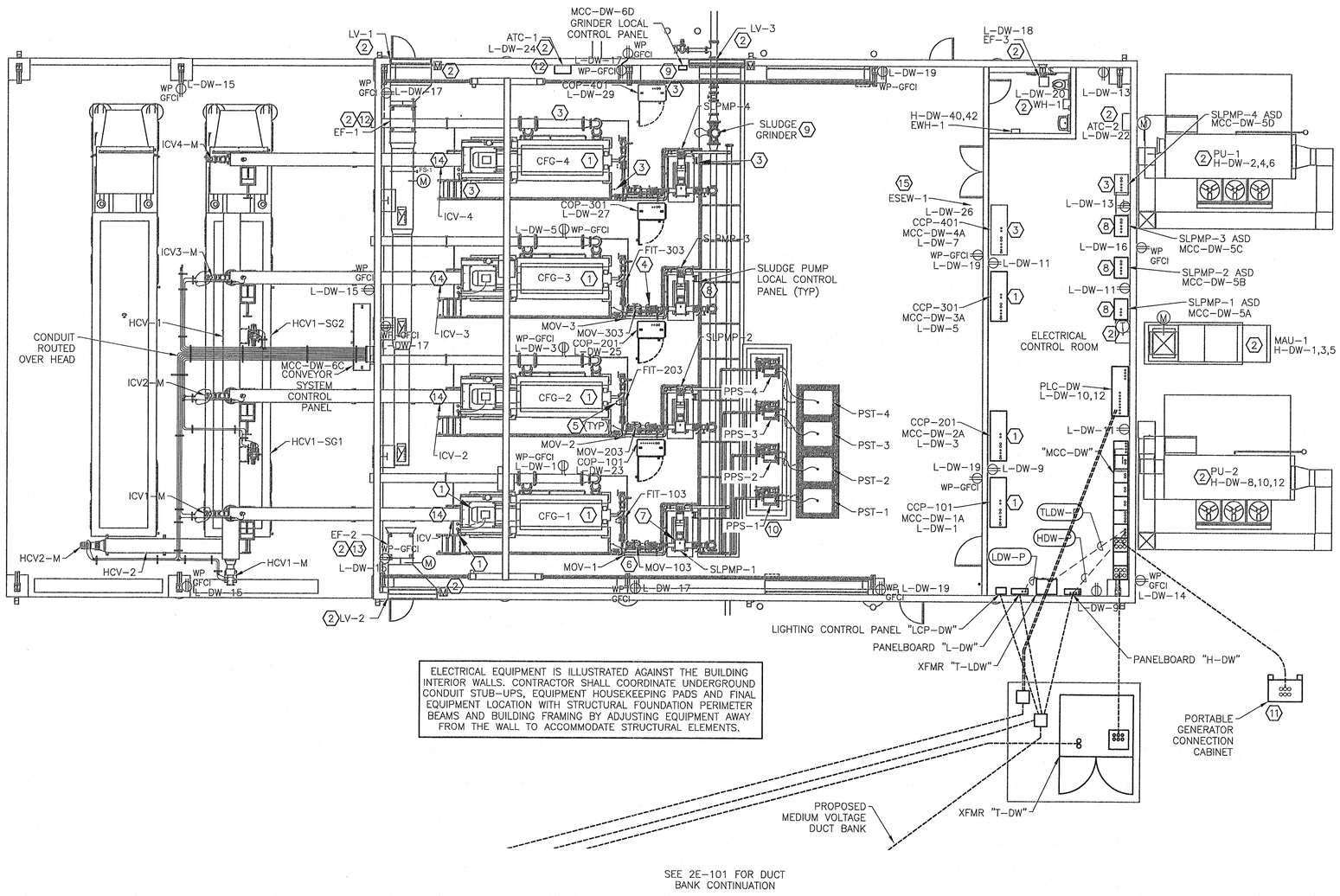
11. THERE IS NOT A GENERATOR IN THIS PROJECT, GENERATOR CONNECTION CABINET IS FOR PORTABLE GENERATOR CONNECTION.

12. INSTALL VENDOR PROVIDED EF–1 VFD ON WALL ADJACENT TO ATC–1.

13. COORDINATE TO PROVIDE NEMA 3R COMBINATION STARTER WITH PROPER SIZED PROTECTION FOR EF–2. INSTALL STARTER ON WALL BELOW EF–2.

14. ELECTRICAL CONTRACTOR SHALL COORDINATE TO CONNECT EMERGENCY STOP PULL CABLE AND ANY OTHER ANCILLARY DEVICES REQUIRED FOR CONVEYOR.

15. PROVIDE A WATER FLOW SWITCH CONNECTION BETWEEN THE EYEWASH/SHOWER STATION AND THE DEWATERING PLC.



ELECTRICAL EQUIPMENT IS ILLUSTRATED AGAINST THE BUILDING INTERIOR WALLS. CONTRACTOR SHALL COORDINATE UNDERGROUND CONDUIT STUB–UPS, EQUIPMENT HOUSEKEEPING PADS AND FINAL EQUIPMENT LOCATION WITH STRUCTURAL FOUNDATION PERIMETER BEAMS AND BUILDING FRAMING BY ADJUSTING EQUIPMENT AWAY FROM THE WALL TO ACCOMMODATE STRUCTURAL ELEMENTS.

SEE 2E–101 FOR DUCT BANK CONTINUATION

DEWATERING POWER PLAN
1/8" = 1'–0"

1/8" = 1'–0"
4 0 8

NO.	DATE	REVISION	APP.

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE ELECTRICAL POWER, CONTROL AND COMMUNICATION EQUIPMENT LOCATIONS FOR CIRCUITS LISTED IN THE CONDUIT SCHEDULE AND DISTRIBUTED IN THE DEWATERING BUILDING.

B. CONTRACTOR SHALL COORDINATE WITH HVAC, PLUMBING, AND PROCESS CONTROL SYSTEM INTEGRATOR FOR EXACT PROPOSED EQUIPMENT REQUIREMENTS.

C. ROUTE CONDUITS UNDERGROUND IF POSSIBLE. IF CONDUITS MUST BE ROUTED OVERHEAD, ROUTE CONDUITS ON STRUT, ATTACHED TO STRUCTURE ABOVE THE CRANE IN THE CENTRIFUGE ROOM. ROUTE CONDUITS ON TRAPEZE TYPE HANGERS IN THE ELECTRICAL ROOM.

D. ALL ANCHORS, STRUT, STRUT FITTINGS, STRAPS AND HARDWARE SHALL BE 316 STAINLESS STEEL.

E. PROVIDE NEMA 4X, 316SS ENCLOSED, FUSED DISCONNECTS FOR THE A/C UNITS. A/C UNIT FEEDERS MAY BE ROUTED UNDER THE SLAB. COORDINATE DISCONNET LOCATIONS WITH MECHANICAL

F. PROVIDE CONDUIT AND PULL STRING FOR HVAC THERMOSTATS.

G. ROUTE CONDUIT SUCH THAT THERE NO CONNECTIONS IN CONDUIT FITTINGS. IF CONNECTIONS ARE REQUIRED A BOX SIZED ACCORDINGLY SHALL BE PROVIDED.

H. PROVIDE RED DOT "CODE KEEPER TYPE (OR APPROVED EQUAL) METALLIC "IN–USE" GFCI COVER, INSTALLED AT 2'–0" ABOVE GRADE.

I. INSTALL RECEPTACLES 2'–0" ABOVE FINISHED FLOOR OR FINISHED GRADE. INSTALL LIGHT SWITCHES 3'–6" ABOVE FINISHED FLOOR.

J. THE DEWATERING BUILDING INTERIOR CENTRIFUGE ROOM IS CONSIDERED A WET ENVIRONMENT WITH REGARD TO RECEPTACLES. ALL WP–GFCI OUTLETS SHALL BE PROVIDED AN IN–USE COVER.

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STATE OF TEXAS
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05.06.2025

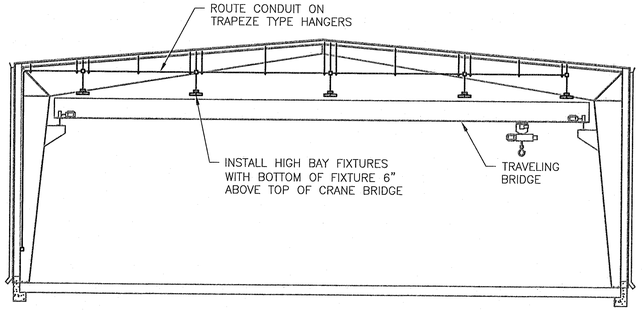
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING POWER PLAN 2E–103

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R–000265–0117–4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 227 OF 255	

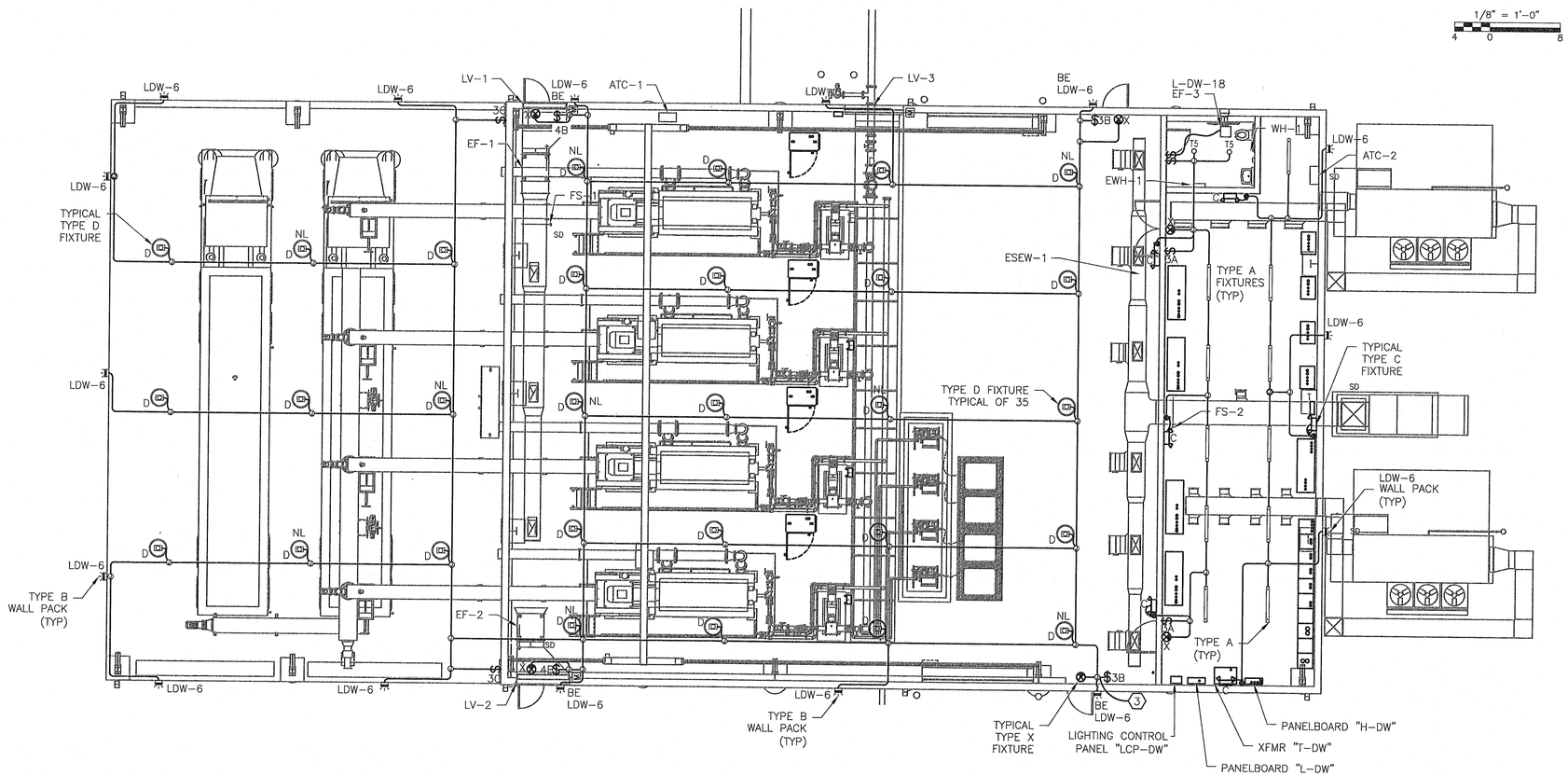
PUBLIC WORKS AND ENGINEERING
ACCEPTED AS NOTED
80341
CITY ENGINEER



DEWATERING BUILDING SECTION

1/8"= 1'-0"

ELECTRICAL EQUIPMENT IS ILLUSTRATED AGAINST THE BUILDING INTERIOR WALLS. CONTRACTOR SHALL COORDINATE UNDERGROUND CONDUIT STUB-UPS, EQUIPMENT HOUSEKEEPING PADS AND FINAL EQUIPMENT LOCATION WITH STRUCTURAL FOUNDATION PERIMETER BEAMS AND BUILDING FRAMING BY ADJUSTING EQUIPMENT AWAY FROM THE WALL TO ACCOMMODATE STRUCTURAL ELEMENTS.



DEWATERING LIGHTING PLAN

1/8"= 1'-0"

1/8" = 1'-0"

4 0 8

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE LIGHTING LAYOUT IN THE DEWATERING BUILDING AREA. SEE DRAWING 2E-602 FOR LCP-DW CONTROL SCHEMATICS.

B. ENSURE HIGH BAY LIGHTS ARE INSTALLED A MINIMUM OF 6 INCHES ABOVE THE TOP OF THE TRAVELING BRIDGE CRANE.

C. PROVIDE LCP-DW 3 WAY AND 4 WAY SWITCHES TO ALLOW HIGH BAY LIGHTS TO BE TURNED ON FROM ANY BUILDING ENTRANCE DOOR.

D. PROVIDE CONTINUOUS HOT TO INTERIOR FIXTURES WITH NL DESIGNATOR AND BE WALL PACKS.

F. LIGHTING CONTROLS FUNCTIONAL TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE COH FORM CE-1190 COMMISSIONING STATEMENT.

G. PROVIDE 15 AMP MOTOR RATED SWITCH FOR EF-3.

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
STACY L. JORDAN
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05.06.2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING LIGHTING PLAN 2E-104

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	228 OF 255

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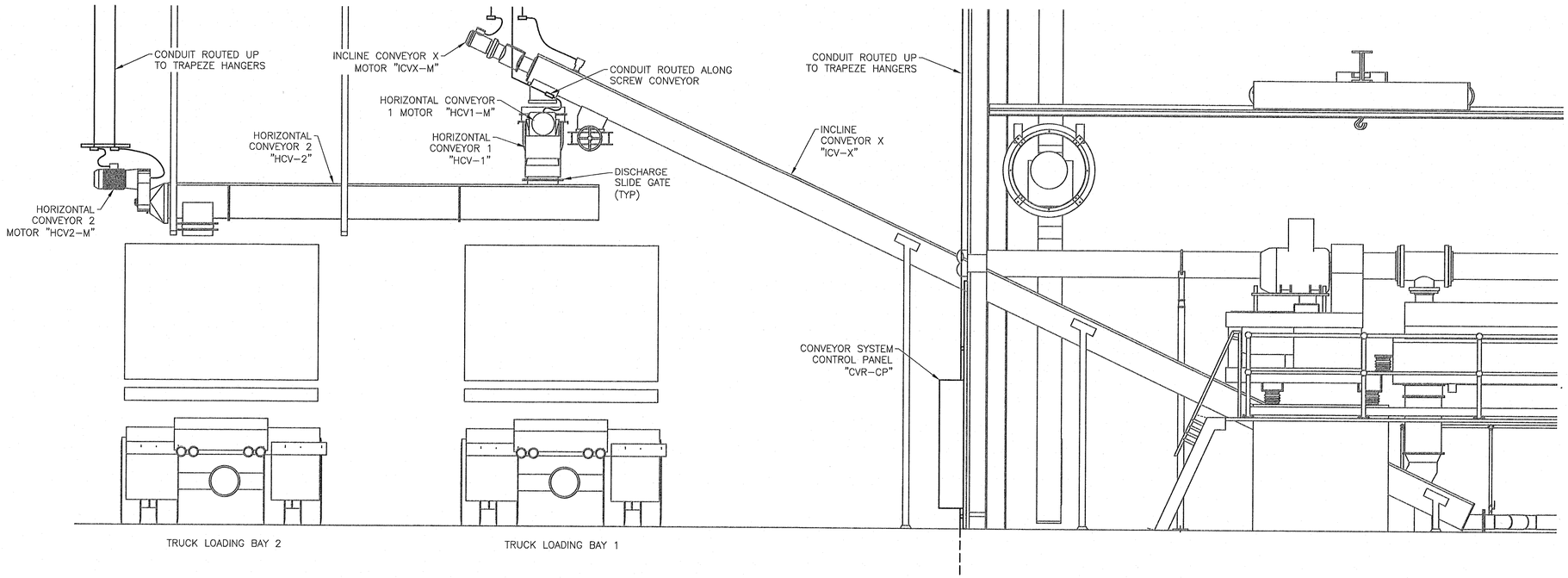
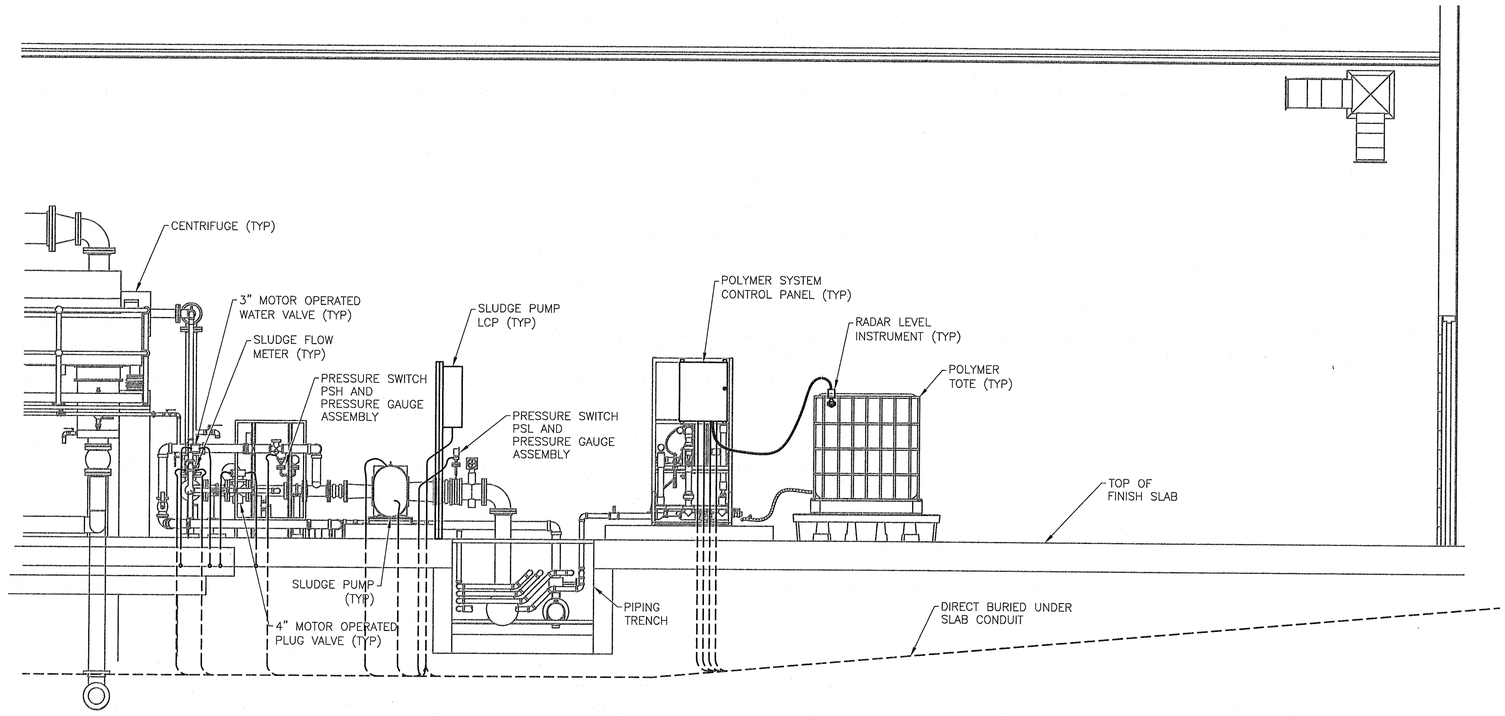
80341
CITY DRAWING NUMBER
HOUSTON, TEXAS





THIS DRAWING ILLUSTRATES AN ACCEPTABLE CONCEPT FOR ROUTING THE UNDER SLAB CONDUITS REQUIRED IN THIS BUILDING. THE PIPING TRENCH REQUIRES THE UNDER SLAB CONDUIT TO BE INSTALLED A MINIMUM OF FIVE FEET DEEP BELOW THE TOP OF SLAB. COORDINATE WITH STRUCTURAL TO PROVIDE FLOWABLE FILL OR COMPACTED STABILIZED SAND FOR BACKFILL OF UNDER SLAB CONDUITS. SEE DRAWING 2E-104 FOR BUILDING CROSS SECTION. COORDINATE ELECTRICAL CONDUIT WITH OTHER TRADES UNDER SLAB INSTALLATIONS

NO.	DATE	REVISION	APP.

1/8" = 1'-0"
4 0 8

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE ELECTRICAL CONDUIT ROUTING CONCEPTS IN THE DEWATERING BUILDING. NOT ALL CONDUIT REQUIRED IS SHOWN.

B. COORDINATE WITH PROCESS MECHANICAL FOR PROPOSED EQUIPMENT ANCILLARY DEVICE LOCATIONS AND CONNECTIONS.

C. ROUTE CONDUITS UNDERGROUND IF POSSIBLE. IF CONDUITS MUST BE ROUTED OVERHEAD, ROUTE CONDUITS ON STRUT, ATTACHED TO STRUCTURE, ABOVE THE CRANE IN THE CENTRIFUGE ROOM. ROUTE CONDUITS ON TRAPEZE TYPE HANGERS IN THE ELECTRICAL ROOM.

