NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

KSC CENTRAL CAMPUS REPLACEMENT HEADQUARTERS BUILDING PHASE 1 VOL. 3 OF 4

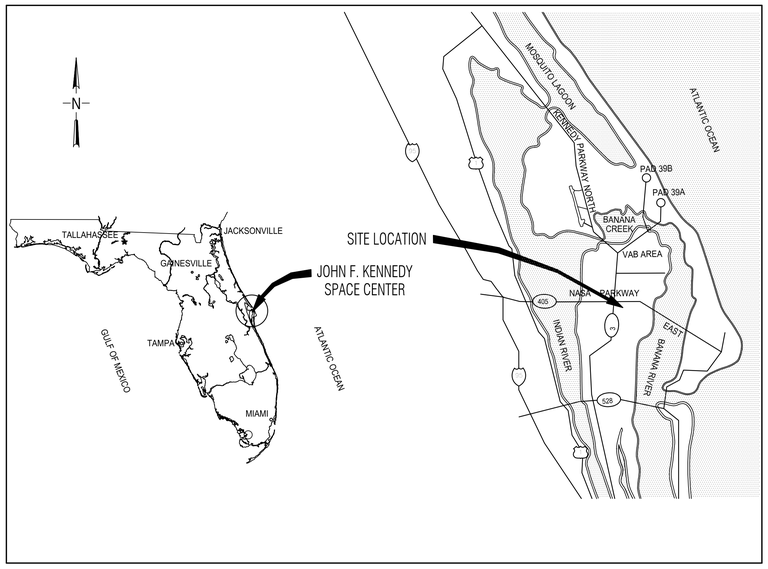
Hunton Brady ARCHITECTS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

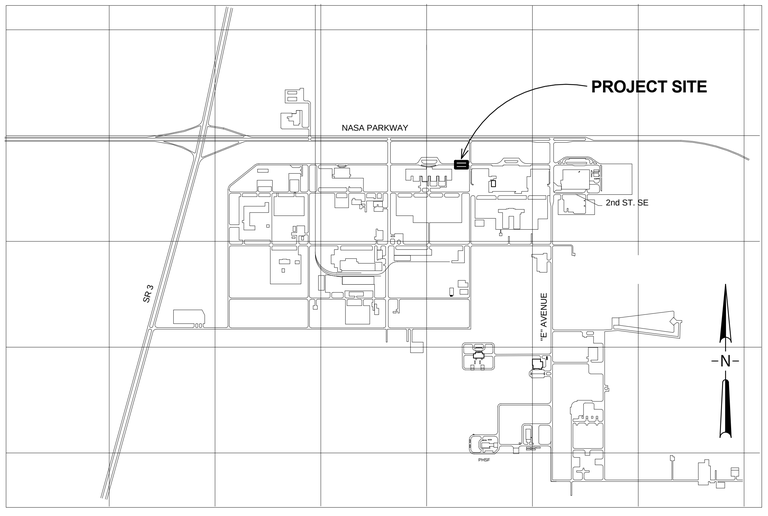
Kennedy Space Center, Florida

PROJ. NO. PCN 98745.1a

VICINITY MAP



SITE MAP



Export Determination Request

NASA KSC Export Control Office (ECO)

EDR# 1419619

DOCUMENT INFORMATION: (TITLE, NUMBER, REV, DATE)

KSC CENTRAL CAMPUS REPLACEMENT HEADQUARTERS BUILDING, PHASE 1
79K39622 VOLUME 3 REV. A.

Sensitive But Unclassified (SBU)

SBU must be handled and protected as instructed in NID 1600-55, NASA Security Program Procedural Requirements, Sensitive But Unclassified (SBU) Controlled Information, Section 5.24. However, it is included on this form only as a convenience to the user.

	Yes	No	SBU Reviewer's Signature	Date	Company / Org
Document contains SBU?	☐	☐			

Export Control (EC)

Additional Comments about this item

	EXPORT DETERMINATION	
EAR 99		The information contained in the document is technical in content, but is not technical data as defined by the ITAR or the EAR, and therefore is EAR 99 NLR (no export license required). [General Prohibition Six (Embargo) applies to all items subject to the EAR, i. e. items on the CCL and within EAR 99 NLR. You may not make an export or re-export contrary to the provisions of part 746 (Embargos and Other Special Controls) of the EAR and 22 CFR part 126.1 of the ITAR.]
EAR		This document is within the purview of the Export Administration Regulations (EAR), 15 CFR 730-774, and is export controlled. It may not be transferred to foreign nationals in the U.S. or abroad without specific approval of a knowledgeable NASA export control official, and/or unless an export license or license exception is obtained/available from the Bureau of Industry and Security, United States Department of Commerce. Violations of these regulations are punishable by fine, imprisonment, or both.
ITAR		This document contains information which falls under the purview of the U.S. Munitions List (USML), as defined in the International Traffic in Arms Regulations (ITAR), 22 CFR 120-130, and is export controlled. It shall not be transferred to foreign nationals, in the U.S. or abroad, without specific approval of a knowledgeable NASA export control official, and/or unless an export license or license exemption is obtained/available from the United States Department of State. *Violations of these regulations are punishable by fine, imprisonment, or both.*
Not Export Controlled		

Attach file for review

Contractor EC Reviewer's Name and Organization	Contractor EC Reviewer's Signature	Date

NASA ECO Reviewer's Name and Organization	NASA ECO Reviewer's Signature	Date

Contact the KSC ECO Help Desk (867-9209) for help in completing this form.

Click to email form to the Export Control Office

KSC FORM 7-657 NS 03/14 (1.1) PREVIOUS EDITIONS ARE OBSOLETE. Validate prior to use.

NRRS 2/7.5.A
Page 1 of 1

ARCHITECT
HUNTONBRADY ARCHITECTS, P.A.
800 North Magnolia Ave., Suite 600
Orlando, Florida 32803
407.839.0886
License AAC001744

SYM	ZONE	REVISIONS	DATE	APPD
A		REVISED SHEETS 1 - 104	05.14.14	

Hunton Brady ARCHITECTS
HuntonBrady Architects P.A.
800 North Magnolia Avenue
Suite 600
Orlando, Florida 32803

SIGNATURES	DATE
DRAWN Bryce Denker	12.18.13
CHECKED Robert Davidescu	12.18.13
SUBMITTED: ARCHENG OF RECORD Drew Krecicki	12.18.13
APPROVED Steve Bellflower	12.18.13
Thomas Wilczek	12.19.13
Wallace R Schroeder	12.20.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

COVER SHEET VOL. 3

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 1

G300

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

DRAWING INDEX

VOL. 1

GENERAL			
1	G000	COVER SHEET VOL. 1	■
2	G001	DRAWING INDEX VOL. 1	■
3	G002	DRAWING INDEX VOL. 2	■
4	G003	DRAWING INDEX VOL. 3	■
5	G004	DRAWING INDEX VOL. 4	■
6	G011	PROJECT DATA	■
7	G110	LIFE SAFETY PLAN - 1ST LEVEL	■
8	G120	LIFE SAFETY PLAN - 2ND LEVEL	■
9	G130	LIFE SAFETY PLAN - 3RD LEVEL	■
10	G140	LIFE SAFETY PLAN - 4TH LEVEL	■
11	G150	LIFE SAFETY PLAN - 5TH LEVEL	■
12	G160	LIFE SAFETY PLAN - 6TH LEVEL	■
13	G170	LIFE SAFETY PLAN - 7TH LEVEL & PENTHOUSE	■
CIVIL			
14	C001	CIVIL GENERAL NOTES	■
15	C002	LEGEND AND ABBREVIATIONS	■
16	C003	CONSTRUCTION PHASING OVERALL PLAN	■
17	C004	CONSTRUCTION PHASING PLAN	■
18	C005	CONSTRUCTION PHASING PLAN	■
19	C006	CONSTRUCTION PHASING PLAN	■
20	C007	CONSTRUCTION PHASING PLAN	■
21	C101	SITE AND KEY PLAN	■
22	C102	EXISTING CONDITIONS PLAN	■
23	C103	EXISTING CONDITIONS PLAN	■
24	C104	EXISTING CONDITIONS PLAN	■
25	C105	EXISTING CONDITIONS PLAN	■
26	C106	SOIL BORING PROFILES	■
27	C107	SOIL BORING PROFILES	■
28	C108	SOIL BORING PROFILES	■
29	C109	SOIL BORING PROFILES	■
30	C110	DEMOLITION PLAN	■
31	C111	DEMOLITION PLAN	■
32	C112	DEMOLITION PLAN	■
33	C113	DEMOLITION PLAN	■
34	C114	DEMOLITION PLAN - OPTION C-2	■
35	C115	SITE PLAN	■
36	C116	SITE PLAN	■
37	C117	SITE PLAN	■
38	C118	SITE PLAN	■
39	C119	SITE PLAN - OPTION C-2	■
40	C120	COORDINATE TABLES	■
41	C121	COORDINATE TABLES	■
42	C122	COORDINATE TABLES	■
43	C123	COORDINATE PLAN	■
44	C124	COORDINATE PLAN	■
45	C125	COORDINATE PLAN	■
46	C126	COORDINATE PLAN	■
47	C127	COORDINATE PLAN - OPTION C-2	■
48	C128	ROADWAY AND PARKING TYPICAL SECTIONS	■
49	C129	1ST STREET SE PLAN AND PROFILE	■
50	C130	1ST STREET SE PLAN AND PROFILE	■
51	C131	D AVENUE SE PLAN AND PROFILE	■
52	C132	GRADING AND DRAINAGE PLAN	■
53	C133	SUPPLEMENTAL GRADING PLAN	■
54	C134	GRADING AND DRAINAGE PLAN	■
55	C135	GRADING AND DRAINAGE PLAN	■
56	C136	GRADING AND DRAINAGE PLAN	■
57	C137	GRADING AND DRAINAGE PLAN - OPTION C-2	■
58	C138	SUPPLEMENTAL GRADING PLAN - OPTION C-2	■
59	C139	MISCELLANEOUS GRADING AND DRAINAGE DETAILS	■
60	C140	STORM SEWER AND DITCH PROFILES	■
61	C141	STORM SEWER AND DITCH PROFILES	■
62	C142	STORM SEWER AND DITCH PROFILES	■
63	C143	DRAINAGE PIPES AND STRUCTURE TABLES	■
64	C144	UTILITIES PLAN	■
65	C145	UTILITIES PLAN	■
66	C146	UTILITIES PLAN	■
67	C147	UTILITIES PLAN	■
68	C148	UTILITY PROFILES AND TABLES	■
69	C149	NOT USED	■
70	C150	NOT USED	■
71	C151	NOT USED	■
72	C201	CIVIL DETAILS	■
73	C202	CIVIL DETAILS	■
74	C203	CIVIL DETAILS	■
75	C204	CIVIL DETAILS	■
76	C205	CIVIL DETAILS	■
77	C206	CIVIL DETAILS	■
78	C207	CIVIL DETAILS	■
79	C208	CIVIL DETAILS	■
80	C209	CIVIL DETAILS	■
81	C210	CIVIL DETAILS	■
82	C211	CIVIL DETAILS	■
83	C212	CIVIL DETAILS	■
LANDSCAPE			
84	L101	HARDSCAPE PLAN	■
85	L102	HARDSCAPE COORDINATES PLAN	■
86	L103	HARDSCAPE DETAILS	■
87	L104	LANDSCAPE PLAN	■
88	L105	LANDSCAPE DETAILS	■
89	L106	IRRIGATION PLAN	■
90	L107	IRRIGATION DETAILS	■
91	L108	IRRIGATION DETAILS AND NOTES	■

DRAWING INDEX

VOL. 1

STRUCTURAL			
92	S001	GENERAL NOTES	■
93	S010	COMPONENTS AND CLADDING PRESSURE DIAGRAMS	■
94	S011	COMPONENTS AND CLADDING PRESSURE DIAGRAMS	■
95	S012	COMPONENTS AND CLADDING PRESSURE DIAGRAMS	■
96	S013	COMPONENTS AND CLADDING PRESSURE DIAGRAMS	■
97	S015	ELEVATOR LOAD PLANS	■
98	S020	LOAD KEY PLAN - SLAB ON GRADE	■
99	S021	LOAD KEY PLAN - 2ND LEVEL	■
100	S022	LOAD KEY PLAN - 3RD-6TH LEVEL	■
101	S023	LOAD KEY PLAN - 7TH LEVEL	■
102	S024	LOAD KEY PLAN - ROOF LEVEL	■
103	S025	LOAD KEY PLAN - HIGH ROOF LEVEL	■
104	S100	FOUNDATION PLAN - OVERALL	■
105	S101	FOUNDATION PLAN - AREA 1	■
106	S101D	DIMENSION PLAN - FOUNDATION - AREA 1	■
107	S102	FOUNDATION PLAN - AREA 2 AND 3	■
108	S102D	DIMENSION PLAN - FOUNDATION - AREA 2 AND 3	■
109	S103	FOUNDATION PLAN SERVICE YARD	■
110	S110	SLAB ON GRADE PLAN - OVERALL	■
111	S111	SLAB ON GRADE PLAN - AREA 1	■
112	S111D	DIMENSION PLAN - SLAB ON GRADE - AREA 1	■
113	S112	SLAB ON GRADE PLAN - AREA 2 AND 3	■
114	S112D	DIMENSION PLAN - SLAB ON GRADE - AREA 2 AND 3	■
115	S120	FLOOR FRAMING PLAN - 2ND LEVEL OVERALL	■
116	S121	FLOOR FRAMING PLAN - 2ND LEVEL - AREA 1	■
117	S121D	DIMENSION - 2ND LEVEL - AREA 1	■
118	S122	ROOF FRAMING PLAN - 2ND LEVEL - AREA 2 AND 3	■
119	S122D	DIMENSION PLAN - 2ND LEVEL - AREA 2 AND 3	■
120	S131	FLOOR FRAMING PLAN - 3RD LEVEL - AREA 1	■
121	S131D	DIMENSION PLAN - 3RD LEVEL - AREA 1	■
122	S141	FLOOR FRAMING PLAN - 4TH LEVEL - AREA 1	■
123	S141D	DIMENSION PLAN - 4TH LEVEL - AREA 1	■
124	S151	FLOOR FRAMING PLAN - 5TH LEVEL - AREA 1	■
125	S151D	DIMENSION PLAN - 5TH LEVEL - AREA 1	■
126	S161	FLOOR FRAMING PLAN - 6TH LEVEL - AREA 1	■
127	S161D	DIMENSION PLAN - 6TH LEVEL - AREA 1	■
128	S171	FLOOR FRAMING PLAN - 7TH LEVEL - AREA 1	■
129	S171D	DIMENSION PLAN - 7TH LEVEL - AREA 1	■
130	S181	ROOF FRAMING PLAN - AREA 1	■
131	S181D	DIMENSION PLAN - ROOF LEVEL - AREA 1	■
132	S191	HIGH ROOF FRAMING PLAN - AREA 1	■
133	S191D	DIMENSION PLAN - HIGH ROOF - AREA 1	■
134	S202	SHEAR WALL ELEVATIONS	■
135	S203	SHEAR WALL ELEVATIONS	■
136	S206	FRAMING ELEVATIONS	■
137	S207	FRAMING ELEVATIONS	■
138	S211	CONCRETE BEAM SCHEDULE	■
139	S212	CONCRETE BEAM SCHEDULE	■
140	S215	COLUMN SCHEDULE	■
141	S221	SHEAR WALL PARTIAL PLANS	■
142	S231	FRAMING PARTIAL PLANS	■
143	S401	CONCRETE TYPICAL DETAILS	■
144	S402	CONCRETE TYPICAL DETAILS	■
145	S403	CONCRETE TYPICAL DETAILS	■
146	S409	SHEAR WALL PILE CAP DETAILS	■
147	S410	PILE CAP DETAILS	■
148	S411	FOUNDATION TYPICAL DETAILS	■
149	S412	FOUNDATION TYPICAL DETAILS	■
150	S413	FOUNDATION TYPICAL DETAILS	■
151	S414	FOUNDATION TYPICAL DETAILS	■
152	S421	TYPICAL DETAILS	■
153	S422	TYPICAL DETAILS	■
154	S423	TYPICAL DETAILS	■
155	S424	TYPICAL DETAILS	■
156	S425	TYPICAL DETAILS	■
157	S431	FRAMING SECTIONS AND DETAILS	■
158	S432	FRAMING SECTIONS AND DETAILS	■
159	S433	FRAMING SECTIONS AND DETAILS	■
160	S434	FRAMING SECTIONS AND DETAILS	■
161	S435	FRAMING SECTIONS AND DETAILS	■
162	S436	FRAMING SECTIONS AND DETAILS	■
163	S437	FRAMING SECTIONS AND DETAILS	■
164	S438	FRAMING SECTIONS AND DETAILS	■
165	S439	FRAMING SECTIONS AND DETAILS	■
166	S440	FRAMING SECTIONS AND DETAILS	■
167	S441	FRAMING SECTIONS AND DETAILS	■
168	S442	FRAMING SECTIONS AND DETAILS	■
169	S501	STEEL FRAMING TYPICAL DETAILS	■
170	S502	STEEL FRAMING TYPICAL DETAILS	■
171	S511	COMPOSITE STEEL FRAMING TYPICAL DETAILS	■
172	S512	COMPOSITE STEEL FRAMING TYPICAL DETAILS	■
173	S601	TYPICAL MASONRY DETAILS	■
174	S602	TYPICAL MASONRY DETAILS	■

OWNER
National Aeronautics and Space Administration

ARCHITECT
HUNTONBRADY ARCHITECTS, P.A.
800 North Magnolia Ave., Suite 600
Orlando, Florida 32803
407.839.0886
License AAC001744

STRUCTURAL
Walter P. Moore and Associates, Inc.
300 S. Orange Avenue, Suite 875
Orlando, Florida 32801
407.418.2218

MECHANICAL, ELECTRICAL, PLUMBING, FIRE, TELECOM.
Affiliated Engineers SE, Inc.
3007 SW Williston Road
Gainesville, Florida 32608
352.376.5500

CIVIL
Jones Edmunds & Associates
3910 S. Washington Ave., Suite 210
Titusville, FL 32780
321.269.2950

LANDSCAPE
Herbert Halback, Inc.
135 West Central Blvd., Suite 450
Orlando, Florida 32801
407.422.1449

FOOD SERVICE CONSULTANT
Food Service Design Associates
PO BOX 809
Norwich, VT 05055
802.649.0212

LEED CONSULTANT
exp U.S. Services Inc.
2601 Westhall Lane
Maitland, FL 32751
407.660.0088

SYM	ZONE	REVISIONS	DATE	APPD
A		THIS SHEET REVISED IN ITS ENTIRETY	05.14.14	

HuntonBrady Architects P.A.
800 North Magnolia Avenue
Suite 600
Orlando, Florida 32803

SIGNATURES	DATE
DRAWN Bryce Denker	12.18.13
CHECKED Robert Davidescu	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Drew Krecicki	12.18.13
ST of LICENSURE: FL LICENSE NO: AAC001744	12.18.13
APPROVED Steve Beiflower	12.18.13
Thomas Wilczek	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DRAWING INDEX VOL. 1

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 2

G301

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

DRAWING INDEX

VOL. 2

GENERAL			
1	G200	COVER SHEET VOL. 2	■
2	G201	DRAWING INDEX VOL. 1	■
3	G202	DRAWING INDEX VOL. 2	■
4	G203	DRAWING INDEX VOL. 3	■
5	G204	DRAWING INDEX VOL. 4	■
ARCHITECTURAL			
6	A001	NOTE AND SYMBOL LEGEND	■
7	A011	DOOR LEGEND	■
8	A012	DOOR SCHEDULE	■
9	A013	DOOR SCHEDULE	■
10	A014	DOOR SCHEDULE	■
11	A021	DOOR DETAILS	■
12	A031	INTERIOR GLAZED OPENINGS	■
13	A032	INTERIOR GLAZED OPENINGS	■
14	A033	INTERIOR GLAZED OPENINGS	■
15	A034	INTERIOR GLAZED OPENINGS	■
16	A035	INTERIOR GLAZED OPENINGS	■
17	A036	INTERIOR GLAZED OPENINGS	■
18	A037	INTERIOR GLAZED OPENINGS	■
19	A038	INTERIOR GLAZED OPENINGS	■
20	A041	INTERIOR PARTITION TYPES	■
21	A042	INTERIOR PARTITION TYPES	■
22	A061	TYPICAL MOUNTING HEIGHTS	■
23	A101	ARCHITECTURAL SITE PLAN	■
24	A102	ARCHITECTURAL SITE FEATURES	■
25	A103	ARCHITECTURAL SITE FEATURES	■
26	A110	FLOOR PLAN - 1ST LEVEL OVERALL	■
27	A111	FLOOR PLAN - 1ST LEVEL AREA 1	■
28	A111D	DIMENSION PLAN - 1ST LEVEL AREA 1	■
29	A112	FLOOR PLAN - 1ST LEVEL AREA 2 & 3	■
30	A112D	DIMENSION PLAN - 1ST LEVEL AREA 2 & 3	■
31	A120	FLOOR PLAN - 2ND LEVEL OVERALL	■
32	A121	FLOOR PLAN - 2ND LEVEL AREA 1	■
33	A121D	DIMENSION PLAN - 2ND LEVEL AREA 1	■
34	A122	ROOF PLAN - 1ST LEVEL AREA 2 & 3	■
35	A122D	DIMENSION ROOF PLAN - AREA 2 & 3	■
36	A131	FLOOR PLAN - 3RD LEVEL	■
37	A131D	DIMENSION PLAN - 3RD LEVEL	■
38	A141	FLOOR PLAN - 4TH LEVEL	■
39	A141D	DIMENSION PLAN - 4TH LEVEL	■
40	A151	FLOOR PLAN - 5TH LEVEL	■
41	A151D	DIMENSION PLAN - 5TH LEVEL	■
42	A161	FLOOR PLAN - 6TH LEVEL	■
43	A161D	DIMENSION PLAN - 6TH LEVEL	■
44	A171	FLOOR PLAN - 7TH LEVEL	■
45	A171D	DIMENSION PLAN - 7TH LEVEL	■
46	A181	ROOF PLAN	■
47	A181D	ROOF DIMENSION PLAN	■
48	A191	HIGH ROOF PLAN	■
49	A201	EXTERIOR ELEVATION	■
50	A202	EXTERIOR ELEVATION	■
51	A203	EXTERIOR ELEVATION	■
52	A204	EXTERIOR ELEVATION	■
53	A205	EXTERIOR ELEVATIONS	■
54	A206	EXTERIOR ELEVATIONS	■
55	A211	EXTERIOR GLAZED OPENINGS	■
56	A212	EXTERIOR GLAZED OPENINGS	■
57	A213	EXTERIOR GLAZED OPENINGS	■
58	A214	EXTERIOR GLAZED OPENINGS	■
59	A215	EXTERIOR GLAZED OPENINGS	■
60	A221	BUILDING SECTIONS	■
61	A222	BUILDING SECTION	■
62	A223	BUILDING SECTION	■
63	A231	EXTERIOR WALL SECTIONS	■
64	A232	EXTERIOR WALL SECTIONS	■
65	A233	EXTERIOR WALL SECTIONS	■
66	A234	EXTERIOR WALL SECTIONS	■
67	A235	EXTERIOR WALL SECTIONS	■
68	A236	EXTERIOR WALL SECTIONS	■
69	A241	EXTERIOR SECTION DETAILS	■
70	A242	EXTERIOR SECTION DETAILS	■
71	A243	EXTERIOR SECTION DETAILS	■
72	A244	EXTERIOR SECTION DETAILS	■
73	A245	EXTERIOR SECTION DETAILS	■
74	A246	EXTERIOR SECTION DETAILS	■
75	A247	EXTERIOR SECTION DETAILS	■
76	A248	EXTERIOR SECTION DETAILS	■
77	A249	EXTERIOR SECTION DETAILS	■
78	A250	EXTERIOR SECTION DETAILS	■
80	A251	EXTERIOR SECTION DETAILS	■
79	A252	EXTERIOR SECTION DETAILS	■
81	A255	TYPICAL ENLARGED DETAILS	■
82	A256	TYPICAL ENLARGED DETAILS	■
83	A257	EXTERIOR DOOR DETAILS	■
84	A261	EXTERIOR PLAN DETAILS	■
85	A262	EXTERIOR PLAN DETAILS	■
86	A263	EXTERIOR PLAN DETAILS	■
87	A264	EXTERIOR PLAN DETAILS	■
88	A265	EXTERIOR PLAN DETAILS	■
89	A266	EXTERIOR PLAN DETAILS	■
90	A267	EXTERIOR PLAN DETAILS	■
91	A311	ENLARGED ELEVATOR PLANS	■
92	A312	ELEVATOR SECTIONS	■
93	A313	ELEVATOR SECTIONS	■
94	A314	ELEVATOR DETAILS	■
95	A321	ENLARGED STAIR PLANS	■
96	A322	ENLARGED STAIR PLANS	■
97	A323	STAIR SECTIONS	■