D. ALL ANCHORS, STRUT, STRUT FITTINGS, STRAPS AND HARDWARE SHALL BE 316 STAINLESS STEEL.

E. ROUTE CONDUIT UNDER PIPING TRENCH, COORDINATE DEPTH WITH SLAB INSTALLATION.

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05.01.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING BUILDING SECTIONS I 2E-301

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 229 OF 255	

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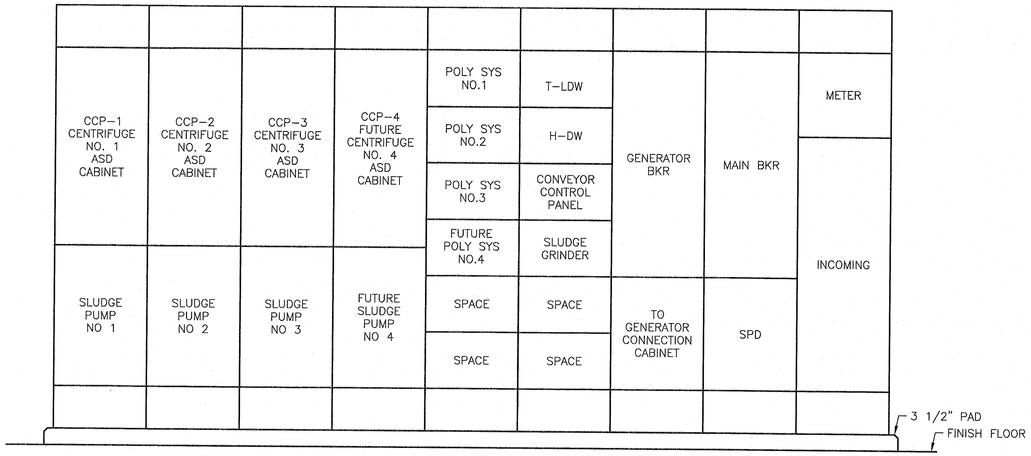
80341



MCC–DW
ELEVATION
NTS

MCC–DW LOAD ANALYSIS

LOAD		AMPS øA	AMPS øB	AMPS øC
CENTRIFUGE 1 CCP	200 HP	240	240	240
CENTRIFUGE 2 CCP	200 HP	240	240	240
CENTRIFUGE 3 CCP	200 HP	240	240	240
FUTURE CENTRIFUGE 4 CCP	200 HP	240	240	240
SLUDGE PUMP 1 ASD	40 HP	52	52	52
SLUDGE PUMP 2 ASD	40 HP	52	52	52
SLUDGE PUMP 3 ASD	40 HP	52	52	52
FUTURE SLUDGE PUMP 4 ASD	40 HP	52	52	52
POLYMER SYSTEM 1	10 HP	14	14	14
POLYMER SYSTEM 2	10 HP	14	14	14
POLYMER SYSTEM 3	10 HP	14	14	14
FUTURE POLYMER SYSTEM 4	10 HP	14	14	14
TRANSFORMER T–LDW	9.3 KVA	39	39	39
PANELBOARD H–DW	126 KVA	189	189	189
CONVEYOR CONTROL PANEL	30 HP	40	40	40
SLUDGE GRINDER	10 HP	14	14	14
TOTAL CONNECTED LOAD		1506	1506	1506
MCC–DW RATED AMPACITY @ 480 VOLT		2000	2000	2000
SPARE AMPACITY		494	494	494

THE TRANSFORMER, MCC AND CONDUCTORS ARE ADEQUATE TO SERVE THE CONNECTED LOAD

DEWATERING PLANT		
Panel / MCC Name	**Calculated Ultimate Available Short Circuit Current**	**Panel/ MCC Rating**
MCC-DW	32.8 kA	65 kA
H-DW	32.8 kA	65 kA
L-DW	10.5 kA	22 kA

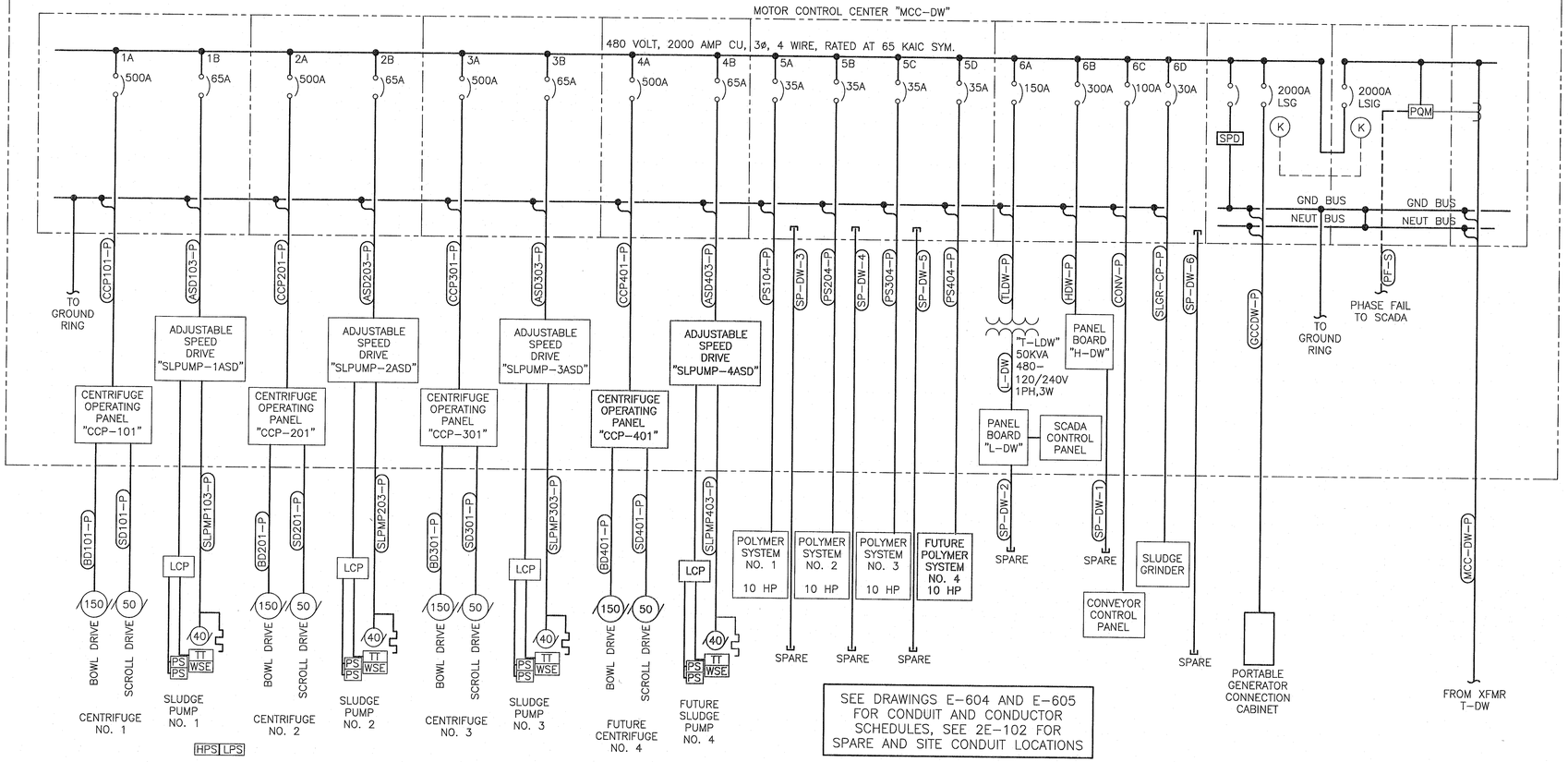
GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE THE DEWATERING BUILDING MCC. FUTURE EQUIPMENT IS SHOWN LIGHT ON THIS DRAWING.

B. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH PROCESS MECHANICAL FOR PROPOSED SLUDGE PUMP AND CENTRIFUGE ANCILLARY DEVICES, HVAC FOR CONTROLS, PLUMBING FOR AND EQUIPMENT LOADS, AND PROCESS CONTROL SYSTEM INTEGRATOR PRIOR TO SHOP DRAWING CREATION FOR THE EXACT PROPOSED EQUIPMENT INTERCONNECTION WIRING REQUIREMENTS.

C. CONTRACTOR SHALL PROVIDE KIRK KEY PHYSICAL INTERLOCK BETWEEN UTILITY POWER BREAKER AND PORTABLE GENERATOR POWER BREAKER.

MCC–DW IS TO BE LOCATED IN THE PROPOSED DEWATERING BUILDING ELECTRICAL ROOM



SEE DRAWINGS E–604 AND E–605 FOR CONDUIT AND CONDUCTOR SCHEDULES, SEE 2E–102 FOR SPARE AND SITE CONDUIT LOCATIONS

MCC-DW ONE LINE DIAGRAM
NTS

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
STACY L. JORDAN
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PROFESSIONAL ENGINEER
05.06.2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING MCC-DW ONE LINE DIAGRAM 2E-601

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 230 OF 255	

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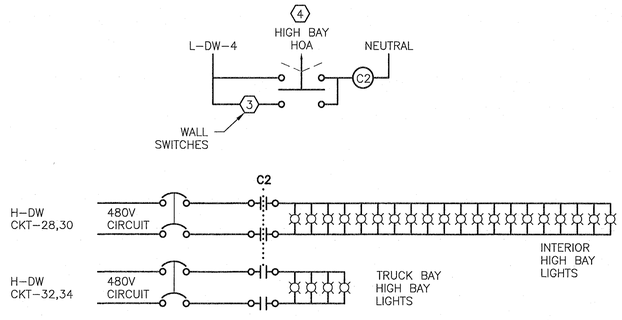
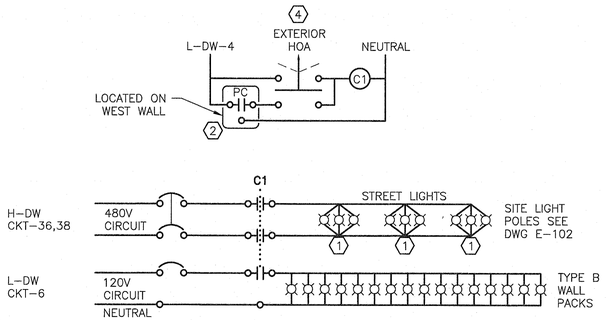


DEWATERING BUILDING INTERIOR LIGHTING
CONTROL WIRING SCHEMATIC



DEWATERING BUILDING EXTERIOR LIGHTING
CONTROL WIRING SCHEMATIC

LIGHTING NOTES:

1. PROVIDE STREET LIGHT POLES, PER DETAIL NO.1 ON DRAWING E-004. SEE DRAWING E-701 FOR LIGHTING CONTROL PANEL INFORMATION.
2. INSTALL PHOTOCELL HIGH ON WALL AND ADJUST TO OPERATE PROPERLY.
3. HIGH BAY INTERIOR AND HIGH BAY TRUCK LOADING BAY LIGHTS CONTROL SHALL BE ROUTED THROUGH 3 WAY AND 4 WAY SWITCHES. H-DW-28,30,32,34,44 MAY SHARE CONDUIT.
4. PROVIDE PHENOLIC NAMEPLATES FOR EACH DEVICE.

DEWATERING PLANT		
Panel / MCC Name	**Calculated Ultimate Available Short Circuit Current**	**Panel/ MCC Rating**
MCC-DW	32.8 kA	65 kA
H-DW	32.8 kA	65 kA
L-DW	10.5 kA	22 kA

SHORT CIRCUIT CURRENT AVAILABLE
FROM TRANSFORMER T-DW

PANELBOARD IS TO BE LOCATED IN THE
DEWATERING BUILDING CONTROL ROOM

PANELBOARD H-DW

BUS AMPS 400
MAIN LUG ONLY YES
VOLTS 480 AIC 65 KA
PHASE 3 WIRE 3 SN NO

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE
3. PHASE, NEUTRAL AND GROUND BUS SHALL BE COPPER

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	C	BKR.	LOAD	WIRE	CKT. DESCRIPTION
	4			1		2			8	
MAU-1	4	60,736	80	3		4	40	26,604	8	PU-1
	4			5		6			8	
	10			7		8			8	
EF-1	10	2,240	15	9		10	40	26,604	8	PU-2
	10			11		12			8	
	10			13		14			6	
EF-2	10	3,730	15	15		16	50	10,500	6	BRIDGE CRANE
	10			17		18			6	
	10			19		20		–	–	
SLUDGE GRINDER	10	3,730	15	21		22	50	–	–	SPARE
	10			23		24		–	–	
	10			25		26	–	–	–	SPACE
OVERHEAD DOORS	10	3,730	20	27		28	20	3,700	12	HIGH BAY INTERIOR LIGHTING
	10			29		30			12	
	–			31		32			12	
SPARE	–	–	30	33		34	20	1,665	12	HIGH BAY TRUCK BAY LIGHTING
	–			35		36			8	
	–			37		38	20	675	8	SITE LIGHTING
SPARE	–	–	50	39		40			–	
	–			41		42	20	–	–	SPARE
SPACE	–	–	–	43		44	–	–	–	SPACE
	–	–	–	45		46	–	–	–	
	–	–	–	47		48	–	–	–	
	–	–	–	49		50	–	–	–	
	–	–	–	51		52	–	–	–	
	–	–	–	53		54	–	–	–	
		70,436		MLO				69,748		

TOTAL CONNECTED VA = 140,184
140 KVA = 170.9 AMPS AT 480 VOLTS
168.2 AMPS X 125% = 210.2 AMPS
THE MCC FEEDER BREAKER, MAIN BREAKER AND CONDUCTORS
ARE ALL RATED PROPERLY TO SERVE THE LOAD
CONDUCTORS ARE SHOWN IN CONDUIT SCHEDULE

PANELBOARD IS TO BE LOCATED IN THE
DEWATERING BUILDING CONTROL ROOM

PANELBOARD L-DW

BUS AMPS 225
MAIN BREAKER YES
VOLTS 240 AIC 22 KAIC
PHASE 1 WIRE 3 SN YES

NOTES
1. SURFACE MOUNT
2. NEMA 1 ENCLOSURE
3. PHASE, NEUTRAL AND GROUND BUS SHALL BE COPPER

225

CKT. DESCRIPTION	WIRE	LOAD	BKR.	A	B	BKR.	LOAD	WIRE	CKT. DESCRIPTION
CENTRIFUGE 1 CCP-101 INTERNAL RECEPT	12	180	20	1	2	20	495	12	ELECT RM LIGHTS
CENTRIFUGE 2 CCP-201 INTERNAL RECEPT	12	180	20	3	4	20	50	12	LIGHTING CONTROL PANEL LCP-DW
CENTRIFUGE 3 CCP-301 INTERNAL RECEPT	12	180	20	5	6	20	680	12	EXTERIOR WALL PACK LIGHTS
CENTRIFUGE 4 CCP-401 INTERNAL RECEPT	12	180	20	7	8	20	24	12	EMERGENCY AND EXIT LIGHTS
ELECTRICAL ROOM RECEPTACLES	12	720	20	9	10	20	80	12	PLC-DW CONTROL PANEL UPS POWER
ELECTRICAL ROOM RECEPTACLES	12	720	20	11	12	20	180	12	PLC-DW CONTROL PANEL RECEPTACLE
ELECTRICAL ROOM RECEPTACLES	12	720	20	13	14	20	180	12	EXTERIOR WALL HVAC RECEPT
BUILDING OPEN AREA NORTH RECEPTACLES	12	720	20	15	16	20	180	12	EXTERIOR WALL HVAC RECEPT
BUILDING OPEN AREA CENTER RECEPTACLES	12	720	20	17	18	20	160	12	EX-FAN EF-3
BUILDING OPEN AREA SOUTH RECEPTACLES	12	720	20	19	20	20	1500	12	WATER HEATER WH-1
SPARE	–	–	20	21	22	20	260	12	VENTILATION CONTROL PANEL ATC-1
COP-101 PANEL & RECEPT INSIDE IT	12	250	20	23	24	20	200	12	HVAC CONTROL PANEL ATC-2
COP-201 PANEL & RECEPT INSIDE IT	12	250	20	25	26	20	100	12	EMERGENCY EYE WASH
COP-301 PANEL & RECEPT INSIDE IT	12	250	20	27	28	20	–	–	SPARE
COP-401 PANEL & RECEPT INSIDE IT	12	250	20	29	30	20	–	–	
SLUDGE FLOW METER FIT-103	12	30	20	31	32	20	–	–	
SLUDGE FLOW METER FIT-203	12	30	20	33	34	20	–	–	
SLUDGE FLOW METER FIT-303	12	30	20	35	36	20	2000	12	WALL HEATER EWH-1
SLUDGE FLOW METER FIT-403	12	30	20	37	38			12	
SPARE	–	–	20	39	40	20	–	–	
	–	–	20	41	42			–	SPARE
		6,160		N			6,089		

TOTAL CONNECTED VA = 12,249
12 KVA = 50.1 AMPS AT 240 VOLTS
50.1 AMPS X 125% = 62.62 AMPS
THE TRANSFORMER, MAIN BREAKER AND CONDUCTORS
ARE ALL RATED PROPERLY TO SERVE THE LOAD
CONDUCTORS ARE SHOWN IN CONDUIT SCHEDULE

DEWATERING PANELBOARD SCHEDULES

NTS

NO.	DATE	REVISION	APP.

KGI Kalluri Group, Inc.
Consulting Engineers & Project Managers
TBPE Registration No. F-665
16300 Katy Freyway, Suite 172
Houston, Texas 77094
Phone: (713)-365-9288

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Houston, Texas 77002
Tel: 713.548.5700
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SURVEYED BY: KUO & ASSOC,
FB NO. P-6232

STATE OF TEXAS
STACY L. JORDAN
148233
LICENSED
PROFESSIONAL ENGINEER
07.01.2025

CITY OF HOUSTON

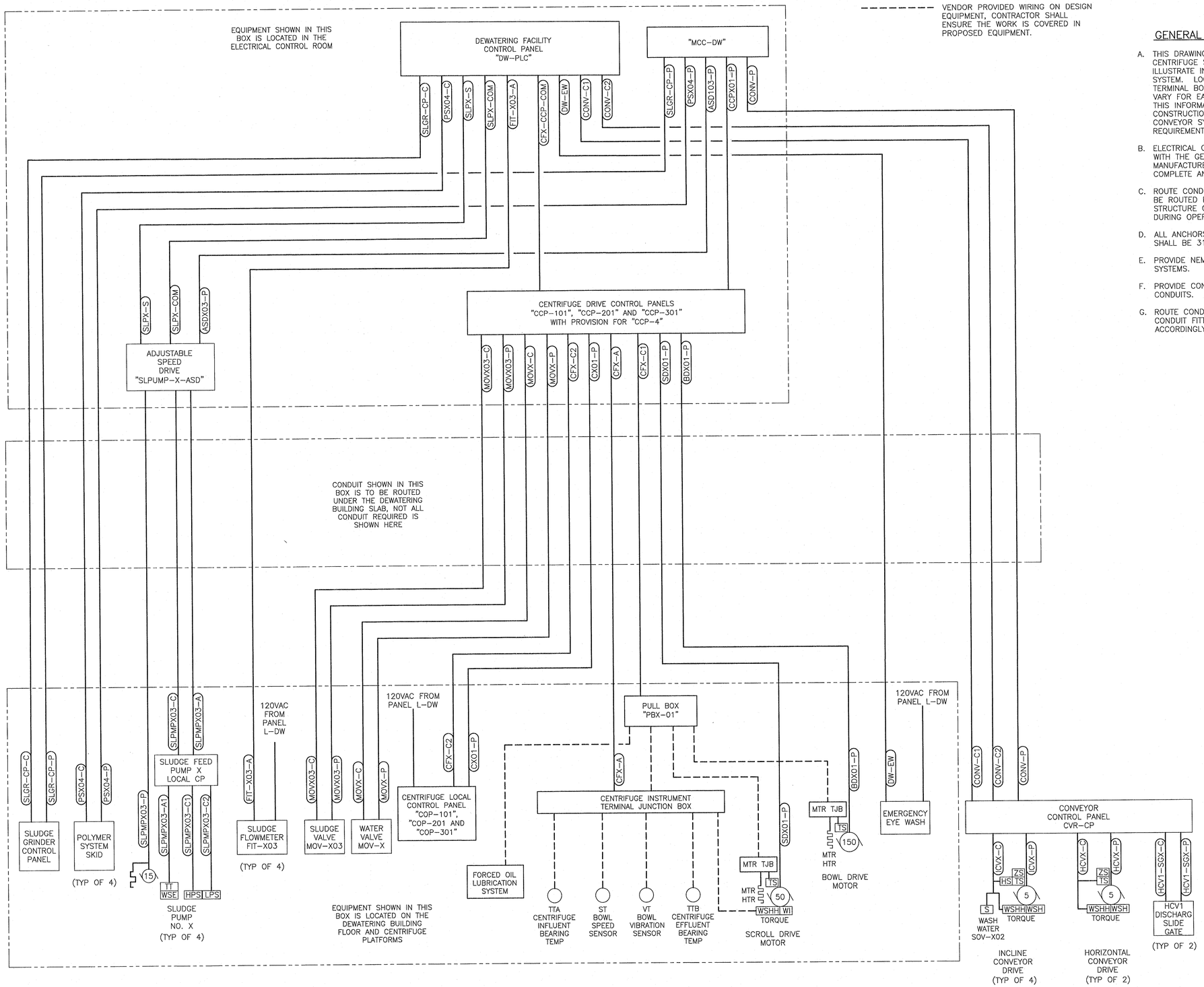
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING PANELBOARD SCHEDULES 2E-602

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 231 OF 255	

ACCEPTED AS NOTED
80341



CENTRIFUGE SYSTEM BLOCK DIAGRAM

NTS

VENDOR PROVIDED WIRING ON DESIGN EQUIPMENT, CONTRACTOR SHALL ENSURE THE WORK IS COVERED IN PROPOSED EQUIPMENT.

GENERAL NOTES:

A. THIS DRAWING'S INFORMATION WAS PROVIDED BY THE DESIGN CENTRIFUGE SYSTEM'S VARIOUS EQUIPMENT MANUFACTURERS TO ILLUSTRATE INTERCONNECTIONS REQUIRED FOR EACH CENTRIFUGE SYSTEM. LOCATIONS FOR THE VARIOUS CONDUIT JUNCTION AND TERMINAL BOXES IS NOT KNOWN. EXACT WIRING REQUIREMENTS VARY FOR EACH OF THE ACCEPTABLE CENTRIFUGE MANUFACTURERS. THIS INFORMATION IS PROVIDED FOR BID PURPOSES, NOT CONSTRUCTION. CENTRIFUGE, SLUDGE PUMP, POLYMER AND CONVEYOR SYSTEM SHOP DRAWINGS WILL PROVIDE FINAL SYSTEM REQUIREMENTS.

B. ELECTRICAL CONTRACTOR SHALL COORDINATE PRIOR TO THE BID WITH THE GENERAL CONTRACTOR'S PROPOSED CENTRIFUGE MANUFACTURER TO HAVE ENOUGH INFORMATION TO INCLUDE A COMPLETE AND WORKING SYSTEM IN THE BID.

C. ROUTE CONDUITS UNDERGROUND IF POSSIBLE. IF CONDUITS MUST BE ROUTED EXPOSED, ROUTE CONDUITS ON STRUT, ATTACHED TO STRUCTURE OUT OF WALKWAYS AND PROTECTED FROM DAMAGE DURING OPERATION.

D. ALL ANCHORS, STRUT, STRUT FITTINGS, STRAPS AND HARDWARE SHALL BE 316 STAINLESS STEEL.

E. PROVIDE NEMA 4X, 316SS ENCLOSURES ON THE CENTRIFUGE SYSTEMS.

F. PROVIDE CONDUIT AND PULL STRING FOR FUTURE EQUIPMENT'S CONDUITS.

G. ROUTE CONDUIT SUCH THAT THERE ARE NO CONNECTIONS IN CONDUIT FITTINGS. IF CONNECTIONS ARE REQUIRED A BOX SIZED ACCORDINGLY SHALL BE PROVIDED.

NO.	DATE	REVISION	APP.

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STATE OF TEXAS
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05.06.2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

DEWATERING CENTRIFUGE SYSTEM BLOCK DIAGRAM 2E-603

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SR SHAHIDUR RAHMAN, P.E.
SHEET NO.	232 OF 255

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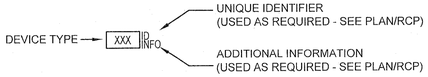
80341
CITY DRAINAGE SYSTEM
HOUSTON, TEXAS

AUDIOVISUAL INFRASTRUCTURE DEVICES

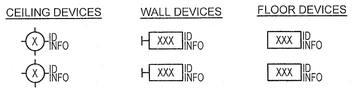
AUDIOVISUAL INFRASTRUCTURE DEVICES ARE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED
1. BLOCKS SHOWN ON THIS SHEET ARE NOT TO SCALE.
2. SEE AV DETAILS FOR MOUNTING AND SPACING REQUIREMENTS
3. NOT ALL SYMBOLS APPLY

SYMBOL	SUPPORTED AV DEVICE	POWER	DATA DROPS	MOUNTING		INFRASTRUCTURE DEVICE DESCRIPTION (UON)	NOTES	DETAIL
		# DUPLEX TECHNICAL RECEPTACLE ADJACENT (UON)	DATA/VOICE OUTLETS ADJACENT (UON)	TYPICAL MOUNTING LOCATION (UON)	HEIGHT AFF TO CENTER OF DEVICE (UON)			
H AVP 1	AV WALL PLATE TYPE 1	1	REF T-SHEETS	WALL	BLDG. STD. RECEPTACLE HT.	RACO 260 BOX WITH 818 TWO-GANG COVER		3 IA-105
H AVP 2	AV WALL PLATE TYPE 2	0	NA	WALL	VERIFY HEIGHT BASED ON SPECIFIED EXRON EXTENDER	1-GANG 3-1/2" DEEP BACK BOX	HIGH ON WALL FOR USB EXTENDER	3 IA-105
H CAM	CAMERA LOCATION	1	1	WALL	84" AFF	1-GANG 3-1/2" DEEP BACK BOX		
CAM	CAMERA LOCATION	1	1	CEILING	ABOVE CLNG TILE	COORDINATE WITH AV CONTRACTOR FOR ANY NEEDED SUPPORT		
FB	FLOOR BOX	1	6D	FLOOR	AT FLOOR	MULTI-MEDIA FLOOR BOX WITH 2-GANGS RESEVERVED FOR AV, SEE COMMS AND ELEC FOR THEIR REQUIREMENTS	LEGRAND/WIRE MOLD OR APPROVED EQUAL	
FPD 1	FLAT PANEL DISPLAY	1 (INSIDE BOX)	1D (INSIDE BOX)	WALL	FRONT OF ROOM: 78" AFF REAR OF ROOM: 72" AFF	CHIEF PAC526FCW BACK BOX.	POWER AND DATA OUTLETS INSTALLED WITHIN BOX	1 IA-105
FPD DS, TUN	FLAT PANEL DISPLAY	1	2D	WALL	72" AFF UON	2-GANG 3-1/2" DEEP BACK BOX. PROVIDE WALL REINFORCEMENT TO SUPPORT 250LB. LOAD.		1 IA-105
H WRK	WALL RACK	1 (QUAD)	6D	WALL	99" AFF	5-GANG 3-1/2" DEEP BACK BOX.		5 IA-105
A	ANTENNA	0	NA	CEILING	AT STRUCTURE	4"-SQUARE STANDARD ELECTRICAL TYPE BOX WITH SCREW COVER		
M	CEILING MIC	0	1D	CEILING	ABOVE TILE GRID	NO INFRASTRUCTURE NEEDED, CABLE WILL COME FROM RACK AND HANG ON J-HOOKS		
S	LOUDSPEAKER	0	NA	CEILING	ABOVE TILE GRID	NO INFRASTRUCTURE NEEDED, CABLE WILL COME FROM RACK AND HANG ON J-HOOKS		4 IA-105
H LA	ASST. LISTENING	0	NA	WALL	96" AFF	1-GANG 3-1/2" DEEP BACK BOX		
H" X W" SCREEN	PROJECTION SCREEN	1 (HARD-WIRED)	NA	CEILING	AT STRUCTURE	CASE SIZE DEPENDENT ON MAKE/MODEL		7 IA-105
H SW	SWITCH	0	NA	WALL	BLDG. STD. SWITCH HT.	1-GANG 3-1/2" DEEP BACK BOX		
H RSP	ROOM SCHEDULING PANEL	0	1D	WALL	ABOVE CLNG	COORDINATE GLASS MOUNTING - TERMINATE A DATA CABLE ABOVE FINISHED CEILING IN A "BISCUIT" BOX.		
PRJ	PROJECTOR	1	2D	CEILING	AT STRUCTURE	MOUNT POWER AND DATA BOX FACE DOWN IN CEILING TILE		2 IA-105

TYPICAL AV SYMBOL IDENTIFIERS



TYPICAL SYMBOL TYPES



GENERAL NOTES

GENERAL

FOR PURPOSES HEREIN, HIGH VOLTAGE IS DEFINED AS ANY CIRCUIT, DEVICE OR OTHER ELEMENT OPERATING ABOVE 70 VOLTS.

TELECOMMUNICATIONS CONTRACTOR

1.) THE TELECOMMUNICATIONS CONTRACTOR SHALL PROVIDE ALL MATERIALS, COMPONENTS, TOOLS, AND LABOR NECESSARY TO MEET VOICE/DATA REQUIREMENTS FOR ALL AV EQUIPMENT THAT REQUIRES VOICE/DATA AS INDICATED IN AV AND TELECOMMUNICATIONS DRAWINGS AND SPECIFICATIONS.

ELECTRICAL CONTRACTOR

1.) THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING SCOPE OF WORK:

A.) COORDINATE WITH DESIGN TEAM ON CONTROL SYSTEM ELEMENTS INCLUDING WALL MOUNTED CONTROL PANELS AND LIGHTING INTERFACES.

B.) PROVIDE AND INSTALL:

i.) THE "HOUSE" LIGHTING CONTROL SYSTEM, RELATED PERIPHERALS AND LOW-VOLTAGE CONTROL WIRING ASSOCIATED WITH THE "HOUSE" LIGHTING CONTROL SYSTEM.

ii.) PROVIDE AND INSTALL ALL CONDUIT, APPROPRIATE PULL STRING, JUNCTION BOXES, FLOOR BOXES, WIRE-WAYS, GUTTERS, SURFACE MOUNTED POWER STRIPS, LIGHTING, BREAKER PANELS, AC WIRING, POWER RECEPTACLES, AND OTHER ELECTRICAL EQUIPMENT AS REQUIRED TO ACCOMMODATE COMPLETE AND FUNCTIONAL AUDIO VISUAL SYSTEMS, UNLESS OTHERWISE NOTED.

iii.) BLANK AV BACK BOX COVER PLATES. CONFIRM BUILDING STANDARD COLOR AND TYPE WITH ARCHITECT PRIOR TO INSTALLATION.

C.) PROVIDE SHOP DRAWINGS OF CONDUIT ROUTING AND BOX PLACEMENT FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO IMPLEMENTATION.

2.) ALL CONDUIT FOR LOW VOLTAGE WIRING SHALL:

A.) BE METALLIC TUBING OF 1"Ø UON IN ALL AREAS OUTSIDE OF CAST CONCRETE.

B.) BE PVC TUBING OF 1"Ø UON IN ALL AREAS IN CAST CONCRETE.

C.) BE SUPPLIED WITH NYLON PULL STRING.

D.) BE 100' MAX LENGTH WITHOUT AN INTERMEDIATE JUNCTION BOX.

E.) HAVE TWO 90 DEGREE BENDS MAX WITHOUT AN INTERMEDIATE JUNCTION BOX.

F.) BE ALIGNED IN PULL BOXES FOR STRAIGHT PULL THROUGH, AND NOT EXCEED 180° OF BENDS BETWEEN PULL POINTS.

3.) ALL PULL BOXES SHALL:

A.) REMAIN ACCESSIBLE BEFORE AND AFTER COMPLETION OF CONSTRUCTION.

B.) NOT TO BE USED IN LIEU OF 90° ELBOWS.

C.) NOT BE USED TO CHANGE DIRECTION OR BEND WITHIN BOX, AND BE INSTALLED AS REQUIRED TO MEET THE ABOVE REQUIREMENTS.

4.) OTHER APPLICABLE SUBCONTRACTORS ARE RESPONSIBLE FOR PROVIDING AND INSTALLING THE FOLLOWING:

A.) STRUCTURAL WORK, GLAZING, WALL OPENINGS, PLATFORMS, RAILINGS, HVAC SYSTEMS, MILLWORK AND FINISHES.

B.) CABLE TV SERVICE AND RELATED CABLING AND CONNECTIONS, TV RELATED ANTENNA SYSTEMS AND ELECTRICAL GROUNDING AS REQUIRED FOR CONNECTIONS OF AUDIOVISUAL DEVICES.

5.) FIRESTOPPING

A.) COORDINATE ANY AND ALL FIRESTOPPING WITH THE GENERAL CONTRACTOR BEFORE PROCEEDING WITH ANY WORK INVOLVING FIRESTOPPING.

B.) ALL FIRESTOPPING SHALL CONFORM TO THE SPECIFICATIONS AND RECOMMENDATION OF THERMAL AND MOISTURE PROTECTION ON FIRESTOPPING OF THROUGH PENETRATION SYSTEM IN THE CONSTRUCTION SPECIFICATIONS DOCUMENT.

C.) SOLUTIONS AND SHOP DRAWINGS/SUBMITTALS FOR FIRE STOP MATERIALS AND SYSTEMS SHALL BE PRESENTED TO THE GENERAL CONTRACTOR FOR WRITTEN APPROVAL OF MATERIAL & SYSTEMS PRIOR TO PURCHASE AND INSTALLATION. ALL MATERIALS AND SYSTEMS SHALL BE COMPLETE, UL LISTED FOR INTENDED INSTALLATION, AND PROVIDE APPROPRIATE RATING AT THE COMPLETION OF JOB.

D.) SEAL ALL PENETRATIONS THROUGH FIRE-RATED BARRIERS (CONDUITS, SLEEVES, SLOTS, CHASES) CREATED BY OR MADE FOR OR ON THE BEHALF OF THE AUDIOVISUAL CONTRACTOR TO PREVENT THE PASSAGE OF SMOKE, FIRE, TOXIC GAS, OR WATER THROUGH PENETRATIONS.

E.) CONTRACTOR SHALL PROVIDE TRAINING MANUALS WHICH INCLUDE INSTRUCTIONS ON METHODS OF ADDING OR REMOVING CABLING TO/FROM FIRESTOPPED SLEEVES AND CHASES.

F.) REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

ABBREVIATIONS

DIV 01:	GENERAL REQUIREMENTS
DIV 27:	COMMUNICATIONS
DIV 26:	ELECTRICAL
AFF:	ABOVE FINISHED FLOOR
AV:	AUDIOVISUAL
BFC:	BELOW FINISHED CEILING
BLDG:	BUILDING
HT:	HEIGHT
IG:	ISOLATED GROUND
NA:	NOT APPLICABLE
NIC:	NOT IN CONTRACT
OFCI:	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI:	OWNER FURNISHED OWNER INSTALLED
QTY:	QUANTITY
STD:	STANDARD
UON:	UNLESS OTHERWISE NOTED

AUDIOVISUAL DRAWING LIST

1IA-001	ADMINISTRATION AUDIOVISUAL INFRASTRUCTURE LEGEND AND NOTES
1IA-002	ADMINISTRATION AUDIOVISUAL INFRASTRUCTURE RISER DIAGRAM
1IA-101	ADMINISTRATION AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR PLAN
1IA-102	ADMINISTRATION AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR REFLECTED CEILING PLAN
1IA-501	ADMINISTRATION AUDIOVISUAL INFRASTRUCTURE GENERAL DETAILS
1IA-601	ADMINISTRATION AUDIOVISUAL SYSTEMS SIGNAL FLOW DIAGRAM
1IA-602	ADMINISTRATION AUDIOVISUAL SYSTEMS SIGNAL FLOW DIAGRAM

NO.	DATE	REVISION	APP.

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BICSI ID # 163919
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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

AUDIOVISUAL INFRASTRUCTURE LEGEND AND NOTES

1IA-001

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 233 OF 255	

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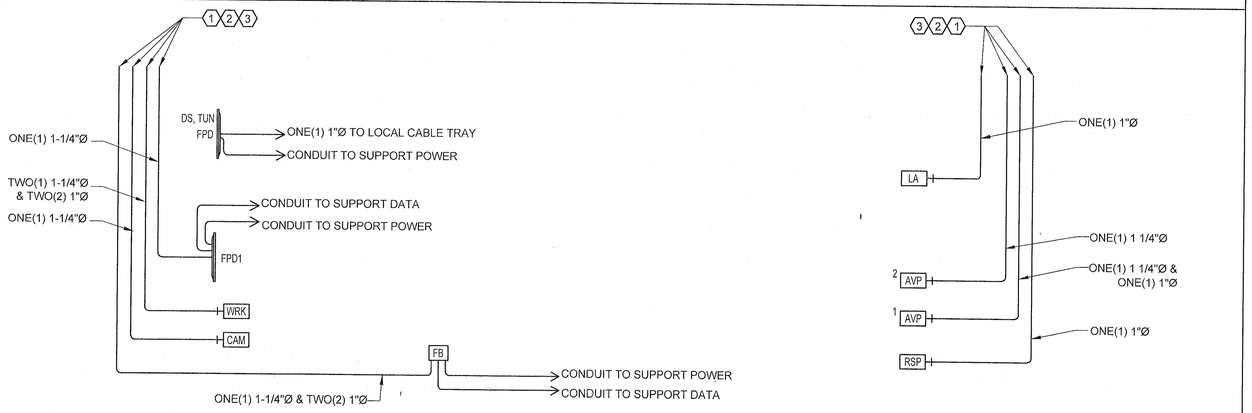
AUDIOVISUAL ONE-LINE CONDUIT DETAIL (TYPICAL)



KEYNOTES:

1. PROVIDE FOUR TO FIVE INCHES OF CONDUIT STUB OUT ACCESSIBLE FROM THE PLENUM SPACE. PROVIDE PLASTIC BUSHING ON ALL CONDUIT STUB OUTS.
2. PROVIDE TWO(2) 1-1/4"Ø CONDUIT SLEEVES FROM LOCAL CABLE TRAY THROUGH WALL AND EXTENDING FOUR TO FIVE INCHES INTO ACCESSIBLE PLENUM SPACE OF ROOM. PROVIDE PLASTIC BUSHING ON ALL CONDUIT STUB OUTS.
3. RUN PLENUM RATED CABLE ON J-HOOKS TO ANTENNA, CAMERA, CEILING MIC AND LOUDSPEAKER LOCATIONS

GENERAL

1.) NOT ALL SYMBOLS TO BE USED PER SPACE. SEE AV DRAWINGS FOR EXACT SPACE REQUIREMENTS.

2.) ANY VARIATIONS IN CONDUIT SIZE OR DESTINATION WILL BE LOCATED IN THE AV DETAIL PAGES.

3.) REFER TO ELECTRICAL AND COMMUNICATIONS DRAWINGS FOR ELECTRICAL AND DATA PATHWAY/CONDUIT REQUIREMENTS.

4.) PROVIDE ONE (1) 1"Ø CONDUIT FROM LIGHTING/DIMMER PANEL TO ACCESSIBLE CEILING PLENUM IN ALL ROOMS WITH PROGRAMMABLE LIGHTS.

5.) PROVIDE ONE (1) 1"Ø CONDUIT FROM SHADE CONTROL TO ACCESSIBLE CEILING PLENUM IN ALL ROOMS WITH CONTROLLABLE WINDOW SHADES.

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Sean Doyle
BICSI ID # 163919
EXPIRES 12-31-25
RCDD
12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

AUDIOVISUAL INFRASTRUCTURE RISER DIAGRAM

1IA-002

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DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
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HOUSTON, TEXAS

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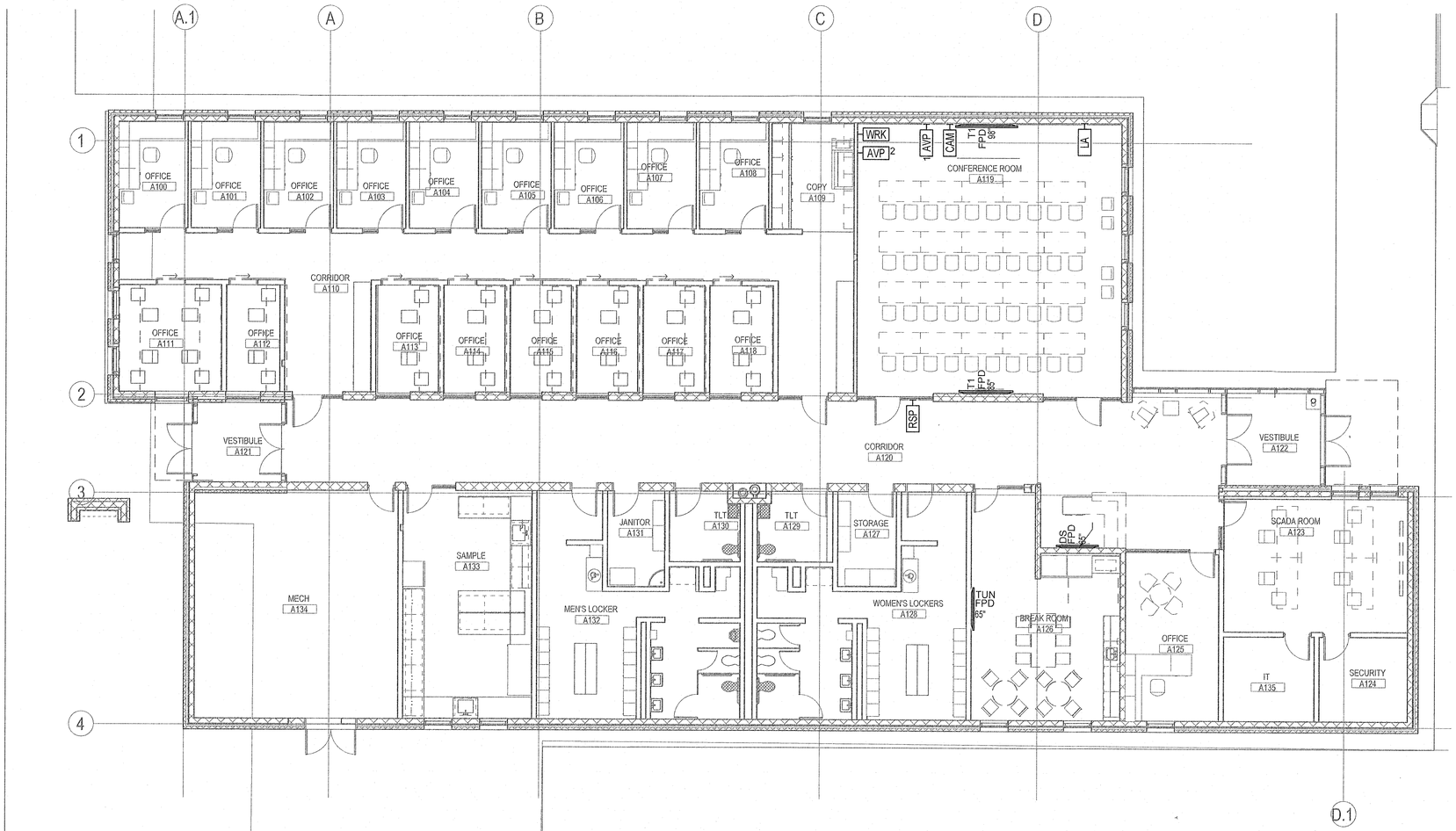
GENERAL NOTES:

1.) THE VALUES IN INCHES AT FPD PANELS INDICATE THE PROPOSED DIAGONAL SIZE OF THE DISPLAY ITSELF. FOR ELEVATION AFF SEE 1IA-001



1IA-101 AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

NO.	DATE	REVISION	APP.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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BICSI ID # 163919
EXPIRES 12-31-25
RCDD
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR PLAN

1IA-101

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	1/8" = 1'-0"
CITY OF HOUSTON PM	S/E SHAHIDUR RAHMAN, P.E.
SHEET NO.	235 OF 255

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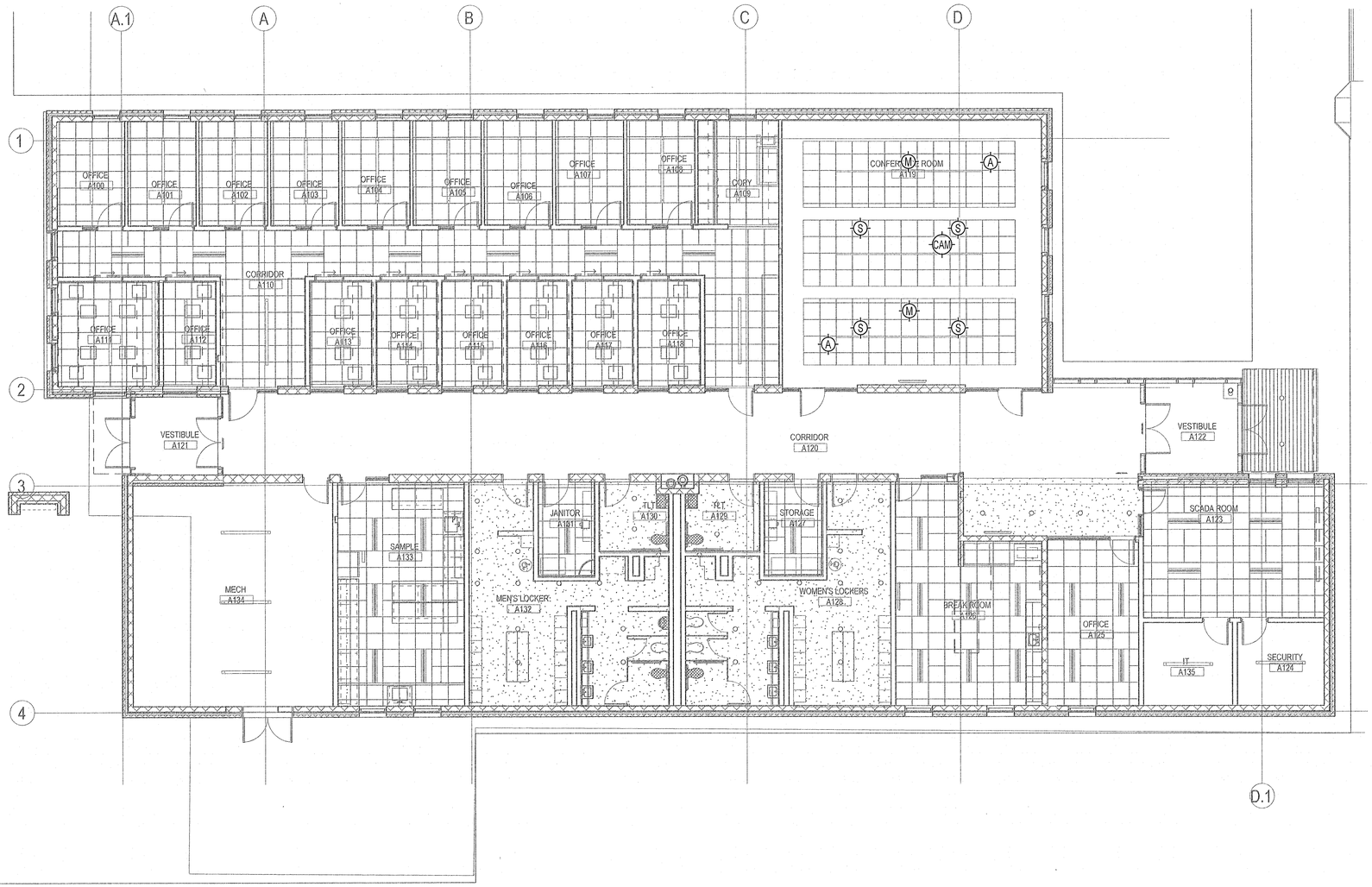

1IA-102 AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

NO.	DATE	REVISION	APP.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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CITY OF HOUSTON
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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

AUDIOVISUAL INFRASTRUCTURE FIRST FLOOR REFLECTED CEILING PLAN 1IA-102

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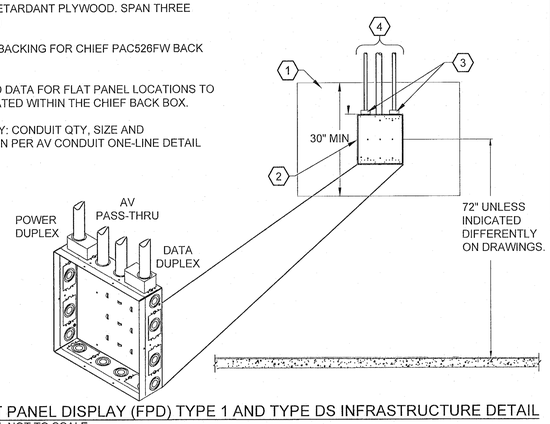
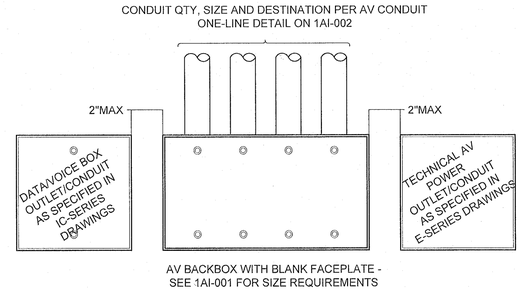
KEYED NOTES:

1. DISPLAY SUPPORT BACKING (3/4" FIRE RETARDANT PLYWOOD. SPAN THREE STUD BAYS)
2. CUTOUT IN BACKING FOR CHIEF PAC526FW BACK BOX
3. POWER AND DATA FOR FLAT PANEL LOCATIONS TO BE TERMINATED WITHIN THE CHIEF BACK BOX.
4. TYPE 1 ONLY: CONDUIT QTY, SIZE AND DESTINATION PER AV CONDUIT ONE-LINE DETAIL ON 1AI-002.



1 / 1IA-501 FLAT PANEL DISPLAY (FPD) TYPE 1 AND TYPE DS INFRASTRUCTURE DETAIL
SCALE: NOT TO SCALE

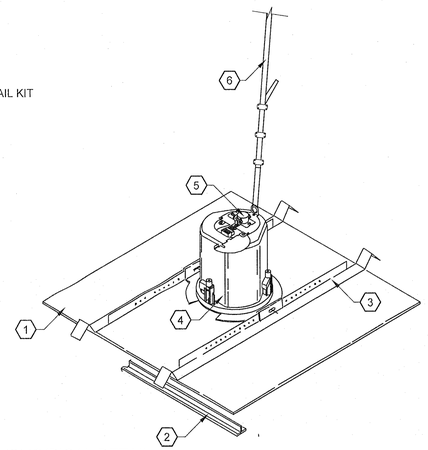
2 / 1IA-501 NOT USED
SCALE: NOT TO SCALE



3 / 1IA-501 AUDIO VISUAL PLATE (AVP) INFRASTRUCTURE DETAIL
SCALE: NOT TO SCALE

KEYED NOTES:

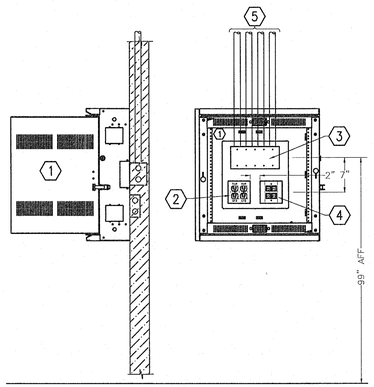
1. 2X2 CEILING TILE
2. CEILING TILE SUPPORT TRUSS
3. CEILING SPEAKER SUPPORT RAIL KIT
4. LOUDSPEAKER IN BACK CAN
5. SPEAKER CABLING ENTRANCE
6. SUPPORT TO STRUCTURE



4 / 1IA-501 CEILING SPEAKER (S) TYPICAL DETAIL
SCALE: NOT TO SCALE

KEYED NOTES:

1. WALL RACK WRK
2. TECHNICAL AV POWER OUTLET/CONDUIT AS SPECIFIED IN E-SERIES DRAWINGS
3. AV INFRASTRUCTURE BACK BOX
4. DATA/VOICE OUTLET/CONDUIT AS SPECIFIED IN T-SERIES DRAWINGS
5. CONDUIT NUMBER, SIZE AND DESTINATION PER AV CONDUIT ONE-LINE DETAIL SIZE MAY VARY FROM SHOWN HERE.



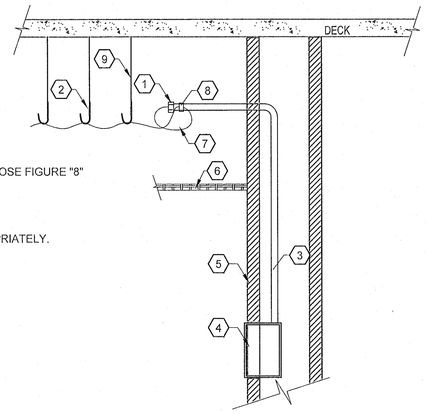
5 / 1IA-501 WALL RACK (WRK) DETAIL - CONFERENCE ROOM RACK
SCALE: NOT TO SCALE

6 / 1IA-501 NOT USED
SCALE: NOT TO SCALE

7 / 1IA-501 NOT USED
SCALE: NOT TO SCALE

KEYED NOTES:

1. INSULATED BUSHING.
2. J-HOOK.
3. CONDUIT WITH PULL STRING.
4. WALL MOUNT BACK BOX.
5. WALL.
6. FINISHED CEILING.
7. 2' MINIMUM CABLE SLACK IN A LOOSE FIGURE "8" SHAPE.
8. VELCRO.
9. ALL THREAD ROD, SIZED APPROPRIATELY.