DRAWING INDEX

VOL. 2

98	A324	STAIR SECTIONS	■
99	A325	STAIR SECTIONS	■
100	A326	STAIR SECTIONS	■
101	A327	STAIR SECTIONS	■
102	A328	STAIR DETAILS	■
103	A411	REFLECTED CEILING PLAN - 1ST LEVEL AREA 1	■
104	A412	REFLECTED CEILING PLAN - 1ST LEVEL AREA 2 & 3	■
105	A421	REFLECTED CEILING PLAN - 2ND LEVEL	■
106	A431	REFLECTED CEILING PLAN - 3RD LEVEL	■
107	A441	REFLECTED CEILING PLAN - 4TH LEVEL	■
108	A451	REFLECTED CEILING PLAN - 5TH LEVEL	■
109	A461	REFLECTED CEILING PLAN - 6TH LEVEL	■
110	A471	REFLECTED CEILING PLAN - 7TH LEVEL	■
111	A501	ENLARGED FLOOR PLANS	■
112	A502	ENLARGED FLOOR PLANS	■
113	A503	ENLARGED FLOOR PLANS	■
114	A504	ENLARGED FLOOR PLANS	■
115	A505	ENLARGED FLOOR PLANS	■
116	A506	ENLARGED FLOOR PLANS	■
117	A507	ENLARGED FLOOR PLANS	■
118	A508	ENLARGED FLOOR PLANS	■
119	A509	ENLARGED FLOOR PLANS	■
120	A510	ENLARGED FLOOR PLANS	■
121	A511	ENLARGED FLOOR PLANS	■
122	A512	ENLARGED FLOOR PLANS	■
123	A513	ENLARGED FLOOR PLANS	■
124	A514	ENLARGED FLOOR PLANS	■
125	A601	INTERIOR ELEVATIONS	■
126	A602	INTERIOR ELEVATIONS	■
127	A603	INTERIOR ELEVATIONS	■
128	A604	INTERIOR ELEVATIONS	■
129	A605	INTERIOR ELEVATIONS	■
130	A606	INTERIOR ELEVATIONS	■
131	A607	INTERIOR ELEVATIONS	■
132	A608	INTERIOR ELEVATIONS	■
133	A609	INTERIOR ELEVATIONS	■
134	A610	INTERIOR ELEVATIONS	■
135	A611	INTERIOR ELEVATIONS	■
136	A612	INTERIOR ELEVATIONS	■
137	A613	INTERIOR ELEVATIONS	■
138	A614	INTERIOR ELEVATIONS	■
139	A615	INTERIOR ELEVATIONS	■
140	A616	INTERIOR ELEVATIONS	■
141	A617	INTERIOR ELEVATIONS	■
142	A618	INTERIOR ELEVATIONS	■
143	A619	INTERIOR ELEVATIONS	■
144	A620	INTERIOR ELEVATIONS	■
145	A621	INTERIOR WALL SECTIONS	■
146	A622	INTERIOR WALL SECTIONS	■
147	A623	INTERIOR WALL SECTIONS	■
148	A624	INTERIOR WALL SECTIONS	■
149	A631	INTERIOR SECTION DETAILS	■
150	A632	INTERIOR SECTION DETAILS	■
151	A633	INTERIOR SECTION DETAILS	■
152	A634	INTERIOR SECTION DETAILS	■
153	A635	INTERIOR SECTION DETAILS	■
154	A636	INTERIOR SECTION DETAILS	■
155	A637	INTERIOR SECTION DETAILS	■
156	A651	INTERIOR PLAN DETAILS	■
157	A652	INTERIOR PLAN DETAILS	■
158	A653	INTERIOR PLAN DETAILS	■
159	A654	INTERIOR PLAN DETAILS	■
160	A655	INTERIOR PLAN DETAILS	■
161	A656	INTERIOR PLAN DETAILS	■
162	A657	INTERIOR PLAN DETAILS	■
163	A671	MILLWORK SECTIONS	■
164	A672	MILLWORK SECTIONS	■
165	A673	MILLWORK DETAILS	■
166	A701	FURNITURE SYSTEM DETAILS	■
167	A702	FURNITURE SYSTEM DETAILS	■
168	A703	FURNITURE SYSTEM DETAILS	■
169	A704	FURNITURE SYSTEM DETAILS	■
170	A711	FURNITURE/EQUIPMENT PLAN - 1ST LEVEL AREA 1	■
171	A712	FURNITURE/EQUIPMENT PLAN - 1ST LEVEL AREA 2 & 3	■
172	A721	FURNITURE/EQUIPMENT PLAN - 2ND LEVEL	■
173	A731	FURNITURE/EQUIPMENT PLAN - 3RD LEVEL	■
174	A741	FURNITURE/EQUIPMENT PLAN - 4TH LEVEL	■
175	A751	FURNITURE/EQUIPMENT PLAN - 5TH LEVEL	■
176	A761	FURNITURE/EQUIPMENT PLAN - 6TH LEVEL	■
177	A771	FURNITURE/EQUIPMENT PLAN - 7TH LEVEL	■
178	A801	ROOM FINISH LEGEND AND NOTES	■
179	A802	ROOM FINISH LEGEND	■
180	A811	FINISH PLAN - 1ST LEVEL AREA 1	■
181	A812	FINISH PLAN - 1ST LEVEL AREA 2 & 3	■
182	A821	FINISH PLAN - 2ND LEVEL	■
183	A831	FINISH PLAN - 3RD LEVEL	■
184	A841	FINISH PLAN - 4TH LEVEL	■
185	A851	FINISH PLAN - 5TH LEVEL	■
186	A861	FINISH PLAN - 6TH LEVEL	■
187	A871	FINISH PLAN - 7TH LEVEL	■
188	A881	PENTHOUSE FINISH PLAN	■
189	A911	FLOOR PATTERN PLAN - 1ST LEVEL AREA 1	■
190	A912	FLOOR PATTERN PLAN - 1ST LEVEL AREA 2 & 3	■
191	A921	FLOOR PATTERN PLAN - 2ND LEVEL	■
192	A931	FLOOR PATTERN PLAN - 3RD LEVEL	■
193	A941	FLOOR PATTERN PLAN - 4TH LEVEL	■
194	A951	FLOOR PATTERN PLAN - 5TH LEVEL	■
195	A961	FLOOR PATTERN PLAN - 6TH LEVEL	■
196	A971	FLOOR PATTERN PLAN - 7TH LEVEL	■

OWNER
National Aeronautics and Space Administration

ARCHITECT
HUNTONBRADY ARCHITECTS, P.A.
800 North Magnolia Ave., Suite 600
Orlando, Florida 32803
407.839.0886
License AAC001744

STRUCTURAL
Walter P. Moore and Associates, Inc.
300 S. Orange Avenue, Suite 875
Orlando, Florida 32801
407.418.2218

MECHANICAL, ELECTRICAL, PLUMBING, FIRE, TELECOM.
Affiliated Engineers SE, Inc.
3007 SW Williston Road
Gainesville, Florida 32608
352.376.5500

CIVIL
Jones Edmunds & Associates
3910 S. Washington Ave., Suite 210
Titusville, FL 32780
321.269.2950

LANDSCAPE
Herbert Halback, Inc.
135 West Central Blvd., Suite 450
Orlando, Florida 32801
407.422.1449

FOOD SERVICE CONSULTANT
Food Service Design Associates
PO BOX 809
Norwich, VT 05055
802.649.0212

LEED CONSULTANT
exp U.S. Services Inc.
2601 Westhall Lane
Maitland, FL 32751
407.660.0088

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	05.14.14	

Hunton Brady ARCHITECTS
HuntonBrady Architects P.A.
800 North Magnolia Avenue
Suite 600
Orlando, Florida 32803

SIGNATURES	DATE
DRAWN Bryce Denker	12.18.13
CHECKED Robert Davidescu	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Drew Krecicki	12.18.13
ST of LICENSURE: FL LICENSE NO: AAC001744	12.18.13
APPROVED Steve Belflower	12.18.13
Thomas Wilczek	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DRAWING INDEX VOL. 2

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 3

G302

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

DRAWING INDEX

VOL. 3

GENERAL		
1	G300	COVER SHEET VOL. 3
2	G301	DRAWING INDEX VOL. 1
3	G302	DRAWING INDEX VOL. 2
4	G303	DRAWING INDEX VOL. 3
5	G304	DRAWING INDEX VOL. 4
MECHANICAL		
6	M001	MECHANICAL SYMBOLS AND ABBREVIATIONS
7	M011	MECHANICAL SCHEDULES
8	M012	MECHANICAL SCHEDULES
9	M013	MECHANICAL SCHEDULES
10	M014	MECHANICAL SCHEDULES
11	M015	MECHANICAL SCHEDULES
12	M016	MECHANICAL SCHEDULES
13	M017	MECHANICAL SCHEDULES
14	M101	MECHANICAL SITE PLAN
15	M111	DUCT PLAN - 1ST LEVEL AREA 1
16	M112	DUCT PLAN - 1ST LEVEL AREA 2 & 3
17	M121	DUCT PLAN - 2ND LEVEL AREA 1
18	M122	DUCT PLAN - 2ND LEVEL AREA 2 & 3
19	M131	DUCT PLAN - 3RD LEVEL
20	M141	DUCT PLAN - 4TH LEVEL
21	M151	DUCT PLAN - 5TH LEVEL
22	M161	DUCT PLAN - 6TH LEVEL
23	M171	DUCT PLAN - 7TH LEVEL
24	M181	DUCT PLAN - ROOF
25	M211	PIPING PLAN - 1ST LEVEL AREA 1
26	M212	PIPING PLAN - 1ST LEVEL AREA 2 & 3
27	M221	PIPING PLAN - 2ND LEVEL AREA 1
28	M231	PIPING PLAN - 3RD LEVEL
29	M241	PIPING PLAN - 4TH LEVEL
30	M251	PIPING PLAN - 5TH LEVEL
31	M261	PIPING PLAN - 6TH LEVEL
32	M271	PIPING PLAN - 7TH LEVEL
33	M281	PIPING PLAN - ROOF
34	M301	ENLARGED MER PLANS - 1ST LEVEL
35	M302	ENLARGED MER PLANS - LEVELS 2-7
36	M303	ENLARGED MER PLANS - PENTHOUSE
37	M311	MECHANICAL SECTIONS
38	M312	MECHANICAL SECTIONS
39	M313	MECHANICAL SECTIONS
40	M401	AIR FLOW DIAGRAM
41	M402	CHILLED WATER FLOW DIAGRAM
42	M403	CHILLED BEAM WATER FLOW DIAGRAM
43	M404	HEATING HOT WATER FLOW DIAGRAM
44	M501	MECHANICAL DETAILS
45	M502	MECHANICAL DETAILS
46	M503	MECHANICAL DETAILS
47	M504	MECHANICAL DETAILS
48	M601	NETWORK ARCHITECTURE DIAGRAM
49	M611	CHILLED WATER CONTROL DIAGRAM (PLC SYSTEM)
50	M612	CHILLED WATER CONTROL DIAGRAM (BAS)
51	M613	HEATING HOT WATER CONTROL DIAGRAM
52	M614	CHILLED BEAM WATER CONTROL DIAGRAM
53	M621	AHU - MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM
54	M622	AHU - MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM
55	M623	AHU - KITCHEN MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM
56	M624	ENERGY RECOVERY SYSTEM CONTROL DIAGRAM
57	M625	FAN COIL UNIT CONTROL DIAGRAM
58	M631	CHILLED BEAM CONTROL DIAGRAM
59	M632	AIR TERMINAL UNIT CONTROL DIAGRAM
60	M633	KITCHEN AIR TERMINAL UNIT CONTROL DIAGRAM
61	M641	MISC. EQUIPMENT MONITORING
62	M642	MISC. EQUIPMENT MONITORING

DRAWING INDEX

VOL. 3

PLUMBING		
63	P001	PLUMBING SYMBOLS AND ABBREVIATIONS
64	P101	PLUMBING SITE PLAN
65	P111	PLUMBING PLAN - UNDERFLOOR AREA 1
66	P112	PLUMBING PLAN - UNDERFLOOR AREA 2 & 3
67	P211	PLUMBING PLAN - 1ST LEVEL AREA 1
68	P212	PLUMBING PLAN - 1ST LEVEL AREA 2 & 3
69	P221	PLUMBING PLAN - 2ND LEVEL AREA 1
70	P222	PLUMBING PLAN - 2ND LEVEL AREA 2 & 3
71	P231	PLUMBING PLAN - 3RD LEVEL
72	P241	PLUMBING PLAN - 4TH LEVEL
73	P251	PLUMBING PLAN - 5TH LEVEL
74	P261	PLUMBING PLAN - 6TH LEVEL
75	P271	PLUMBING PLAN - 7TH LEVEL
76	P281	PLUMBING PLAN - ROOF
77	P291	PLUMBING PLAN - HIGH ROOF
78	P301	PLUMBING ENLARGED TOILET ROOM PLANS
79	P302	PLUMBING ENLARGED TOILET ROOM PLANS
80	P303	PLUMBING ENLARGED TOILET ROOM PLANS
81	P304	PLUMBING ENLARGED KITCHEN PLAN - WASTE & VENT
82	P305	PLUMBING ENLARGED KITCHEN PLAN - DOMESTIC WATER & GAS
83	P401	PLUMBING DOMESTIC WATER RISER DIAGRAM
84	P402	PLUMBING CLEAR WATER WASTE RISER DIAGRAM
85	P403	PLUMBING SANITARY WASTE RISER DIAGRAM
86	P404	PLUMBING SECTION RISERS
87	P501	PLUMBING DETAILS
88	P502	PLUMBING DETAILS
89	P503	PLUMBING DETAILS
90	P601	PLUMBING FIXTURE SCHEDULE
91	P602	PLUMBING SCHEDULES
FIRE PROTECTION		
92	FP001	FIRE PROTECTION SYMBOLS AND ABBREVIATIONS
93	FP111	FIRE PROTECTION PLAN - 1ST LEVEL AREA 1
94	FP112	FIRE PROTECTION PLAN - 1ST LEVEL AREA 2 & 3
95	FP121	FIRE PROTECTION PLAN - 2ND LEVEL AREA 1
96	FP131	FIRE PROTECTION PLAN - 3RD LEVEL
97	FP141	FIRE PROTECTION PLAN - 4TH LEVEL
98	FP151	FIRE PROTECTION PLAN - 5TH LEVEL
99	FP161	FIRE PROTECTION PLAN - 6TH LEVEL
100	FP171	FIRE PROTECTION PLAN - 7TH LEVEL
101	FP181	FIRE PROTECTION PLAN - ROOF
102	FP301	FIRE PROTECTION ENLARGED PLAN AND SECTIONS
103	FP401	FIRE PROTECTION RISER SCHEMATIC
104	FP501	FIRE PROTECTION DETAILS

OWNER
National Aeronautics and Space Administration

ARCHITECT
HUNTONBRADY ARCHITECTS, P.A.
800 North Magnolia Ave., Suite 600
Orlando, Florida 32803
407.839.0886
License AAC001744

STRUCTURAL
Walter P. Moore and Associates, Inc.
300 S. Orange Avenue, Suite 875
Orlando, Florida 32801
407.418.2218

MECHANICAL, ELECTRICAL, PLUMBING, FIRE, TELECOM.
Affiliated Engineers SE, Inc.
3007 SW Williston Road
Gainesville, Florida 32608
352.376.5500

CIVIL
Jones Edmunds & Associates
3910 S. Washington Ave., Suite 210
Titusville, FL 32780
321.269.2950

LANDSCAPE
Herbert Halback, Inc.
135 West Central Blvd., Suite 450
Orlando, Florida 32801
407.422.1449

FOOD SERVICE CONSULTANT
Food Service Design Associates
PO BOX 809
Norwich, VT 05055
802.649.0212

LEED CONSULTANT
exp U.S. Services Inc.
2601 Westhall Lane
Maitland, FL 32751
407.660.0088

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	05.14.14	

HuntonBrady ARCHITECTS
HuntonBrady Architects P.A.
800 North Magnolia Avenue
Suite 600
Orlando, Florida 32803

SIGNATURES	DATE
DRAWN Bryce Denker	12.18.13
CHECKED Robert Davidescu	12.18.13
SUBMITTED: ARCHENG OF RECORD Drew Krecicki	12.18.13
ST of LICENSURE: FL LICENSE NO: AAC001744	12.18.13
APPROVED Steve Beiflower	12.18.13
Thomas Wilczek	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DRAWING INDEX VOL. 3

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 4

G303

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

DRAWING INDEX

VOL. 4

GENERAL			
1	G400	COVER SHEET VOL. 4	■
2	G401	DRAWING INDEX VOL. 1	■
3	G402	DRAWING INDEX VOL. 2	■
4	G403	DRAWING INDEX VOL. 3	■
5	G404	DRAWING INDEX VOL. 4	■
ELECTRICAL			
6	E001	ELECTRICAL SYMBOLS & ABBREVIATIONS	■
7	E011	ELECTRICAL LUMINAIRE SCHEDULE	■
8	E012	ELECTRICAL LUMINAIRE SCHEDULE	■
9	E021	EQUIPMENT CONNECTION SCHEDULE	■
10	E022	EQUIPMENT CONNECTION SCHEDULE	■
11	E023	VARIABLE FREQUENCY DRIVE SCHEDULE	■
12	E031	FOOD SERVICE & PRINTING EQUIP. CONNECTION SCHEDULES	■
13	E101	ELECTRICAL SITE PLAN	■
14	E102	ELECTRICAL SITE LIGHTING PLAN	■
15	E103	ELECTRICAL SITE GROUNDING PLAN	■
16	E104	ELECTRICAL SERVICE YARD PLAN	■
17	E105	ELECTRICAL SERVICE YARD LIGHTING PLAN	■
18	E110	POWER PLAN - 1ST LEVEL OVERALL	■
19	E111	POWER PLAN - 1ST LEVEL AREA 1	■
20	E112	POWER PLAN - 1ST LEVEL AREA 2 & 3	■
21	E121	POWER PLAN - 2ND LEVEL AREA 1	■
22	E122	POWER PLAN - 2ND LEVEL AREA 2 & 3	■
23	E131	POWER PLAN - 3RD LEVEL	■
24	E141	POWER PLAN - 4TH LEVEL	■
25	E151	POWER PLAN - 5TH LEVEL	■
26	E161	POWER PLAN - 6TH LEVEL	■
27	E171	POWER PLAN - 7TH LEVEL	■
28	E181	POWER PLAN - ROOF	■
29	E191	LIGHTNING PROTECTION PLAN - ROOF	■
30	E211	LIGHTING PLAN - 1ST LEVEL AREA 1	■
31	E211C	LIGHTING CONTROLS PLAN – 1ST LEVEL AREA 1	■
32	E212	LIGHTING PLAN - 1ST LEVEL AREA 2 & 3	■
33	E212C	LIGHTING CONTROLS PLAN – 1ST LEVEL AREA 2 & 3	■
34	E221	LIGHTING PLAN - 2ND LEVEL AREA 1	■
35	E221C	LIGHTING CONTROLS PLAN – 2ND LEVEL AREA 1	■
36	E231	LIGHTING PLAN - 3RD LEVEL	■
37	E231C	LIGHTING CONTROLS PLAN – 3RD LEVEL	■
38	E241	LIGHTING PLAN - 4TH LEVEL	■
39	E241C	LIGHTING CONTROLS PLAN – 4TH LEVEL	■
40	E251	LIGHTING PLAN - 5TH LEVEL	■
41	E251C	LIGHTING CONTROLS PLAN – 5TH LEVEL	■
42	E261	LIGHTING PLAN - 6TH LEVEL	■
43	E261C	LIGHTING CONTROLS PLAN – 6TH LEVEL	■
44	E271	LIGHTING PLAN - 7TH LEVEL	■
45	E271C	LIGHTING CONTROLS PLAN – 7TH LEVEL	■
46	E281	LIGHTING PLAN - PENTHOUSE	■
47	E281C	LIGHTING CONTROLS PLAN – PENTHOUSE	■
48	E301	ENLARGED KITCHEN POWER PLAN - 1ST LEVEL	■
49	E302	ENLARGED ELECTRICAL ROOM PLANS - 1ST TO 4TH LEVELS	■
50	E303	ENLARGED ELECTRICAL ROOM PLANS - 5TH LEVEL TO PENTHOUSE	■
51	E304	ELECTRICAL SWITCHBOARD ELEVATIONS	■
52	E401	ELECTRICAL DETAILS	■
53	E402	ELECTRICAL DETAILS	■
54	E403	ELECTRICAL DETAILS - KCCS MONITORING NETWORK DIAGRAM	■
55	E404	STAIR TOWER LIGHTING SECTIONS	■
56	E405	LIGHTING DETAILS	■
57	E406	LIGHTING CONTROL DETAILS	■
58	E407	FOOD SERVICE ELECTRICAL DETAILS	■
59	E501	MEDIUM-VOLTAGE RISER DIAGRAM	■
60	E502	NORMAL POWER RISER DIAGRAM	■
61	E503	EMERGENCY POWER RISER DIAGRAM	■
62	E601	GROUNDING RISER DIAGRAM	■
63	E602	GROUNDING DETAILS	■
64	E603	LIGHTNING PROTECTION DETAILS	■
65	E701	NORMAL POWER PANEL SCHEDULES	■
66	E702	NORMAL POWER PANEL SCHEDULES	■
67	E703	NORMAL POWER PANEL SCHEDULES	■
68	E704	NORMAL POWER PANEL SCHEDULES	■
69	E705	NORMAL POWER PANEL SCHEDULES	■
70	E706	NORMAL POWER PANEL SCHEDULES	■
71	E707	NORMAL POWER PANEL SCHEDULES	■
72	E708	NORMAL POWER PANEL SCHEDULES	■
73	E709	NORMAL POWER PANEL SCHEDULES	■
74	E711	EMERGENCY/STANDBY/UPS POWER PANEL SCHEDULES	■
75	E712	EMERGENCY/STANDBY/UPS POWER PANEL SCHEDULES	■
76	E713	EMERGENCY/STANDBY/UPS POWER PANEL SCHEDULES	■
77	E714	EMERGENCY/STANDBY/UPS POWER PANEL SCHEDULES	■
78	E715	EMERGENCY/STANDBY/UPS POWER PANEL SCHEDULES	■
FIRE ALARM			
79	FA001	FIRE ALARM SYMBOLS AND ABBREVIATIONS	■
80	FA110	FIRE ALARM PLAN - 1ST LEVEL OVERALL	■
81	FA111	FIRE ALARM PLAN - 1ST LEVEL AREA 1	■
82	FA112	FIRE ALARM PLAN - 1ST LEVEL AREA 2 & 3	■
83	FA121	FIRE ALARM PLAN - 2ND LEVEL AREA 1	■
84	FA131	FIRE ALARM PLAN - 3RD LEVEL	■
85	FA141	FIRE ALARM PLAN - 4TH LEVEL	■
86	FA151	FIRE ALARM PLAN - 5TH LEVEL	■
87	FA161	FIRE ALARM PLAN - 6TH LEVEL	■
88	FA171	FIRE ALARM PLAN - 7TH LEVEL	■
89	FA181	FIRE ALARM PLAN - ROOF	■
90	FA501	FIRE ALARM RISER DIAGRAM LEVELS 1 & 2	■
91	FA502	FIRE ALARM RISER DIAGRAM LEVELS 3 & 4	■
92	FA503	FIRE ALARM RISER DIAGRAM LEVELS 5 & 6	■
93	FA504	FIRE ALARM RISER DIAGRAM LEVELS 7 & PENTHOUSE	■
94	FA510	FIRE ALARM SMOKE CONTROL DIAGRAM	■
95	FA601	FIRE ALARM MATRICES	■
96	FA602	FIRE ALARM DETAILS	■
97	FA603	FIRE ALARM DETAILS	■
98	FA604	FIRE ALARM DETAILS	■

DRAWING INDEX

VOL. 4

TECHNOLOGY			
99	T001	TECHNOLOGY LEGEND, NOTES, AND ABBREVIATIONS	■
100	T111	TECHNOLOGY PLAN - 1ST LEVEL AREA 1	■
101	T112	TECHNOLOGY PLAN - 1ST LEVEL AREAS 2 & 3	■
102	T121	TECHNOLOGY PLAN - 2ND LEVEL	■
103	T131	TECHNOLOGY PLAN - 3RD LEVEL	■
104	T141	TECHNOLOGY PLAN - 4TH LEVEL	■
105	T151	TECHNOLOGY PLAN - 5TH LEVEL	■
106	T161	TECHNOLOGY PLAN - 6TH LEVEL	■
107	T171	TECHNOLOGY PLAN - 7TH LEVEL	■
108	T181	TECHNOLOGY PLAN - ROOF LEVEL	■
109	T211	ABOVE CEILING FLOOR PLAN - 1ST LEVEL AREA 1	■
110	T212	ABOVE CEILING FLOOR PLAN - 1ST LEVEL AREAS 2 & 3	■
111	T221	ABOVE CEILING FLOOR PLAN - 2ND LEVEL	■
112	T231	ABOVE CEILING FLOOR PLAN - 3RD LEVEL	■
113	T241	ABOVE CEILING FLOOR PLAN - 4TH LEVEL	■
114	T251	ABOVE CEILING FLOOR PLAN - 5TH LEVEL	■
115	T261	ABOVE CEILING FLOOR PLAN - 6TH LEVEL	■
116	T271	ABOVE CEILING FLOOR PLAN - 7TH LEVEL	■
117	T311	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 1ST LEVEL AREA 1	■
118	T312	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 1ST LEVEL AREAS 2 & 3	■
119	T321	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 2ND LEVEL	■
120	T331	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 3RD LEVEL	■
121	T341	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 4TH LEVEL	■
122	T351	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 5TH LEVEL	■
123	T361	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 6TH LEVEL	■
124	T371	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - 7TH LEVEL	■
125	T381	PAGING & AREA WARNING SYSTEM (PAWS) PLAN - ROOF LEVEL	■
126	T501	TYPICAL OUTSIDE PLANT DETAILS	■
127	T502	TECHNOLOGY TYPICAL DETAILS	■
128	T503	TECHNOLOGY TYPICAL DETAILS	■
129	T504	AUDIO/VISUAL TYPICAL DETAILS	■
130	T505	AUDIO/VISUAL TYPICAL DETAILS	■
131	T506	AUDIO/VISUAL TYPICAL DETAILS	■
132	T601	VOICE AND DATA SYSTEM SINGLE LINE DIAGRAM	■
133	T602	PAWS AND TV SYSTEM SINGLE LINE DIAGRAMS	■
134	T701	TELCOM ENLARGED PLANS	■
135	T801	IDF.1B - ENLARGED CABINET ELEVATIONS	■
136	T802	IDF - ENLARGED CABINET ELEVATIONS	■
AUDIO/VISUAL - VENDOR			
137	AV101	AUDIO / VISUAL CONFERENCE ROOM - 1238	■
138	AV102	AUDIO / VISUAL CONFERENCE ROOM - 2009	■
139	AV103	AUDIO / VISUAL CONFERENCE ROOM - 2009	■
140	AV104	AUDIO / VISUAL CONFERENCE ROOMS - 2025, 3025, 4025, 5025, 6025, 7025	■
141	AV105	AUDIO / VISUAL CONFERENCE ROOM - 2040	■
142	AV106	AUDIO / VISUAL CONFERENCE ROOM - 3007A, 4007A, 5007A, 6007A	■
143	AV107	AUDIO / VISUAL CONFERENCE ROOMS - 3009, 4009, 5009, 6009	■
144	AV108	AUDIO / VISUAL CONFERENCE ROOMS - 3436, 3438, 4436, 4438	■
145	AV109	AUDIO / VISUAL CONFERENCE ROOM - 6440	■
146	AV110	AUDIO / VISUAL CONFERENCE ROOM - 7007	■
147	AV111	AUDIO / VISUAL CONFERENCE ROOM - 7206A	■
148	AV112	AUDIO / VISUAL CONFERENCE ROOM - 7212	■
149	AV113	AUDIO / VISUAL CONFERENCE ROOM - 7212	■
FOOD SERVICE			
150	FS100	FOOD SERVICE EQUIPMENT SCHEDULE	■
151	FS101	FOOD SERVICE EQUIPMENT PLAN	■
152	FS102	FOOD SERVICE ELECTRICAL PLAN	■
153	FS103	FOOD SERVICE PLUMBING PLAN	■
154	FS104	FOOD SERVICE MECHANICAL PLAN	■
155	FS105	FOOD SERVICE MECHANICAL DETAILS	■
156	FS106	FOOD SERVICE MECHANICAL DETAILS	■
157	FS107	FOOD SERVICE MECHANICAL DETAILS	■
158	FS108	FOOD SERVICE MECHANICAL DETAILS	■
SIGNAGE			
159	W001	SIGNAGE COVER SHEET	■
160	W101	SIGNAGE SITE PLAN	■
161	W111	SIGNAGE LOCATION FLOOR PLAN - 1ST LEVEL AREA 1	■
162	W112	SIGNAGE LOCATION FLOOR PLAN - 1ST LEVEL AREA 2	■
163	W113	SIGNAGE LOCATION FLOOR PLAN - 1ST LEVEL AREA 3	■
164	W121	SIGNAGE LOCATION FLOOR PLAN - 2ND LEVEL AREA 1	■
165	W131	SIGNAGE LOCATION FLOOR PLAN - 3RD LEVEL AREA 1	■
166	W141	SIGNAGE LOCATION FLOOR PLAN - 4TH LEVEL AREA 1	■
167	W151	SIGNAGE LOCATION FLOOR PLAN - 5TH LEVEL AREA 1	■
168	W161	SIGNAGE LOCATION FLOOR PLAN - 6TH LEVEL AREA 1	■
169	W171	SIGNAGE LOCATION FLOOR PLAN - 7TH LEVEL AREA 1	■
170	W181	SIGNAGE LOCATION ROOF PLAN	■
171	W204	EXTERIOR BUILDING MOUNTED SIGNAGE	■
172	W301	SIGNAGE DETAILS	■
173	W302	SIGNAGE DETAILS	■
174	W303	SIGNAGE DETAILS	■
175	W304	SIGNAGE DETAILS	■
176	W305	SIGNAGE DETAILS	■
177	W306	SIGNAGE DETAILS	■
178	W307	SIGNAGE DETAILS	■

OWNER
National Aeronautics and Space Administration

ARCHITECT
HUNTONBRADY ARCHITECTS, P.A.
800 North Magnolia Ave., Suite 600
Orlando, Florida 32803
407.839.0886
License AAC001744

STRUCTURAL
Walter P. Moore and Associates, Inc.
300 S. Orange Avenue, Suite 875
Orlando, Florida 32801
407.418.2218

MECHANICAL, ELECTRICAL, PLUMBING, FIRE, TELECOM.
Affiliated Engineers SE, Inc.
3007 SW Williston Road
Gainesville, Florida 32608
352.376.5500

CIVIL
Jones Edmunds & Associates
3910 S. Washington Ave., Suite 210
Titusville, FL 32780
321.269.2950

LANDSCAPE
Herbert Halback, Inc.
135 West Central Blvd., Suite 450
Orlando, Florida 32801
407.422.1449

FOOD SERVICE CONSULTANT
Food Service Design Associates
PO BOX 809
Norwich, VT 05055
802.649.0212

LEED CONSULTANT
exp U.S. Services Inc.
2601 Westhall Lane
Maitland, FL 32751
407.660.0088

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	05.14.14	

HuntonBrady Architects P.A.
800 North Magnolia Avenue
Suite 600
Orlando, Florida 32803

SIGNATURES	DATE
DRAWN Bryce Denker	12.18.13
CHECKED Robert Davidescu	12.18.13
SUBMITTED: ARCHENG OF RECORD Drew Krecicki	12.18.13
ST of LICENSURE: FL LICENSE NO: AAC001744	12.18.13
APPROVED Steve Belflower	12.18.13
Thomas Wilczek	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DRAWING INDEX VOL. 4

G304

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 5

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

ABBREVIATIONS

AFF - ABOVE FINISHED FLOOR
AFM - AIR FLOW MONITOR
AHU - AIR HANDLING UNIT
AS - AIR SEPARATOR

B - BOILER
BAS - BUILDING AUTOMATION SYSTEM
BTU - BRITISH THERMAL UNIT
BTUH - BRITISH THERMAL UNITS PER HOUR

CB - CHILLED BEAM
CBP - CHILLED BEAM PUMP
CBW - CHILLED BEAM WATER
CC - COOLING COIL
CD - CONTROL DAMPER
CD - CEILING DIFFUSER
CFM - CUBIC FEET PER MINUTE
CHW - CHILLED WATER
CL - CENTERLINE
COND - CONDENSATE/CONDENSER
CWP - CHILLED WATER PUMP
CWW - CLEAR WATER WASTE

D - DAMPER
D - DRAIN
DB - DRY BULB
DDC - DIRECT DIGITAL CONTROL
DN - DOWN
DPS - DIFFERENTIAL PRESSURE SWITCH

EAT - ENTERING AIR TEMPERATURE
EAT - EXHAUST AIR TERMINAL
EF - EXHAUST FAN
EL - ELEVATION
EMS - ELECTRIC MOTOR STARTER
ERU - ENERGY RECOVERY UNIT
ESP - EXTERNAL STATIC PRESSURE
ET - EXPANSION TANK
EWT - ENTERING WATER TEMPERATURE
EXH - EXHAUST

F - FILTER
FCU - FAN COIL UNIT
FIC - FIELD INTERFACE CONTROLLER
FLA - FULL LOAD AMPS
FM - WATER FLOW METER
FPI - FINS PER INCH
FPM - FEET PER MINUTE
FPS - FEET PER SECOND

G - GRILLE
GA - GAUGE
GPM - GALLONS PER MINUTE

HHW - HEATING HOT WATER
HP - HORSE POWER
HWP - HOT WATER PUMP
HX - HEAT EXCHANGER

I/O - INPUT/OUTPUT
IACP - INDUSTRIAL AREA CHILLER PLANT
IH - INTAKE HOOD
IP - INTERNET PROTOCOL

JACE - JAVA APPLICATION CONTROL ENGINE

KCCS - KENNEDY COMPLEX CONTROL SYSTEM

LAT - LEAVING AIR TEMPERATURE
LCD - LIQUID CRYSTAL DISPLAY
LD - LINEAR DIFFUSER
LON - LON - WORKS
LWT - LEAVING WATER TEMPERATURE

MBH - THOUSANDS OF BTU PER HOUR
MEP - MECHANICAL, ELECTRICAL AND PIPING
MER - MECHANICAL EQUIPMENT ROOM
MS - MOTOR STARTER

NIC - NOT IN CONTRACT
NPS - NOMINAL PIPE SIZE
NPT - NATIONAL PIPE THREAD

OAF - OUTSIDE AIR MAKEUP UNIT
OAT - OUTSIDE AIR TERMINAL
OAU - OUTSIDE AIR UNIT
OC - ON CENTER

P - PUMP
PD - PRESSURE DROP
PSF - POUNDS PER SQUARE FOOT
PSI - POUNDS PER SQUARE INCH
PSIA - POUNDS PER SQUARE INCH ABSOLUTE
PSIG - POUNDS PER SQUARE INCH GAUGE
PVC - POLYVINYL CHLORIDE

RPM - REVOLUTIONS PER MINUTE

SAD - SOUND ATTENUATING DEVICE
SAT - SUPPLY AIR TERMINAL
SF - SUPPLY FAN
SG - SUPPLY GRILLE
SP - STATIC PRESSURE

TC - TEMPERATURE CONTROL
TCP - TRANSMISSION CONTROL PROTOCOL
TSP - TOTAL STATIC PRESSURE
TTC - TELEPHONE TERMINAL CABINET

UCS - UNIVERSAL CONTROL SYSTEM
U/G - UNDERGROUND

V - VOLTS
VFD - VARIABLE FREQUENCY DRIVE
VP - VELOCITY PRESSURE

WB - WET BULB
WC - WATER COLUMN
WF - WATER FILTER
WFM - WATER FLOW METER
WG - WATER GAUGE
WMG - WIRE MESH GRILLE
W/ - WITH

CONTROLS

CONTROLS ABBREVIATION MATRIX

LETTER	FIRST POSITION	LETTER	FOLLOWING POSITIONS
A		A	ALARM
B		B	
C	CONTROL/COMMAND	C	CONTROLLER/CONTROL
D		D	DIFFERENTIAL
E	VOLTAGE	E	ELEMENT
F	FLOW	F	
G	GAGING	G	GLASS
H	HAND	H	HIGH
I	CURRENT	I	INDICATOR
J	POWER	J	
K	TIME	K	
L	LEVEL	L	LOW
M	MOISTURE (OR HUMID.)	M	MIDDLE
N		N	
O	OCCUPANCY	O	
P	PRESSURE (OR VAC.)	P	POINT
Q	QUANTITY	Q	
R		R	RECORDER
S	SPEED	S	SWITCH
T	TEMPERATURE	T	TRANSMITTER
U		U	
V	VIBRATION	V	VALVE/DAMPER
W	WEIGHT/FORCE	W	WELL
X	USER-DEFINED	X	
Y	EVENT OR STATE	Y	RELAY/CONVERTER
Z	POSITION	Z	DRIVE/ACTUATE

CONTROLS ABBREVIATION EXAMPLE

TSLA 02

FOR FIRST POSITION, USE FIRST COLUMN.
T=TEMPERATURE.

FOR FOLLOWING POSITION(S), USE SECOND COLUMN.
S=SWITCH, L=LOW, A=ALARM

DEFINITIONS

ENABLE - ALLOW AN OPERATION TO START
ACTIVATE - REQUIRE AN OPERATION TO START
DISABLE - PREVENT AN OPERATION FROM STARTING
DEACTIVATE - REQUIRE AN OPERTION TO STOP
PROVE - COMMAND EQUALS STATUS
100% - MAXIMUM COMMAND OR FULL OPEN
0% - MINIMUM COMMAND OR FULL CLOSED
FO - FAIL OPEN
FC - FAIL CLOSED
FLP - FAIL TO LAST POSITION
NO - NORMALLY OPEN
NC - NORMALLY CLOSED

EQUIPMENT NOTATION

COIL
H - HEATING
C - COOLING
AIR FILTER
DAMPER
FAN/BLOWER
PUMP

CONTROLS SYMBOLS

XXXXX — PROCESS FLOW DIRECTIONAL
PROCESS MEDIUM DESCRIPTION

XXX — CONTROLLER IDENTIFIER (VFD, MS, ETC)
VFD = VARIABLE FREQUENCY DRIVE
MS = MOTOR STARTER
DEVICE/CONTROLLER SIGNAL PATHWAY

SENSING LINE

ACTUATORS

MANUAL
MODULATING
GENERAL
ELECTRIC MOTOR DRIVEN

DAMPERS

OR — MANUAL BALANCING DAMPER
OR — CONTROL DAMPER
BD OR BD — BACKDRAFT DAMPER
F OR F — 1 1/2 HOUR RATED FIRE DAMPER
S OR S — SMOKE DAMPER
FS OR FS — 1 1/2 HOUR RATED COMBINATION FIRE/SMOKE DAMPER

SPECIAL DESIGNATION

POINT OF NEW CONNECTION TO EXISTING
X — REVISION REFERENCE
X — FLAG NOTE
P 1 — EQUIPMENT DESIGNATION (PUMP INDICATED)

DETAILED AREA
DETAIL NUMBER — 1
SHEET NUMBER — M301
DETAIL REFERENCE

DETAIL NUMBER — 1
SHEET NUMBER — M301
SECTION REFERENCE

DUCTWORK

SINGLE — DOUBLE

15° MAX. FOR DIVERGING, 25° MAX FOR CONVERGING TRANSITION - ECCENTRIC
15° MAX. FOR DIVERGING, 25° MAX FOR CONVERGING TRANSITION - CONCENTRIC
FLOW DIRECTION DESIGNATION
OR — LINE CONTINUATION BREAK (RECTANGULAR, ROUND)
SUPPLY AIR (SA) OR OUTDOOR AIR (OA) DUCT (SOLID LINE TYPICAL FOR SUPPLY AND OUTDOOR AIR UP, BROKEN LINE DOWN)
RETURN AIR (RA), RELIEF AIR, OR TRANSFER AIR (TA) DUCT (SOLID LINE TYPICAL FOR RETURN, RELIEF AND TRANSFER AIR UP, BROKEN LINE DOWN)
EXHAUST AIR (EA) DUCT (SOLID LINE TYPICAL FOR EXHAUST AIR UP, BROKEN LINE DOWN)
DUCT RISE/DROP W/90° ELBOWS (SUPPLY RECTANGULAR DUCT SHOWN)
N/A — DUCT RISE (R)/DROP(D) W/45° ELBOWS (RECTANGULAR DUCTS)
N/A — ROUND SUPPLY AIR (SA) OR OUTDOOR AIR (OA) DUCT (SOLID LINE TYPICAL FOR SUPPLY AND OUTDOOR AIR UP, BROKEN LINE DOWN)
N/A — ROUND RETURN AIR (RA), RELIEF AIR, OR TRANSFER AIR (TA) DUCT (SOLID LINE TYPICAL FOR RETURN, RELIEF AND TRANSFER AIR UP, BROKEN LINE DOWN)
N/A — ROUND EXHAUST AIR (EA) DUCT (SOLID LINE TYPICAL FOR EXHAUST AIR UP, BROKEN LINE DOWN)
DUCT RISE/DROP W/90° ELBOWS (ROUND DUCTS)
DUCT DROP W/45° ELBOWS (ROUND OR OVAL DUCTS)
W R=1.5W — RADIUS ELBOW
OR — SQUARE ELBOW — SINGLE LINE SYMBOL INDICATES EITHER RADIUS OR SQUARE ELBOW (REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS INCLUDING TURNING VANES)
45° W — 1/4 W BUT NOT LESS THAN 6" — SQUARE/RECTANGULAR BRANCH TAKE-OFF (SA, RA, OR EA)
OR — RECTANGULAR/ROUND BRANCH TAKE-OFF (SA) OR ROUND/ROUND BRANCH TAKE-OFF (SA)
R=1.5W W — RADIUS TEE
SQUARE TEE W/TURNING VANES (FOR PRESSURE SA DIVERGING ONLY)
1/4 W BUT NOT LESS THAN 6" — W — 45° — LOW — BULLHEAD TEE (FOR LOW PRESSURE SA DUCTWORK ONLY)

DUCTWORK SYSTEM LABELS

BCA - BOILER COMBUSTION AIR
BEV - BOILER EXHAUST VENT
DE - DISHWASHER EXHAUST
EA - EXHAUST AIR
GE - GENERAL EXHAUST
GRE - GREASE EXHAUST
MUA - MAKE UP AIR
OA - OUTSIDE AIR
RA - RETURN AIR
RLF - RELIEF AIR
SA - SUPPLY AIR
SCA - SMOKE CONTROL AIR
TA - TRANSFER AIR

DUCTWORK SPECIALTIES

ACCESS DOOR
FLEXIBLE DUCT
OR — DUCT FLEXIBLE CONNECTION

DIFFUSERS, GRILLES AND CHILLED BEAMS

HORIZONTAL MOUNT
SUPPLY DIFFUSER OR GRILLE
ROUND SUPPLY DIFFUSER
RETURN GRILLE
EXHAUST GRILLE
LINEAR DIFFUSER OR GRILLE
2x6 CHILLED BEAM
2x4 CHILLED BEAM
2x2 CHILLED BEAM

VERTICAL MOUNT
SUPPLY GRILLE
RETURN GRILLE
EXHAUST GRILLE
SUPPLY LINEAR DIFFUSER
RETURN LINEAR GRILLE

DIFFUSER NOTATION

DUCT SIZE (NET INSIDE DIMENSIONS - INCHES)
FIRST FIGURE: SIDE SHOWN
SECOND FIGURE: SIDE NOT SHOWN
Ø INDICATES ROUND
X/X Ø INDICATES FLAT OVAL

10Ø SA
SUPPLY AIR DUCT (SA)
FLEXIBLE DUCT (SEE SPECIFICATIONS)
DIFFUSER

CD-1(B) 450
DIFFUSER COLOR, WHERE INDICATED (A) = ALUMINUM, (B) = BLACK, (C) = CUSTOM COLOR
CEILING DIFFUSER (CD)
LINEAR DIFFUSER (LD)
AIR QUANTITY (CFM)
DIFFUSER AIR PATTERN
1 ARROW: 1 WAY
2 ARROWS: 2 WAY
3 ARROWS: 3 WAY
NO ARROWS: 4 WAY

GRILLE NOTATION

DUCT SIZE (NET INSIDE DIMENSIONS - INCHES)
FIRST FIGURE: SIDE SHOWN
SECOND FIGURE: SIDE NOT SHOWN

8x8 RA
RETURN AIR DUCT (RA)
GENERAL EXHAUST DUCT (GE)
FLEXIBLE DUCT (SEE SPECIFICATIONS)
GRILLE

G-1 250
RETURN OR EXHAUST GRILLE (G)
SUPPLY GRILLE (SG)
LINEAR RETURN/EXHAUST GRILLE (LG)
TRANSFER GRILLE (TG)
AIR QUANTITY (CFM)

CHILLED BEAM NOTATION

DUCT SIZE (NET INSIDE DIMENSIONS - INCHES)
Ø INDICATES ROUND

6Ø SA
SUPPLY AIR DUCT (SA)
FLEXIBLE DUCT (SEE SPECIFICATIONS)
CHILLED BEAM

CHILLED BEAM (CB)
CB 1(C)
CHILLED BEAM COLOR, WHERE INDICATED (C) = CUSTOM COLOR
CHILLED BEAM TYPE REFER TO SCHEDULE

PIPING

SINGLE — DOUBLE

ELBOW DOWN
ELBOW UP
BOTTOM CONNECTION (45° OR 90°)
TOP CONNECTION (45° OR 90°)
45° PIPE DROP
TEE (REFER TO SPECIFICATION FOR SIDE, TOP OR BOTTOM TEE)
FLOW DIRECTION DESIGNATION
LINE CONTINUATION BREAK

PIPING SYSTEM LABELS

CBR - CHILLED BEAM WATER RETURN
CBS - CHILLED BEAM WATER SUPPLY
CHR - CHILLED WATER RETURN
CHS - CHILLED WATER SUPPLY
D - DRAIN
HWR - HEATING HOT WATER RETURN
HWS - HEATING HOT WATER SUPPLY

PIPING SPECIALTIES

GENERAL PIPELINE STRAINER WITHOUT DRAIN
GENERAL PIPELINE STRAINER WITH DRAIN
FLANGE
UNION
2" AND SMALLER, CAP OR PLUG 2-1/2" AND LARGER, BLIND FLANGE
THERMOMETER
PRESSURE GAUGE (WITH GAUGE VALVE)
FLOW SENSOR
FLOW METER
TEST PLUG (PRESSURE/TEMP.)
DIRECTION OF FLOW
DIRECTION OF PITCH
AUTOMATIC AIR VENT
MANUAL AIR VENT
PIPE FLEXIBLE CONNECTION
OR — CONCENTRIC OR ECCENTRIC REDUCER
PIPE ANCHOR

VALVES

OR — BUTTERFLY VALVE
GLOBE VALVE
BALL VALVE
SHUTOFF VALVE (BUTTERFLY VALVE FOR 2 1/2" AND LARGER, BALL VALVE FOR 2" AND SMALLER)
BALANCING VALVE
SPRING CHECK VALVE
SWING CHECK VALVE
XX — 2-WAY CONTROL VALVE (VALVE BODY AS SPECIFIED)
DRAIN VALVE
DRAIN VALVE WITH CAP
LOCKSHIELD VALVE
PRESSURE REDUCING VALVE-PRV (DOWNSTREAM SETPOINT)
PRESSURE RELIEF VALVE (RV)
TRIPLE DUTY VALVE

(XX)=DEFINES NORMAL POSITION
NC=NORMALLY CLOSED (CONTROL VALVE OR DAMPER)
NO=NORMALLY OPEN (CONTROL VALVE OR DAMPER)

FIELD MOUNTED CONTROLS

T — SPACE TEMPERATURE **
H — SPACE HUMIDITY **
CO2 — CARBON DIOXIDE SENSOR **
AFM — AIR FLOW MONITOR
FM — WATER FLOW METER
S — DUCT SMOKE DETECTOR

(**) SHOWN ON PIPING PLANS FOR CLARITY

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SYMBOLS AND ABBREVIATIONS

M001

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A
PCN. NO. 98745.1a | SHEET 6

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

SUPPLY FAN SCHEDULE

MARK	LOCATION	SERVICE	TYPE	FAN DATA AIRFLOW (CFM)	TSP IN WG	MAX. SPEED (RPM)	DRIVE TYPE	WHEEL TYPE	WHEEL MIN DIA (IN.)	MAX. BRAKE HP	FAN CLASS	ARRANGEMENT	DISCHARGE	ROTATION	DAMPER	INTERLOCK	SOUND DATA MAX. INLET/OUTLET SOUND POWER LEVEL (dB) @ MID OCTAVE BAND FREQUENCY (Hz) 63	125	250	500	1,000	2,000	4,000	8,000	MOTOR DATA HP	RPM	VOLT	PH	VFD	BASED ON	REMARKS
SF-1	PENTHOUSE	OUTSIDE AIR	CENTRIF. BLOWER	6,000	6.2	1,771	DIRECT	AIRFOIL	27	8.0	I	4	TOP ANG. UPBLAST	CCW	NONE	-	93/109	91/100	99/102	89/93	87/91	86/87	83/84	80/80	10	1,800	460	3	YES	GREENHECK MODEL AFSW	(1)
SF-2	PENTHOUSE	OUTSIDE AIR	CENTRIF. BLOWER	6,000	6.2	1,771	DIRECT	AIRFOIL	27	8.0	I	4	TOP ANG. UPBLAST	CCW	NONE	-	93/109	91/100	99/102	89/93	87/91	86/87	83/84	80/80	10	1,800	460	3	YES	GREENHECK MODEL AFSW	(1)
SF-3	PENTHOUSE	OUTSIDE AIR	CENTRIF. BLOWER	6,000	6.2	1,771	DIRECT	AIRFOIL	27	8.0	I	4	TOP ANG. UPBLAST	CCW	NONE	-	93/109	91/100	99/102	89/93	87/91	86/87	83/84	80/80	10	1,800	460	3	YES	GREENHECK MODEL AFSW	(1)
SF-4	PENTHOUSE	OUTSIDE AIR	CENTRIF. BLOWER	6,000	6.2	1,771	DIRECT	AIRFOIL	27	8.0	I	4	TOP ANG. UPBLAST	CCW	NONE	-	93/109	91/100	99/102	89/93	87/91	86/87	83/84	80/80	10	1,800	460	3	YES	GREENHECK MODEL AFSW	(1)
SF-5	PENTHOUSE	STAIR PRESSURIZATION	CENTRIF. BLOWER	6,000	1.7	1,184	DIRECT	AIRFOIL	24	2.5	I	4	TOP HORIZ.	CW	NONE	-	86/99	85/94	86/88	80/92	75/79	72/74	67/68	63/64	3	1,200	460	3	YES	GREENHECK MODEL AFSW	(1)
SF-6	PENTHOUSE	STAIR PRESSURIZATION	INLINE	10,800	1.5	2,007	DIRECT	MIXED	20	6.4	N/A	4	HORIZ.	N/A	NONE	-	83/93	79/85	94/94	91/92	89/93	85/88	88/89	74/75	10	1,800	460	3	YES	GREENHECK MODEL QEID	(1)
SF-7	PENTHOUSE	ELEV. PRESSURIZATION	INLINE	9,000	0.5	1,808	DIRECT	MIXED	20	3.5	N/A	4	HORIZ.	N/A	NONE	-	83/92	81/86	92/92	89/91	87/91	84/86	86/86	71/72	7-1/2	1,800	460	3	YES	GREENHECK MODEL QEID	(1)
SF-8	HIGH ROOF	ELEV. PRESSURIZATION	HOODED ROOFTOP	18,000	0.5	1,160	DIRECT	PROP	36	5.5	N/A	N/A	DOWNBLAST	N/A	NONE	-	98/-	103/-	99/-	96/-	95/-	92/-	87/-	82/-	7-1/2	1,200	460	3	YES	GREENHECK MODEL RCS3	(1), (2)

NOTES:
1. ALL COMPONENTS EXPOSED TO THE AIR STREAM SHALL BE CONSTRUCTED OF ALUMINUM FOR CORROSION RESISTANCE.
2. PROVIDE MANUFACTURER'S PRE-FRABRICATED CURB PER SPECIFICATIONS. UNIT ASSEMBLY, STRUCTURAL CONNECTION, AND SUPPORTS SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA TO MEET FLORIDA BUILDING CODE REQUIREMENTS TO WITHSTAND SUSTAINED FORCE GENERATED BY APPLICABLE WINDSPEEDS. REFER TO STRUCTURAL DRAWINGS FOR WIND LOAD DESIGN CRITERIA.