8 / 1IA-501 TYPICAL CABLE MANAGEMENT DETAIL
SCALE: NOT TO SCALE

NO.	DATE	REVISION	APP

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

AUDIOVISUAL INFRASTRUCTURE GENERAL DETAILS

1IA-501

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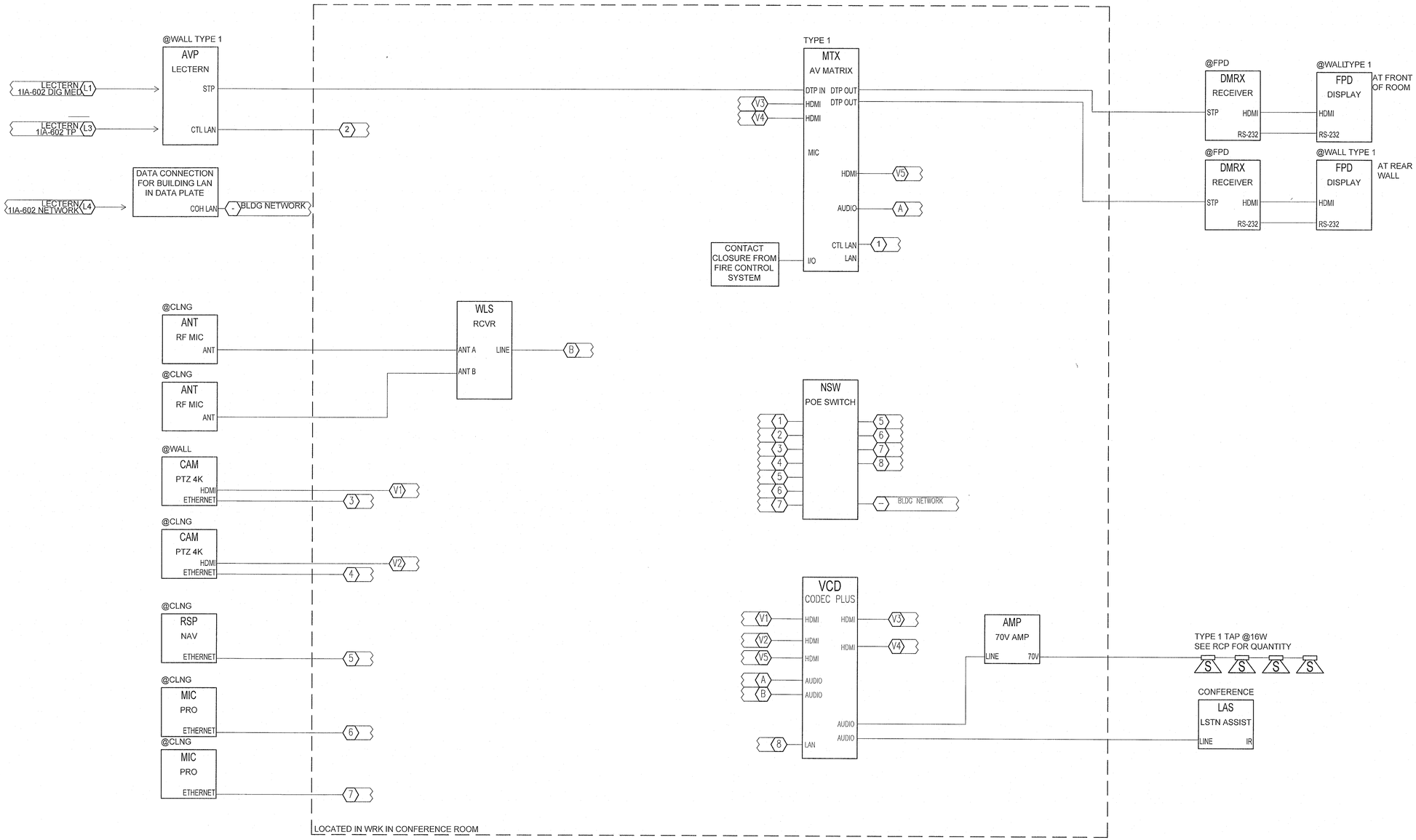

1 / 1IA-601 SIGNAL FLOW - CONFERENCE ROOM
SCALE: NOT TO SCALE

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

AUDIOVISUAL SYSTEMS SIGNAL FLOW DIAGRAM 1IA-601

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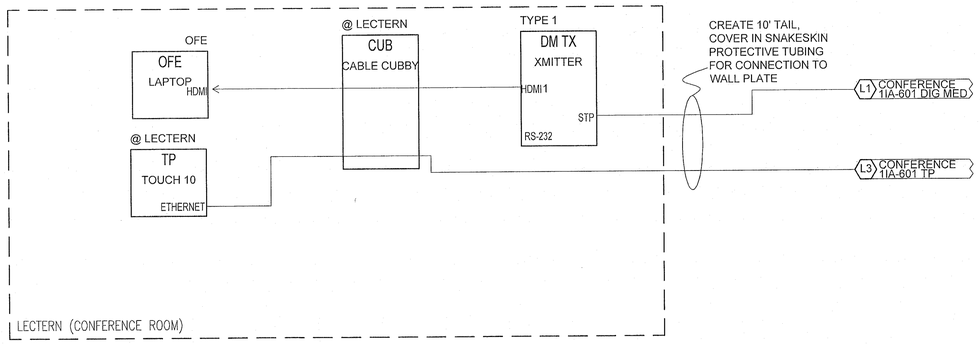
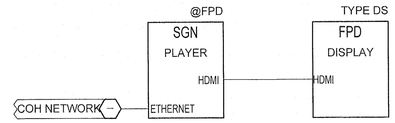


1 / 1IA-602 SIGNAL FLOW - LECTERN FOR CONFERENCE ROOM
SCALE: NOT TO SCALE



2 / 1IA-602 SIGNAL FLOW - DIGITAL SIGNAGE FLAT PANEL DISPLAYS (TYPICAL)
SCALE: NOT TO SCALE

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

AUDIOVISUAL SYSTEMS SIGNAL FLOW DIAGRAM

1IA-602

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GENERAL NOTES

GENERAL CONTRACTOR/CONSTRUCTION MANAGER NOTES:

1.) THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER IS RESPONSIBLE TO ENSURE THAT ALL DIVISIONS AND TRADES ARE AWARE OF WORK REQUIRED TO SUPPORT THE INSTALLATION OF RELATED SYSTEMS AND SUB-SYSTEMS. CONTRACTORS ARE RESPONSIBLE TO REVIEW ALL RELATED SPECIFICATIONS AND DRAWINGS.

2.) PROVIDE AND INSTALL WALL MOUNTED ¾" AC GRADE FIRE RESISTANT PLYWOOD IN ALL COMMUNICATIONS ROOMS ON AS INDICATED. APPLY INTUMESCENT COATING TO OUTWARD FACING SIDES OF PLYWOOD, ENSURE FIRE RESISTANT STAMP IS VISIBLE FOR INSPECTION ON EACH SHEET OF PLYWOOD.

3.) CABLE TRAY, SLEEVES, BOXES, POWER, AND CONDUITS SHOWN ON COMMUNICATIONS DRAWINGS ARE FOR COORDINATION ONLY. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS.

ELECTRICAL CONTRACTOR NOTES:

1.) THE ELECTRICAL CONTRACTOR SHALL FURNISH AND PROVIDE THE FOLLOWING FOR COMMUNICATIONS CABLING: CABLE TRAY, CONDUIT, SLEEVES, WALL, AND FLOOR BOXES REFER TO THE ELECTRICAL AND COMMUNICATIONS DETAIL DRAWINGS.

A.) STANDARD DATA AND VOICE SERVICE BOXES FOR COMMUNICATIONS SHALL BE A FLUSH 4 11/16" SQ DEEP BOX (3" MIN) WITH SINGLE GANG REDUCTION PLATE AND A 1"Ø CONDUIT FROM BOX TO ACCESSIBLE CEILING SPACE.

B.) BOXES FOR WIRELESS DEVICES MOUNTED ABOVE LAY-IN CEILINGS SHALL BE A 4 11/16"SQ DEEP BOX (3" MIN) WITH SINGLE GANG REDUCTION PLATE (TYP).

C.) FURNITURE DATA AND POWER PATHWAYS UP TO SEATING SHALL BE AS SPECIFIED ON THE ELECTRICAL AND COMMUNICATIONS DRAWINGS. CONTRACTOR SHALL COORDINATE WITH G.C. AND SYSTEM FURNITURE MANUFACTURER FOR PLACEMENT OF DATA/VOICE DROPS. INSTALL POWER CABLING IN SEPARATE RACEWAY FROM COMMUNICATIONS CABLING.

2.) CONTRACTOR SHALL PROVIDE RACEWAY INSTALLATION IN A MANNER THAT WILL PROTECT ALL DATA/VOICE/FIBER CABLING FROM MECHANICAL DAMAGE. INSTALL CONDUITS FOR COMMUNICATIONS WITH LONG RADIUS BENDS, BUSHED ENDS THAT ARE GROUNDED AND BONDED AS PER CODES AND STANDARDS.

3.) CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR AND COMMUNICATIONS TRADE ON CONDUIT AND CABLE TRAY ROUTING FOR COMMUNICATIONS CABLES PRIOR TO INSTALLATION OF PATHWAYS TO ENSURE CABLE PATHWAYS DO NOT CAUSE CABLE LENGTHS TO EXCEED MAXIMUM DISTANCES. IN GENERAL, CONDUITS FROM CABLE TRAY TO TELECOM OUTLETS SHOULD BE THE MOST DIRECT ROUTE POSSIBLE FOLLOWING BUILDING LINES.

4.) CONTRACTOR SHALL INSTALL A TIED OFF NYLON PULL STRING IN ALL CONDUITS.

5.) INSTALL THE CABLE TRAY WITH A MIN. 12" CLEARANCE ABOVE IT AND ON ONE SIDE OF TRAY. INSTALL SOLID BOTTOM TRAY WHERE IS PLACED ABOVE LIGHT FIXTURES.

6.) CONDUITS SHALL NOT EXCEED 180° OF BENDS BETWEEN PULL POINTS. INSTALL PERMANENTLY ACCESSIBLE PULL BOXES AS REQUIRED TO MEET THIS REQUIREMENT. DO NOT CHANGE DIRECTION OR BEND WITHIN A JUNCTION BOX OR PULL BOX.

7.) GROUNDING AND BONDING:

A.) BUILDING GROUNDING SYSTEM BY ELECTRICAL CONTRACTOR.

B.) ALL PATHWAYS INSTALLED FOR COMMUNICATIONS SHALL BE BONDED TO COMMUNICATION GROUND BUS BARS.

C.) REFER TO ELECTRICAL SERIES DRAWINGS AND SPECIFICATIONS FOR OTHER COMMUNICATION GROUNDING REQUIREMENTS AND INFO ON INSTALLATION OF MATERIALS AND HARDWARE.

D.) DISSIMILAR METALS BONDED TO EACH OTHER AND APT TO CORRODE IN NORMAL ENVIRONMENTAL CONDITIONS SHALL BE SEPARATED BY A CONDUCTIVE MATERIAL SPACER TO PREVENT CORROSION. REFER TO SPECIFICATIONS FOR OTHER GROUNDING REQUIREMENTS.

E.) BUS BARS SHALL BE PRE-DRILLED WITH STANDARD NEMA BOLT HOLE SIZING & SPACING FOR CONNECTIONS OF THE BONDING CONDUCTORS TO THE BUSBAR.

8.) IDENTIFICATION:

A.) SPRAY ALL BOXES AND CONDUIT FOR COMMUNICATIONS WITH A DISTINCTIVE COLOR FOR EASY IDENTIFICATION. COLOR SHALL BE DIFFERENT FROM OTHER TRADES.

COMMUNICATION NOTES

1.) THE TELECOMMUNICATIONS CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DOCUMENTS FOR RELATED SECTIONS, WHICH MAKE UP THE CONTRACT DOCUMENTS AND SHALL COORDINATE ALL COMMUNICATIONS WORK ON THE COMMUNICATIONS PLANS WITH ANY COMMUNICATIONS SECTIONS OF RELATED DRAWINGS AND SPECIFICATIONS.

A.) STRUCTURED CABLING REQUIREMENTS FOR THE PROJECT ARE THE RESPONSIBILITY OF THE COMMUNICATIONS CABLING CONTRACTOR UNLESS OTHERWISE NOTED. COORDINATE WITH ALL TRADES THAT APPLY. REFER TO MEP, AUDIOVISUAL, AND SECURITY SHEETS FOR ADDITIONAL CABLING REQUIREMENTS.

2.) TELECOMMUNICATIONS CONTRACTOR, CABLING CONTRACTOR, OR COMMUNICATIONS CONTRACTOR SHALL HERE AFTER BE REFERRED TO AS CONTRACTOR UNLESS OTHERWISE NOTED.

3.) CONTRACTOR SHALL PROVIDE ALL MATERIALS, COMPONENTS, TOOLS, AND LABOR NECESSARY TO COMPLETE THIS INFRASTRUCTURE INSTALLATION.

4.) ALL COMMUNICATIONS CABLING PATHWAYS OUTSIDE OF COMMUNICATIONS ROOMS BY ELECTRICAL CONTRACTOR.

5.) CONTRACTOR SHALL PROVIDE 'J' HOOKS ON THREADED ROD RATED FOR SUPPORTING DATA CABLING THAT IS NOT IN CONDUIT OR CABLE TRAY. CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR ON CABLE PATHS PRIOR TO INSTALLATION OF CABLING.

COMMUNICATIONS CABLING:

1.) ALL UTP HORIZONTAL CABLING MUST BE WITHIN A PHYSICAL LENGTH OF 295'.

2.) PROVIDE ALL NECESSARY MEANS TO PROTECT ALL COPPER/FIBER CABLING AND JACK/PORTS FROM MECHANICAL DAMAGE AND DUST DURING CONSTRUCTION.

3.) FIBER BACKBONE/RISER CABLE SHALL BE INSTALLED IN CONDUIT OR ON LADDER RUNWAY UNLESS IT IS ARMORED.

4.) COORDINATE WITH GENERAL CONTRACTOR FOR SYSTEM FURNITURE WORKSTATIONS TO PROVIDE REQUIRED BRACKETS TO INSTALL AND TERMINATE COMMUNICATIONS CABLING, JACKS AND FACE PLATES.

COMMUNICATIONS ROOMS:

1.) CONTRACTOR TO PROVIDE EQUIPMENT RACKS, HORIZONTAL CABLE RUNWAYS AND MANAGERS, VERTICAL CABLE MANAGERS, TERMINATION HARDWARE, POWER STRIPS FOR RACKS, TERMINATION, LABELING, AND TESTING AS SPECIFIED IN CONTRACT DOCUMENTS.

2.) GRAPHIC REPRESENTATION OF PATCH PANELS, BLOCKS, VERTICAL, AND HORIZONTAL CORD MANAGEMENT DO NOT REPRESENT EXACT QUANTITIES. CONTRACTOR SHALL PROVIDE SUFFICIENT QUANTITIES FOR ALL CABLING, PLUS 20% GROWTH. (REFER ALSO TO SPECIFICATIONS).

GROUNDING AND BONDING:

1.) CONTRACTOR SHALL BOND ALL METALLIC COMPONENTS TO BUSBAR IN THE FOLLOWING MANNER:

A.) CONTRACTOR SHALL INSTALL A CONTINUOUS BONDING CONDUCTOR FROM BUSBAR TO EACH ROW OF EQUIPMENT RACKS. EXTEND CONDUCTOR ALONG ENTIRE ROW. BOND EACH RACK TO BONDING CONDUCTOR WITH AN INSULATED COPPER CONDUCTOR.

B.) BOND/STRAP ALL LADDER RACKS TO ADJACENT SECTIONS WITH A STRANDED BONDING COPPER CONDUCTOR. INSTALL A BONDING CONDUCTOR FROM BUSBAR TO LADDER RACKS.

C.) BONDING SHALL BE IN AN APPROVED MANNER.

D.) DISSIMILAR METALS BONDED TO EACH OTHER AND APT TO CORRODE IN NORMAL ENVIRONMENTAL CONDITIONS SHALL BE SEPARATED BY A CONDUCTIVE MATERIAL SPACER TO PREVENT CORROSION. REFER TO SPECIFICATIONS FOR OTHER GROUNDING REQUIREMENTS.

FIRESTOPPING:

1.) COORDINATE ANY AND ALL FIRESTOPPING WITH THE GENERAL CONTRACTOR BEFORE PROCEEDING WITH ANY WORK INVOLVING FIRESTOPPING.

2.) ALL FIRESTOPPING SHALL CONFORM TO THE SPECIFICATIONS AND RECOMMENDATIONS OF THERMAL AND MOISTURE PROTECTION ON FIRESTOPPING OF THROUGH PENETRATION SYSTEMS IN THE CONSTRUCTION SPECIFICATIONS DOCUMENT.

3.) SOLUTIONS AND SHOP DRAWINGS/SUBMITTALS FOR FIRE STOP MATERIALS AND SYSTEMS SHALL BE PRESENTED TO THE GENERAL CONTRACTOR FOR WRITTEN APPROVAL OF MATERIAL & SYSTEMS PRIOR TO PURCHASE AND INSTALLATION. ALL MATERIALS AND SYSTEMS SHALL BE COMPLETE, UL LISTED FOR INTENDED INSTALLATION, AND PROVIDE APPROPRIATE RATING AT THE COMPLETION OF JOB.

4.) SEAL ALL PENETRATIONS THROUGH FIRE-RATED BARRIERS (CONDUITS, SLEEVES, SLOTS, CHASES) CREATED BY OR MADE FOR OR ON THE BEHALF OF THE TELECOMMUNICATIONS CONTRACTOR TO PREVENT THE PASSAGE OF SMOKE, FIRE, TOXIC GAS, OR WATER THROUGH PENETRATIONS.

5.) CONTRACTOR SHALL PROVIDE TRAINING MANUALS WHICH INCLUDE INSTRUCTIONS ON METHODS OF ADDING OR REMOVING CABLING TO/FROM FIRESTOPPED SLEEVES AND CHASES.

6.) LAMINATE AND PERMANENTLY AFFIX TO EACH COMMUNICATIONS ROOM WALL ADJACENT TO CHASES THE FOLLOWING INFORMATION:

A.) NAME OF MANUFACTURER OF FIRE STOP SYSTEM.

B.) PART & MODEL NUMBERS OF SYSTEM AND ALL COMPONENTS.

LEGEND

#D	WALL DATA INFORMATION OUTLET. NUMBER(#) DENOTES QUANTITY OF CABLES.
W	WALL PHONE (VOICE) OUTLET AT 48" AFF.
#D	WALL DATA INFORMATION OUTLET FOR A/V EQUIPMENT. NUMBER(#) DENOTES QUANTITY OF CABLES. REFER TO A/V DRAWINGS AND SPECIFICATIONS FOR EXACT PLACEMENT.
	DATA OUTLET FOR WIRELESS ACCESS POINT (WAP) CONNECTIVITY ABOVE LAY-IN CEILING. TERMINATE WITH MODULAR CONNECTORS AND LABEL.
1D.S	WALL DATA OUTLET FOR IP CAMERA. REFER TO SECURITY DRAWINGS AND SPECIFICATIONS FOR EXACT PLACEMENT.
1D.S	CEILING DATA OUTLET FOR IP CAMERA. REFER TO SECURITY DRAWINGS AND SPECIFICATIONS FOR EXACT PLACEMENT.
#D	CEILING DATA INFORMATION OUTLET FOR A/V PROJECTOR. NUMBER(#) DENOTES AMOUNT OF CABLES. REFER TO A/V DRAWINGS AND SPECIFICATIONS FOR EXACT PLACEMENT.

ABBREVIATIONS

BAS:	BUILDING AUTOMATION SYSTEM
BET:	BUILDING ENTRANCE TERMINAL
DIV 01:	GENERAL REQUIREMENTS
DIV 07:	THERMAL & MOISTURE PROTECTION
DIV 23:	HEATING, VENTILATING, AND AIR-CONDITIONING
DIV 25:	INTEGRATED AUTOMATION
DIV 26:	ELECTRICAL
TR:	TELECOMMUNICATIONS ROOM
OFOI:	OWNER FURNISHED, OWNER INSTALLED
CFCI:	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
TBC:	TELECOM BONDING CONDUCTOR
SBB:	SECONDARY BUS BAR
TMBC:	TELECOM MAIN BONDING CONDUCTOR
PBB:	PRIMARY BUS BAR
TMH:	TELECOMMUNICATIONS MANHOLE
UTP:	UNSHIELDED TWISTED PAIR
WAP:	WIRELESS ACCESS POINT

DRAWING LIST

1IC-001	ADMINISTRATION COMMUNICATIONS LEGEND AND NOTES
1IC-002	ADMINISTRATION COMMUNICATIONS RISER DIAGRAM
1IC-101	ADMINISTRATION COMMUNICATIONS SITE PLAN
1IC-102	ADMINISTRATION COMMUNICATIONS FIRST FLOOR PLAN
1IC-501	ADMINISTRATION COMMUNICATIONS TELECOM ROOM DETAILS
1IC-502	ADMINISTRATION COMMUNICATIONS TELECOM ROOM DETAILS
1IC-503	ADMINISTRATION COMMUNICATIONS GENERAL DETAILS

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

COMMUNICATIONS LEGEND AND NOTES

1IC-001

WBS NUMBER	R-000265-0117-4
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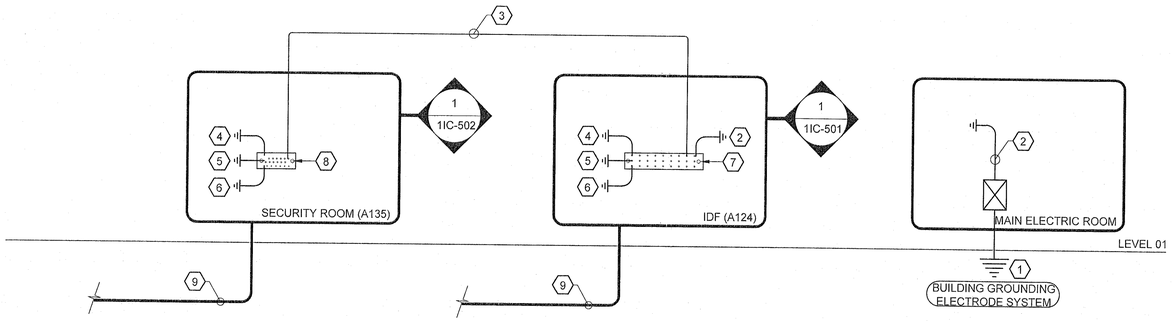
GROUNDING RISER DIAGRAM

KEYED NOTES:

1. RECOMMENDED MAXIMUM RESISTANCE EQUAL OR LESS THAN 5 OHMS.
2. STRANDED COPPER INSULATED CONDUCTOR, #4/0 TO BUILDING'S ELECTRICAL SERVICE MAIN GROUNDING ELECTRODE SYSTEM SIZED TO TEST TO EQUAL TO OR LESS THAN 0.1 OHM. ROUTE CONDUCTOR TO ELECTRICAL SERVICE WITH FEWEST BENDS AS PRACTICAL. LABEL EACH END OF CONDUCTOR WITH ROOM NUMBER TO WHICH CABLE IS ROUTED. BOND GROUND CONDUCTOR TO GROUND WITH EXOTHERMIC WELD.
3. MINIMUM #3/0 INSULATED AND STRANDED COPPER. TEST TO 0.1 OHM. BOND GROUND CONDUCTOR TO CONDUCTOR AND/OR BUSBAR WITH EXOTHERMIC WELD.
4. TO DEDICATED ELECTRICAL PANEL GROUND IN DATA/TEL, IF AVAILABLE.
5. MINIMUM #2/0 AWG TO BUILDING STEEL, IF AVAILABLE.
6. BONDING COPPER CONDUCTOR (SIZE #2/O AWG) FROM BUSBAR TO EACH ROW OF EQUIPMENT RACKS, ALONG ENTIRE LENGTH OF ROW. BOND EACH RACK TO BONDING CONDUCTOR WITH A #6 AWG STRANDED BONDING COPPER CONDUCTOR WITH 2-HOLE CRIMP LUGS AND H-TAPS. (TYP)
7. NEMA RATED PBB ¼" X 4" X 20" WITH STAND OFF INSULATORS. BOND GROUND CONDUCTOR TO PBB WITH EXOTHERMIC WELD. REFER TO ROOM DETAIL DRAWINGS FOR FINAL LOCATION.
8. NEMA RATED SBB ¼" X 4" X 10" WITH STAND OFF INSULATORS. BOND GROUND CONDUCTOR TO PBB WITH EXOTHERMIC WELD. NOTE: QUANTITIES AND CONNECTIONS ARE CONCEPTUAL. PLACE QUANTITY OF BUSBARS IN DATA/TEL ROOMS IN LOCATIONS AS SHOWN ON ROOM DETAIL DRAWINGS.
9. PROVIDE THREE (3) 4"ø CONDUITS TO EXISTING, LOW-VOLTAGE DUCT BANK FOR INCOMING ISP AND TELCO CIRCUITS. EACH CONDUIT SHALL CONTAIN 3-4" MESH FABRIC INNERDUCTS BY MAXCELL.