EXHAUST FAN SCHEDULE

MARK	LOCATION	SERVICE	TYPE	FAN DATA AIRFLOW (CFM)	TSP IN. WG.	MAX. SPEED (RPM)	DRIVE TYPE	WHEEL TYPE	WHEEL MIN DIA (IN.)	MAX. BRAKE HP	FAN CLASS	ARRANGEMENT	DISCHARGE	ROTATION	DAMPER	INTERLOCK	SOUND DATA MAX. INLET/OUTLET SOUND POWER LEVEL (dB) @ MID OCTAVE BAND FREQUENCY (Hz) 63	125	250	500	1,000	2,000	4,000	8,000	MOTOR DATA HP	RPM	VOLT	PH	VFD	BASED ON	REMARKS
EF-1	PENTHOUSE	GENERAL EXHAUST	CENTRIF. BLOWER	5,760	5.6	1,948	DIRECT	AIRFOIL	22	6.8	I	4	TOP ANG. UPBLAST	CW	NONE	-	93/104	90/93	93/94	92/92	87/88	84/83	81/79	78/76	7-1/2	1,800	460	3	YES	GREENHECK MODEL AFSW	-
EF-2	PENTHOUSE	GENERAL EXHAUST	CENTRIF. BLOWER	5,760	5.6	1,948	DIRECT	AIRFOIL	22	6.8	I	4	TOP ANG. UPBLAST	CW	NONE	-	93/104	90/93	93/94	92/92	87/88	84/83	81/79	78/76	7-1/2	1,800	460	3	YES	GREENHECK MODEL AFSW	-
EF-3	PENTHOUSE	GENERAL EXHAUST	CENTRIF. BLOWER	5,760	5.6	1,948	DIRECT	AIRFOIL	22	6.8	I	4	TOP ANG. UPBLAST	CW	NONE	-	93/104	90/93	93/94	92/92	87/88	84/83	81/79	78/76	7-1/2	1,800	460	3	YES	GREENHECK MODEL AFSW	-
EF-4	PENTHOUSE	GENERAL EXHAUST	CENTRIF. BLOWER	5,760	5.6	1,948	DIRECT	AIRFOIL	22	6.8	I	4	TOP ANG. UPBLAST	CW	NONE	-	93/104	90/93	93/94	92/92	87/88	84/83	81/79	78/76	7-1/2	1,800	460	3	YES	GREENHECK MODEL AFSW	-
EF-5	ROOF	MAIL ROOM	ROOFTOP	700	0.5	1,002	BELT	BI	12	0.1	I	N/A	DOWNBLAST	N/A	NONE	AHU-4	65/-	71/-	68/-	61/-	55/-	52/-	47/-	45/-	1/4	1,800	115	1	NO	GREENHECK MODEL GB	(1)

NOTES:
1. PROVIDE MANUFACTURER'S PRE-FRABRICATED CURB PER SPECIFICATIONS. UNIT ASSEMBLY, STRUCTURAL CONNECTION, AND SUPPORTS SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA TO MEET FLORIDA BUILDING CODE REQUIREMENTS TO WITHSTAND SUSTAINED FORCE GENERATED BY APPLICABLE WINDSPEEDS. REFER TO STRUCTURAL DRAWINGS FOR WIND LOAD DESIGN CRITERIA.

PACKAGED AIR HANDLING UNIT SCHEDULE

MARK	LOCATION	SERVICE	SUPPLY MAX (CFM)	OUTSIDE AIR (CFM)	FAN DATA TYPE	DRIVE TYPE	WHEEL TYPE	WHEEL MIN DIA (IN.)	TSP IN. WG.	ESP IN. WG.	MAX. SPEED (RPM)	MAX. BRAKE HP	SOUND DATA MAX. INLET/OUTLET SOUND POWER LEVEL (dB) @ MID OCTAVE BAND FREQUENCY (Hz) 63	125	250	500	1,000	2,000	4,000	8,000
AHU-1	MAIL ROOM MER	PRINTING/GRAPHICS & SUPPORT AREAS	15,700	7,000	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	33.0	8.8	5.3	1,593	31.1	83/93	87/92	98/100	87/95	82/96	79/97	66/91	52/80
AHU-2	CAFETERIA MER	CAFETERIA AND SERVERY	11,500	4,100	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	24.5	7.0	3.5	2,110	18.4	82/90	80/86	83/88	91/94	77/93	73/91	65/89	52/81
AHU-3	MAIN FIRST FLR MER	KITCHEN	10,000	6,200	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	24.5	6.9	3.4	2,001	15.3	81/89	81/86	94/94	85/91	74/89	72/90	65/89	50/77
AHU-4	MAIL ROOM MER	MAIL ROOM AND POST OFFICE	2,800	700	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	14.0	6.2	2.7	3,505	4.3	76/80	76/78	79/83	92/95	70/85	72/88	69/89	54/80
AHU-5	SECOND FLOOR MER	SECOND FLOOR	11,000	2,200	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	27.0	7.6	3.9	1,833	18.5	82/90	82/88	96/97	86/93	76/93	73/93	62/91	56/78
AHU-6	THIRD FLOOR MER	THIRD FLOOR	11,000	2,200	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	27.0	7.6	3.9	1,833	18.5	82/90	82/88	96/97	86/93	76/93	73/93	62/91	56/78
AHU-7	FOURTH FLOOR MER	FOURTH FLOOR	11,000	2,200	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	27.0	7.6	3.9	1,833	18.5	82/90	82/88	96/97	86/93	76/93	73/93	62/91	56/78
AHU-8	FIFTH FLOOR MER	FIFTH FLOOR	11,000	2,200	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	27.0	7.6	3.9	1,833	18.5	82/90	82/88	96/97	86/93	76/93	73/93	62/91	56/78
AHU-9	SIXTH FLOOR MER	SIXTH FLOOR	11,000	2,200	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	27.0	7.6	3.9	1,833	18.5	82/90	82/88	96/97	86/93	76/93	73/93	62/91	56/78
AHU-10	SEVENTH FLOOR MER	SEVENTH FLOOR	15,700	2,200	CENTRIFUGAL PLENUM	DIRECT	AIRFOIL	30.0	7.8	4.3	1,722	27.8	82/92	89/90	95/98	84/96	83/96	80/97	67/90	55/81

PACKAGED AIR HANDLING UNIT SCHEDULE

MARK	MOTOR DATA HP	VOLT	PH	VFD	COOLING COIL CAPACITY TOTAL (MBH)	SENS. (MBH)	MAX. FACE VEL (FPM)	MAX. AIR PD (IN.WG.)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	WATER FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WAT. PD (FT WC)	UV LIGHTS	HEATING COIL CAPACITY (MBH)	MAX. AIR PD (IN WG)	EAT DB (°F)	LAT DB (°F)	WATER FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WAT. PD (FT WC)	FILTERS (1) PRE	FINAL	BASED ON	REMARKS
AHU-1	40	460	3	YES	987.1	456.5	450	1.0	78.9	71.2	52.0	51.5	150	47	61	22	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-1.1	F-1.2	MCQUAY VISION	(2), (3), (4)
AHU-2	25	460	3	YES	646.8	325.7	450	1.0	78.2	69.6	52.0	51.5	85	47	62	30	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-2.1	F-2.2	MCQUAY VISION	(3), (4)
AHU-3	25	460	3	YES	747.0	308.1	450	1.0	80.5	74.2	52.0	51.5	97	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-3.1	F-3.2	MCQUAY VISION	(3)
AHU-4	7-1/2	460	3	YES	156.2	79.3	450	1.0	78.2	69.6	52.0	51.5	21	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-4.1	F-4.2	MCQUAY VISION	-
AHU-5	25	460	3	YES	495.0	293.7	450	1.2	76.8	66.6	52.0	51.5	67	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-5.1	F-5.2	MCQUAY VISION	(4)
AHU-6	25	460	3	YES	495.0	293.7	450	1.2	76.8	66.6	52.0	51.5	67	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-6.1	F-6.2	MCQUAY VISION	(4)
AHU-7	25	460	3	YES	495.0	293.7	450	1.2	76.8	66.6	52.0	51.5	67	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-7.1	F-7.2	MCQUAY VISION	(4)
AHU-8	25	460	3	YES	495.0	293.7	450	1.2	76.8	66.6	52.0	51.5	67	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-8.1	F-8.2	MCQUAY VISION	(4)
AHU-9	25	460	3	YES	495.0	293.7	450	1.2	76.8	66.6	52.0	51.5	67	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-9.1	F-9.2	MCQUAY VISION	(4)
AHU-10	40	460	3	YES	642.9	410.7	450	1.0	76.2	65.4	52.0	51.5	86	47	62	20	YES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F-10.1	F-10.2	MCQUAY VISION	(3), (4)

NOTES:
1. REFER TO FILTER SCHEDULE FOR FILTER PERFORMANCE CRITERIA.
2. PROVIDE TWO COOLING COILS, PIPED FOR SERIES CHILLED WATER FLOW. PERFORMANCE CRITERIA IS BASED ON COMBINED PERFORMANCE OF BOTH COILS. PROVIDE INDIVIDUAL UV LIGHTS DOWNSTREAM OF EACH COOLING COIL.
3. 10-ROW COOLING COIL IS ACCEPTABLE FOR THIS AIR HANDLING UNIT.
4. SCHEDULE LISTS NOMINAL OUTSIDE AIR FLOW RATE USED FOR COIL SIZING. REFER TO OUTSIDE AIR TERMINAL DEVICE SCHEDULE FOR AIR FLOW SETPOINT.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.1.4.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SCHEDULES

M011

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A
PCN. NO. 98745.1a | SHEET 7

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

CHILLED WATER PUMP SCHEDULE

MARK	LOCATION	SERVICE	TYPE	CAPACITY (GPM)	DISCH. HEAD (FT WC)	MAX NPSH (FT WC)	MIN EFFICIENCY (%)	SIZE DISCH. (IN)	SIZE SUCTION (IN)	SIZE IMPELLER DIA. (IN)	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLT	MOTOR DATA PH	VFD	BASED ON	REMARKS
CWP-1	FIRST FLOOR MER	CAMPUS CHW	VERTICAL SPLIT	1,200	70	10	79	5	8	9.4	40	1,800	460	3	YES	TACO MODEL TC	-
CWP-2	FIRST FLOOR MER	CAMPUS CHW	VERTICAL SPLIT	1,200	70	10	79	5	8	9.4	40	1,800	460	3	YES	TACO MODEL TC	-
CWP-3	FIRST FLOOR MER	BUILDING CHW	VERTICAL SPLIT	1,200	240	10	79	5	8	14.7	150	1,800	460	3	YES	TACO MODEL TC	-
CWP-4	FIRST FLOOR MER	BUILDING CHW	VERTICAL SPLIT	1,200	240	10	79	5	8	14.7	150	1,800	460	3	YES	TACO MODEL TC	-
CWP-5	FIRST FLOOR MER	CAMPUS CHW	VERTICAL SPLIT	1,200	70	10	79	5	8	9.4	40	1,800	460	3	YES	TACO MODEL TC	(1)
CWP-6	FIRST FLOOR MER	BUILDING CHW	VERTICAL SPLIT	1,200	240	10	79	5	8	14.7	150	1,800	460	3	YES	TACO MODEL TC	(1)

NOTES:
1. EQUIPMENT ASSOCIATED WITH OPTION M-1. REFER TO ARCHITECTURAL DRAWINGS.

CHILLED BEAM PUMP SCHEDULE

MARK	LOCATION	SERVICE	TYPE	CAPACITY (GPM)	DISCH. HEAD (FT WC)	MAX NPSH (FT WC)	MIN EFFICIENCY (%)	SIZE DISCH. (IN)	SIZE SUCTION (IN)	SIZE IMPELLER DIAMETER (IN)	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLT	MOTOR DATA PH	VFD	BASED ON	REMARKS
CBP-1	PENTHOUSE	CHILLED BEAMS	END SUCTION	210	160	10	62	2-1/2	3	12.7	25	1,800	460	3	YES	TACO MODEL FI	-
CBP-2	PENTHOUSE	CHILLED BEAMS	END SUCTION	210	160	10	62	2-1/2	3	12.7	25	1,800	460	3	YES	TACO MODEL FI	-

NOTES:
1. RESERVED

HOT WATER PUMP SCHEDULE

MARK	LOCATION	SERVICE	TYPE	CAPACITY (GPM)	DISCH. HEAD (FT WC)	MAX NPSH (FT WC)	MIN EFFICIENCY (%)	SIZE DISCH. (IN)	SIZE SUCTION (IN)	SIZE IMPELLER DIAMETER (IN)	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLT	MOTOR DATA PH	VFD	BASED ON	REMARKS
HWP-1	PENTHOUSE	HEATING HOT WATER	END SUCTION	300	170	12	60	3	5	12.5	50	1,800	460	3	YES	TACO MODEL TC	-
HWP-2	PENTHOUSE	HEATING HOT WATER	END SUCTION	300	170	12	60	3	5	12.5	50	1,800	460	3	YES	TACO MODEL TC	-

NOTES:
1. RESERVED

HEAT EXCHANGER SCHEDULE

MARK	LOCATION	SERVICE	TYPE	TOTAL CAPACITY (MBH)	MIN SURFACE AREA (SQ FT)	COLD SIDE FLUID	COLD SIDE WATER FLOW (GPM)	COLD SIDE EWT (°F)	COLD SIDE LWT (°F)	COLD SIDE MAX. WATER PD (FT WC)	COLD SIDE FOULING MARGIN	HOT SIDE FLUID	HOT SIDE WATER FLOW (GPM)	HOT SIDE EWT (°F)	HOT SIDE LWT (°F)	HOT SIDE MAX. WATER PD (FT WC)	HOT SIDE FOULING MARGIN	BASED ON	REMARKS
HX-1	FIRST FLOOR MER	CHILLED WATER	PLATE & FRAME	9,027	5,506	CAMPUS CHW	1,200	45	60	25	(1)	BUILDING CHW	1,200	62	47	25	(1)	ALFA LAVAL AQ6L-FG	-
HX-2	FIRST FLOOR MER	CHILLED WATER	PLATE & FRAME	9,027	5,506	CAMPUS CHW	1,200	45	60	25	(1)	BUILDING CHW	1,200	62	47	25	(1)	ALFA LAVAL AQ6L-FG	-
HX-3	PENTHOUSE	CHILLED BEAMS	PLATE & FRAME	942.2	124	BUILDING CHW	125	47	62	10	(1)	CHILLED BEAM WATER	210	69	60	25	(1)	ALFA LAVAL AQ2-FG	-
HX-4	PENTHOUSE	CHILLED BEAMS	PLATE & FRAME	942.2	124	BUILDING CHW	125	47	62	10	(1)	CHILLED BEAM WATER	210	69	60	25	(1)	ALFA LAVAL AQ2-FG	-
HX-5	FIRST FLOOR MER	CHILLED WATER	PLATE & FRAME	9,027	5,506	CAMPUS CHW	1,200	45	60	25	(1)	BUILDING CHW	1,200	62	47	25	(1)	ALFA LAVAL AQ6L-FG	(2)

NOTES:
1. REFER TO SPECIFICATIONS FOR FOULING MARGIN PERCENTAGE.
2. THIS HEAT EXCHANGER INCLUDED IN OPTION M-1. INCLUDE THE EQUIPMENT PAD, PIPING CONNECTIONS TO THE 10" CHILLED WATER SUPPLY AND RETURN LINES, AND ALL APPURTENANCES TO PROVIDE A FULLY FUNCTIONING SYSTEM.

ENERGY RECOVERY UNIT SCHEDULE

MARK	LOCATION	SERVICE	OUTSIDE AIR MAX FLOW (CFM)	OUTSIDE AIR MAX AIR PD (IN WG)	OUTSIDE AIR FILTERS (2) PRE	OUTSIDE AIR FILTERS (2) FINAL	EXHAUST AIR MAX FLOW (CFM)	EXHAUST AIR MAX AIR PD (IN WG)	EXHAUST AIR FILTERS (2) PRE	EXHAUST AIR FILTERS (2) FINAL	SUMMER CONDITIONS OUTSIDE AIR ENTERING TEMP. DB	SUMMER CONDITIONS OUTSIDE AIR ENTERING HUM. GR/LB.	SUMMER CONDITIONS OUTSIDE AIR LEAVING TEMP. DB	SUMMER CONDITIONS OUTSIDE AIR LEAVING HUM. GR/LB.	SUMMER CONDITIONS EXHAUST AIR ENTERING TEMP. DB	SUMMER CONDITIONS EXHAUST AIR ENTERING HUM. GR/LB.	WINTER CONDITIONS OUTSIDE AIR ENTERING TEMP. DB	WINTER CONDITIONS OUTSIDE AIR ENTERING HUM. GR/LB.	WINTER CONDITIONS OUTSIDE AIR LEAVING TEMP. DB	WINTER CONDITIONS OUTSIDE AIR LEAVING HUM. GR/LB.	WINTER CONDITIONS EXHAUST AIR ENTERING TEMP. DB	WINTER CONDITIONS EXHAUST AIR ENTERING HUM. GR/LB.	BASED ON	REMARKS
ERU-1	PENTHOUSE	OUTSIDE AIR PRECONIDTIONING	12,000	1.2	F-ERU-1.1	NONE	12,000	1.2	F-ERU-1.2	NONE	83.9	150.7	78.3	123.3	75.0	62.6	38.4	-	59.7	-	72.0	-	RENEWAIRE	(1)
ERU-2	PENTHOUSE	OUTSIDE AIR PRECONIDTIONING	12,000	1.2	F-ERU-2.1	NONE	12,000	1.2	F-ERU-2.2	NONE	83.9	150.7	78.3	123.3	75.0	62.6	38.4	-	59.7	-	72.0	-	RENEWAIRE	(1)

NOTES:
1. UNIT IS BASED ON MCQUAY AHU CABINET WITH FIXED PLATE HEAT EXCHANGER CORES INSTALLED IN AN ARRAY CONFIGURATION.
2. REFER TO FILTER SCHEDULE FOR FILTER PERFORMANCE CRITERIA.

HEATING BOILER SCHEDULE

MARK	LOCATION	SERVICE	TYPE	CAPACITY MIN OUTPUT (MBH)	CAPACITY MAX FLOW (GPM)	CAPACITY NET MCA RATING (AMPS)	BURNER TYPE	BURNER FUEL	BURNER MIN GAS PRESS. (IN WG)	BURNER INPUT (MBH)	BURNER GAS TRAIN (IN)	BURNER MINIMUM TURNDOWN RATIO	TEST PRESS. (PSIG)	WORKING PRESS. (PSIG)	MIN HEATING SURFACE (SQ FT)	MIN EFF. (1) (%)	MAX. WATER PD (FT WC)	ELECTRICAL FLA	ELECTRICAL VOLT	ELECTRICAL PH	BASED ON	REMARKS
B-1	PENTHOUSE	HEATING HOT WATER	CONDENSING	2,760	350	15	SEALED	GAS	14	3,000	2	20:1	-	160	237.0	93	10	13.6	120	1	LOCHINVAR CREST	-
B-2	PENTHOUSE	HEATING HOT WATER	CONDENSING	2,760	350	15	SEALED	GAS	14	3,000	2	20:1	-	160	237.0	93	10	13.6	120	1	LOCHINVAR CREST	-

NOTES:
1. EFFICIENCY RATING SHALL BE BASED ON 100 DEGREE ENTERING WATER TEMPERATURE AND 120 DEGREE LEAVING WATER TEMPERATURE.

VARIABLE FREQUENCY DRIVES

MARK	LOCATION	SERVICE	MAX HP	INPUT ELECTRICAL CHARACTERISTICS VOLTS	INPUT ELECTRICAL CHARACTERISTICS FREQUENCY	INPUT ELECTRICAL CHARACTERISTICS PHASE	HARMONIC MITIGATION	BASED ON	REMARKS
VFD-AHU-1	MECHANICAL ROOM	AHU-1	40	460	60	3	6-PULSE	-	-
VFD-AHU-2	MECHANICAL ROOM	AHU-2	25	460	60	3	6-PULSE	-	-
VFD-AHU-3	MECHANICAL ROOM	AHU-3	25	460	60	3	6-PULSE	-	-
VFD-AHU-4	MECHANICAL ROOM	AHU-4	7-1/2	460	60	3	6-PULSE	-	-
VFD-AHU-5	MECHANICAL ROOM	AHU-5	25	460	60	3	6-PULSE	-	-
VFD-AHU-6	MECHANICAL ROOM	AHU-6	25	460	60	3	6-PULSE	-	-
VFD-AHU-7	MECHANICAL ROOM	AHU-7	25	460	60	3	6-PULSE	-	-
VFD-AHU-8	MECHANICAL ROOM	AHU-8	25	460	60	3	6-PULSE	-	-
VFD-AHU-9	MECHANICAL ROOM	AHU-9	25	460	60	3	6-PULSE	-	-
VFD-AHU-10	MECHANICAL ROOM	AHU-10	40	460	60	3	6-PULSE	-	-
VFD-SF-1	PENTHOUSE	SF-1	10	460	60	3	6-PULSE	-	-
VFD-SF-2	PENTHOUSE	SF-2	10	460	60	3	6-PULSE	-	-
VFD-SF-3	PENTHOUSE	SF-3	10	460	60	3	6-PULSE	-	-
VFD-SF-4	PENTHOUSE	SF-4	10	460	60	3	6-PULSE	-	-
VFD-SF-5	PENTHOUSE	SF-5	3	460	60	3	6-PULSE	-	-
VFD-SF-6	PENTHOUSE	SF-6	10	460	60	3	6-PULSE	-	-
VFD-SF-7	PENTHOUSE	SF-7	7-1/2	460	60	3	6-PULSE	-	-
VFD-SF-8	PENTHOUSE	SF-8	7-1/2	460	60	3	6-PULSE	-	-
VFD-EF-1	PENTHOUSE	EF-1	7-1/2	460	60	3	6-PULSE	-	-
VFD-EF-2	PENTHOUSE	EF-2	7-1/2	460	60	3	6-PULSE	-	-
VFD-EF-3	PENTHOUSE	EF-3	7-1/2	460	60	3	6-PULSE	-	-
VFD-EF-4	PENTHOUSE	EF-4	7-1/2	460	60	3	6-PULSE	-	-
VFD-CWP-1	MECHANICAL ROOM	CWP-1	40	460	60	3	6-PULSE	-	-
VFD-CWP-2	MECHANICAL ROOM	CWP-2	40	460	60	3	6-PULSE	-	-
VFD-CWP-3	MECHANICAL ROOM	CWP-3	150	460	60	3	18-PULSE	-	-
VFD-CWP-4	MECHANICAL ROOM	CWP-4	150	460	60	3	18-PULSE	-	-
VFD-CBP-1	PENTHOUSE	CBP-1	25	460	60	3	6-PULSE	-	-
VFD-CBP-2	PENTHOUSE	CBP-2	25	460	60	3	6-PULSE	-	-
VFD-HWP-1	PENTHOUSE	HWP-1	50	460	60	3	12-PULSE	-	-
VFD-HWP-2	PENTHOUSE	HWP-2	50	460	60	3	12-PULSE	-	-
VFD-CWP-5	MECHANICAL ROOM	CWP-1	40	460	60	3	6-PULSE	-	(1)
VFD-CWP-6	MECHANICAL ROOM	CWP-3	150	460	60	3	18-PULSE	-	(1)

NOTES:
1. EQUIPMENT ASSOCIATED WITH OPTION M-1. REFER TO ARCHITECTURAL DRAWINGS.

SYM	ZONE		DATE	APPD
A		THIS SHEET REVISED IN ITS ENTIRETY	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SCHEDULES

M012

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 8

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FAN COIL UNITS

MARK	LOCATION		DUCTED/	FAN CHARACTERISTICS				COOLING COIL							HEATING COIL					BASED ON	REMARKS
	ROOM NUMBER	ROOM NAME	UNDUCTED (1)	NOM. CFM	MOTOR HP	VOLT	PH	CAPACITY TOTAL (MBH)	CAPACITY SENSIBLE (MBH)	EAT DB (F)	EAT WB (F)	EWT	GPM	MAX PD (FT)	CAPACITY TOTAL (MBH)	EAT (F)	EWT	GPM	MAX PD (FT)		
FCU-1-1	1211	ELECTRICAL	DUCTED	4,850	3	208	3	100.8	98.3	74.0	62.0	47	13.4	10	N/A	N/A	N/A	N/A	N/A	TRANE LPC	-
FCU-1-2	1458	EMER ELECTRICAL	UNDUCTED	2,150	1	120	1	59.0	48.8	80.0	67.0	47	8.2	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-1-3	1454	ELECTRICAL	UNDUCTED	550	1/3	120	1	14.3	11.8	80.0	67.0	47	2.1	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-1-4	1451	MECHANICAL	UNDUCTED	2,800	1	208	3	65.8	58.5	80.0	67.0	47	9.2	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-1-5	1457	MAIN ELECTRICAL	UNDUCTED	600	1/3	120	1	15.3	12.8	80.0	67.0	47	2.2	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-1-6	1211	ELECTRICAL	UNDUCTED	900	1/2	120	1	23.4	19.9	80.0	67.0	47	3.3	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-1-7	1464	TELECOM	UNDUCTED	250	1/3	120	1	4.5	4.4	74.0	62.0	47	0.7	10	1.5	72.0	120	0.2	10	TRANE BCHC	-
FCU-1-8	1260	FIRE PUMP	UNDUCTED	250	1/3	120	1	6.6	5.4	80.0	67.0	47	1.0	10	1.5	72.0	120	0.2	10	TRANE BCHC	-
FCU-1-9	1417P	DRY STORAGE	DUCTED	250	1/3	120	1	4.5	4.4	74.0	62.0	47	0.7	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-2-1	2215	ELECTRICAL	UNDUCTED	400	1/3	120	1	10.9	9.0	80.0	67.0	47	1.5	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-2-2	2406A	TELECOM	DUCTED	1,400	3/4	120	1	27.7	27.4	74.0	62.0	47	3.9	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-3-1	3213	ELECTRICAL	UNDUCTED	400	1/3	120	1	10.9	9.0	80.0	67.0	47	1.5	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-3-2	3413	JANITOR	DUCTED	1,400	3/4	120	1	27.7	27.4	74.0	62.0	47	3.9	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-4-1	4213	ELECTRICAL	UNDUCTED	400	1/3	120	1	10.9	9.0	80.0	67.0	47	1.5	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-4-2	4413	JANITOR	DUCTED	1,400	3/4	120	1	27.7	27.4	74.0	62.0	47	3.9	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-5-1	5213	ELECTRICAL	UNDUCTED	400	1/3	120	1	10.9	9.0	80.0	67.0	47	1.5	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-5-2	5413	JANITOR	DUCTED	1,400	3/4	120	1	27.7	27.4	74.0	62.0	47	3.9	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-5-3	5434	STORAGE	DUCTED	250	1/3	120	1	4.5	4.4	74.0	62.0	47	0.7	10	2.3	72.0	120	0.3	10	TRANE BCHC	(2)
FCU-6-1	6213	ELECTRICAL	UNDUCTED	400	1/3	120	1	10.9	9.0	80.0	67.0	47	1.5	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-6-2	6413	JANITOR	DUCTED	1,400	3/4	120	1	27.7	27.4	74.0	62.0	47	3.9	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-6-3	6434	STORAGE	DUCTED	250	1/3	120	1	4.5	4.4	74.0	62.0	47	0.7	10	1.5	72.0	120	0.2	10	TRANE BCHC	(2)
FCU-7-1	7215	ELECTRICAL	UNDUCTED	400	1/3	120	1	10.9	9.0	80.0	67.0	47	1.5	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-7-2	7413	JANITOR	DUCTED	2,250	3/4	120	1	43.4	42.3	74.0	62.0	47	6.1	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-
FCU-8-1	N/A	PENTHOUSE	UNDUCTED	4,450	3	208	3	158.6	119.5	80.0	67.0	47	21.1	10	N/A	N/A	N/A	N/A	N/A	TRANE LPC	-
FCU-8-2	N/A	PENTHOUSE	UNDUCTED	4,450	3	208	3	158.6	119.5	80.0	67.0	47	21.1	10	N/A	N/A	N/A	N/A	N/A	TRANE LPC	-
FCU-8-3	N/A	ELEVATOR CONTROL	UNDUCTED	1,450	1/2	120	1	31.6	30.5	80.0	67.0	47	4.4	10	N/A	N/A	N/A	N/A	N/A	TRANE BCHC	-

NOTES:
1. ALL UNITS SHALL BE HORIZONTAL TYPE CABINETS. DUCTED UNITS SHALL ALLOW FOR A MINIMUM OF 0.5 IN WG OF EXTERNAL STATIC PRESSURE.
2. MAXIMUM INLET/DISCHARGE SOUND POWER LEVELS SHALL NOT EXCEED THE FOLLOWING VALUES:

MAX. INLET/OUTLET SOUND POWER LEVEL (dB) @ MID OCTAVE BAND FREQUENCY (Hz)							
63	125	250	500	1,000	2,000	4,000	8,000
79/78	73/82	66/73	55/68	47/66	45/64	42/60	35/55

EXHAUST AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	
EAT-1.1	1218	MEN	1,540	1,540	1,540	0.5	1.5	12	-
EAT-1.2	1200	CORRIDOR	2,555	2,555	2,555	0.5	1.5	16	-
EAT-1.3	1200	CORRIDOR	445	445	445	0.5	1.5	8	-
EAT-2.1	1200	CORRIDOR	3,245	0	0	0.5	1.5	24x16	-
EAT-2.2	1200	CORRIDOR	115	115	115	0.5	1.5	4	-
EAT-5.1	2211	BREAK ROOM	465	465	465	0.5	1.5	8	-
EAT-5.2	2209	MEN	875	875	875	0.5	1.5	10	-
EAT-6.1	3421	MECHANICAL	735	735	735	0.5	1.5	10	-
EAT-6.2	3409	WOMEN	900	900	900	0.5	1.5	10	-
EAT-6.3	3211	BREAK ROOM	465	465	465	0.5	1.5	8	-
EAT-7.1	4421	MECHANICAL	335	335	335	0.5	1.5	6	-
EAT-7.2	4409	WOMEN	900	900	900	0.5	1.5	10	-
EAT-7.3	4211	BREAK ROOM	465	465	465	0.5	1.5	8	-
EAT-8.1	5421	MECHANICAL	635	635	635	0.5	1.5	8	-
EAT-8.2	5409	WOMEN	900	900	900	0.5	1.5	10	-
EAT-8.3	5211	BREAK ROOM	465	465	465	0.5	1.5	8	-
EAT-9.1	6421	MECHANICAL	335	335	335	0.5	1.5	6	-
EAT-9.2	6409	WOMEN	900	900	900	0.5	1.5	10	-
EAT-9.3	6211	BREAK ROOM	465	465	465	0.5	1.5	8	-
EAT-10.1	7421	MECHANICAL	205	205	205	0.5	1.5	6	-
EAT-10.2	7409	BREAK ROOM	465	465	245	0.5	1.5	8	-
EAT-10.3	7211	WOMEN	1,430	1,430	1,430	0.5	1.5	12	-

NOTES:
1. RESERVED

SUPPLY/RETURN/EXHAUST AIR DISTRIBUTION DEVICES

MARK	TYPE	AIRFLOW (CFM)	NOMINAL DUCT CONNECTION SIZE (IN)	REMARKS
CD-1	SUPPLY AIR DIFFUSER 24x24 MODULE SIZE	0-135	6Ø	SUPPLY DIFFUSERS SHALL BE EQUAL TO PRICE SCDA (4 CONE MODEL) MAX. NECK VELOCITY 700 FPM MAX. NC = 30 MAX. PRESSURE DROP 0.10" CEILING LAY-IN OR SURFACE MOUNT USED FOR GENERAL PURPOSE
		140-240	8Ø	
		245-380	10Ø	
		380-550	12Ø	
		555-740	14Ø	
		745-850	15Ø	
CD-2 CD-2(B)	SUPPLY AIR DIFFUSER 22Ø SIZE	0-380	10Ø	SUPPLY DIFFUSERS SHALL BE EQUAL TO PRICE RCDA (FULLY ADJUSTABLE) MAX. NECK VELOCITY 700 FPM MAX. NC = 30 MAX. PRESSURE DROP 0.10" CEILING SURFACE MOUNT USED FOR CAFETERIA
SG-1	SUPPLY AIR GRILLE VARIABLE SIZE (SIDEWALL OR CEILING/DUCT)	0-125	6x6	SUPPLY GRILLES SHALL BE EQUAL TO PRICE 520 L (BLADES PARALLEL TO LONG DIM.) MAX. NECK VELOCITY 700 FPM MAX. NC = 40 MAX. PRESSURE DROP 0.10" DUCT OR CEILING/WALL SURFACE MOUNT ALTERNATE SIZES WITH EQUIVALENT CORE AREA ARE ACCEPTABLE USED FOR GENERAL PURPOSE AND AREAS WITH EXPOSED CEILINGS
		130-275	8x8	
		280-420	12x8	
		425-750	18x10	
		755-1260	24x12	
		1265-1950	24x18 OR 36x12	
		1955-2500	30x18	
		2505-3000	36x18	
		3005-4600	52x24	
LD-1 LD-1(A) LD-1(B) (SUPPLY) LG-1 (RETURN)	SUPPLY/RETURN AIR LINEAR SLOT 48x6 MODULE SIZE (CEILING, SIDEWALL)	0-120	6Ø	SUPPLY/RETURN LINEAR SLOTS SHALL BE EQUAL TO PRICE SDS 75(SUPPLY) / SDR 75(RETURN) 3/4" SLOT SPACING, 3 SLOTS MAX. NECK VELOCITY 700 FPM MAX. NC = 30 MAX. PRESSURE DROP 0.10" CEILING/WALL SURFACE MOUNT W/ CONCEALED FASTENINGS OR LAY-IN PROVIDE FACTORY FABRICATED, EXTERNALLY INSULATED PLENUM FOR FLEXIBLE DUCT CONNECTION PROVIDE MITERED END FLANGES USED FOR LOBBY AREAS AND AREAS WITH TECHZONE CEILINGS
		125-250	8Ø	

MARK	TYPE	AIRFLOW (CFM)	NOMINAL DUCT CONNECTION SIZE (IN)	REMARKS
G-1	RETURN/EXHAUST AIR GRILLE 24x24 MODULE SIZE (RETURN, EXHAUST)	0-110	6Ø	RETURN/EXHAUST GRILLES SHALL BE EQUAL TO PRICE 530 MAX. NECK VELOCITY 700 FPM MAX. NC = 30 MAX. PRESSURE DROP 0.10" CEILING LAY-IN OR SURFACE MOUNT USED FOR GENERAL PURPOSE FOR 24x24 MODULE SIZE, PROVIDE MIN. 3" TALL SQUARE TO ROUND GRILLE TRANSITION COLLARS.
		115-220	8Ø	
		225-330	10Ø	
		335-475	12Ø	
		480-650	14Ø	
		655-845	16Ø	
	48x24 MODULE SIZE (RETURN, EXHAUST)	1505-3600	18Ø WITH GRILLE PLENUM BOX	FOR 48x24 MODULE SIZE, PROVIDE GRILLE PLENUM BOX WITH 18Ø DUCT CONNECTION(S) - REFER TO DETAIL FOR GRILLE PLENUM BOX.
G-2	RETURN/EXHAUST AIR GRILLE VARIABLE SIZE (SIDEWALL OR CEILING/DUCT)	0-125	6x6	RETURN/EXHAUST GRILLES SHALL BE EQUAL TO PRICE 630 MAX. NECK VELOCITY 700 FPM MAX. NC = 40 MAX. PRESSURE DROP 0.10" DUCT OR CEILING/WALL SURFACE MOUNT ALTERNATE SIZES WITH EQUIVALENT CORE AREA ARE ACCEPTABLE USED FOR GENERAL PURPOSE AND AREAS WITH EXPOSED CEILINGS
		130-270	8x8	
		275-420	10x10	
		425-630	12x12	
		635-900	18x12	
		905-1250	24x12	
		1255-1925	36x12	
		1930-2800	42x18	
		2805-5000	52x24	
G-3	OPEN PLENUM RETURN AIR GRILLE 24x24 MODULE SIZE	0-1000	16Ø	RETURN GRILLES SHALL BE EQUAL TO PRICE 530 MAX. NECK VELOCITY 700 FPM MAX. NC = 30 MAX. PRESSURE DROP 0.10" CEILING LAY-IN OR SURFACE MOUNT USED FOR OPEN PLENUM RETURN **PROVIDE MIN. 3" TALL SQUARE TO ROUND GRILLE TRANSITION COLLAR ATTACHED TO 6 FT. OF 16Ø FLEXIBLE DUCT - REFER TO DETAIL

NOTES:
1. PROVIDE DUCT TRANSITIONS AS REQUIRED TO MATCH AIR DISTRIBUTION DEVICE CONNECTION SIZE AS SCHEDULED.
2. UNLESS OTHERWISE INDICATED, PROVIDE FLEXIBLE DUCT CONNECTIONS TO ALL CEILING AIR DISTRIBUTION DEVICES EXPOSED AIR DISTRIBUTION DEVICES SHALL HAVE HARD DUCT CONNECTIONS.
3. UNLESS OTHERWISE INDICATED, PROVIDE WHITE FINISH FOR LAYIN/SURFACE MOUNTED, ALUMINUM FOR EXPOSED AIR DISTRIBUTION DEVICES. (A) = ALUMINUM, (B) = BLACK, (C) CUSTOM COLOR.
4. UNLESS OTHERWISE INDICATED, CONFIRM AFF HEIGHT FOR ALL WALL MOUNTED AIR DISTRIBUTION DEVICES WITH ARCHITECT.
5. SCHEDULE APPLIES TO ALL AIR DISTRIBUTION DEVICES EXCEPT WHERE DEVICE SIZES ARE CALLED OUT SPECIFICALLY ON PLANS.

OUTSIDE AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN.	MAX.	MIN.	MIN.	REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	AIRFLOW (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	
OAT-1.1	1452	MECHANICAL	6,340	6,340	0.5	1.5	24x16	-
OAT-2.1	1221	MECHANICAL	3,285	1,450	0.5	1.5	24x16	-
OAT-5.1	2223	MECHANICAL	1,440	1,440	0.5	1.5	12	-
OAT-6.1	3421	MECHANICAL	2,200	2,200	0.5	1.5	14	-
OAT-7.1	4421	MECHANICAL	1,800	1,800	0.5	1.5	14	-
OAT-8.1	5421	MECHANICAL	2,100	2,100	0.5	1.5	14	-
OAT-9.1	6421	MECHANICAL	1,800	1,800	0.5	1.5	14	-
OAT-10.1	7421	MECHANICAL	2,200	2,200	0.5	1.5	14	-
								-

NOTES:
1. RESERVED

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SCHEDULES

M013

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 9

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

AHU-1 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-1.1	1208	GIFT SHOP	800	300	300	0.5	1.5	10	560	27.3	2.8	120	50	95.0	3.0	-
SAT-1.2	1013	ELEVATOR LOBBY	1,750	600	600	0.5	1.5	14	700	26.6	2.7	120	50	85.0	3.0	-
SAT-1.3	1200	CORRIDOR	975	975	900	0.5	1.5	10	975	37.0	3.8	120	50	85.0	3.0	-
SAT-1.4	1022C	TELLER AREA	1,515	585	560	0.5	1.5	12	610	23.2	2.4	120	50	85.0	3.0	-
SAT-1.5	1022C	TELLER AREA	155	155	155	0.5	1.5	4	155	5.9	0.6	120	50	85.0	3.0	-
SAT-1.6	1022D	WORK/BREAK ROOM	190	90	90	0.5	1.5	6	90	3.4	0.5	120	50	85.0	3.0	-
SAT-1.7	1208	GIFT SHOP	805	805	350	0.5	1.5	10	805	30.6	3.1	120	50	85.0	3.0	-
SAT-1.8	1214A	HAIR SHOP	370	370	370	0.5	1.5	8	370	14.1	1.5	120	50	85.0	3.0	-
SAT-1.9	1222	WOMEN	1,390	1,390	1,390	0.5	1.5	12	1,390	52.8	5.3	120	50	85.0	3.0	-
SAT-1.10	1245A	PRINTING PRODUCTION	595	595	300	0.5	1.5	8	595	22.6	2.3	120	50	85.0	3.0	-
SAT-1.11	1236	RECEPTION	635	195	195	0.5	1.5	8	255	9.7	1.0	120	50	85.0	3.0	-
SAT-1.12	1254A	PRINTING PRODUCTION	220	90	90	0.5	1.5	6	90	3.4	0.5	120	50	85.0	3.0	-
SAT-1.13	1242	GRAPHICS LEAD	415	375	375	0.5	1.5	8	375	14.2	1.5	120	50	85.0	3.0	-
SAT-1.14	1246	GRAPHICS	1,720	600	600	0.5	1.5	14	690	26.2	2.7	120	50	85.0	3.0	-
SAT-1.15	1254A	PRINTING PRODUCTION	2,330	2,330	2,330	0.5	1.5	14	2,330	88.5	8.9	120	50	85.0	3.0	-
SAT-1.16	1254A	PRINTING PRODUCTION	485	160	160	0.5	1.5	8	195	7.4	0.8	120	50	85.0	3.0	-
SAT-1.17	1232	CORRIDOR	525	525	525	0.5	1.5	8	525	19.9	2.0	120	50	85.0	3.0	-
SAT-1.18	1022	CREDIT UNION	400	400	300	0.5	1.5	8	400	15.2	1.6	120	50	85.0	3.0	-

NOTES:
1. RESERVED

AHU-2 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-2.1	1400	CAFETERIA	900	900	270	0.5	1.5	10	900	29.3	3.0	120	55	85.0	3.0	-
SAT-2.2	1400	CAFETERIA	1,100	1,100	420	0.5	1.5	12	1,100	35.8	3.6	120	55	85.0	3.0	-
SAT-2.3	1400A	CAFETERIA SEATING	2,700	1,055	1,055	0.5	1.5	16	1,080	35.2	3.6	120	55	85.0	3.0	-
SAT-2.4	1400A	CAFETERIA SEATING	4,500	1,755	1,755	0.5	1.5	24x16	1,800	58.6	5.9	120	55	85.0	3.0	-
SAT-2.5	1400A	CAFETERIA SEATING	2,300	895	895	0.5	1.5	14	920	29.9	3.0	120	55	85.0	3.0	-

NOTES:
1. RESERVED

AHU-4 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-4.1	1453	MAIL ROOM	1,275	700	700	0.5	1.5	12	700	22.8	2.3	120	55	85.0	3.0	-
SAT-4.2	1453B	OFFICE	225	225	225	0.5	1.5	6	225	7.3	0.8	120	55	85.0	3.0	-
SAT-4.3	1443	POST OFFICE	855	440	270	0.5	1.5	10	440	14.3	1.5	120	55	85.0	3.0	-
SAT-4.4	1443	POST OFFICE	150	150	150	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-

NOTES:
1. RESERVED

AHU-3 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-3.1	1400J	PREP 1	795	410	410	0.5	1.5	10	410	17.8	1.8	120	45	85.0	3.0	-
SAT-3.2	1400J	PREP 1	165	130	130	0.5	1.5	4	130	5.6	0.6	120	45	85.0	3.0	-
SAT-3.3	1417F	FOOD STATION 2	3785	1,600	1,600	0.5	1.5	24x16	1,600	69.4	7.0	120	45	85.0	3.0	-
SAT-3.4	1417F	FOOD STATION 2	540	270	270	0.5	1.5	8	270	11.7	1.2	120	45	85.0	3.0	-
SAT-3.5	1417E	PREP 2	1600	1,600	480	0.5	1.5	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
SAT-3.6	1417A	PREP 3	1155	800	550	0.5	1.5	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
SAT-3.7	1417A	PREP 3	250	145	145	0.5	1.5	6	145	6.3	0.7	120	45	85.0	3.0	
SAT-3.8	1417P	DRY STORAGE	810	810	810	0.5	1.5	10	810	35.2	3.6	120	45	85.0	3.0	
SAT-3.9	1417C	WAREWASHING	525	185	185	0.5	1.5	8	525	22.8	2.3	120	45	85.0	3.0	
SAT-3.10	1417P	DRY STORAGE	100	100	100	0.5	1.5	4	100	4.3	0.5	120	45	85.0	3.0	
SAT-3.11	1417P	DRY STORAGE	150	150	150	0.5	1.5	4	150	6.5	0.7	120	45	85.0	3.0	

NOTES:
1. RESERVED

AHU-3 EXHAUST AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	
EAT-3.1	1400M	STORAGE	695	310	310	0.5	1.5	10	
EAT-3.2	1400J	PREP 1	265	230	230	0.5	1.5	6	
EAT-3.3	1417C	WAREWASHING	440	170	170	0.5	1.5	8	
EAT-3.4	1400J	PREP 1	760	760	480	0.5	1.5	10	
EAT-3.5	1400D	FOOD STATION 3	355	0	350	0.5	1.5	6	
EAT-3.6	1400D	FOOD STATION 3	450	345	345	0.5	1.5	8	
EAT-3.7	1417F	FOOD STATION 2	860	860	860	0.5	1.5	10	
EAT-3.8	1417C	WAREWASHING	0	185	0	0.5	1.5	6	
EAT-3.9	1417	SERVICE CORRIDOR	175	175	175	0.5	1.5	6	

NOTES:
1. MAX AIRFLOW SETPOINT CORRESPONDS TO THE MAX AIRFLOW SETTING FOR THE ASSOCIATED SUPPLY AIR TERMINAL.
2. MINIMUM AIRFLOW SETPOINTS CORRESPOND TO THOSE LISTED FOR THE ASSOCIATED SUPPLY AIR TERMINAL.