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Sean Doyle
BICSI ID # 163919
EXPIRES 12-31-25
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12/12/2024

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

COMMUNICATIONS RISER DIAGRAM

1IC-002

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 241 OF 255	

P.E. REGISTERED AND LICENSED
ACCEPTED AND FILED
80341
HOUSTON, TEXAS

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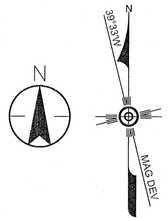


GENERAL NOTES:

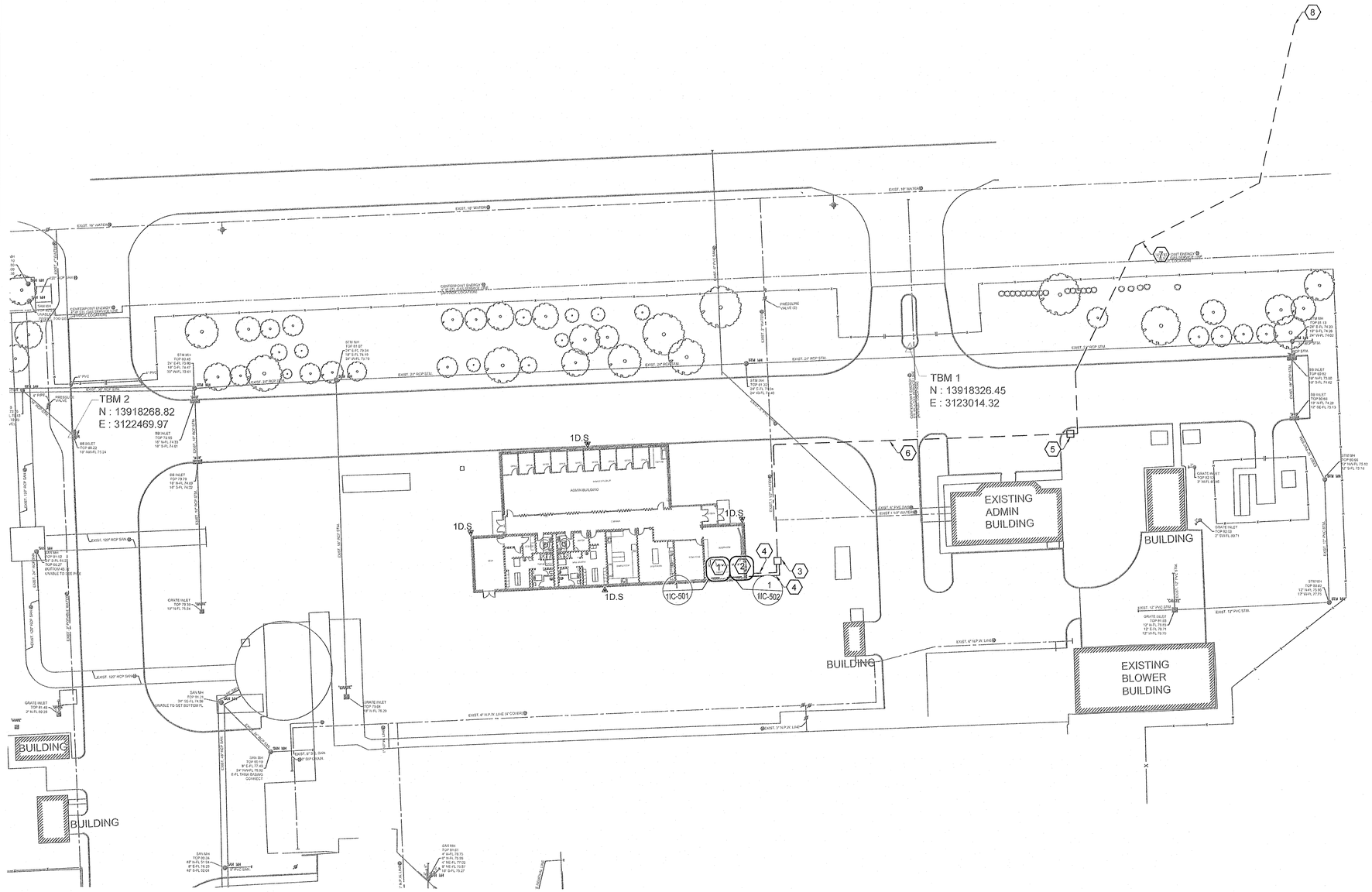
1.) OSP FIBER SHALL BE PROVIDED AND INSTALLED BY LIGHTWAVE.

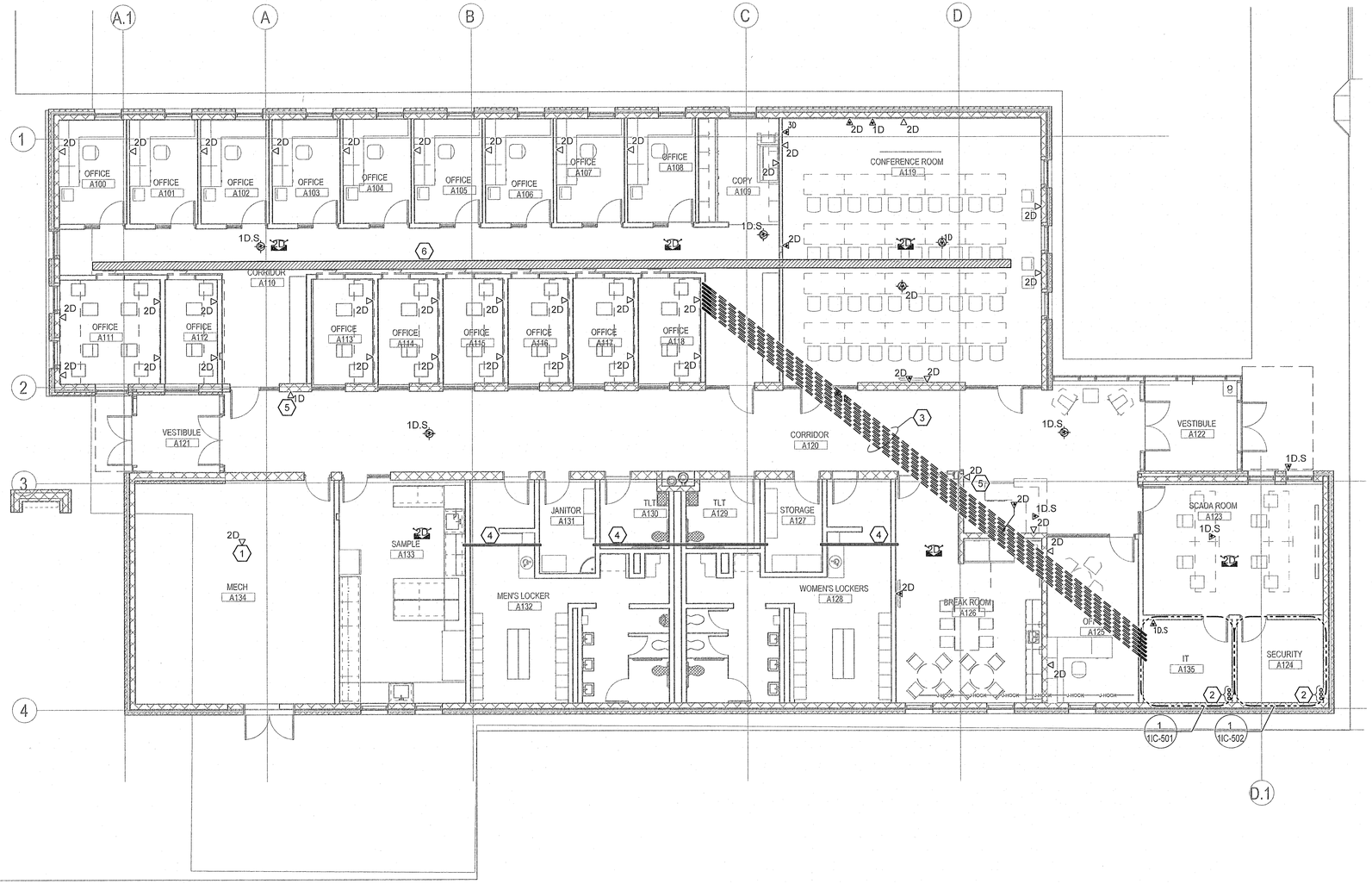
2.) PROVIDE THREE (3) 4" Ø CONDUITS FOR INCOMING FIBER TO IT ROOM. POPULATE EACH CONDUIT WITH THREE (3) 3" MAXCELL FIBER INNERDUCT. REFER TO CIVIL AND ELECTRICAL FOR EXACT ROUTING CONDITIONS.

3.) EXISTING LOW-VOLTAGE DUCT BANK IS TO REMAIN. THIS PATHWAY SHALL BE USED FOR THE ADMIN BUILDING'S NETWORK CONNECTIVITY BY LIGHTWAVE AND AT&T.

KEYED NOTES:

1. APPROXIMATE LOCATION OF IT ROOM (A135).
2. APPROXIMATE LOCATION OF SECURITY ROOM (A124).
3. APPROXIMATE LOCATION OF EXISTING LOW-VOLTAGE MANHOLE. PROVIDE THREE (3) 4"ø CONDUITS BETWEEN THIS LOCATION AND IT EACH IDF.
4. THREE (3) 4"ø CONDUITS. PROVIDE 3-CELL 3" MAXCELL FABRIC INNERDUCT IN EACH CONDUIT.
5. PROPOSED DATA SERVICE PULL BOX. REFER TO ELECTRICAL DRAWINGS FOR PULL BOX REQUIREMENTS.
6. PROPOSED DATA SERVICE DUCT BANKS. REFER TO ELECTRICAL DRAWINGS FOR EXACT LOCATION AND ROUTE.
7. EXISTING DATA SERVICE DUCT BANKS. REFER TO CIVIL/ ELECTRICAL DRAWINGS FOR EXACT LOCATION AND ROUTE.
8. TO DATA SERVICE CONNECTION.


TBM 1
N : 13918326.45
E : 3123014.32
TBM 2
N : 13918268.82
E : 3122469.97
EXISTING ADMIN BUILDING
EXISTING BLOWER BUILDING
BUILDING
BUILDING
BUILDING
1D.S
1D.S
1D.S
1IC-501
1IC-502
EXIST. 18" WATER
EXIST. 12" RCP SAN
EXIST. 24" RCP STM
EXIST. 6" PVC WATER
EXIST. 8" W.P.W. LINE
EXIST. 3" W.P.W. LINE
EXIST. 12" PVC STM
EXIST. 2" PRESSURE SANITARY
CENTERPOINT ENERGY GAS SERVICE LOCATION
PRESSURE VALVE (T)
GRATE INLET TOP 91.40 2' W.P.L 89.28
GRATE INLET TOP 91.40 2' W.P.L 89.28
GRATE INLET TOP 78.08 18" W.P.L 76.29
GRATE INLET TOP 82.19 2' W.P.L 80.19
GRATE INLET TOP 82.19 2' W.P.L 80.71
GRATE INLET TOP 80.93 12" E.P.L 78.91 12" W.P.L 78.70
SAN MH TOP 91.54 39" I.D.P.L 74.94 UNABLE TO GET BOTTOM FL
SAN MH TOP 82.19 9' E.P.L 77.49 24" INV.P.L 76.59 E.P.L TANK RISING CONNECT
SAN MH TOP 84.23 48" S.P.L 51.94 8" S.P.L 78.23 48" S.P.L 52.66
SAN MH TOP 84.23 48" S.P.L 78.23 8" W.P.L 78.09 6" NE.P.L 77.03 8" NE.P.L 75.87 18" S.P.L 79.27
STM MH TOP 91.97 24" E.P.L 79.04 24" W.P.L 78.79 18" S.P.L 79.79
STM MH TOP 91.97 24" E.P.L 79.04 24" W.P.L 78.85
STM MH TOP 91.95 24" E.P.L 79.04 24" W.P.L 78.85
STM MH TOP 91.95 24" E.P.L 74.26 18" S.P.L 74.02 24" W.P.L 74.02



1IC-102 COMMUNICATIONS FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1.) COORDINATE FINAL LOCATION OF BAS OUTLETS IN MECHANICAL AND ELECTRICAL SPACES WITH DIVISION 23/25/26 CONTRACTOR.

2.) CABLES INSTALLED IN MECHANICAL AND ELECTRICAL ROOMS SHALL BE INSTALLED IN CONDUIT. CABLE INSTALLED ON J-HOOKS IN THESE SPACES ARE NOT ACCEPTABLE.

3.) CONFIRM CONDUIT ROUTES WITH CIVIL AND ELECTRICAL DRAWINGS PRIOR TO PULLING CABLE.

KEYED NOTES:

1. DATA CABLING TO SERVE BUILDING AUTOMATION SYSTEM. FIELD COORDINATE EXACT TERMINATION LOCATION WITH MEP CONTRACTOR.
2. PROVIDE THREE (3) 4" Ø CONDUITS FOR LIGHTWAVE FIBER INCOMING CIRCUITS. REFER TO CIVIL FOR EXACT ROUTING CONDITIONS.
3. SEVEN (7) UNDERGROUND 2" CONDUITS TO SERVE ADMINISTRATION AREA. TURN UP IN WALL CAVITY AND EXTEND INTO THE PLENUM. PROVIDE BUSHING ON EACH END. REFER TO ELECTRICAL AND CIVIL DRAWINGS FOR EXACT PLACEMENT.
4. PROVIDE ONE (1) 2"Ø CONDUIT WITH BUSHINGS, FOR COMMUNICATIONS PATHWAY ACROSS HARD-LID CEILINGS.
5. DATA CONNECTIVITY FOR KRONOS CLOCK.
6. 12"x4" COMMUNICATIONS BASKET TRAY.

NO.	DATE	REVISION	APP

NOTICE:

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

COMMUNICATIONS FIRST FLOOR PLAN

1IC-102

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DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
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REGISTERED PROFESSIONAL ENGINEER
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HOUSTON, TEXAS

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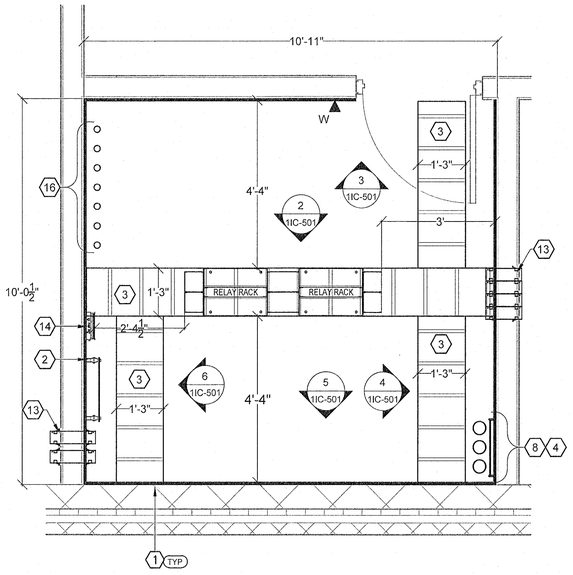
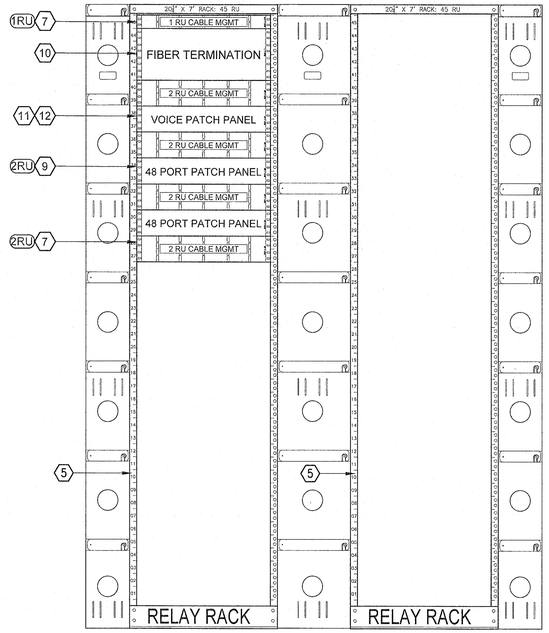


1 / 1IC-501 IDF ROOM A135 PLAN VIEW
SCALE: 1/2" = 1'-0"

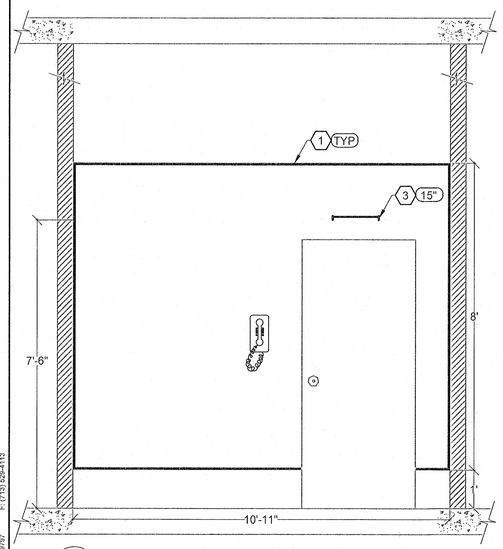


2 / 1IC-501 RACK ELEVATION
SCALE: NOT TO SCALE

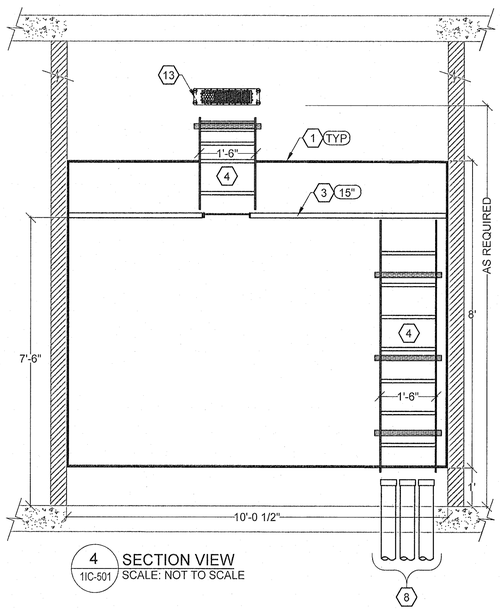
KEYED NOTES:

1. 3/4" WALL MOUNTED PLYWOOD. (SEE NOTES PAGE)
2. PRIMARY BUSBAR.
3. HORIZONTAL CABLE RUNWAY/LADDER RACK. (AS INDICATED)
4. VERTICAL LADDER RACK. (AS INDICATED)
5. 2-POST RELAY RACK. (TYP)
6. VERTICAL RACK MOUNTED CABLE MANAGEMENT. (TYP)
7. HORIZONTAL RACK MOUNTED CABLE MANAGEMENT. (TYP)
8. COMMUNICATIONS CONDUIT. (BY DIV 26)
9. RJ-45 PATCH PANEL.
10. FIBER OPTIC TERMINATION PANEL. (TYP)
11. VOICE RISER TERMINATION.
12. HORIZONTAL VOICE CABLE TERMINATION.
13. EZ-PATH FIRE STOP SYSTEM. (COORDINATE FIRE RATING)
14. BUILDING ENTRANCE TERMINAL. (BET)
15. RESERVED AREA (AS INDICATED)
16. SEVEN (7) 2" CONDUITS TO SERVE ADMINISTRATION AREA. TURN UP IN WALL CAVITY AND EXTEND INTO THE PLENUM. PROVIDE BUSHING ON EACH END. REFER TO ELECTRICAL AND CIVIL DRAWINGS FOR EXACT PLACEMENT.
17. WALL-MOUNTED RACK, 19" X 19U, FOR SECURITY TERMINATIONS AND EQUIPMENT.

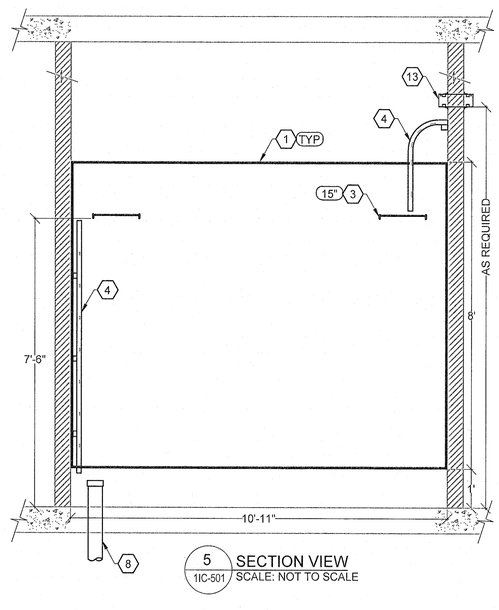
NO.	DATE	REVISION	APP.



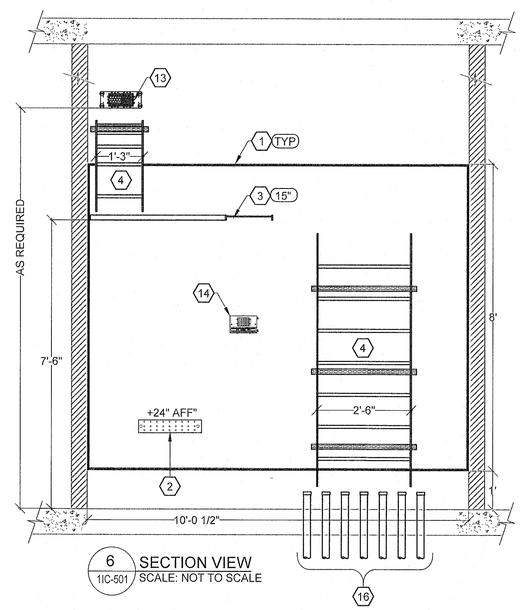
3 / 1IC-501 SECTION VIEW
SCALE: NOT TO SCALE



4 / 1IC-501 SECTION VIEW
SCALE: NOT TO SCALE



5 / 1IC-501 SECTION VIEW
SCALE: NOT TO SCALE



6 / 1IC-501 SECTION VIEW
SCALE: NOT TO SCALE

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

COMMUNICATIONS TELECOM ROOM DETAILS

1IC-501

WBS NUMBER
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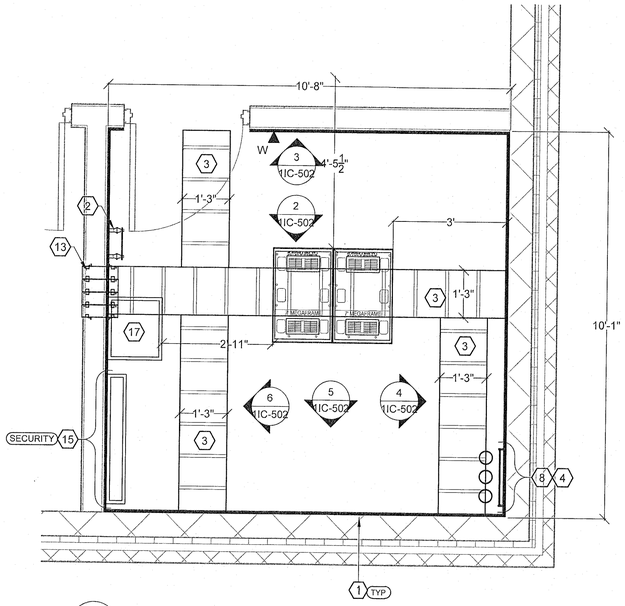
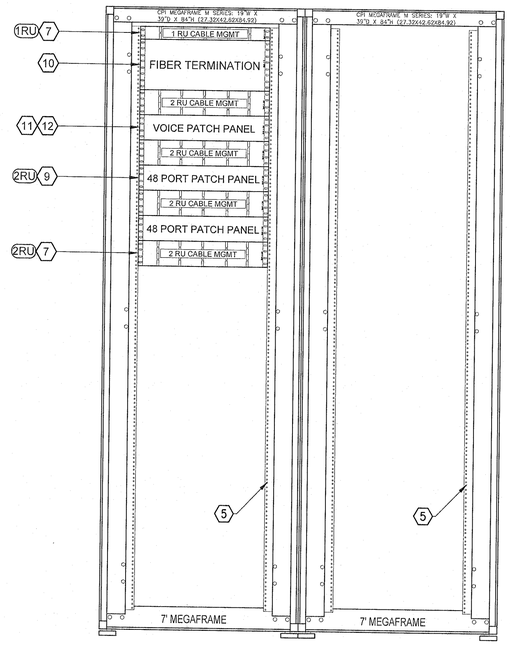


1 / 1IC-501 SECURITY ROOM A135 PLAN VIEW
SCALE: 1/2" = 1'-0"

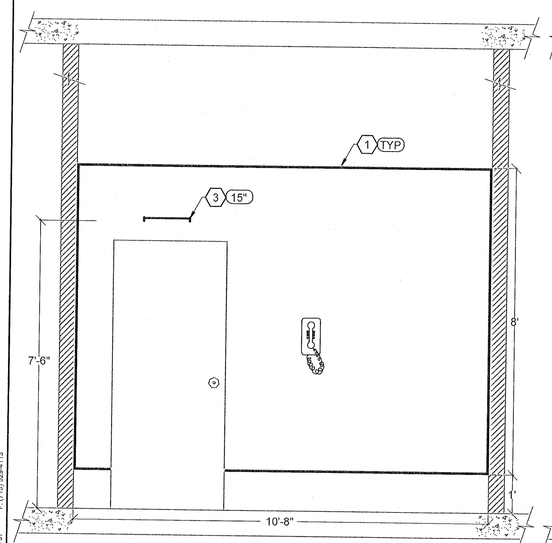


2 / 1IC-501 RACK ELEVATION
SCALE: NOT TO SCALE

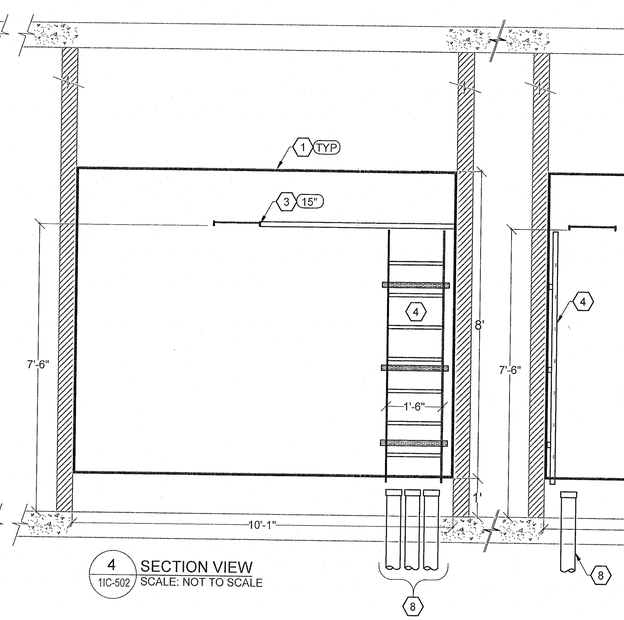
KEYED NOTES:

1. 3/4" WALL MOUNTED PLYWOOD. (SEE NOTES PAGE)
2. PRIMARY BUSBAR.
3. HORIZONTAL CABLE RUNWAY/LADDER RACK. (AS INDICATED)
4. VERTICAL LADDER RACK. (AS INDICATED)
5. 19" X 7' LOCKABLE CABINET. (TYP)
6. VERTICAL RACK MOUNTED CABLE MANAGEMENT. (TYP)
7. HORIZONTAL RACK MOUNTED CABLE MANAGEMENT. (TYP)
8. COMMUNICATIONS CONDUIT. (BY DIV 26)
9. RJ-45 PATCH PANEL.
10. FIBER OPTIC TERMINATION PANEL. (TYP)
11. VOICE RISER TERMINATION.
12. HORIZONTAL VOICE CABLE TERMINATION.
13. EZ-PATH FIRE STOP SYSTEM. (COORDINATE FIRE RATING)
14. BUILDING ENTRANCE TERMINAL. (BET)
15. RESERVED AREA (AS INDICATED)
16. SEVEN (7) 2" CONDUITS TO SERVE ADMINISTRATION AREA. TURN UP IN WALL CAVITY AND EXTEND INTO THE PLENUM. PROVIDE BUSHING ON EACH END. REFER TO ELECTRICAL AND CIVIL DRAWINGS FOR EXACT PLACEMENT.
17. WALL-MOUNTED RACK, 19" X 19U, FOR SECURITY TERMINATIONS AND EQUIPMENT.