DUCT PRESSURE CLASS, MATERIAL AND LEAKAGE

SERVICE	SECTION	DUCTWORK			LEAKAGE TESTING						REMARKS
		PRESSURE CLASS (IN WG)	MATERIAL OF CONSTRUCTION	SEAL CLASS	TEST PORTION (% OF LENGTH)	TEST PRESSURE (IN WG)	LEAKAGE CLASS RECT	LEAKAGE CLASS ROUND	LEAKAGE FACTOR RECT (CFM/100 SF)	LEAKAGE FACTOR ROUND (CFM/100 SF)	
SUPPLY AIR	AHU TO TERMINAL DEVICES	+4	GALVANIZED STEEL	A	25	+4	6	3	14.8	7.4	-
SUPPLY AIR	TERMINAL DEVICES TO AIR OUTLETS	+2	GALVANIZED STEEL	A	10	+2	6	3	9.4	4.7	-
RETURN AIR	RETURN GRILLES TO AHU	-2	GALVANIZED STEEL	A	25	-2	6	3	9.4	4.7	-
EXHAUST AIR	EXHAUST GRILLES TO TERMINAL DEVICES	-2	GALVANIZED STEEL	A	10	-2	6	3	9.4	4.7	-
EXHAUST AIR	TERMINAL DEVICES TO FAN	-6	GALVANIZED STEEL	A	25	-6	6	3	19.2	9.6	-
EXHAUST AIR	FAN TO EXHAUST PLENUM	+4	GALVANIZED STEEL	A	25	+4	6	3	14.8	7.4	-
OUTSIDE AIR	PLENUM TO FAN	-4	GALVANIZED STEEL	A	25	-4	6	3	14.8	7.4	-
OUTSIDE AIR	FAN TO AHU	+6	GALVANIZED STEEL	A	25	+6	6	3	19.2	9.6	-
SMOKE CONTROL AIR	PLENUM TO FAN	-4	GALVANIZED STEEL	A	100	-4	6	3	14.8	7.4	-
SMOKE CONTROL AIR	FAN TO AIR OUTLET	+6	GALVANIZED STEEL	A	100	+6	6	3	19.2	9.6	-
GREASE EXHAUST	HOOD OUTLET TO FAN INLET	-4	STAINLESS STEEL	A	100	-4	6	3	(1)	(1)	
MAKEUP AIR	ROOFTOP UNIT TO HOOD INLET	2	GALVANIZED STEEL	A	25	6	6	3	9.4	4.7	

NOTES:
1. REFER TO SECTION 23 05 93 FOR DUCT LEAKAGE TESTING FOR WELDED DUCT.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SCHEDULES

M014

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 10

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

AHU-5 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-5.1	2400	ENG'G DOCUMENTATION	400	400	160	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-5.2	2401	ENG'G DOCUMENTATION	715	270	270	0.5	1.5	10	290	9.4	1.0	120	55	85.0	3.0	-
SAT-5.3	2402	ENG'G DOCUMENTATION	400	400	160	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-5.4	2423	STORAGE	850	850	310	0.5	1.5	10	850	27.7	2.8	120	55	85.0	3.0	-
SAT-5.5	2423	STORAGE	300	300	90	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-5.6	2439	WORK ROOM	300	300	100	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-5.7	2439	WORK ROOM	300	300	90	0.5	1.5	6	300	11.4	1.2	120	55	90.0	3.0	-
SAT-5.8	2439	WORK ROOM	200	200	90	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-5.9	2237	OFFICE	600	600	200	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-5.10	2200	CORRIDOR	1,005	305	305	0.5	1.5	10	405	15.4	1.6	120	55	90.0	3.0	-
SAT-5.11	2200	CORRIDOR	280	280	200	0.5	1.5	6	280	9.1	1.0	120	55	85.0	3.0	-
SAT-5.12	2226A	STORAGE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-5.13	2226A	STORAGE	100	100	100	0.5	1.5	4	100	3.3	0.5	120	55	85.0	3.0	-
SAT-5.14	2220	OPEN OFFICE	450	450	240	0.5	1.5	8	450	17.1	1.8	120	55	90.0	3.0	-
SAT-5.15	2210	OPEN OFFICE	450	450	235	0.5	1.5	8	450	17.1	1.8	120	55	90.0	3.0	-
SAT-5.16	2206	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-5.17	2200	CORRIDOR	100	100	100	0.5	1.5	4	100	3.3	0.5	120	55	85.0	3.0	-
SAT-5.18	2211	BREAK ROOM	315	315	315	0.5	1.5	6	315	10.3	1.1	120	55	85.0	3.0	-
SAT-5.19	2207	WOMEN	550	550	550	0.5	1.5	8	550	17.9	1.8	120	55	85.0	3.0	-
SAT-5.20	RESERVED	RESERVED	1,370	420	420	0.5	1.5	12	550	17.9	1.8	120	55	85.0	3.0	

NOTES:
1. RESERVED

AHU-6 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-6.1	3000	LOBBY	400	400	160	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-6.2	3406B	OFFICE	715	270	270	0.5	1.5	10	290	9.4	1.0	120	55	85.0	3.0	-
SAT-6.3	3402	ADMIN	225	225	200	0.5	1.5	6	225	7.3	0.8	120	55	85.0	3.0	-
SAT-6.4	3400	CORRIDOR	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-6.5	3410	OPEN OFFICE	300	300	110	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-6.6	3414A	TEAMING ROOM	200	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-6.7	3414	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-6.8	3414	OPEN OFFICE	600	600	215	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-6.9	3424H	TEAMING ROOM	235	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-6.10	3414	OPEN OFFICE	100	100	50	0.5	1.5	4	100	4.3	0.5	120	55	95.0	3.0	-
SAT-6.11	3239	TEAMING ROOM	160	160	160	0.5	1.5	4	160	5.2	0.6	120	55	85.0	3.0	-
SAT-6.12	3237	WORK ROOM	75	75	50	0.5	1.5	4	75	2.4	0.5	120	55	85.0	3.0	-
SAT-6.13	3400	CORRIDOR	310	95	95	0.5	1.5	6	155	6.7	0.7	120	55	95.0	3.0	-
SAT-6.14	3234	OPEN OFFICE	290	250	150	0.5	1.5	6	250	9.5	1.0	120	55	90.0	3.0	-
SAT-6.15	3234	OPEN OFFICE	100	100	100	0.5	1.5	4	100	3.3	0.5	120	55	85.0	3.0	-
SAT-6.16	3226	OPEN OFFICE	675	675	270	0.5	1.5	10	675	22.0	2.2	120	55	85.0	3.0	-
SAT-6.17	3220	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-6.18	3220	OPEN OFFICE	100	100	100	0.5	1.5	4	100	3.3	0.5	120	55	85.0	3.0	-
SAT-6.19	3210	OPEN OFFICE	600	600	190	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-6.20	3206H	OPEN OFFICE	100	100	100	0.5	1.5	4	100	3.3	0.5	120	55	85.0	3.0	-
SAT-6.21	3206	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-6.22	3007A	CONFERENCE ROOM	555	170	170	0.5	1.5	8	225	7.3	0.8	120	55	85.0	3.0	-
SAT-6.23	3000	LOBBY	150	150	50	0.5	1.5	4	150	6.5	0.7	120	55	95.0	3.0	-
SAT-6.24	3000	LOBBY	200	200	90	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-6.25	3009	CONFERENCE ROOM	150	150	150	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-
SAT-6.26	3009	CONFERENCE ROOM	930	280	280	0.5	1.5	10	375	12.2	1.3	120	55	85.0	3.0	-
SAT-6.27	3407	MEN	550	550	550	0.5	1.5	8	550	17.9	1.8	120	55	85.0	3.0	-
SAT-6.28	3211	BREAK ROOM	315	315	315	0.5	1.5	6	315	10.3	1.1	120	55	85.0	3.0	-
SAT-6.29	3436	CONFERENCE ROOM	1,150	420	420	0.5	1.5	12	460	15.0	1.5	120	55	85.0	3.0	-
SAT-6.30	3400	CORRIDOR	775	270	270	0.5	1.5	10	310	10.1	1.1	120	55	85.0	3.0	-

NOTES:
1. RESERVED

AHU-7 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-7.1	4000	LOBBY	400	400	160	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-7.2	4406B	OFFICE	765	270	270	0.5	1.5	10	310	10.1	1.1	120	55	85.0	3.0	-
SAT-7.3	4406A	OFFICE	200	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-7.4	4406	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-7.5	4410	OPEN OFFICE	300	300	105	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-7.6	N/A	NOT USED	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
SAT-7.7	4416	OPEN OFFICE	300	300	100	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-7.8	4420	OPEN OFFICE	600	600	220	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-7.9	4426H	OFFICE	235	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-7.10	4420	OPEN OFFICE	100	100	50	0.5	1.5	4	100	4.3	0.5	120	55	95.0	3.0	-
SAT-7.11	4239	OFFICE	160	150	150	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-
SAT-7.12	4237	WORK AREA	75	75	50	0.5	1.5	4	75	2.4	0.5	120	55	85.0	3.0	-
SAT-7.13	4200	CORRIDOR	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-7.14	4234	OPEN OFFICE	600	600	180	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-7.15	N/A	NOT USED	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
SAT-7.16	4226	OPEN OFFICE	300	300	90	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-7.17	4216	OPEN OFFICE	300	300	90	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-7.18	4216	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-7.19	4216A	OFFICE	200	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-7.20	4206	OPEN OFFICE	300	300	100	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-7.21	4206H	OFFICE	50	50	50	0.5	1.5	4	50	1.6	0.5	120	55	85.0	3.0	-
SAT-7.22	4206	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-7.23	4007A	CONFERENCE	100	100	100	0.5	1.5	4	100	3.3	0.5	120	55	85.0	3.0	-
SAT-7.24	4007	DIRECTORIAL SUITE	150	150	50	0.5	1.5	4	150	6.5	0.7	120	55	95.0	3.0	-
SAT-7.25	4007	DIRECTORIAL SUITE	200	200	90	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-7.26	4009	CONFERENCE	150	150	100	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-
SAT-7.27	4009	CONFERENCE	930	280	280	0.5	1.5	10	375	12.2	1.3	120	55	85.0	3.0	-
SAT-7.28	4407	MEN	550	550	550	0.5	1.5	8	550	17.9	1.8	120	55	85.0	3.0	-
SAT-7.29	4211	BREAK ROOM	315	315	315	0.5	1.5	6	315	10.3	1.1	120	55	85.0	3.0	-
SAT-7.30	4430	CONFERENCE	1,150	420	420	0.5	1.5	12	460	15.0	1.5	120	55	85.0	3.0	-
SAT-7.31	4430	CONFERENCE	775	270	270	0.5	1.5	10	310	10.1	1.1	120	55	85.0	3.0	-

NOTES:
1. RESERVED

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SCHEDULES

M015

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 11	

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

AHU-8 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-8.1	5000	LOBBY	400	400	160	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-8.2	5406	OPEN OFFICE	765	270	270	0.5	1.5	10	310	10.1	1.1	120	55	85.0	3.0	-
SAT-8.3	5402	ADMIN	125	125	100	0.5	1.5	4	125	4.1	0.5	120	55	85.0	3.0	-
SAT-8.4	5406	OPEN OFFICE	100	100	50	0.5	1.5	4	100	3.8	0.5	120	55	90.0	3.0	-
SAT-8.5	5410	OPEN OFFICE	750	750	270	0.5	1.5	10	750	24.4	2.5	120	55	85.0	3.0	-
SAT-8.6	5416H	OFFICE	150	150	150	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-
SAT-8.7	5420	OPEN OFFICE	200	200	100	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-8.8	5420A	TEAMING ROOM	215	90	90	0.5	1.5	6	90	2.9	0.5	120	55	85.0	3.0	-
SAT-8.9	5426	OPEN OFFICE	300	300	110	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-8.10	5426	OPEN OFFICE	235	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-8.11	5426	OPEN OFFICE	100	100	50	0.5	1.5	4	100	4.3	0.5	120	55	95.0	3.0	-
SAT-8.12	5200	CORRIDOR	150	150	50	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-
SAT-8.13	5437	WORK ROOM	75	75	50	0.5	1.5	4	75	2.4	0.5	120	55	85.0	3.0	-
SAT-8.14	5226	OPEN OFFICE	1,050	1,050	320	0.5	1.5	10	1,050	34.2	3.5	120	55	85.0	3.0	-
SAT-8.15	5200	OPEN OFFICE	200	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-8.16	5200	OPEN OFFICE	200	200	100	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-8.17	5216	OPEN OFFICE	600	600	190	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-8.18	5206	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-8.19	5206H	STORAGE	100	100	100	0.5	1.5	4	100	3.3	0.5	120	55	85.0	3.0	-
SAT-8.20	5007A	CONFERENCE ROOM	555	170	170	0.5	1.5	8	225	7.3	0.8	120	55	85.0	3.0	-
SAT-8.21	5007	DIRECTORIAL SUITE	150	150	50	0.5	1.5	4	150	5.7	0.6	120	55	90.0	3.0	-
SAT-8.22	5007	DIRECTORIAL SUITE	200	200	90	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-8.23	5009	CONFERENCE ROOM	175	175	150	0.5	1.5	4	175	5.7	0.6	120	55	85.0	3.0	-
SAT-8.24	5009	CONFERENCE ROOM	930	280	280	0.5	1.5	10	375	12.2	1.3	120	55	85.0	3.0	-
SAT-8.25	5407	MEN	550	550	550	0.5	1.5	8	550	17.9	1.8	120	55	85.0	3.0	-
SAT-8.26	5211	BREAK ROOM	315	315	315	0.5	1.5	6	315	10.3	1.1	120	55	85.0	3.0	-
SAT-8.27	5434	STORAGE	605	240	205	0.5	1.5	8	245	8.0	0.8	120	55	85.0	3.0	-
SAT-8.28	5424	STORAGE	250	90	90	0.5	1.5	6	100	3.3	0.5	120	55	85.0	3.0	-

NOTES:
1. RESERVED

AHU-9 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-9.1	6000	LOBBY	400	400	160	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-9.2	6406B	OFFICE	765	270	270	0.5	1.5	10	310	10.1	1.1	120	55	85.0	3.0	-
SAT-9.3	6406A	OFFICE	225	225	200	0.5	1.5	6	225	7.3	0.8	120	55	85.0	3.0	-
SAT-9.4	6406	OPEN OFFICE	200	200	100	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-9.5	6410	OPEN OFFICE	300	300	105	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-9.6	6416A	OFFICE	150	150	150	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-
SAT-9.7	6416	OPEN OFFICE	200	200	100	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-9.8	6420	OPEN OFFICE	600	600	220	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-9.9	6426H	OFFICE	150	150	150	0.5	1.5	4	150	4.9	0.5	120	55	85.0	3.0	-
SAT-9.10	6426	OPEN OFFICE	100	100	50	0.5	1.5	4	100	4.3	0.5	120	55	95.0	3.0	-
SAT-9.11	6239	OPEN OFFICE	200	200	150	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-9.12	6237	WORK ROOM	75	75	50	0.5	1.5	4	75	2.4	0.5	120	55	85.0	3.0	-
SAT-9.13	6234	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-9.14	6226	OPEN OFFICE	800	800	270	0.5	1.5	10	800	26.0	2.7	120	55	85.0	3.0	-
SAT-9.15	6234	OPEN OFFICE	200	200	100	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-9.16	6220	OPEN OFFICE	200	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-9.17	6220	OPEN OFFICE	200	200	100	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-9.18	6210	OPEN OFFICE	600	600	190	0.5	1.5	8	600	19.5	2.0	120	55	85.0	3.0	-
SAT-9.19	6206	OPEN OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-9.20	6206H	OFFICE	50	50	50	0.5	1.5	4	50	1.6	0.5	120	55	85.0	3.0	-
SAT-9.21	6007A	CONFERENCE	555	170	170	0.5	1.5	8	225	7.3	0.8	120	55	85.0	3.0	-
SAT-9.22	6007	DIRECTORIAL SUITE	150	150	50	0.5	1.5	4	150	5.7	0.6	120	55	90.0	3.0	-
SAT-9.23	6007	DIRECTORIAL SUITE	200	200	90	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-9.24	6009	CONFERENCE	175	175	150	0.5	1.5	4	175	5.7	0.6	120	55	85.0	3.0	-
SAT-9.25	6009	CONFERENCE	930	280	280	0.5	1.5	10	375	12.2	1.3	120	55	85.0	3.0	-
SAT-9.26	6407	MEN	550	550	550	0.5	1.5	8	550	17.9	1.8	120	55	85.0	3.0	-
SAT-9.27	6211	BREAK ROOM	315	315	315	0.5	1.5	6	315	10.3	1.1	120	55	85.0	3.0	-
SAT-9.28	6440	CONFERENCE	665	270	270	0.5	1.5	10	270	8.8	0.9	120	55	85.0	3.0	-
SAT-9.29	6434	STORAGE	1,015	380	355	0.5	1.5	10	410	13.3	1.4	120	55	85.0	3.0	-

NOTES:
1. RESERVED

AHU-10 SUPPLY AIR TERMINAL DEVICES

MARK	LOCATION		MAX.	MIN AIRFLOW		MAX.	MIN.	MIN.	HEATING COIL							REMARKS
	ROOM NUMBER	ROOM NAME	AIRFLOW (CFM)	OCCUPIED (CFM)	UNOCCUPIED (CFM)	UNIT PD ("WG)	INLET SP ("WG)	INLET SIZE (IN)	REHEAT AIRFLOW (CFM)	CAP. (MBH)	GPM	EWT (°F)	EAT (°F)	LAT (°F)	MAX PD (FT)	
SAT-10.1	7000	LOBBY	400	400	160	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-10.2	7406A	OFFICE	765	270	270	0.5	1.5	10	310	10.1	1.1	120	55	85.0	3.0	-
SAT-10.3	7406	OPEN OFFICE	225	225	200	0.5	1.5	6	225	7.3	0.8	120	55	85.0	3.0	-
SAT-10.4	7402	ADMIN	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-10.5	7410	OPEN OFFICE	300	300	200	0.5	1.5	6	300	11.4	1.2	120	55	90.0	3.0	-
SAT-10.6	7416A	OFFICE	200	200	100	0.5	1.5	6	200	7.6	0.8	120	55	90.0	3.0	-
SAT-10.7	7416	OPEN OFFICE	200	200	200	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-10.8	7416	OPEN OFFICE	300	300	200	0.5	1.5	6	300	11.4	1.2	120	55	90.0	3.0	-
SAT-10.9	7434D	LAW LIBRARY	500	500	215	0.5	1.5	8	500	16.3	1.7	120	55	85.0	3.0	-
SAT-10.10	7434B	PATENT FILE STORAGE	500	500	250	0.5	1.5	8	500	19.0	1.9	120	55	90.0	3.0	-
SAT-10.11	7434A	LEGAL WORK ROOM	100	100	50	0.5	1.5	4	100	4.3	0.5	120	55	95.0	3.0	-
SAT-10.12	7434A	LEGAL WORK ROOM	200	200	100	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-10.13	7434T	LEGAL STORAGE	460	160	160	0.5	1.5	8	185	6.0	0.7	120	55	85.0	3.0	-
SAT-10.14	7232	CORRIDOR	200	200	90	0.5	1.5	6	200	6.5	0.7	120	55	85.0	3.0	-
SAT-10.15	7238A	DEPOSITION	590	180	180	0.5	1.5	8	240	7.8	0.8	120	55	85.0	3.0	-
SAT-10.16	7238A	DEPOSITION	250	250	100	0.5	1.5	6	250	10.9	1.1	120	55	95.0	3.0	-
SAT-10.17	7238	LEGAL OPEN OFFICE	300	300	90	0.5	1.5	6	300	11.4	1.2	120	55	90.0	3.0	-
SAT-10.18	7224	MULTIPURPOSE ROOM	300	300	90	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-10.19	7222	WORK ROOM	635	550	260	0.5	1.5	8	550	17.9	1.8	120	55	85.0	3.0	-
SAT-10.20	7218	BREAK ROOM	300	300	90	0.5	1.5	6	300	9.8	1.0	120	55	85.0	3.0	-
SAT-10.21	7212	CONFERENCE	2,905	875	875	0.5	1.5	16	1,165	37.9	3.8	120	55	85.0	3.0	-
SAT-10.22	7206A	CONFERENCE	875	270	270	0.5	1.5	10	350	11.4	1.2	120	55	85.0	3.0	-
SAT-10.23	7226	DD SECRETARY	325	325	300	0.5	1.5	6	325	10.6	1.1	120	55	85.0	3.0	-
SAT-10.24	7006	INTERN AREA	430	350	160	0.5	1.5	8	350	13.3	1.4	120	55	90.0	3.0	-
SAT-10.25	7007	CONFERENCE	350	350	140	0.5	1.5	6	350	11.4	1.2	120	55	85.0	3.0	-
SAT-10.26	7009A	SECRETARY	400	400	210	0.5	1.5	8	400	13.0	1.4	120	55	85.0	3.0	-
SAT-10.27	7000	LOBBY	985	300	300	0.5	1.5	10	395	12.9	1.3	120	55	85.0	3.0	-
SAT-10.28	7211	BREAK ROOM	315	315	315	0.5	1.5	6	315	10.3	1.1	120	55	85.0	3.0	-
SAT-10.29	7407	MEN	550	550	550	0.5	1.5	8	550	17.9	1.8	120	55	85.0	3.0	-

NOTES:
1. RESERVED

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SCHEDULES

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 12

M016

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FILTERS AND FILTER HOUSINGS

MARK	SYSTEM	LOCATION	TYPE	CFM	MIN FACE AREA (FT2	PRESSURE DROP (IN WG) INITIAL	PRESSURE DROP (IN WG) FINAL	PD FOR FAN TSP	MIN EFF. (%)	BASED ON	REMARKS
F-1.1	AHU-1	PREFILTER	PLEATED	15,700	31	0.28	1.0	1.0	MERV 8	-	-
F-1.2	AHU-1	FINAL FILTER	BAG	15,700	31	0.65	1.5	1.5	MERV 13	-	-
F-2.1	AHU-2	PREFILTER	PLEATED	11,500	23	0.28	1.0	1.0	MERV 8	-	-
F-2.2	AHU-2	FINAL FILTER	BAG	11,500	23	0.65	1.5	1.5	MERV 13	-	-
F-3.1	AHU-3	PREFILTER	PLEATED	10,000	20	0.28	1.0	1.0	MERV 8	-	-
F-3.2	AHU-3	FINAL FILTER	BAG	10,000	20	0.65	1.5	1.5	MERV 13	-	-
F-4.1	AHU-4	PREFILTER	PLEATED	2,800	6	0.28	1.0	1.0	MERV 8	-	-
F-4.2	AHU-4	FINAL FILTER	BAG	2,800	6	0.65	1.5	1.5	MERV 13	-	-
F-5.1	AHU-5	PREFILTER	PLEATED	11,000	22	0.28	1.0	1.0	MERV 8	-	-
F-5.2	AHU-5	FINAL FILTER	BAG	11,000	22	0.65	1.5	1.5	MERV 13	-	-
F-6.1	AHU-6	PREFILTER	PLEATED	11,000	22	0.28	1.0	1.0	MERV 8	-	-
F-6.2	AHU-6	FINAL FILTER	BAG	11,000	22	0.65	1.5	1.5	MERV 13	-	-
F-7.1	AHU-7	PREFILTER	PLEATED	11,000	22	0.28	1.0	1.0	MERV 8	-	-
F-7.2	AHU-7	FINAL FILTER	BAG	11,000	22	0.65	1.5	1.5	MERV 13	-	-
F-8.1	AHU-8	PREFILTER	PLEATED	11,000	22	0.28	1.0	1.0	MERV 8	-	-
F-8.2	AHU-8	FINAL FILTER	BAG	11,000	22	0.65	1.5	1.5	MERV 13	-	-
F-9.1	AHU-9	PREFILTER	PLEATED	11,000	22	0.28	1.0	1.0	MERV 8	-	-
F-9.2	AHU-9	FINAL FILTER	BAG	11,000	22	0.65	1.5	1.5	MERV 13	-	-
F-10.1	AHU-10	PREFILTER	PLEATED	15,700	31	0.28	1.0	1.0	MERV 8	-	-
F-10.2	AHU-10	FINAL FILTER	BAG	15,700	31	0.65	1.5	1.5	MERV 13	-	-
F-ERU-1.1	ERU-1	OA FILTER	PLEATED	12,000	24	0.28	1.0	1.0	MERV 8	-	-
F-ERU-1.2	ERU-1	EA FILTER	PLEATED	10,500	21	0.28	1.0	1.0	MERV 8	-	-
F-ERU-2.1	ERU-2	OA FILTER	PLEATED	12,000	24	0.28	1.0	1.0	MERV 8	-	-
F-ERU-2.2	ERU-2	EA FILTER	PLEATED	10,500	21	0.28	1.0	1.0	MERV 8	-	-

EXPANSION TANKS

MARK	SYSTEM	TANK VOLUME (GAL)	MIN ACCEP. VOLUME (GAL)	TYPE	DIMENSIONS DIAMETER (IN)	DIMENSIONS HEIGHT (IN)	DIMENSIONS SYSTEM CONN. (IN)	AIR CHARGE PRESSURE (PSIG)	BASED ON	REMARKS
ET-1	CHILLED WATER	344	140	BLADDER	36	97	1 1/2	75	TACO MODEL CA	
ET-2	CHILLED BEAM WATER	67	34	BLADDER	20	49	3/4	30	TACO MODEL CBX	
ET-3	HEATING HOT WATER	160	100	BLADDER	30	68	3/4	30	TACO MODEL CBX	

WATER FILTERS

MARK	SYSTEM	LOCATION	DESIGN WATER FLOW (GPM)	MAX WATER PD (FT WG)	MAX MEDIA SIZE (MICRON)	INLET SIZE (IN)	OUTLET SIZE (IN)	BASED ON	REMARKS
WF-1	CHILLED WATER	1451 - MECHANICAL	240	15	5	4	4	PALL 303 S	-
WF-2	CHILLED BEAM WATER	PENTHOUSE	21	15	5	1 1/2	1 5/8	PALL 2544 S	-
WF-3	HEATING HOT WATER	PENTHOUSE	60	15	5	1 1/2	1 5/8	PALL 2544 S	-

AIR SEPARATORS

MARK	SYSTEM	SIZE (IN)	FLOW RATE (GPM)	STRAINER	BASED ON	REMARKS
AS-1	CHILLED WATER	10	2400	-	TACO MODEL 4910AH	
AS-2	CHILLED BEAM WATER	5	210	-	TACO MODEL 4905A	
AS-3	HEATING HOT WATER	6	600	-	TACO MODEL 4906A	

SOUND ATTENUATORS

MARK	SYSTEM	TYPE	LOCATION	AIRFLOW DATA INLET AIR FLOW (CFM)	AIRFLOW DATA MAX INLET VELOCITY (FPM)	AIRFLOW DATA MAX PD (1) (IN WG)	DYNAMIC INSERTION LOSS (Db) RE 10-12 W @ MID OCTAVE BAND FREQUENCY (Hz) 63	125	250	500	1K	2K	4K	8K	OVERALL DIMENSIONS HEIGHT/ DIAMETER (IN)	WIDTH (IN)	MAX LENGTH (2) (IN)	BASED ON	REMARKS
SAD-1.1	AHU-1 SUPPLY	FILM-LINED MEDIA FILLED ELBOW	1452 - MECHANICAL	15,700	2,100	0.35	7	8	12	21	25	32	25	17	54	20	69 x 69	PRICE MODEL ERMT	-
SAD-1.2	AHU-1 RETURN	FILM-LINED MEDIA FILLED ELBOW	1452 - MECHANICAL	8,700	1,300	0.35	6	8	16	19	31	37	27	19	24	40	36 x 36	PRICE MODEL ERMT	-
SAD-2.1	AHU-2 SUPPLY	FILM-LINED MEDIA FILLED	1400L - FOOD STATION 1	11,500	2,000	0.5	4	5	9	16	21	24	20	12	16	50	36	PRICE MODEL RHT	-
SAD-2.2	AHU-2 RETURN	FILM-LINED MEDIA FILLED	1400L - FOOD STATION 1	11,500	1,600	0.5	5	7	12	20	28	28	22	12	22	48	48	PRICE MODEL RHT	-
SAD-3.1	AHU-3 SUPPLY	FILM-LINED MEDIA FILLED	1417P - DRY STORAGE	10,000	2,100	0.4	8	11	19	25	30	28	19	12	18	38	36	PRICE MODEL RMTX	-
SAD-3.2	AHU-3 RETURN	FILM-LINED MEDIA FILLED	1417P - DRY STORAGE	3,700	1,000	0.4	7	11	19	23	28	28	20	12	22	24	60	PRICE MODEL RHT	-
SAD-4.1	AHU-4 SUPPLY	FILM-LINED MEDIA FILLED	1452 - MECHANICAL	2,800	1,200	0.4	8	11	22	29	40	53	45	28	14	24	60 x 48	PRICE MODEL ERMT	-
SAD-4.2	AHU-4 RETURN	FILM-LINED MEDIA FILLED	1452 - MECHANICAL	2,100	900	0.4	9	13	21	30	43	49	33	16	12	28	60	PRICE MODEL RMT	-
SAD-5.1	AHU-5 SUPPLY	FILM-LINED MEDIA FILLED	2223 - MECHANICAL	11,000	2,500	0.5	8	12	20	29	35	34	33	12	20	32	96	PRICE MODEL RHT	-
SAD-5.2	AHU-5 RETURN	FILM-LINED MEDIA FILLED TEE	2223 - MECHANICAL	8,800	1,200	0.5	9	11	23	36	41	39	31	24	18	30	114 x 57	PRICE MODEL ERM	(3)
SAD-6.1	AHU-6 SUPPLY	FILM-LINED MEDIA FILLED	3421 - MECHANICAL	11,000	2,500	0.5	8	12	20	29	35	34	33	12	20	32	96	PRICE MODEL RHT	-
SAD-6.2	AHU-6 RETURN	FILM-LINED MEDIA FILLED TEE	3421 - MECHANICAL	8,800	1,200	0.5	9	11	23	36	41	39	31	24	18	30	114 x 57	PRICE MODEL ERM	(3)
SAD-7.1	AHU-7 SUPPLY	FILM-LINED MEDIA FILLED	4421 - MECHANICAL	11,000	2,500	0.5	8	12	20	29	35	34	33	12	20	32	96	PRICE MODEL RHT	-
SAD-7.2	AHU-7 RETURN	FILM-LINED MEDIA FILLED TEE	4421 - MECHANICAL	8,800	1,200	0.5	9	11	23	36	41	39	31	24	18	30	114 x 57	PRICE MODEL ERM	(3)
SAD-8.1	AHU-8 SUPPLY	FILM-LINED MEDIA FILLED	5421 - MECHANICAL	11,000	2,500	0.5	8	12	20	29	35	34	33	12	20	32	96	PRICE MODEL RHT	-
SAD-8.2	AHU-8 RETURN	FILM-LINED MEDIA FILLED TEE	5421 - MECHANICAL	8,800	1,200	0.5	9	11	23	36	41	39	31	24	18	30	114 x 57	PRICE MODEL ERM	(3)
SAD-9.1	AHU-9 SUPPLY	FILM-LINED MEDIA FILLED	6421 - MECHANICAL	11,000	2,500	0.5	8	12	20	29	35	34	33	12	20	32	96	PRICE MODEL RHT	-
SAD-9.2	AHU-9 RETURN	FILM-LINED MEDIA FILLED TEE	6421 - MECHANICAL	8,800	1,200	0.5	9	11	23	36	41	39	31	24	18	30	114 x 57	PRICE MODEL ERM	(3)
SAD-10.1	AHU-10 SUPPLY	FILM-LINED MEDIA FILLED	7421 - MECHANICAL	15,700	2,300	0.5	7	9	17	31	41	39	26	16	22	44	108	PRICE MODEL RMT	-
SAD-10.2	AHU-10 RETURN	FILM-LINED MEDIA FILLED TEE	7421 - MECHANICAL	13,500	1,350	0.5	7	13	23	31	40	34	30	24	18	80	104 x 48	PRICE MODEL ERM	(3)
SAD-11	GENERAL EXHAUST	FILM-LINED MEDIA FILLED ELBOW	PENTHOUSE	21,000	1,050	0.5	5	7	7	13	12	15	11	9	40	72	48 x 42	PRICE MODEL ERMT	-
SAD-12	EF-5	ROUND FILM-LINED MEDIA FILLED	MAILROOM	700	2,000	0.2	5	7	13	30	34	28	19	11	8	-	36	PRICE MODEL CHT	-
SAD-5.3.1	FCU-5.3 SUPPLY	ELBOW MEDIA FILLED	5434 - STORAGE	225	540	0.2	10	14	24	29	39	51	41	27	8	8	40 x 40	PRICE MODEL ERMT	-
SAD-5.3.2	FCU-5.3 RETURN	ELBOW MEDIA FILLED	5434 - STORAGE	225	540	0.2	10	14	24	29	39	51	41	27	8	8	34 x 34	PRICE MODEL ERMT	-
SAD-6.4.1	FCU-6.4 SUPPLY	ELBOW MEDIA FILLED	6434 - STORAGE	225	540	0.2	15	18	32	35	43	55	51	33	8	8	58 x 58	PRICE MODEL ERMT	-
SAD-6.4.2	FCU-6.4 RETURN	ELBOW MEDIA FILLED	6434 - STORAGE	225	540	0.2	10	14	24	28	40	48	37	24	8	8	34 x 34	PRICE MODEL ERMT	-

NOTES:
1. RATED PRESSURE DROP FOR EACH SOUND ATTENUATING DEVICE SHALL INCLUDE SYSTEM EFFECT DUE TO DUCT AND FITTINGS ON UPSTREAM AND DOWNSTREAM SIDES OF DEVICE.
2. LENGTH DIMENSION FOR ELBOW ATTENUATORS IS DESIGNATED IN INLET LEG LENGTH X OUTLET LEG LENGTH.
3. BACK-TO-BACK ELBOWS CONFIGURED TO FORM A TEE ARE ACCEPTABLE. INLET LEG LENGTH DESIGNATION INDICATES LENGTH BETWEEN INLET FLANGES.

CHILLED BEAMS

MARK	NOMINAL SIZE (FT) W	NOMINAL SIZE (FT) L	SENSIBLE COOLING CAPACITY (BTUH) TOTAL	PRIM AIR	COIL	PRIMARY AIR AIR FLOW (CFM)	EAT (°F)	MAX PD ("WG)	CHILLED WATER FLOW (GPM)	EWT (°F)	MAX PD (FT)	DISCHARGE TYPE 1, 2, OR 4 WAY	BASED ON	REMARKS
CB-1	2	2	1,728	1,089	640	50	55	0.6	0.25	60	5	2-WAY	TROX DID 632	(1) (3)
CB-1(C)	2	2	1,728	1,089	640	50	55	0.6	0.25	60	5	2-WAY	TROX DID 632	(1) (3)
CB-2	2	4	2,970	1,633	1,337	75	55	0.5	0.30	60	5	2-WAY	TROX DID 632	(2) (3)
CB-3	2	6	4,210	2,177	2,033	100	55	0.5	0.50	60	5	2-WAY	TROX DID 632	(2) (3)
CB-3(C)	2	6	4,425	2,177	2,248	100	55	0.5	0.50	60	5	2-WAY	TROX DID 632	(2) (3)
CB-4	2	6	4,585	1,633	2,952	75	55	0.5	0.75	60	5	2-WAY	TROX DID 632	(2) (3)

NOTES:
1. LEAVING WATER TEMPERATURE SHALL BE A MINIMUM OF 65°F.
2. CHILLED BEAMS SHALL MEET SCHEDULED PERFORMANCE WITH A LEAVING WATER TEMPERATURE BETWEEN 68°F TO 69°F
3. UNLESS OTHERWISE INDICATED, PROVIDE WHITE FINISH FOR LAYIN/SURFACE MOUNTED. (C) = CUSTOM COLOR.

INTAKE HOODS

MARK	LOCATION	SERVICE	CAPACITY (CFM)	APPROX. HEIGHT (IN)	THROAT SIZE (IN) (W x L)	MAXIMUM INLET VELOCITY (FPM)	BASED ON	REMARKS
IH-1	ROOFTOP	AHU-4	700	16	14 x 14	700	GREENHECK MODEL FGI	(1)
IH-2	ROOFTOP	AHU-3	6,200	26	36X36	700	GREENHECK MODEL FGI	(1)

NOTES:
1. PROVIDE MANUFACTURER'S PRE-FRABRICATED CURB PER SPECIFICATIONS. UNIT ASSEMBLY, STRUCTURAL CONNECTION, AND SUPPORTS SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA TO MEET FLORIDA BUILDING CODE REQUIREMENTS TO WITHSTAND SUSTAINED FORCE GENERATED BY APPLICABLE WINDSPEEDS.

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers
Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

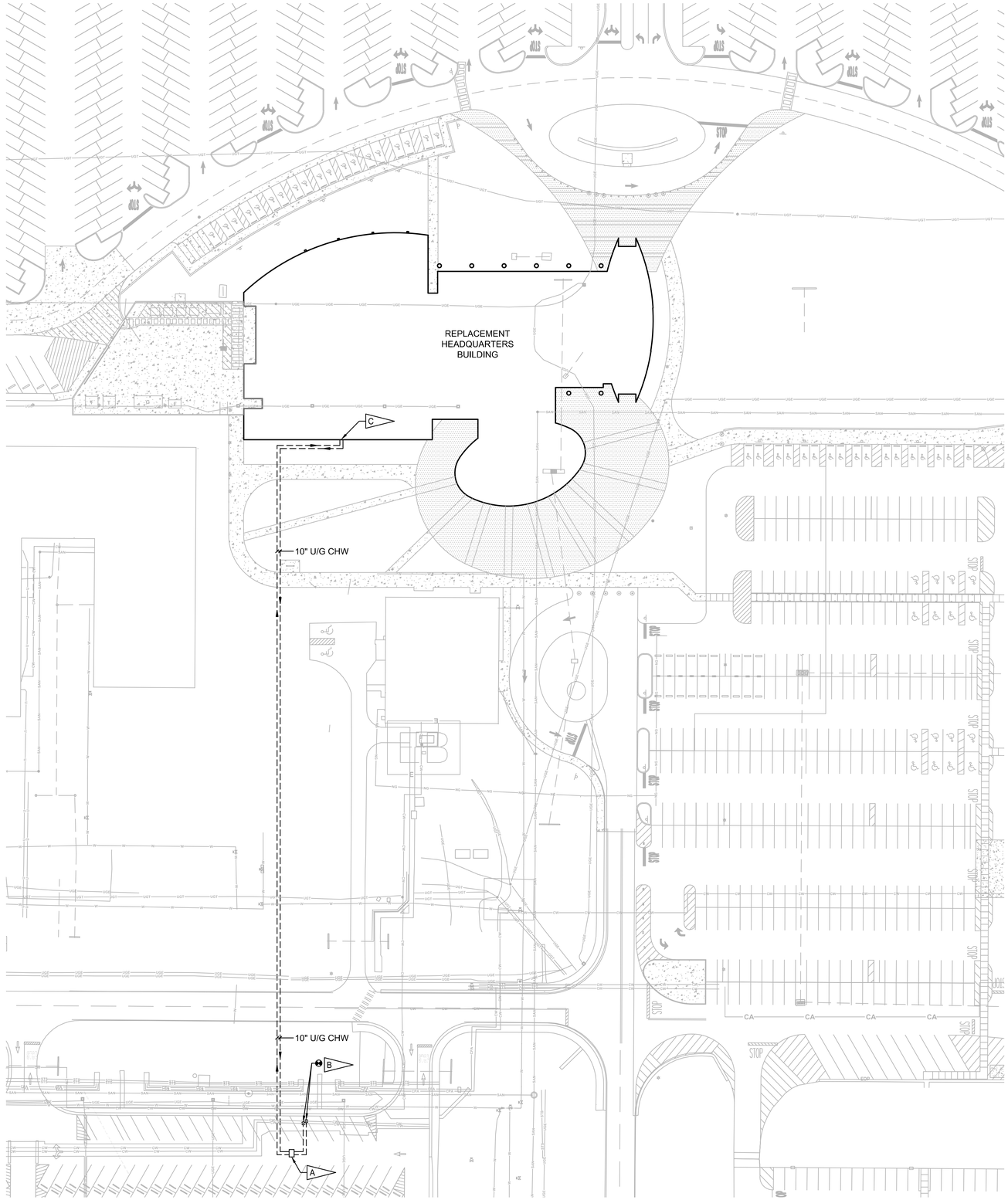
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SCHEDULES

M017

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A
PCN. NO. 98745.1a | SHEET 13

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



MECHANICAL SITE PLAN

1" = 40'-0"

GENERAL NOTES

1. THE EXISTING UNDERGROUND UTILITY LINES SHOWN HEREON WERE TAKEN FROM DOCUMENTS FURNISHED BY OTHERS AND ARE NOT FIELD VERIFIED. THEREFORE, THE ENGINEER CAN NOT GUARANTEE THE ACCURACY OF SAME, NOR THAT ALL UTILITIES ARE SHOWN. THE CONTRACTOR SHALL EXPOSE ALL UNDERGROUND UTILITY LINES TO THE CONTRACTING OFFICER'S SATISFACTION AND MAKE ADJUSTMENTS TO THE SAME IN THE EVENT THERE ARE CONFLICTS WITH NEW CONSTRUCTION.

2. PROTECT ALL EXISTING UTILITIES, STRUCTURES, ETC. DURING EXCAVATION AND INSTALLATION OF NEW UTILITIES. EXISTING STRUCTURES AND FACILITIES, INCLUDING BUT NOT LIMITED TO BUILDINGS, UTILITIES, TOPOGRAPHY, STREETS, CURBS, WALKS, LANDSCAPE MATERIALS, AND OTHER IMPROVEMENTS THAT ARE DAMAGED OR REMOVED DUE TO REQUIRED EXCAVATIONS OR CONTRACTOR'S WORK, SHALL BE PATCHED, REPAIRED, OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER, THE CONTRACTING OFFICER OF SUCH STRUCTURES AND FACILITIES, AND AUTHORITIES HAVING JURISDICTION. HAND EXCAVATION MAY BE REQUIRED IN SOME AREAS.

3. CONTRACTOR IS TO COORDINATE ALL WORK WITH CONTRACTING OFFICER AND OUTSIDE UTILITY COMPANIES IN ORDER TO PREVENT DAMAGE TO UTILITY LINES AND MAKING OF ADJUSTMENTS TO SAME.

4. IN NO CASE SHALL NEW UNDERGROUND PIPING HAVE LESS THAN 36 INCHES OF COVER, EXCEPT WHERE INDICATED OR APPROVED BY ENGINEER. REFER TO DRAWING 79K39622 VOLUME 1, SHEETS C101 THROUGH C105 FOR EXISTING CONDITIONS SHOWING THE KNOWN UTILITIES AND INFORMATION ON DEPTH OF BURIAL FROM DIGGING AND GROUND PENETRATING RADAR. RESOLUTION OF INSTALLATION CONFLICTS BETWEEN THE CHILLED WATER LINES AND OTHER UTILITIES SHALL BE MADE IN ACCORDANCE WITH THE DETAIL AND NOTES ON SHEET C211 OF DRAWING 79K39622 VOLUME 1.

5. DUE TO THE SENSITIVE NATURE OF MAINTAINING UTILITIES TO THIS CAMPUS, CONTRACTOR IS NOT AUTHORIZED TO OPERATE ANY VALVE OF THE EXISTING UTILITY SYSTEM. COORDINATE ALL WORK REQUIRING THE SHUTDOWN OF EXISTING, OR STARTUP OF NEW UTILITIES WITH CONTRACTING OFFICER PRIOR TO START OF WORK.

6. VERIFY EXACT LOCATION, SIZE AND IDENTITY OF EXISTING UTILITIES PRIOR TO START OF WORK. IF NECESSARY, ADJUST PIPING CONNECTIONS TO ENSURE CORRECT SYSTEM TIE-IN. PROVIDE REDUCING FITTINGS WHERE REQUIRED IN MAKING NEW CONNECTIONS TO EXISTING. COORDINATE INSTALLATION WITH ALL TRADES. WHERE INTERFERENCES DEVELOP IN FIELD, OFFSET OR REROUTE PIPING AS REQUIRED TO CLEAR SUCH INTERFERENCES.

7. PROVIDE REMOVAL AND REPLACEMENT/ RELOCATION OF ALL SURFACE OBJECTS INCLUDING, BUT NOT LIMITED TO SIGNS, TREES, PLANTERS, BIKE RACKS, UTILITY POLES, ETC. AS NECESSARY TO INSTALL NEW UNDERGROUND PIPING AND VALVE BOXES. RESTORE GRASS TO ORIGINAL CONDITION USING SOD.

8. WORK SHOWN HEREIN IS INTENDED TO SHOW END RESULT AND DOES NOT IMPLY SEQUENCING OF WORK. CONTRACTOR TO ESTABLISH WORK SEQUENCE VIA COORDINATION WITH OWNER AND REVIEW OF EXISTING CONDITIONS.

FLAG NOTES

A — PRECAST CONCRETE VALVE BOX. LOCATE BOX OUTSIDE OF PARKING STALLS TO MAINTAIN ACCESS - REFER TO DETAIL THIS SHEET.

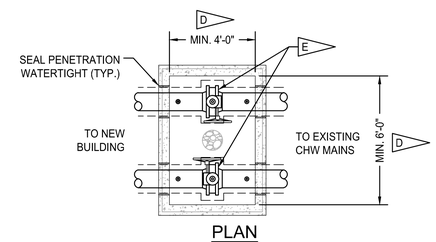
B — WELDED HOT TAP CONNECTION TO EXISTING 16Ø STEEL U/G CHILLED WATER.

C — REFER TO SHEET M301 FOR CONTINUATION OF CHW PIPING INTO BUILDING.

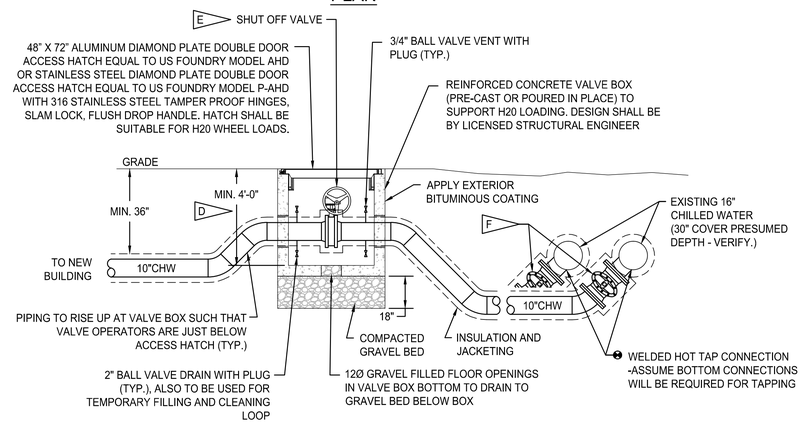
D — CONFIRM VALVE BOX DIMENSIONS BASED ON INSTALLATION REQUIREMENTS AND ADJUST SIZE OF BOX IF NECESSARY.

E — SHUT OFF VALVES IN VALVE BOX SHALL BE HIGH PERFORMANCE BUTTERFLY VALVES - REFER TO SPECIFICATIONS.

F — RESILIENT WEDGE TAPPING VALVE. CONSTRUCT FOR BURIED APPLICATION, WITH EPOXY COATING AND 316 STAINLESS STEEL FASTENERS.



PLAN



SECTION

PRECAST CONCRETE VALVE BOX DETAIL (1)

NO SCALE

GRAPHIC SCALE

0 40 80 120

SCALE IN FEET
1" = 40'-0"

N

SYM	ZONE	REVISIONS	DATE	APPD
A		THIS SHEET REVISED IN ITS ENTIRETY	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO: 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

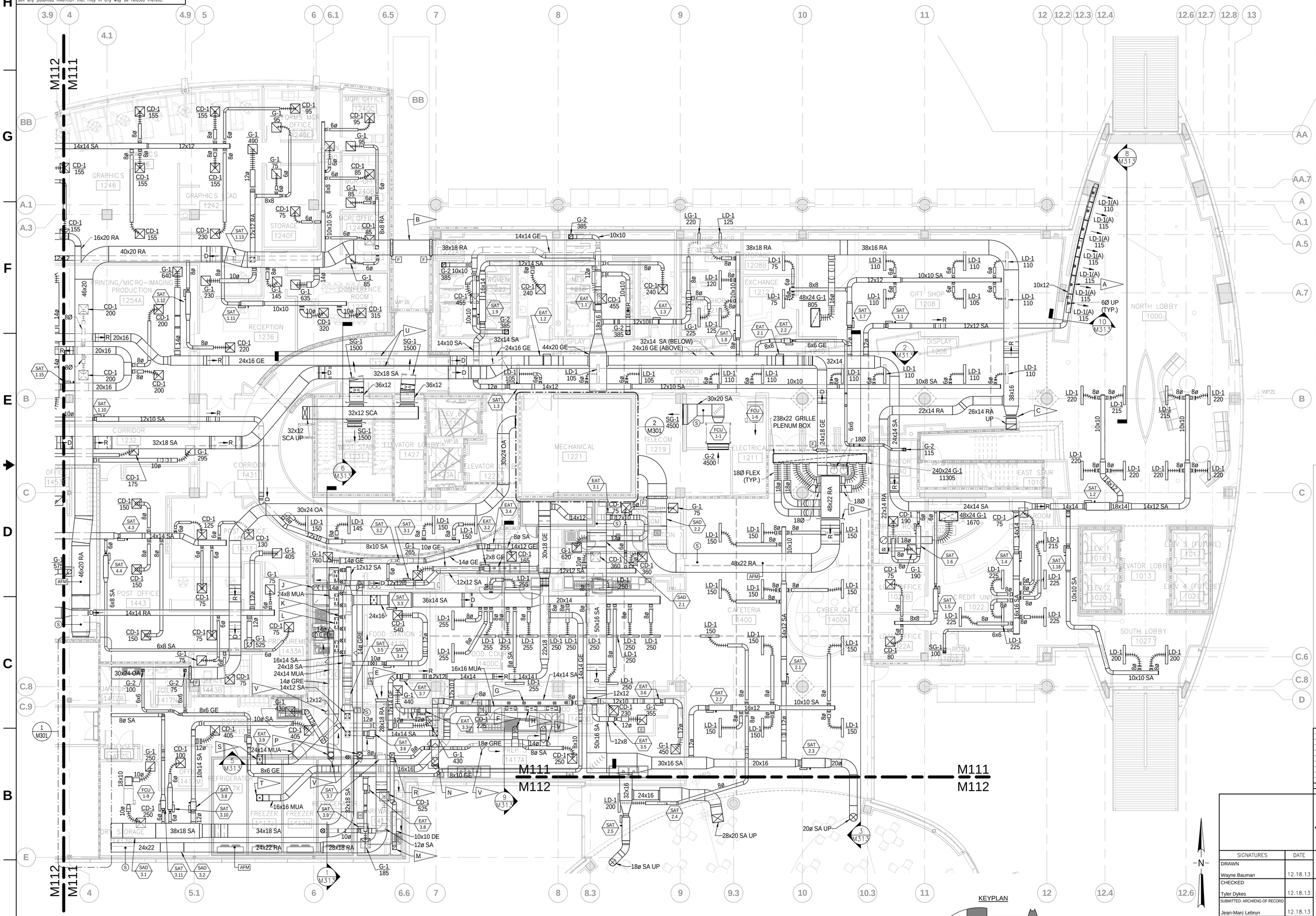
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SITE PLAN

M101

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A
PCN. NO. 98745.1a | SHEET 14

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



DUCT PLAN - 1ST LEVEL - AREA 1

1/8" = 1'-0"

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

- A — LINEAR SLOT DIFFUSERS LOCATED IN METAL PANEL AT TOP OF DISPLAY WALL. MOUNT DIFFUSERS CONTINUOUSLY END TO END AT CENTERLINE ELEV. 17'-3" AFF. REFER TO ARCHITECTURAL DETAIL. PROVIDE FACTORY SUPPLIED FACE OPERATED BALANCING DAMPER (TYP OF 7).
- B — INSULATE RETURN DUCT LOCATED WITHIN EXTERIOR SOFFIT TO MEET REQUIREMENTS FOR EXTERIOR DUCTWORK. BOD 14'-6" AFF MIN.
- C — BALANCE TO 2425 CFM.
- D — BALANCE TO 8060 CFM.
- E — TERMINATE OPEN ENDED DUCT WITH WIRE MESH GRILLE.
- F — 14Ø GRE DN TO HOOD CONNECTION (TYP. OF 2). REFER TO FOOD SERVICE DRAWINGS.
- G — 8Ø SA DN TO HOOD CONNECTION (TYP OF 4). REFER TO FOOD SERVICE DRAWINGS.
- H — 28x10 MUA DN TO HOOD CONNECTION (TYP. OF 3). REFER TO FOOD SERVICE DRAWINGS.
- J — 14Ø GRE DN TO HOOD CONNECTION (TYP OF 2). REFER TO FOOD SERVICE DRAWINGS.
- K — 8Ø SA DN TO HOOD CONNECTION (TYP OF 8). REFER TO FOOD SERVICE DRAWINGS.
- L — 28x10 MUA DN TO HOOD CONNECTION (TYP OF 4). REFER TO FOOD SERVICE DRAWINGS.
- M — 8x8 DE DN TO HOOD CONNECTION. REFER TO FOOD SERVICE DRAWINGS.
- N — 18Ø GRE UP TO FAN ON ROOF. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- P — 14Ø GRE UP TO FAN ON ROOF. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- R — 12x12 DE UP TO FAN ON ROOF. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- S — 24x14 MUA UP TO MU UNIT ON ROOF. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- T — 16x16 MUA UP TO MU UNIT ON ROOF. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- U — DUCT ROUTED ABOVE HORIZONTAL RATED EXIT ENCLOSURE. REFER TO ARCHITECTURAL FOR ADDITIONAL DETAIL.
- V — GREASE DUCT HORIZONATAL CLEANOUT (TYP.).