NO.	DATE	REVISION	APP



3 / 1IC-502 SECTION VIEW
SCALE: NOT TO SCALE



4 / 1IC-502 SECTION VIEW
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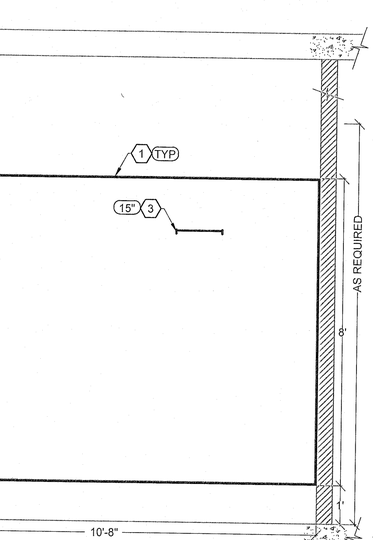
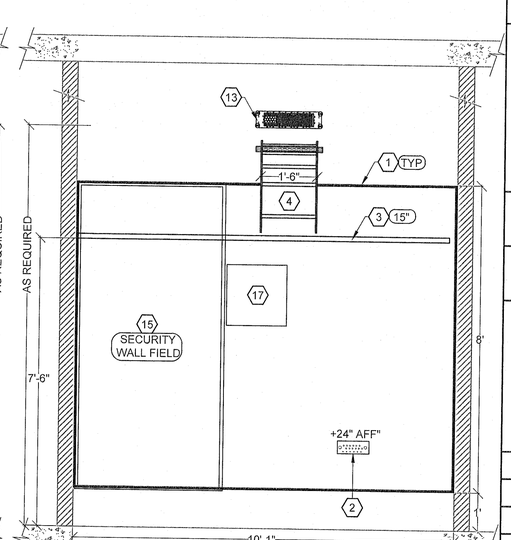


5 / 1IC-502 SECTION VIEW
SCALE: NOT TO SCALE



6 / 1IC-502 SECTION VIEW
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EXPIRES 12-31-25
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

COMMUNICATIONS TELECOM ROOM DETAILS

1IC-502

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
R-000265-0117-4	
DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 245 OF 255	

ACCEPTED
80341
CITY ENGINEER
HOUSTON, TEXAS

GENERAL NOTES:

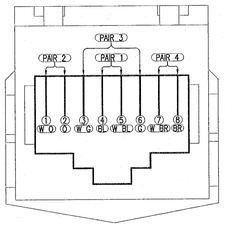
1.) ROTATE FACE PLATE 90° CLOCKWISE FOR HORIZONTAL CONFIGURATION.

2.) PLASTIC FACE PLATE SHALL BE USED IN ALL SURFACE MOUNT, OVERHEAD, AND LAB TABLE RACEWAY OUTLETS. COORDINATE COLOR W/ARCHITECT.

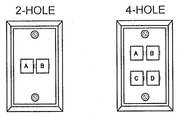
3.) COLOR CODES:
DATA JACK-BLUE
FACE PLATE PLASTIC-COORDINATE COLOR W/OWNER
CABLES-BLUE.

4.) ALL COMMUNICATIONS OUTLETS, TERMINATIONS BLOCKS AND PASSIVE CONNECTION DEVICES SHALL BE CONFIGURED TO TIA/EIA T568B WIRING STANDARDS.

CONNECTOR PIN ASSIGNMENTS	
8 PIN MODULE JACK PIN No.	DATA CONNECTION COLOR CODE
1	WHITE/ORANGE
2	ORANGE
3	WHITE/GREEN
4	BLUE
5	WHITE/BLUE
6	GREEN
7	WHITE/BROWN
8	BROWN



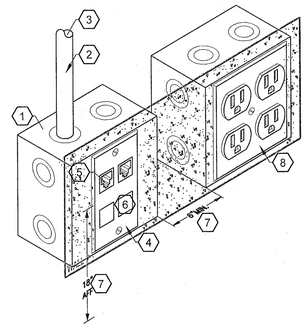
JACK POSITIONS



1 / 1IC-503 T568B CONNECTOR WIRING DETAIL
SCALE: NOT TO SCALE

KEYED NOTES:

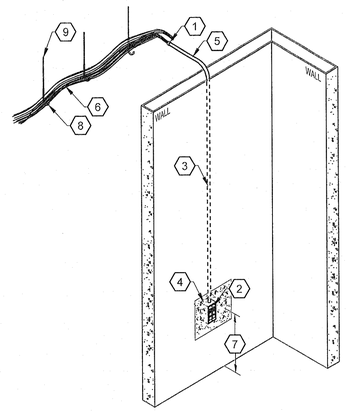
1. RECESSED DOUBLE GANG BOX (4 1/16"X4 1/16"X3") WITH SINGLE GANG REDUCTION PLATE. (BY DIV 26)
2. 1"Ø CONDUIT WITH 200 LBS ¼" POLYLINE PULL STRING. (BY DIV 26)
3. END OF CONDUIT DEBURRED AND FITTED WITH PROTECTIVE GROMMET. (BY DIV 26)
4. STRUCTURED CABLING, OUTLETS, COVER PLATES, AND JACKS SUPPLIED AND INSTALLED BY COMMUNICATION CONTRACTOR. COORDINATE COVERPLATES COLOR WITH ARCHITECT.
5. PROVIDE RJ-45 JACK FOR EACH CABLE.
6. FILL UNUSED POSITIONS WITH BLANKS.
7. COORDINATE EXACT MOUNTING HEIGHT AND DISTANCE WITH ARCHITECTURAL DRAWINGS.
8. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR BOX, FACEPLATE, AND CONDUIT REQUIREMENTS.



2 / 1IC-503 POWER AND DATA OUTLET DETAIL
SCALE: NOT TO SCALE

KEYED NOTES:

1. INSULATED BUSHING ON END OF CONDUIT
2. DATA OUTLET FACEPLATE.
3. 1"Ø CONDUIT WITH PULL STRING.
4. BACK BOX AS INDICATED ON SYMBOL SCHEDULE. (TYP)
5. CONDUIT STUB-OUT, WITH BUSHING, TO MAIN CABLE PATHWAY.
6. PRIMARY COMMUNICATIONS CABLING PATHWAY.
7. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECT/GC.
8. J-HOOKS.
9. PROVIDE MIN 12" LONG ¾"Ø CONDUIT ON THE THREADED ROD.



3 / 1IC-503 COMMUNICATIONS OUTLET DETAIL
SCALE: NOT TO SCALE

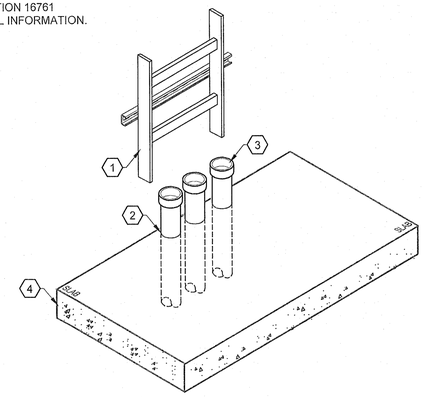
4 / 1IC-503 NOT USED
SCALE: NOT TO SCALE

GENERAL NOTES:

1.) REFER TO SPECIFICATIONS SECTION 16761 (FIRESTOPPING) FOR ADDITIONAL INFORMATION.

KEYED NOTES:

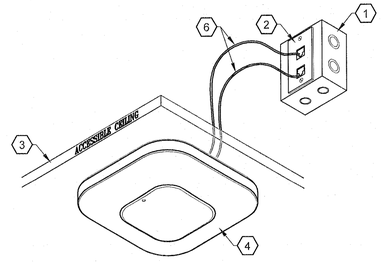
1. VERTICAL LADDER RACK AND UNISTRUT SUPPORT.
2. FIRE STOP SYSTEM THROUGH FIRE RATED PENETRATION.
3. COMMUNICATION SLEEVES TERMINATE 3" AFF.
4. 2-HOUR RATED FLOOR ASSEMBLY.



5 / 1IC-503 CONDUIT SLEEVE DETAIL
SCALE: NOT TO SCALE

KEYED NOTES:

1. INSTALL 1"Ø CONDUIT FROM BOX TO ACCESSIBLE CEILING. PROVIDE 20' OF SLACK IN ACCESSIBLE CEILING PLENUM BEFORE ENTERING CONDUIT, FOR MOVES.
2. STAINLESS STEEL FACEPLATE.
3. CEILING GRID/LAY IN CEILING.
4. HORIZONTAL SURFACE MOUNTED WIRELESS ANTENNA BY OWNER (OFCI).
5. COVERAGE AREA IS OMNI-DIRECTIONAL.
6. COORDINATE PLENUM RATED PATCH CORD LENGTH WITH OWNER (CFCI).

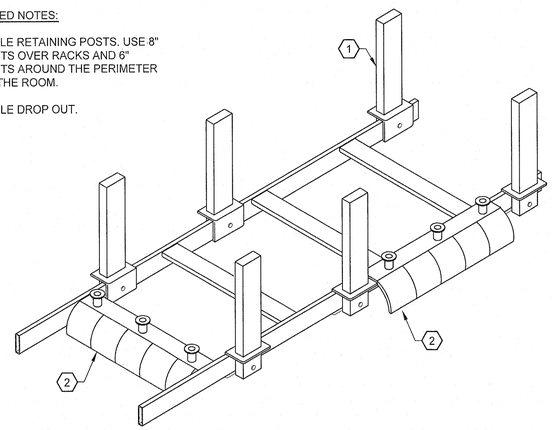


6 / 1IC-503 OUTLET DIRECTIONAL WIRELESS ANTENNA DETAIL
SCALE: NOT TO SCALE

7 / 1IC-503 NOT USED
SCALE: NOT TO SCALE

KEYED NOTES:

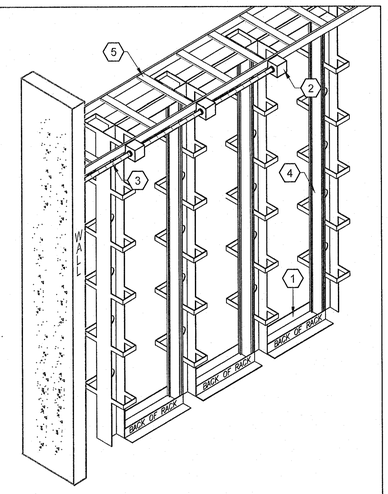
1. CABLE RETAINING POSTS. USE 8" POSTS OVER RACKS AND 6" POSTS AROUND THE PERIMETER OF THE ROOM.
2. CABLE DROP OUT.



8 / 1IC-503 CABLE RUNWAY WITH DROPOUT AND POSTS (TYP)
SCALE: NOT TO SCALE

KEYED NOTES:

1. 19" X 7' RELAY RACK.
2. ELECTRICAL RECEPTACLE.
3. CONDUIT TO ELECTRICAL PANEL.
4. VERTICAL CABLE MANAGEMENT.
5. OVERHEAD LADDER RACK.



9 / 1IC-503 POWER AT RACKS
SCALE: NOT TO SCALE

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BICSI ID # 163919
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RCDD
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

COMMUNICATIONS GENERAL DETAILS

1IC-503

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
CITY OF HOUSTON PM	
SHAHIDUR RAHMAN, P.E.	
SHEET NO. 246 OF 255	

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ACCEPTED
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AS BUILT DRAWING
HOUSTON, TEXAS

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ABBREVIATIONS

AC:	ACCESS CONTROL
APS:	ACCESS CONTROL SYSTEM POWER SUPPLY
CCTV:	CLOSED CIRCUIT TELEVISION
CPS:	CAMERA POWER SUPPLY
CPU:	CENTRAL PROCESSING UNIT
CR:	CARD READER
DGP:	DATA GATHERING PANEL
DVR:	DIGITAL VIDEO RECORDER
DIV 01:	GENERAL REQUIREMENTS
DIV 08:	OPENINGS
DIV 26:	ELECTRICAL
DIV 27:	COMMUNICATIONS
DP:	DOOR POSITION SENSOR
FOV:	FIELD OF VIEW - CAMERA PICTURE
GB:	GLASS BREAK DETECTOR
ID:	INTRUSION DETECTION
KVM:	KEYBOARD-VIDEO-MOUSE SWITCH
KP:	INTRUSION DETECTION KEYPAD
LPR:	LICENSE PLATE RECOGNITION
LPS:	LOCK POWER SUPPLY
MD:	MOTION DETECTOR
MP:	MEGAPIXEL - CAMERA RESOLUTION
NVR:	NETWORK VIDEO RECORDER
OFCI:	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI:	OWNER FURNISHED, OWNER INSTALLED
PoE:	POWER OVER ETHERNET
PP:	TELECOMMUNICATIONS PATCH PANEL
TR:	TELECOMMUNICATIONS ROOM
TCP/IP:	TRANSFER CONTROL/INTERNET PROTOCOL
UPS:	UNINTERRUPTIBLE POWER SUPPLY
UTP:	UNSHIELDED TWISTED PAIR
VMS:	VIDEO MANAGEMENT SYSTEM
DPDT:	DOUBLE PULL DOUBLE THROW

SECURITY NOTES

ARCHITECT/GEN. CONTRACTOR/CONST. MANAGER NOTES:

1.) THE ARCHITECT AND/OR GENERAL CONTRACTOR/CONSTRUCTION MANAGER IS RESPONSIBLE TO ENSURE THAT ALL DIVISIONS AND TRADES ARE AWARE OF WORK REQUIRED TO SUPPORT THE INSTALLATION OF RELATED SYSTEMS AND SUB-SYSTEMS. CONTRACTORS ARE RESPONSIBLE TO REVIEW ALL RELATED SPECIFICATIONS AND DRAWINGS.

SECURITY NOTES:

1.) THE SECURITY INTEGRATOR (SUBCONTRACTOR) SHALL REVIEW ALL CONSTRUCTION DOCUMENTS FOR RELATED SECTIONS, WHICH MAKE UP THE CONTRACT DOCUMENTS AND SHALL COORDINATE ALL ELECTRONIC SECURITY WORK ON THE ELECTRONIC SECURITY PLANS WITH ANY ELECTRONIC SECURITY SECTIONS OF RELATED DRAWINGS AND SPECIFICATIONS.

A.) ELECTRONIC SECURITY REQUIREMENTS FOR THE PROJECT ARE THE RESPONSIBILITY OF THE SECURITY INTEGRATOR (SUBCONTRACTOR) UNLESS OTHERWISE NOTED. COORDINATE WITH ALL TRADES THAT APPLY. REFER TO MEP AND COMMUNICATIONS SHEETS FOR ADDITIONAL CABLING REQUIREMENTS.

2.) ALL COMPONENTS AND DEVICES SHOWN ON THESE DRAWINGS ARE FOR APPROXIMATE LOCATION AND POSITIONING ONLY. VERIFY EXACT LOCATIONS WITH THE OWNER OR G.C. PRIOR TO INSTALLATION.

3.) ALL PRIMARY SECURITY WIRING PATHWAYS OUTSIDE OF SECURITY ROOMS SHALL BE BY ELECTRICAL CONTRACTOR. ALL CONDUIT RUNS SHALL BE FROM THE INSTALLED SECURITY DEVICE LOCATION TO THE NEAREST ACCESSIBLE CEILING SPACE.

4.) CONTRACTOR SHALL COORDINATE WITH TELECOMMUNICATIONS CONTRACTOR AND CONSULT THE TELECOMMUNICATIONS DRAWINGS. INSTALL J-HOOKS AS REQUIRED TO SUPPORT SECURITY CABLING.

5.) PROVIDE ALL NECESSARY MEANS TO PROTECT ALL SECURITY CABLING AND CONNECTORS FROM MECHANICAL DAMAGE, DUST AND DIRT DURING CONSTRUCTION.

6.) FIRE PANEL CONNECTIVITY AND PROGRAMMING BY FIRE ALARM CONTRACTOR.

7.) SECURITY INTEGRATOR SHALL COORDINATE ANY INSTALLATION IN TELECOM ROOMS WITH OWNER IT DEPARTMENT.

8.) SHIELDED AND SCREENED CABLES SHALL HAVE THEIR SHIELD'S GROUNDED PER MANUFACTURER'S INSTRUCTION. WHEN SHIELD GROUNDS ARE REQUIRED AT ONE END ONLY, THEY SHALL BE GROUNDED AT THE DGP (MASTER PANEL WHEN REMOTE PANELS ARE USED), WITH THE OTHER END OF THE CABLE, INSULATED TO PREVENT SHIELD GROUNDING.

9.) ALL METALLIC DATA, SIGNALING AND POWER CONDUCTORS FOR ROOF, FENCE AND POLE/TOWER MOUNTED DEVICES/SENSORS SHALL HAVE SURGE SUPPRESSORS WITH MANUFACTURER RECOMMENDED GROUNDING AT BOTH THE DEVICE AND TERMINATION ENDS.

10.) ALL POWER SUPPLIES NOT FED FROM A UPS SHALL HAVE EXTERNAL SURGE SUPPRESSORS WITH MANUFACTURER RECOMMENDED GROUNDING.

ELECTRICAL CONTRACTOR NOTES:

1.) ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE THE FOLLOWING FOR SECURITY INFRASTRUCTURE: CONDUIT, SLEEVES, WALL, AND FLOOR BOXES. REFER TO ELECTRICAL AND TELECOMMUNICATIONS DRAWINGS.

A.) PROVIDE AND INSTALL WALL MOUNTED ¾" FIRE RETARDANT PLYWOOD FOR ALL SECURITY PANEL LOCATIONS. APPLY WHITE OR LIGHT COLORED PAINT TO ALL SIDES OF PLYWOOD PRIOR TO INSTALLATION. (BY ELECTRICAL CONTRACTOR, OR AS DESIGNATED BY C.M.)

B.) REFER TO ARCHITECTURAL DRAWINGS TO COORDINATE WALL AND CABINETRY BOX LOCATIONS.

C.) ALL BOXES INSTALLED FOR SECURITY SHALL HAVE CONDUITS INSTALLED FROM BACK BOX TO NEAREST ACCESSIBLE CEILING SPACE AT A POINT THAT ALLOWS ADEQUATE VERTICAL WORK ROOM.

2.) CONTRACTOR SHALL PROVIDE RACEWAY INSTALLATION IN A MANNER THAT WILL PROTECT ALL SECURITY CABLING FROM MECHANICAL DAMAGE. INSTALL CONDUITS FOR SECURITY WITH LONG RADIUS BENDS AND BUSHED ENDS.

3.) PROVIDE DEDICATED RECEPTACLE CIRCUITS LOCATED ON OR NEAR EACH EQUIPMENT RACK LOCATED IN THE SECURITY ROOMS. SEE DRAWINGS FOR EXACT LOCATIONS.

4.) CONTRACTOR SHALL INSTALL A TIED OFF NYLON PULL STRING IN ALL CONDUITS.

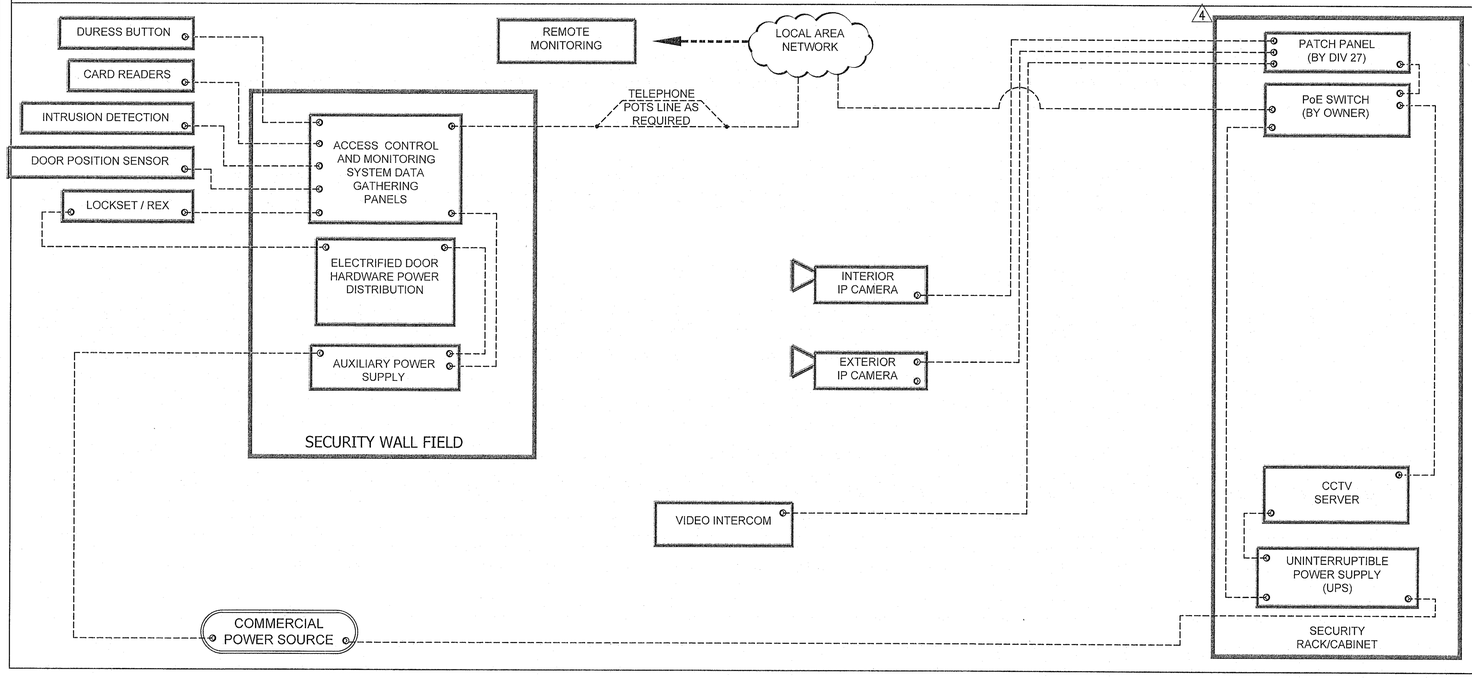
5.) IDENTIFICATION:

A.) SPRAY ALL BOXES AND CONDUIT FOR SECURITY WITH A DISTINCTIVE COLOR FOR EASY IDENTIFICATION. COLOR SHALL BE DIFFERENT FROM OTHER TRADES.

LEGEND

- WALL MOUNTED CARD READER
- DOOR POSITION SENSOR
- REQUEST TO EXIT. (REX) (BY DIV 08)
- DOOR/OPENING CALLOUT. REFER TO DESIGNATED DETAIL.
- INTERIOR IP DOME SURVEILLANCE CAMERA.
- 360° WIDE ANGLE INTERIOR IP DOME SURVEILLANCE CAMERA.
- 180° WIDE ANGLE EXTERIOR IP DOME SURVEILLANCE CAMERA.
- 270° WIDE ANGLE EXTERIOR IP DOME SURVEILLANCE CAMERA.
- VIDEO INTERCOM
- CONCEALED PERSONNEL DURESS BUTTON
- INTRUSION KEYPAD
- DUAL TECHNOLOGY MOTION DETECTOR
- GLASS BREAK DETECTOR

SECURITY BLOCK DIAGRAM



DRAWING LIST

1IS-001	ADMINISTRATION SECURITY LEGEND AND NOTES
1IS-002	ADMINISTRATION SECURITY RISER DIAGRAM
1IS-101	ADMINISTRATION SECURITY SITE PLAN
1IS-102	ADMINISTRATION SECURITY FIRST FLOOR PLAN
1IS-201	ADMINISTRATION DOOR ELEVATION DETAILS
1IS-501	ADMINISTRATION SECURITY GENERAL DETAILS I
1IS-502	ADMINISTRATION SECURITY GENERAL DETAILS II
1IS-503	ADMINISTRATION SECURITY GENERAL DETAILS III
1IS-504	ADMINISTRATION SECURITY GENERAL DETAILS IV

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

SECURITY LEGEND AND NOTES

1IS-001

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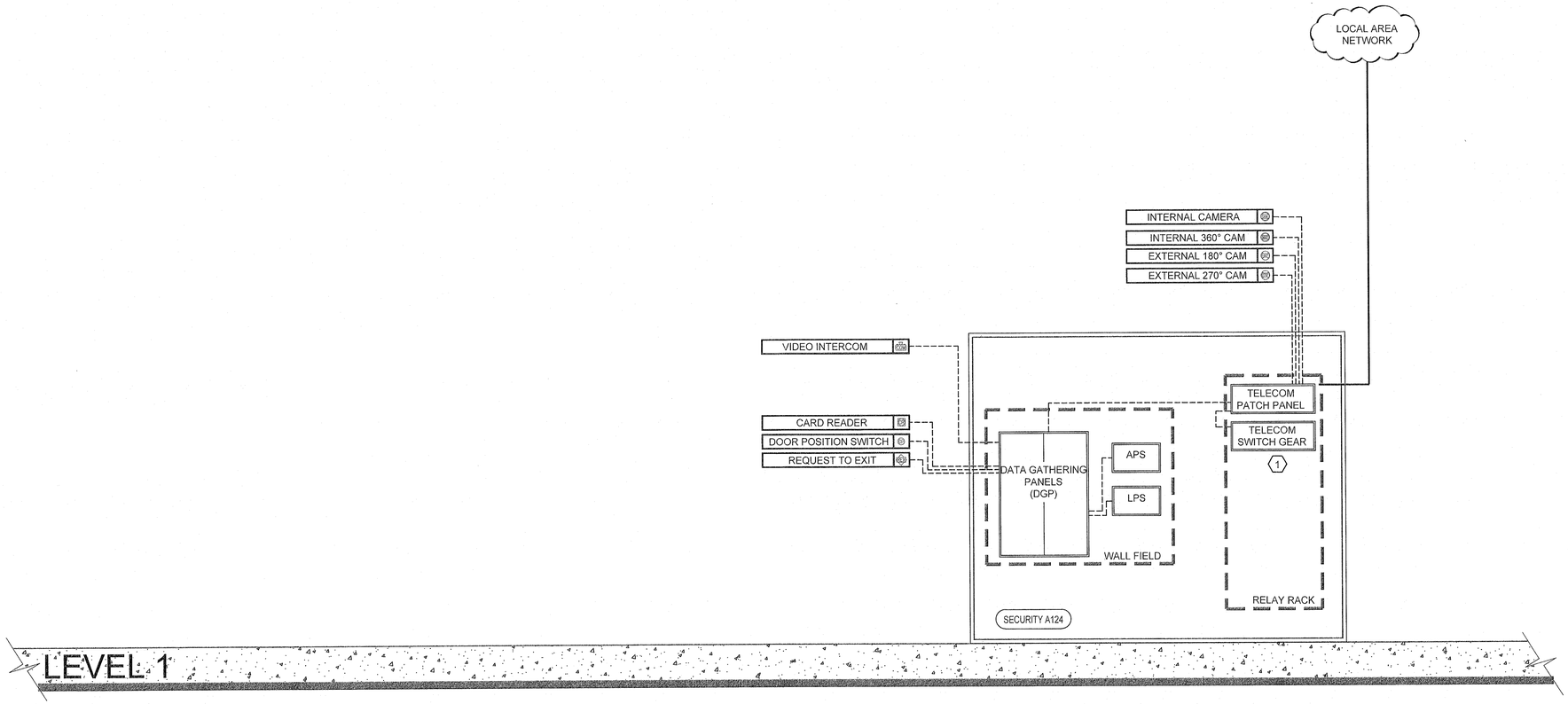
SECURITY RISER

KEYED NOTES:

1. DATA NETWORK CONNECTIVITY OF DATA GATHERING PANELS TO LAN/WAN SHALL BE BY TELECOM CONTRACTOR. SECURITY CONTRACTOR SHALL COORDINATE WITH TELECOM CONTRACTOR AND IT PERSONNEL FOR IP ADDRESSES.



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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

SECURITY RISER DIAGRAM

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PROFESSIONAL ENGINEER
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SHAHIDUR RAHMAN
12/10/2024

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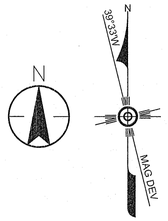
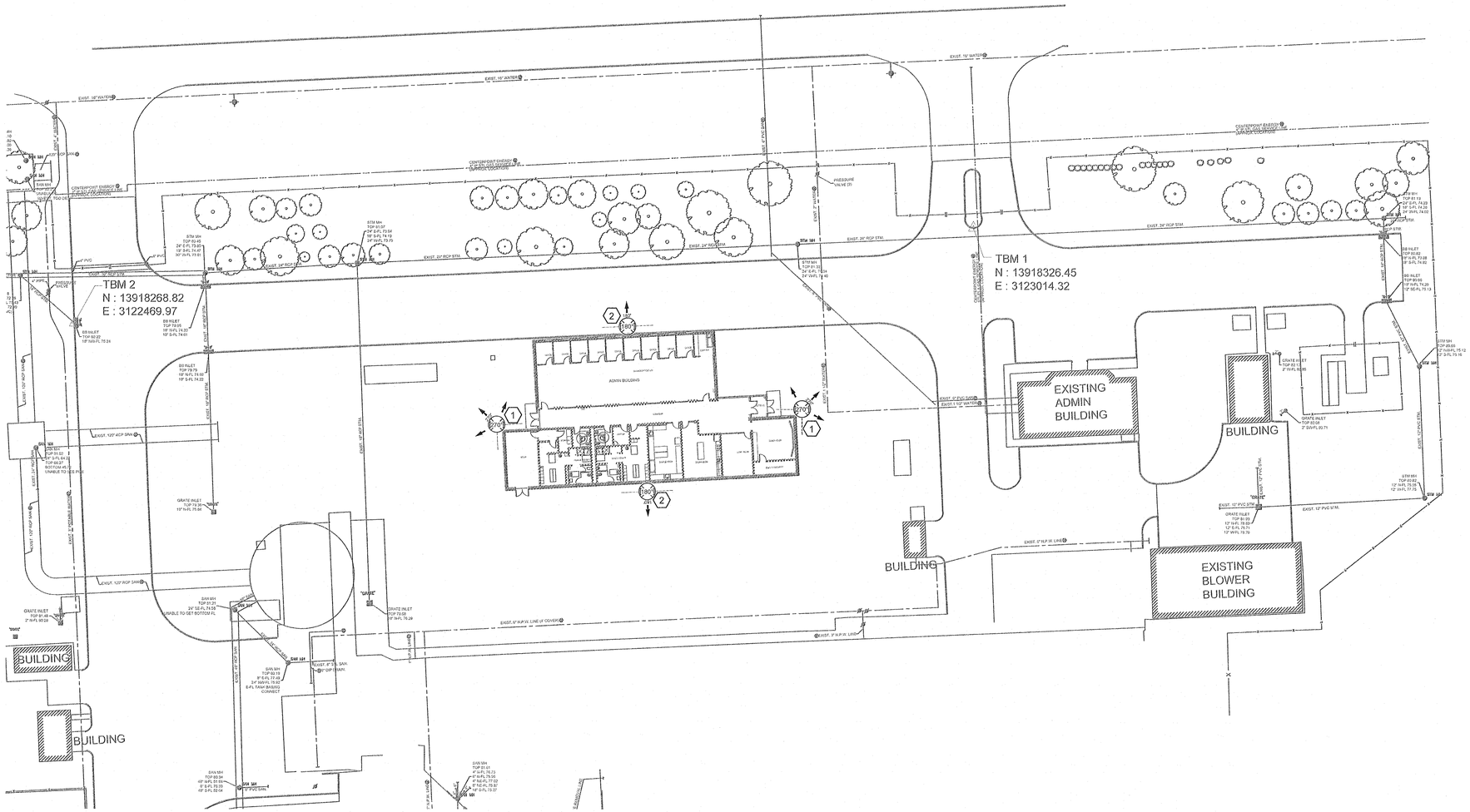


KEYED NOTES:

1. CORNER MOUNT SECURITY SURVEILLANCE CAMERA.
2. WALL MOUNT SECURITY SURVEILLANCE CAMERA.


TBM 1
N : 13918326.45
E : 3123014.32
TBM 2
N : 13918268.82
E : 3122469.97
EXISTING ADMIN BUILDING
EXISTING BLOWER BUILDING
BUILDING
BUILDING
BUILDING
ADMIN BUILDING
EXIST. 16" WATER
EXIST. 18" WATER
EXIST. 12" WATER
EXIST. 24" RCP STM
EXIST. 12" RCP STM
EXIST. 18" RCP STM
EXIST. 12" RCP SAN
EXIST. 12" PVC SAN
EXIST. 8" HLP W. LINE
EXIST. 6" HLP W. LINE
EXIST. 12" PVC STM
EXIST. 8" PVC SAN
EXIST. 6" PVC SAN
EXIST. 10" RCP SAN
EXIST. 8" HLP W. LINE UP COVER
EXIST. 3" H.L.P.W. LINE
EXIST. 4" HLP W. LINE
EXIST. 4" PVC SAN
EXIST. 6" PVC SAN
EXIST. 8" PVC SAN
EXIST. 12" PVC STM
EXIST. 18" RCP STM
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EXIST. 60" RCP STM
EXIST. 72" RCP STM
EXIST. 84" RCP STM
EXIST. 96" RCP STM
EXIST. 108" RCP STM
EXIST. 120" RCP STM
EXIST. 120" RCP SAN
EXIST. 10" DUCTILE IRON PIPE
EXIST. 12" DUCTILE IRON PIPE
EXIST. 16" DUCTILE IRON PIPE
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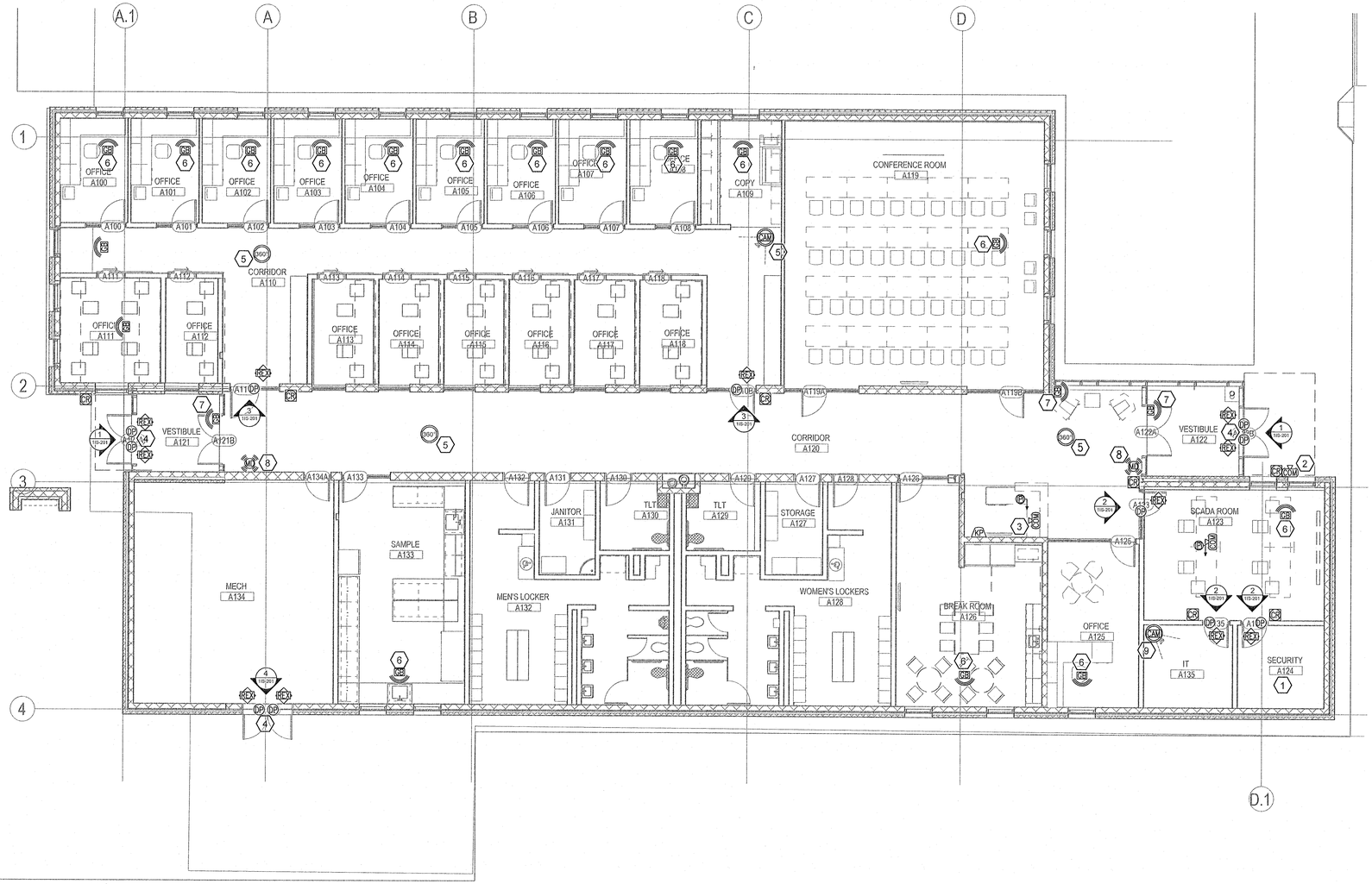
EXIST. 120" ABS



1IS-102 SECURITY FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

KEYED NOTES:

1. SECURITY VIDEO SURVEILLANCE, ACCESS CONTROL AND INTRUSION DETECTION TO BE ROUTED TO THIS LOCATION.
2. VIDEO INTERCOM SUB STATION WITH INTEGRATED CARD READER. INTERCOM/CARD READER DEVICE TO BE PEDESTAL MOUNTED. PEDESTAL TO BE PROVIDED BY ARCHITECT.
3. VIDEO INTERCOM MASTER STATION.
4. DPDT DOOR POSITION SENSORS TO BE MONITORED BY ACCESS CONTROL SYSTEM AND INTRUSION DETECTION SYSTEM.
5. CEILING MOUNTED SECURITY SURVEILLANCE CAMERA.
6. CEILING MOUNTED GLASS BREAK DETECTOR.
7. WALL MOUNTED GLASS BREAK DETECTOR.
8. WALL MOUNTED MOTION DETECTOR.
9. WALL MOUNTED SECURITY SURVEILLANCE CAMERA.

NO.	DATE	REVISION	APP.

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

VERIFICATION OF PRIVATE UTILITY LINES

Date

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

Signature valid for six months.

Date

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

Signature valid for six months.

Date

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

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Sean Doyle
BICSI ID # 163919
EXPIRES 12-31-25
RCDD
12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

SECURITY FIRST FLOOR PLAN

1IS-102

WBS NUMBER	R-000265-0117-4
DRAWING SCALE	
CITY OF HOUSTON PM	SHAHIDUR RAHMAN, P.E.
SHEET NO.	250 OF 255

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80341
TEXAS REGISTERED ENGINEERING FIRM
HOUSTON, TEXAS

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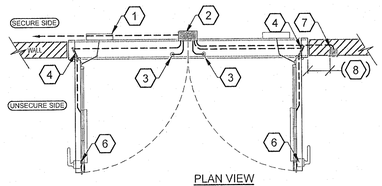
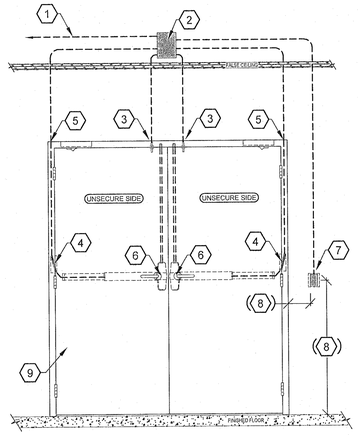
KEYED NOTES:

1. 3/4"Ø CONDUIT TO ACCESSIBLE CEILING FOR PATHWAY AND WIRING TO SECURITY CONTROL LOCATION. (BY DIV 26)
2. CONCEALED 6" X 8" X 4" COVERED JUNCTION BOX LOCATED NEAR DOOR ABOVE CEILING ACCESSIBLE TO SECURE SIDE. (BY DIV 26)
3. CONCEALED DOOR POSITION SENSOR. PROVIDE 3/4"Ø CONDUIT AND REQUIRED FRAME AND PATHWAY PREPARATION.
4. POWER TRANSFER FOR WIRE ROUTING TO J-BOX. (BY DIV 08)
5. PROVIDE 3/4"Ø CONDUIT, REQUIRED FRAME, AND PATHWAY PREPARATION FOR WIREWAY THROUGH DOOR.
6. ELECTRIFIED LATCH RETRACTION EXIT DEVICE WITH INTEGRAL REX SWITCH ON SECURE SIDE. MONITORING, DELAYED EGRESS AND LOCAL AUDIBLE ALARM AS REQUIRED. (BY DIV 08)
7. SINGLE GANG JUNCTION BOX AND 3/4"Ø CONDUIT FOR CARD READER. (BY DIV 26)
8. MOUNT CARD READER ON UNSECURE SIDE 42" AFF AND 6" OPTIMUM FROM DOOR.
9. COORDINATE WITH DIVISION 08 DOOR AND HARDWARE SPECIFICATIONS/DRAWINGS.



PLAN VIEW

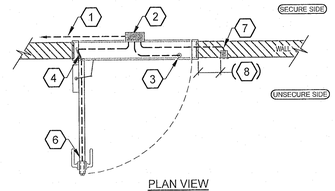


ELEVATION VIEW

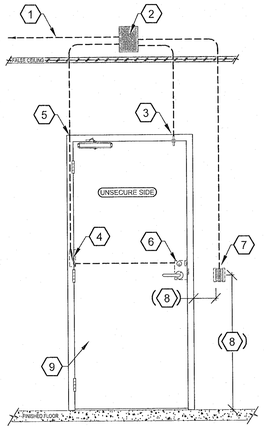
1 DOUBLE LATCH RETRACTION CARD READER DOOR
1S-201 SCALE: NOT TO SCALE

KEYED NOTES:

1. 3/4"Ø CONDUIT TO ACCESSIBLE CEILING FOR PATHWAY AND WIRING TO SECURITY CONTROL LOCATION. (BY DIV 26)
2. CONCEALED 6" X 8" X 4" COVERED JUNCTION BOX LOCATED NEAR DOOR ABOVE CEILING ACCESSIBLE TO SECURE SIDE. (BY DIV 26)
3. CONCEALED DOOR POSITION SENSOR. PROVIDE 3/4"Ø CONDUIT AND REQUIRED FRAME AND PATHWAY PREPARATION.
4. POWER TRANSFER FOR WIRE ROUTING TO J-BOX. (BY DIV 08)
5. PROVIDE 3/4"Ø CONDUIT, REQUIRED FRAME, AND PATHWAY PREPARATION FOR WIREWAY THROUGH DOOR.
6. ELECTRIFIED LOCKSET WITH INTEGRAL REX SWITCH. (BY DIV 08)
7. SINGLE GANG JUNCTION BOX AND 3/4"Ø CONDUIT FOR CARD READER. (BY DIV 26)
8. MOUNT CARD READER ON UNSECURE SIDE 42" AFF AND 6" OPTIMUM FROM DOOR.
9. COORDINATE WITH DIVISION 08 DOOR AND HARDWARE SPECIFICATIONS/DRAWINGS.



PLAN VIEW

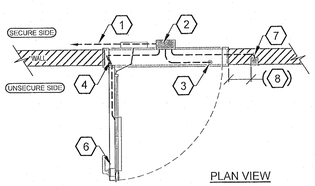


ELEVATION VIEW

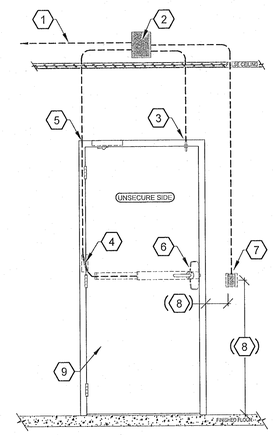
2 SINGLE ELEC. LOCK CARD READER DOOR
1S-201 SCALE: NOT TO SCALE

KEYED NOTES:

1. 3/4"Ø CONDUIT TO ACCESSIBLE CEILING FOR PATHWAY AND WIRING TO SECURITY CONTROL LOCATION. (BY DIV 26)
2. CONCEALED 6" X 8" X 4" COVERED JUNCTION BOX LOCATED NEAR DOOR ABOVE CEILING ACCESSIBLE TO SECURE SIDE. (BY DIV 26)
3. CONCEALED DOOR POSITION SENSOR. PROVIDE 3/4"Ø CONDUIT AND REQUIRED FRAME AND PATHWAY PREPARATION.
4. POWER TRANSFER FOR WIRE ROUTING TO J-BOX. (BY DIV 08)
5. PROVIDE 3/4"Ø CONDUIT, REQUIRED FRAME, AND PATHWAY PREPARATION FOR WIREWAY THROUGH DOOR.
6. ELECTRIFIED LOCKSET WITH INTEGRAL REX SWITCH. (BY DIV 08)
7. COORDINATE WITH DIVISION 08 DOOR AND HARDWARE SPECIFICATIONS/DRAWINGS.



PLAN VIEW

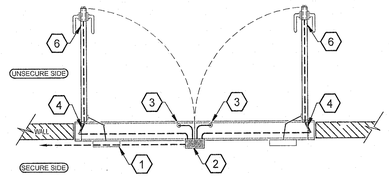


ELEVATION VIEW

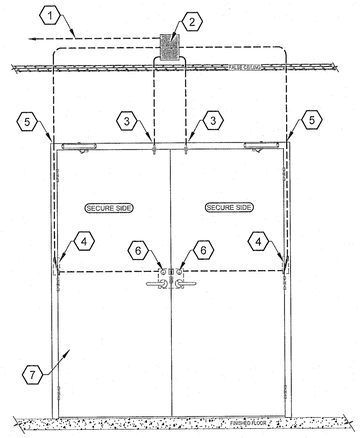
3 SINGLE EXIT DEVICE CARD READER DOOR
1S-201 SCALE: NOT TO SCALE

KEYED NOTES:

1. 3/4"Ø CONDUIT TO ACCESSIBLE CEILING FOR PATHWAY AND WIRING TO SECURITY CONTROL LOCATION. (BY DIV 26)
2. CONCEALED 6" X 8" X 4" COVERED JUNCTION BOX LOCATED NEAR DOOR ABOVE CEILING ACCESSIBLE TO SECURE SIDE. (BY DIV 26)
3. CONCEALED DOOR POSITION SENSOR. PROVIDE 3/4"Ø CONDUIT AND REQUIRED FRAME AND PATHWAY PREPARATION.
4. POWER TRANSFER FOR WIRE ROUTING TO J-BOX. (BY DIV 08)
5. PROVIDE 3/4"Ø CONDUIT, REQUIRED FRAME, AND PATHWAY PREPARATION FOR WIREWAY THROUGH DOOR.
6. ELECTRIFIED LOCKSET WITH INTEGRAL REX SWITCH. (BY DIV 08)
7. COORDINATE WITH DIVISION 08 DOOR AND HARDWARE SPECIFICATIONS/DRAWINGS.



PLAN VIEW



ELEVATION VIEW

4 DOUBLE MONITORED DOOR
1S-201 SCALE: NOT TO SCALE

NO.	DATE	REVISION	APP.

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12/12/2024

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

SECURITY DOOR ELEVATION DETAILS

1IS-201

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 251 OF 255	

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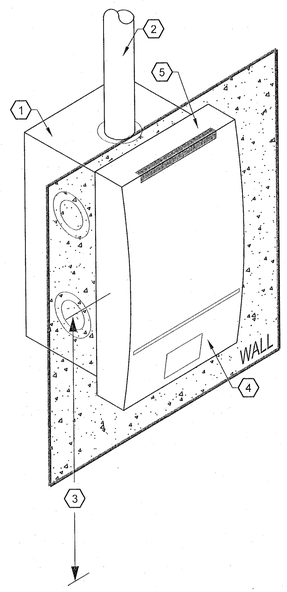
KEYED NOTES:

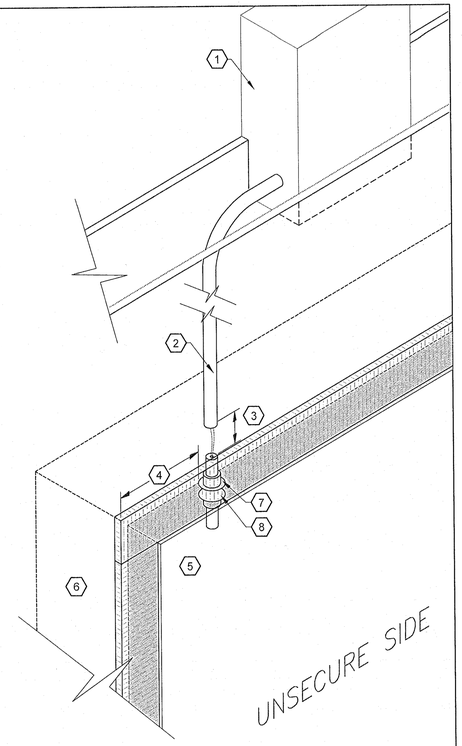
1. RECESSED SINGLE GANG BACK BOX.
2. ¾"Ø CONDUIT C/W PULL STRING TO ACCESSIBLE CEILING SPACE. (BY DIV 26)
3. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECT/GC.
4. PROXIMITY CARD READER. PROVIDE END OF LINE RESISTOR.
5. LABEL TOP OF CARD READER WITH CORRESPONDING DOOR DESIGNATION. COORDINATE WITH OWNER ON EXACT LABELING METHOD.



1 / 1S-501 CARD READER (CR)
SCALE: NOT TO SCALE

KEYED NOTES:

1. CONCEALED 6" X 8" X 4" COVERED JUNCTION BOX LOCATED NEAR DOOR ABOVE CEILING ACCESSIBLE TO SECURE SIDE. (BY DIV 26)
2. 3/4"Ø CONDUIT C/W PULL STRING. (BY DIV 26)
3. MAXIMUM OF 2" GAP WITH CLEAR WIRING PATH TO SWITCH.
4. 6" OPTIMAL FROM OUTSIDE EDGE OF HEADER.
5. DOOR. (BY DIV 08)
6. DOOR FRAME. (BY DIV 01 & 08)
7. DOOR POSITION SENSOR (1"Ø) WITH DPDT CONTACTS. PROVIDE END OF LINE RESISTOR.
8. DOOR MOUNTED MAGNET (1"Ø).

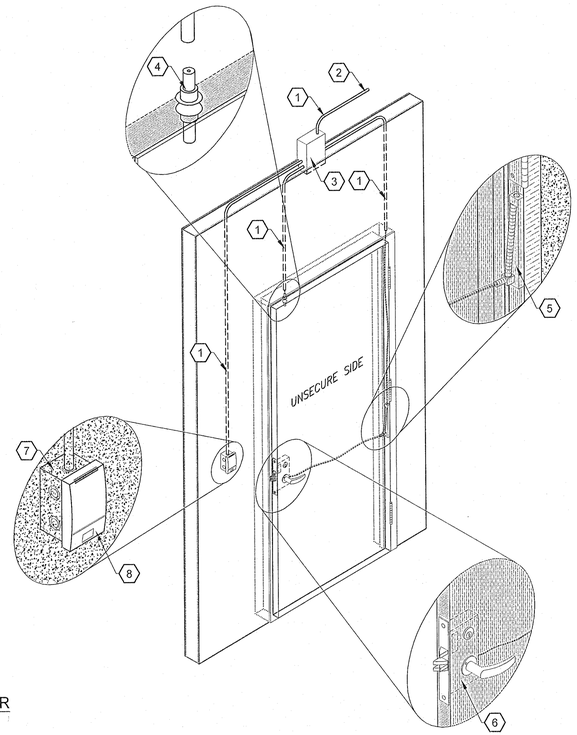


2 / 1S-501 MONITORED DOOR POSITION SENSOR (DP)
SCALE: NOT TO SCALE

NO.	DATE	REVISION	APP.

KEYED NOTES:

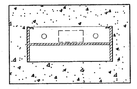
1. 3/4"Ø CONDUIT C/W POLYLINE PULL STRING.
2. TO SECURITY FIELD PANELS.
3. CONCEALED 6" X 8" X 4" COVERED JUNCTION BOX.
4. CONCEALED DOOR POSITION SENSOR. PROVIDE END OF LINE RESISTOR.
5. POWER TRANSFER.
6. ELECTRIFIED LOCKSET WITH INTEGRAL REX SWITCH.
7. RECESSED SINGLE GANG BACK BOX.
8. CARD READER. PROVIDE END OF LINE RESISTOR.



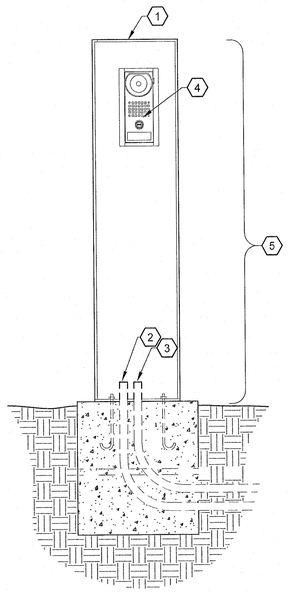
3 / 1S-501 TYPICAL INTERIOR CARD READER DOOR
SCALE: NOT TO SCALE

KEYED NOTES:

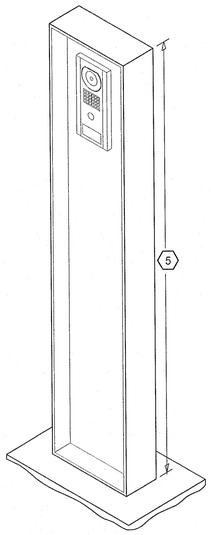
1. PEDESTAL. COORDINATE PEDESTAL WITH ARCHITECT.
2. 1"Ø CONDUIT FOR VIDEO INTERCOM (BY DIV 26).
3. 1"Ø CONDUIT FOR CARD READER (BY DIV 26).
4. VIDEO INTERCOM WITH INTEGRATED RP10 HID CARD READER.
5. COORDINATE EXACT MOUNTING HEIGHT OF PEDESTAL AND DEVICES WITH ARCHITECT/GC.



TOP SECTION VIEW



FRONT VIEW



ISOMETRIC VIEW

4 / 1S-501 PEDESTAL DETAIL
SCALE: NOT TO SCALE

GENERAL NOTES:

1.) PROVIDE GROUNDING PER MANF. AND NEC REQUIREMENTS.

2.) PROVIDE SURGE SUPPRESSORS FOR THE CARD READER AND INTERCOM AT THE DEVICE AND TERMINATION OF THE CABLES.

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

SECURITY GENERAL DETAILS I

1IS-501

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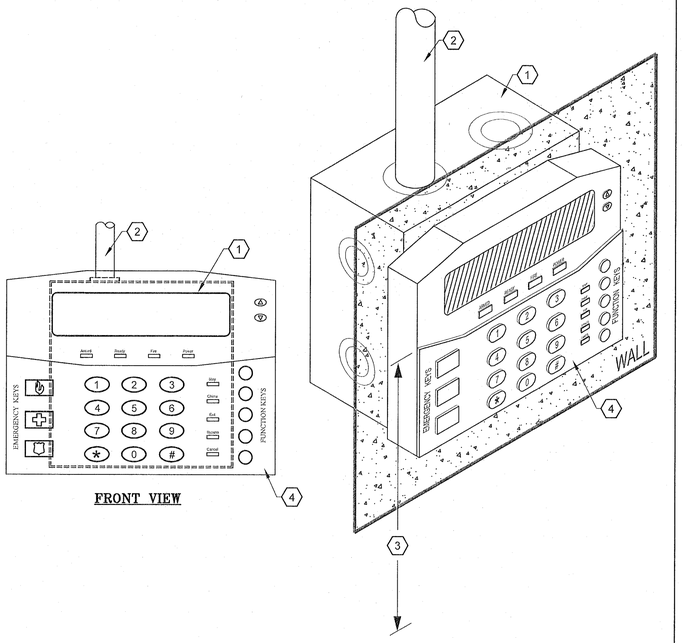
DRAWING SCALE	
CITY OF HOUSTON PM	
SR SHAHIDUR RAHMAN, P.E.	
SHEET NO. 252 OF 255	

PUBLIC WORKS AND ENGINEERING ACCEPTED
80341
HOUSTON, TEXAS

KEYED NOTES:

1. RECESSED 4" X 4" X 21/8" DOUBLE GANG J-BOX. (BY DIV 26)
2. 3/4"Ø CONDUIT C/W PULL STRING TO ACCESSIBLE CEILING SPACE. (BY DIV 26)
3. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECT/GC.
4. INTRUSION KEYPAD. PROVIDE END OF LINE RESISTOR.

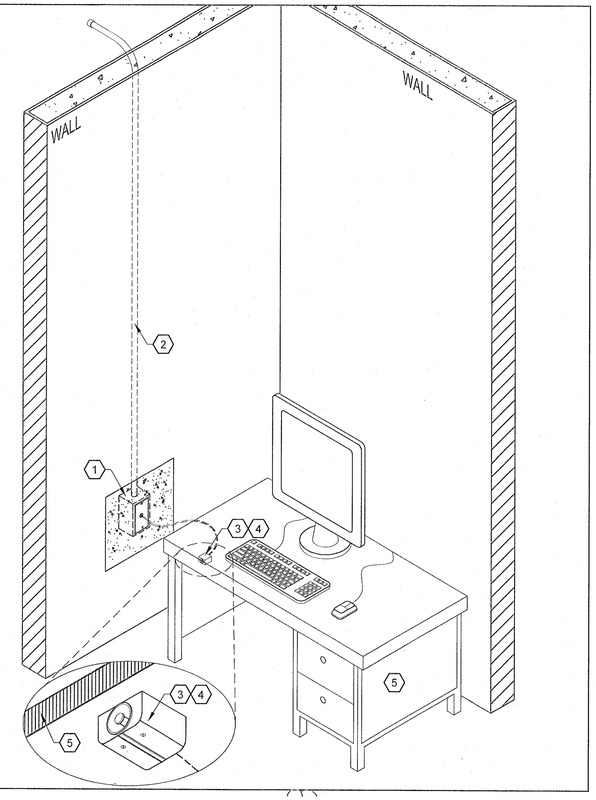


FRONT VIEW

1 / 1S-501 KEYPAD
SCALE: NOT TO SCALE

KEYED NOTES:

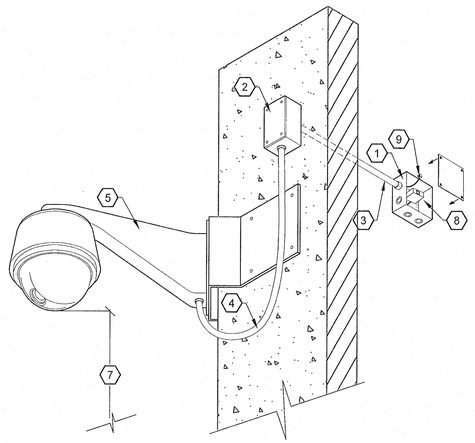
1. RECESSED SINGLE GANG BACK BOX.
2. 3/4"Ø CONDUIT C/W POLYLINE PULL STRING AND INSULATED BUSHING TO PRIMARY PATHWAY. (BY DIV 26)
3. PERSONNEL DURESS 'HOLD UP' BUTTON'.
4. MOUNT IN A CONCEALED YET EASILY ACCESSIBLE LOCATION.
5. DESK OR MODULAR FURNITURE.



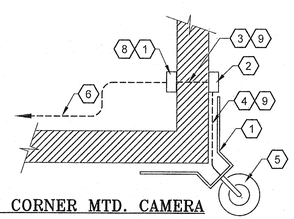
2 / 1S-501 PANIC BUTTON
SCALE: NOT TO SCALE

KEYED NOTES:

1. 3/4"Ø CONDUIT TO ACCESSIBLE CEILING OR CABLE TRAY. (BY DIV 26)
2. 411/16"X411/16"X21/8" TWO GANG BOX. (BY DIV 26)
3. BOX COVER PLATE WITH TORX TAMPER RESISTANT SCREWS.
4. CAMERA, ENCLOSURE, AND MOUNTING SUPPORT HARDWARE AS REQUIRED BY THE MANUFACTURER.
5. SCHEDULED LAY-IN CEILING.
6. BISCUIT WITH RJ-45 JACK UNMOUNTED IN BOX. (BY DIV 27)
7. 10'-0" TO 11'-0" TYPICAL UNLESS OTHERWISE NOTED. FIELD VERIFY MOUNTING HEIGHT.
8. PATCH CABLES MUST BE FACTORY MADE.
9. HOMERUN BACK TO NEAREST TELECOM ROOM. (BY DIV 27)



ISOMETRIC

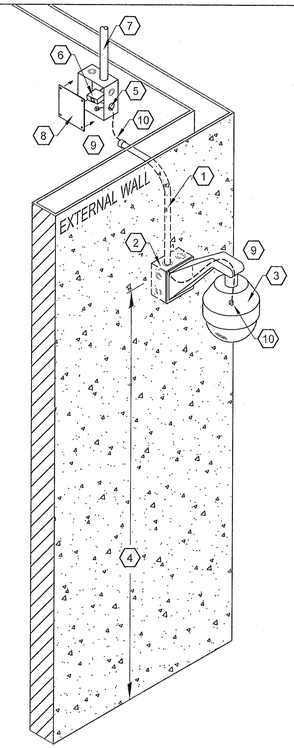


PLAN VIEW CORNER MTD. CAMERA

3 / 1S-501 EXTERIOR CORNER MOUNT CAMERA
SCALE: NOT TO SCALE

KEYED NOTES:

1. 3/4"Ø CONDUIT C/W POLYLINE PULL STRING FROM EXTERNAL BOX TO INTERNAL SPACE. (BY DIV 26)
2. FLUSH MOUNTED 411/16"X411/16"X21/8" BOX. (BY DIV 26)
3. EXTERNAL PENDANT DOME CAMERA, ENCLOSURE AND MOUNTING SUPPORT HARDWARE AS REQUIRED BY THE MANUFACTURER.
4. 10'-0" TO 11'-0" TYPICAL UNLESS OTHERWISE NOTED. FIELD VERIFY MOUNTING HEIGHT.
5. 411/16"X411/16"X21/8" BOX. (BY DIV 26) PROVIDE AND INSTALL GROMMET FOR KNOCK-OUT.
6. BISCUIT WITH RJ-45 JACK UNMOUNTED IN BOX. (BY DIV 27)
7. 3/4"Ø CONDUIT TO CABLE TRAY OR ACCESSIBLE SPACE. (BY DIV 26)
8. BOX COVER PLATE WITH TORX TAMPER RESISTANT SCREWS.
9. PROVIDE AUXILIARY POWER FOR CAMERA SYSTEM AS REQUIRED.
10. PATCH CABLES MUST BE FACTORY MADE.



4 / 1S-501 EXTERIOR WALL MOUNT CAMERA
SCALE: NOT TO SCALE

NO.	DATE	REVISION	APP.

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Sean Doyle
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12/12/2024

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HOUSTON PUBLIC WORKS

INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

SECURITY GENERAL DETAILS II

1IS-502

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SHAHIDUR RAHMAN, P.E.	
SHEET NO. 253 OF 255	

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P.E. NO.
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DATE
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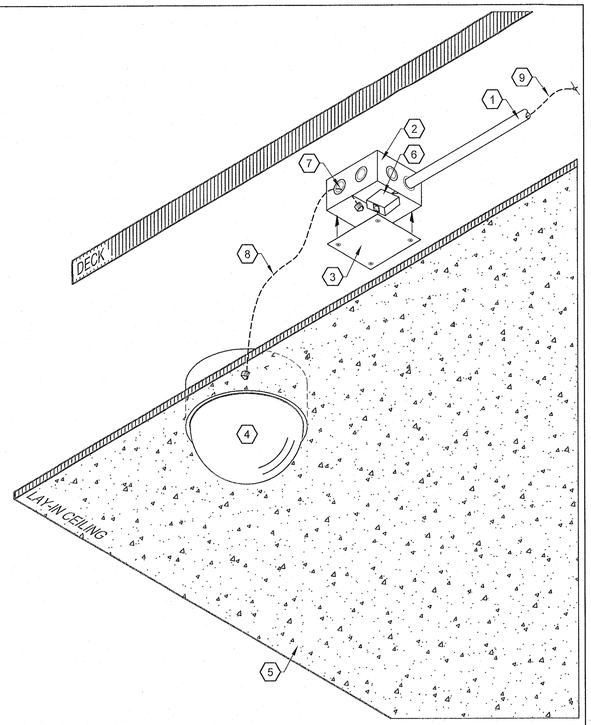
KEYED NOTES:

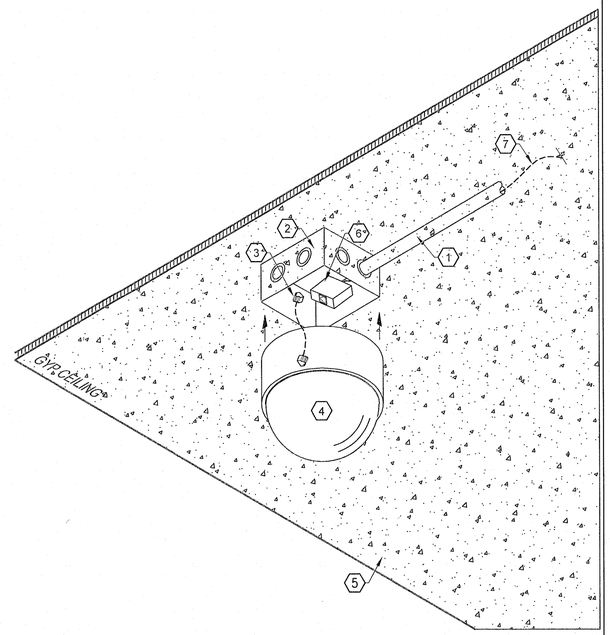
1. 3/4"Ø CONDUIT TO ACCESSIBLE CEILING OR CABLE TRAY. (BY DIV 26)
2. 411/16"X411/16"X21/8" TWO GANG BOX. (BY DIV 26)
3. BOX COVER PLATE WITH TORX TAMPER RESISTANT SCREWS.
4. PROVIDE CAMERA, ENCLOSURE, AND MOUNTING SUPPORT HARDWARE AS REQUIRED BY THE MANUFACTURER.
5. SCHEDULED LAY-IN CEILING.
6. BISCUIT WITH RJ-45 JACK UNMOUNTED IN BOX. (BY DIV 27)
7. PROVIDE AND INSTALL GROMMET FOR KNOCK-OUT.
8. PATCH CABLES MUST BE FACTORY MADE.
9. HOMERUN BACK TO NEAREST TELECOM ROOM. (BY DIV 27)



1 / 1S-503 CEILING MOUNTED IP CAMERA DETAIL (CAU)
SCALE: NOT TO SCALE

KEYED NOTES:

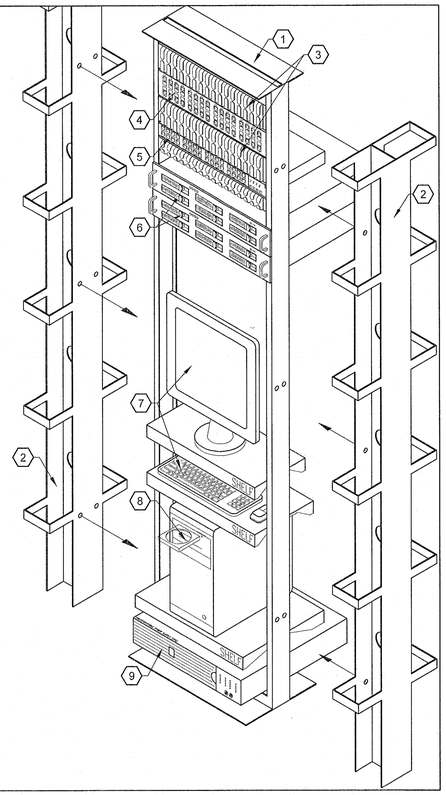
1. 11/4""Ø CONDUIT C/W POLYLINE PULL STRING TO ACCESSIBLE CEILING SPACE FOR DATA CONNECTIVITY. (BY DIV 26)
2. 411/16"X411/16"X21/8" BOX MOUNTED FLUSH TO GYP CEILING FOR CAMERA MOUNTING. COORDINATE MOUNTING DETAILS WITH DIV 28. (BY DIV 26)
3. PATCH CABLES MUST BE FACTORY MADE.
4. PROVIDE CAMERA, ENCLOSURE AND MOUNTING HARDWARE MANUFACTURER.
5. SCHEDULED CEILING.
6. BISCUIT WITH RJ-45 JACK UNMOUNTED IN BOX. (BY DIV 27)
7. HOMERUN BACK TO NEAREST TELECOM ROOM. (BY DIV 27)



2 / 1S-503 GYP. BOARD CEILING MOUNT CAMERA (CAU)
SCALE: NOT TO SCALE

KEYED NOTES:

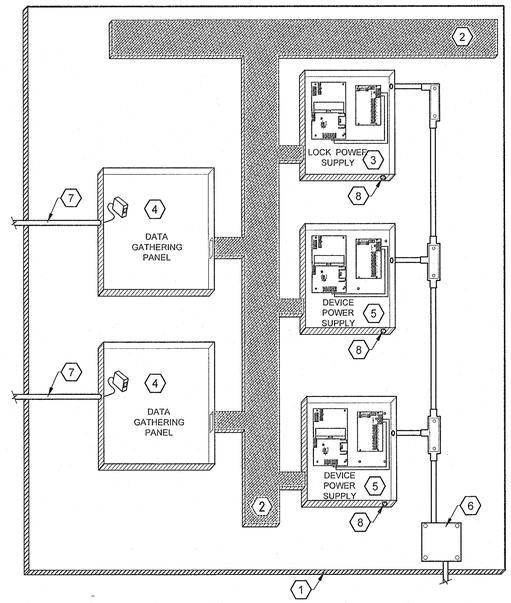
1. 7' RELAY RACK. (BY DIV 27)
2. VERTICAL WIRE MANAGEMENT. (BY DIV 27)
3. HORIZONTAL WIRE MANAGEMENT. (1RU AND 2RU) (BY DIV 27)
4. PATCH PANEL. (PATCH PANEL AND CABLE TERMINATION BY DIV 27)
5. LAYER 3 POWER OVER ETHERNET (POE) SWITCH.
6. NETWORK VIDEO RECORDER AND VIDEO MANAGEMENT SERVER. (VMS) (QUANTITY AS REQUIRED)
7. MONITOR/KEYBOARD/MOUSE.
8. TOWER CPU/ACCESS CONTROL MANAGEMENT SYSTEM. (ACMS)
9. UNINTERRUPTIBLE POWER SUPPLY. (UPS)



3 / 1S-503 IP RACK PP, SWITCH
SCALE: NOT TO SCALE

KEYED NOTES:

1. 3/4" FIRE RETARDANT PLYWOOD PAINTED FLAT WHITE. (COORDINATED BY GENERAL CONTRACTOR)
2. WIREWAY. (AS REQUIRED)
3. LOCK POWER SUPPLY WITH TAMPER SWITCH.
4. SECURITY DEVICE DATA GATHERING PANELS (DGP) WITH TAMPER SWITCH.
5. SECURITY DEVICE POWER SUPPLY WITH TAMPER SWITCH.
6. EACH PANEL REQUIRES A DEDICATED 120VAC CIRCUIT WITH DEDICATED GROUND ON 24 HOUR EMERGENCY POWER. (BY DIV 26)
7. EACH DGP REQUIRES ONE VOICE AND ONE DATA CIRCUIT. (BY DIV 27)
8. FIRE ALARM INTERFACE.



4 / 1S-503 TYPICAL SECURITY WALL FIELD
SCALE: NOT TO SCALE

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INTERCONTINENTAL AIRPORT WASTEWATER TREATMENT PLANT IMPROVEMENTS

SECURITY GENERAL DETAILS III

1IS-503

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DRAWING SCALE	
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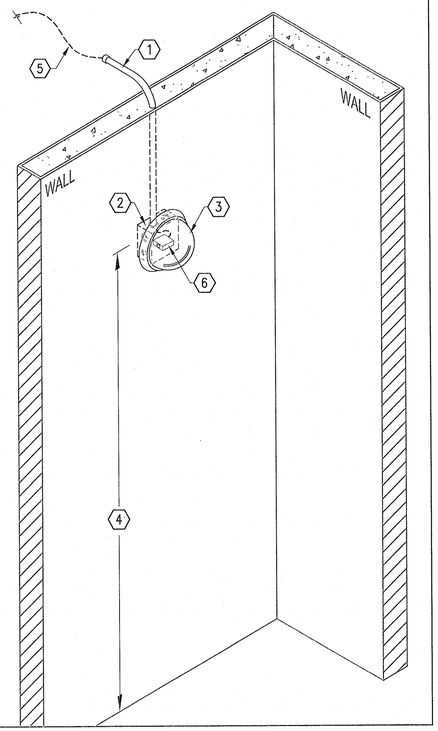
KEYED NOTES:

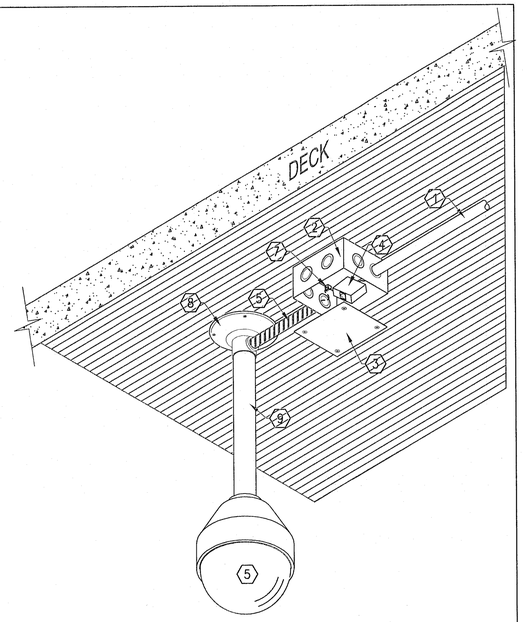
1. ¾"ø CONDUIT C/W POLYLINE PULL STRING TO ACCESSIBLE CEILING SPACE. (BY DIV 26)
2. 4" X 4" X 2⅛" BOX. COORDINATE CAMERA MOUNTING DETAILS WITH DIV 28 SECURITY CONTRACTOR AND PROVIDE DEVICE RING FLUSH WITH WALL AS REQUIRED TO MOUNT CAMERA. (BY DIV 26)
3. DOME CAMERA, ENCLOSURE AND MOUNTING SUPPORT HARDWARE AS REQUIRED BY THE MANUFACTURER.
4. 10'–0" TO 11'–0" TYPICAL. FIELD VERIFY MOUNTING HEIGHT.
5. HOMERUN CABLE BACK TO NEAREST TELECOM ROOM. (BY DIV 27)
6. BISCUIT WITH RJ–45 JACK UNMOUNTED IN BOX. (BY DIV 27)



1 WALL MOUNTED IP CAMERA DETAIL (CAU)
SCALE: Not to Scale

KEYED NOTES:

1. ¾"ø CONDUIT C/W POLYLINE PULL STRING HOMERUN TO PULLBOX. (BY DIV 26)
2. SURFACE MOUNTED 4¹⁄₁₆"X4¹⁄₁₆"X2⅛" BOX. (BY DIV 26)
3. BOX COVER PLATE WITH TORX TAMPER RESISTANT SCREWS. (BY DIV 26)
4. BISCUIT WITH RJ–45 JACK UNMOUNTED IN BOX. (BY DIV 27)
5. PROVIDE LIQUID TIGHT FLEXIBLE CONDUIT CONNECTION BETWEEN PENDANT MOUNT AND JUNCTION BOX.
6. CAMERA, ENCLOSURE, AND MOUNTING SUPPORT HARDWARE AS REQUIRED BY THE MANUFACTURER.
7. PATCH CABLES MUST BE FACTORY MADE.
8. PENDANT MOUNT FASTENED TO STRUCTURE.
9. PREFERRED CAMERA ELEVATION IS 10'–11'. FIELD VERIFY PENDANT LENGTH AND PROVIDE PENDANT TO MATCH PREFERRED CAMERA ELEVATION AND TO PROVIDE UNOBSTRUCTED CAMERA VIEW.



2 PENDANT MOUNTED CAMERA DETAIL (CAU)
SCALE: Not to Scale

3 NOT USED
SCALE: Not to Scale

4 NOT USED
SCALE: Not to Scale

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SECURITY GENERAL DETAILS IV
1IS-504

WBS NUMBER
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