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

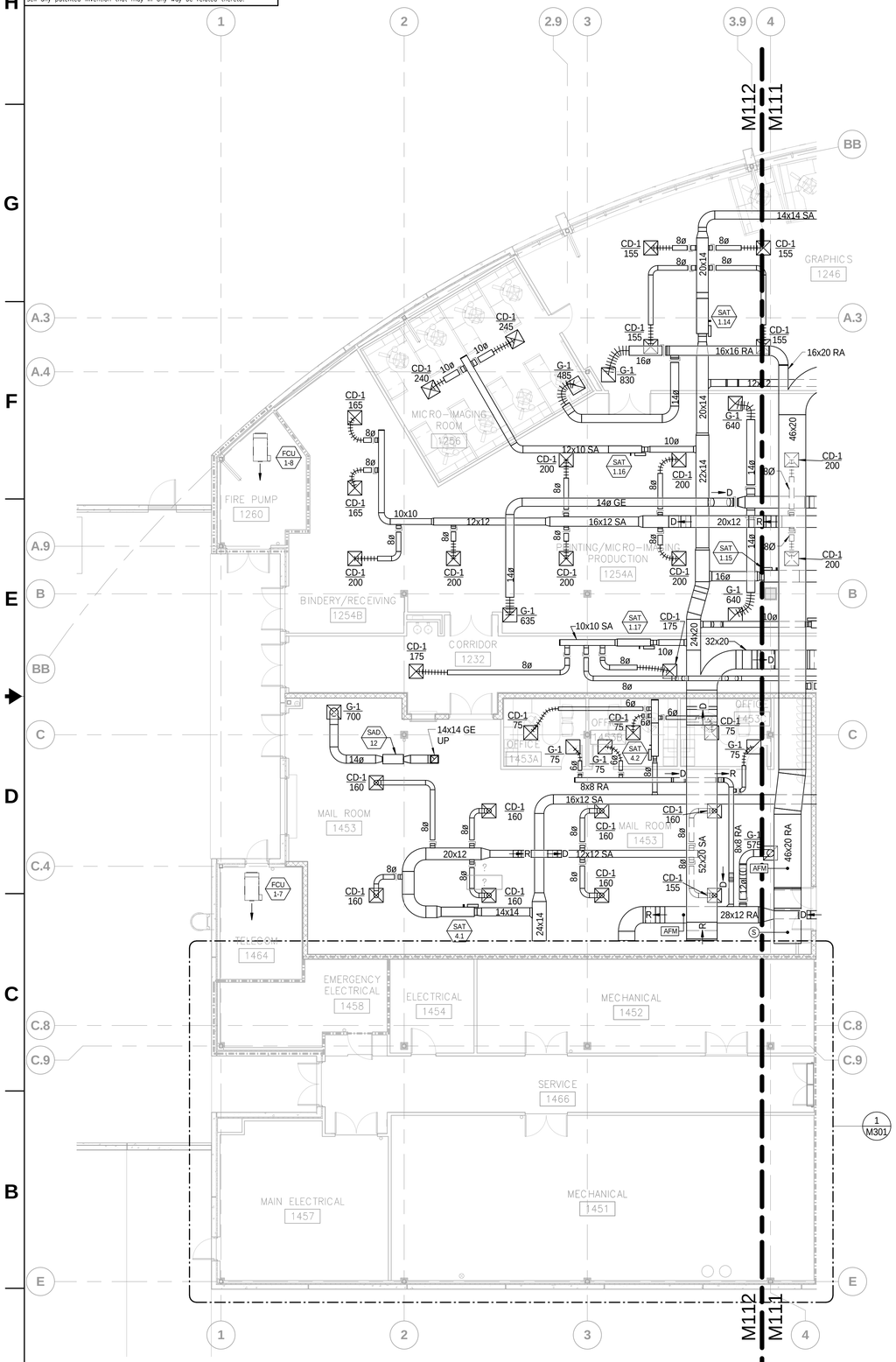
DUCT PLAN - 1ST LEVEL AREA 1

M111

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

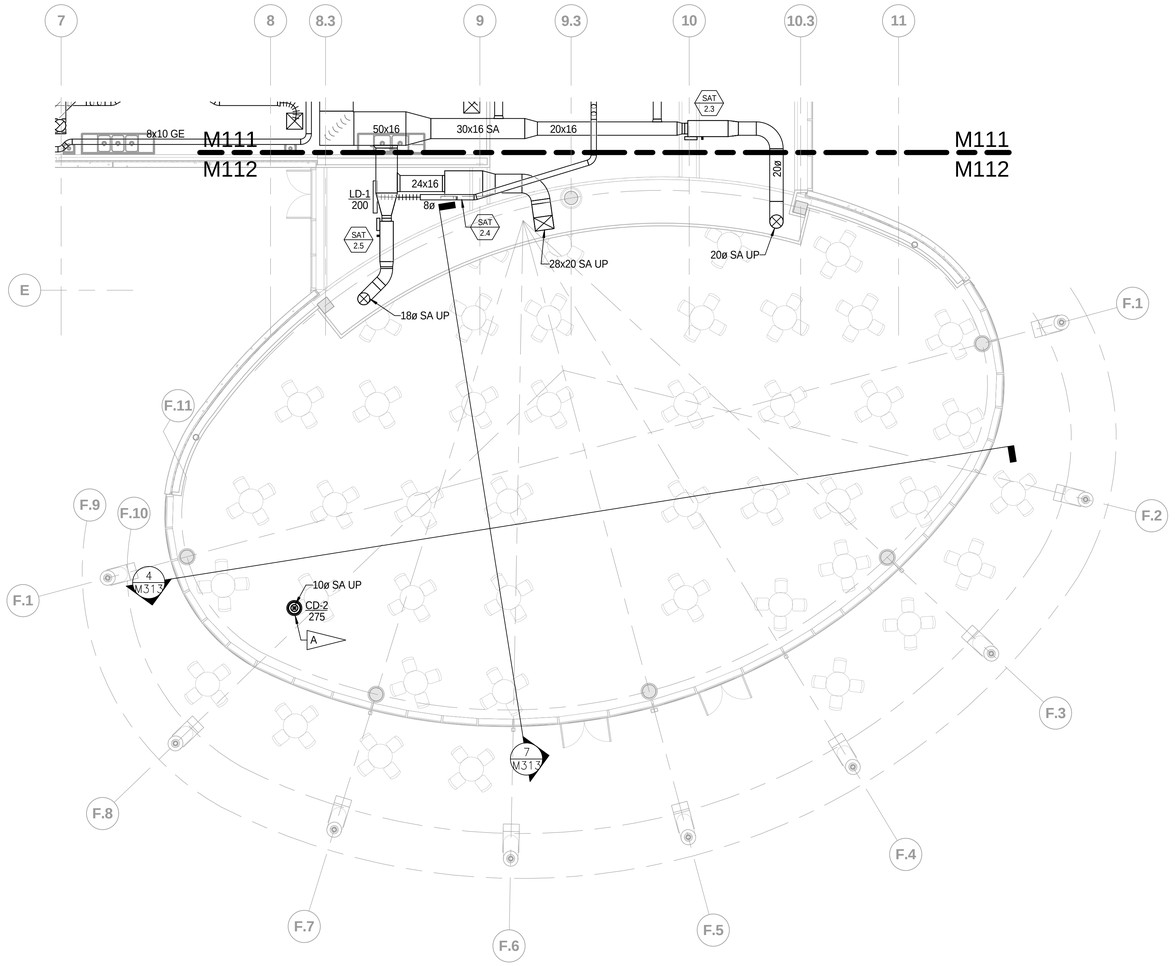
PCN. NO. 98745.1a SHEET 15

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



DUCT PLAN - 1ST LEVEL - AREA 2 (1)

1/8" = 1'-0"



DUCT PLAN - 1ST LEVEL - AREA 3 (2)

1/8" = 1'-0"

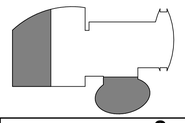
GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

A — DIFFUSER LOCATED IN LOWER FLOATING CEILING - ELEV. 16'-6" AFF. REFER TO REFLECTED CEILING PLAN.

KEYPLAN



GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 1ST LEVEL AREA 2 & 3

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 16

M112

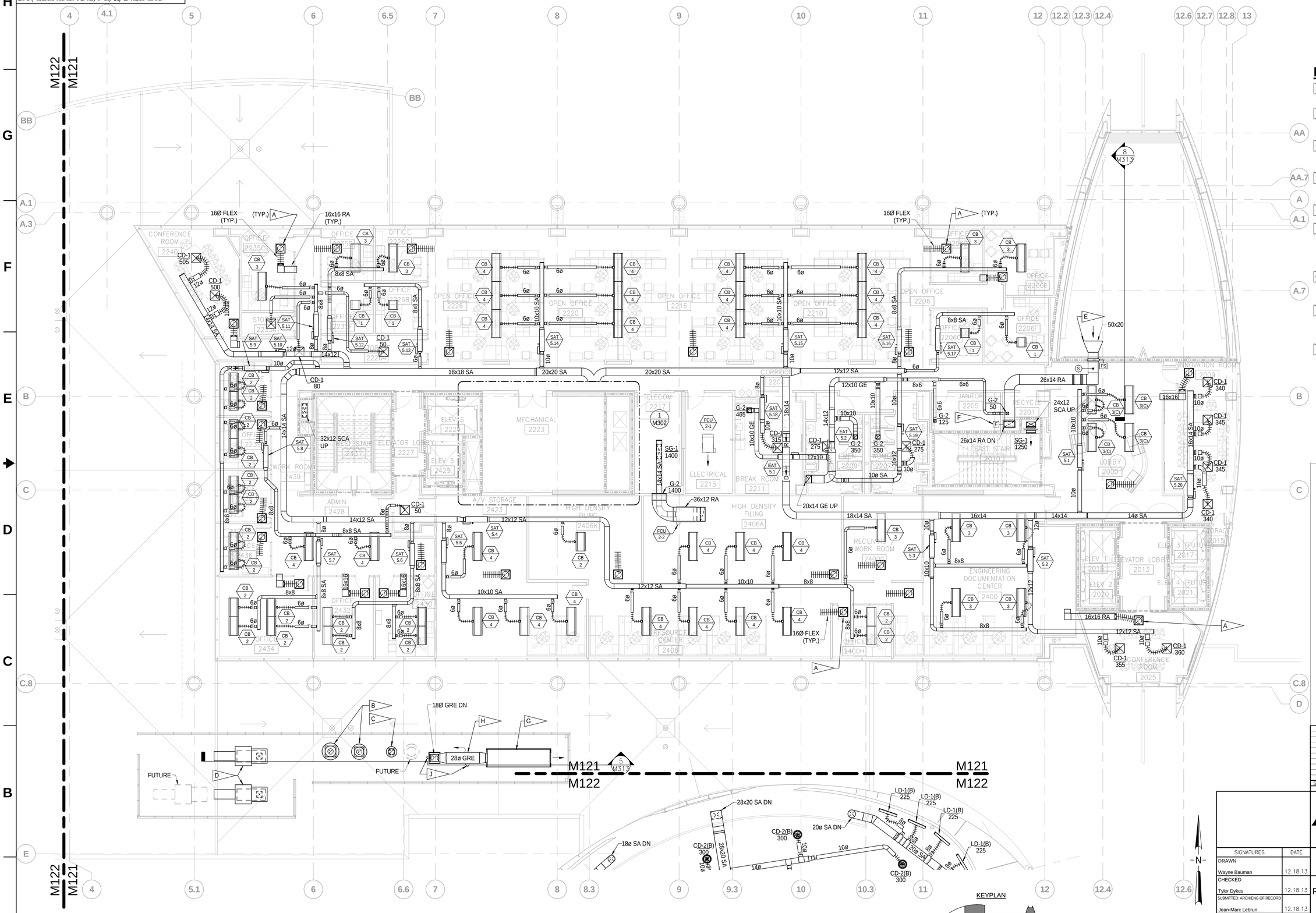
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

- A — OPEN CEILING PLENUM RETURN GRILLE WITH TYPE G-3 GRILLE. REFER TO DETAIL 3, SHEET M501.
- B — INSTALL GREASE EXHAUST FAN - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- C — INSTALL DISHWASHER EXHAUST FAN - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- D — INSTALL KITCHEN MAKE UP AIR UNIT - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- E — TERMINATE OPEN ENDED DUCT WITH WIRE MESH GRILLE ABOVE CEILING.
- F — FIRE DAMPER AT DECK PENETRATION - ACCESS TO SERVICE/INSPECT FIRE DAMPER SHALL BE VIA WALL MOUNTED ACCESS DOOR LOCATED WITHIN RECYCLE ROOM 2201 WALL - REFER TO ARCHITECTURAL.
- G — INSTALL POLLUTION CONTROL UNIT - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- H — PROVIDE MANUFACTURER'S MINIMUM DUCT SIZE AND STRAIGHT DUCT ENTRANCE LENGTH AT UNIT INLET. PROVIDE DUCT ROOF SUPPORTS TO SUPPORT SLOPED ROOF TOP DUCTWORK.
- J — GREASE DUCT HORIZONTAL CLEANOUT.



DUCT PLAN - 2ND LEVEL - AREA 1

1/8" = 1'-0"

KEYPLAN

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
129 21 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 2ND LEVEL AREA 1

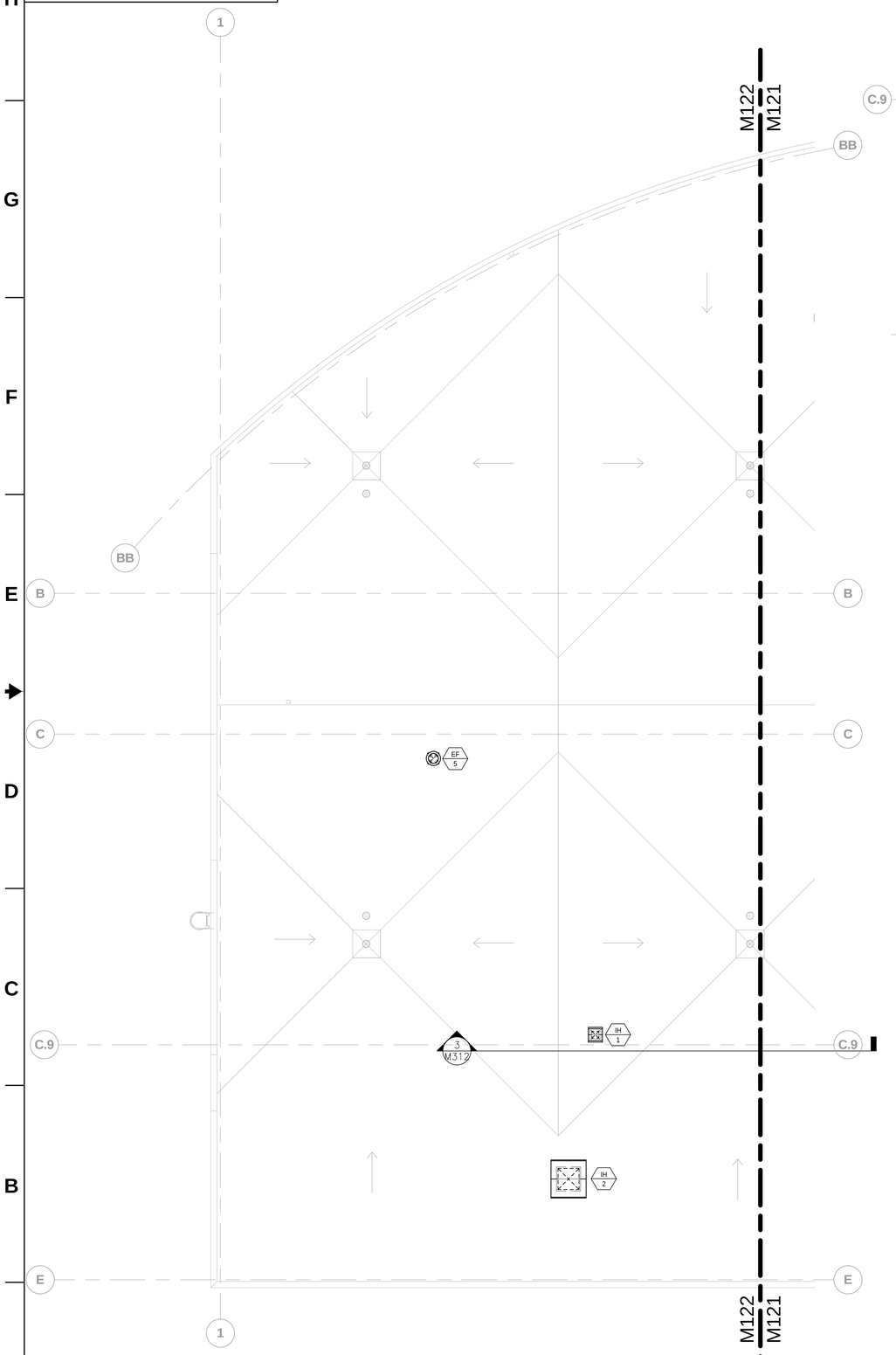
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 17

M121

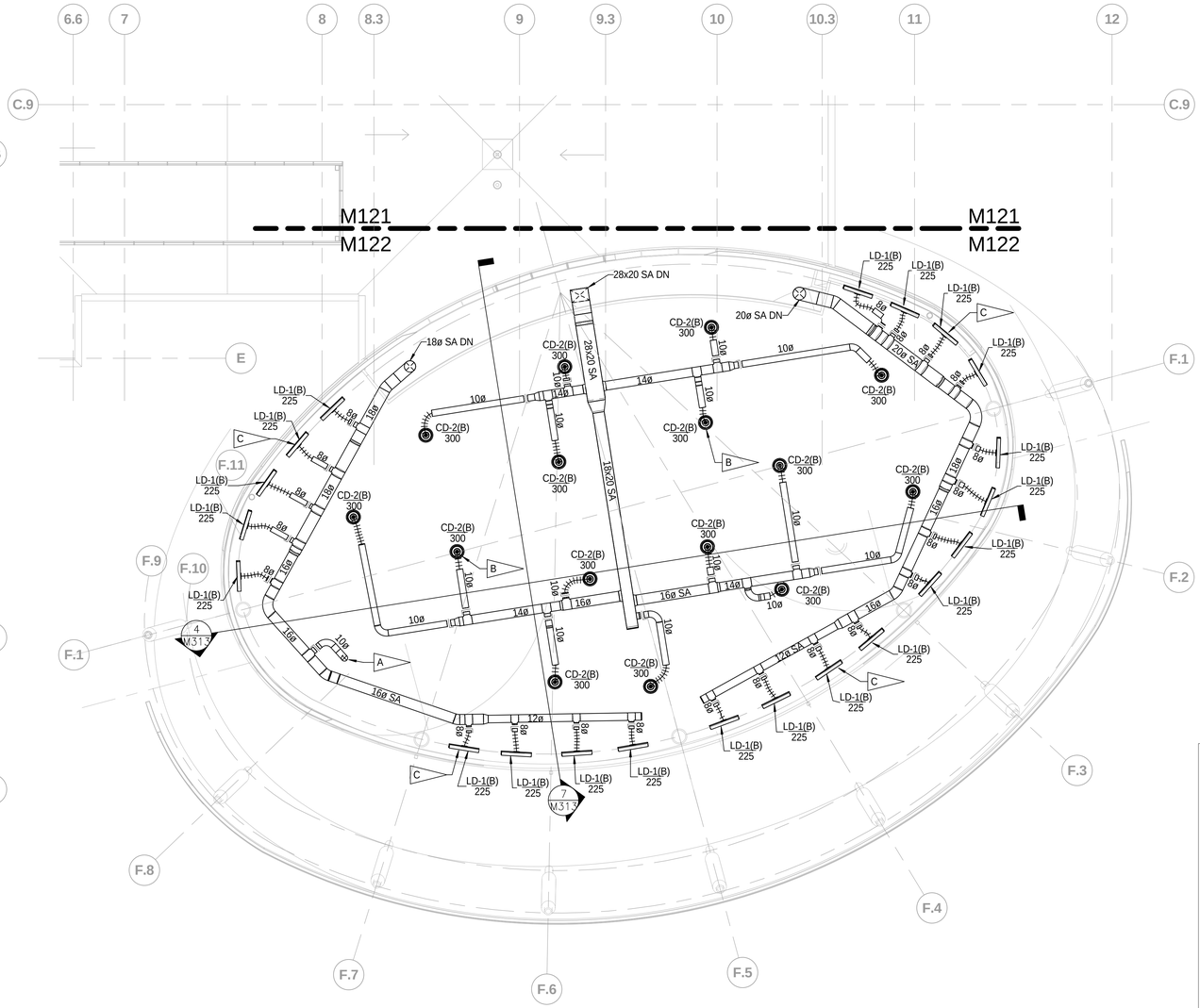
KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



DUCT PLAN - 2ND LEVEL - AREA 2 (1)

1/8" = 1'-0"



DUCT PLAN - 2ND LEVEL - AREA 3 (2)

1/8" = 1'-0"

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

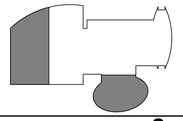
A — 10Ø DOWN TO DIFFUSER LOCATED IN LOWER FLOATING CEILING @ 16'-6" AFF. REFER TO SHEET M112.

B — DIFFUSER LOCATED IN UPPER SLOPED CEILING (TYP OF 15).

C — FLOATING PERIMETER SLOT DIFFUSER (TYP. OF 21). LOCATE DIFFUSER WITHIN OPEN CEILING CAVITY BETWEEN EDGE OF UPPER SLOPED CEILING AND EXTERIOR CURTAIN WALL. PROVIDE RIGID SUPPORT/ANCHORING OF EACH DIFFUSER FROM STRUCTURE ABOVE OR FROM ADJACENT EXTERIOR WALL SUCH THAT DIFFUSERS ARE CENTERED ALONG GRID LINE F.11 AND BOTTOM FACE OF EACH DIFFUSER IS ALIGNED WITH PLANE OF UPPER SLOPED CEILING. ALL VISIBLE PORTIONS OF SLOT DIFFUSER, DUCTWORK AND SUPPORTS SHALL BE PAINTED BLACK. REFER TO ARCHITECTURAL FOR ADDITIONAL DETAILS AND REQUIREMENTS.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

KEYPLAN



GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

M122

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 2ND LEVEL AREA 2 & 3

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 18

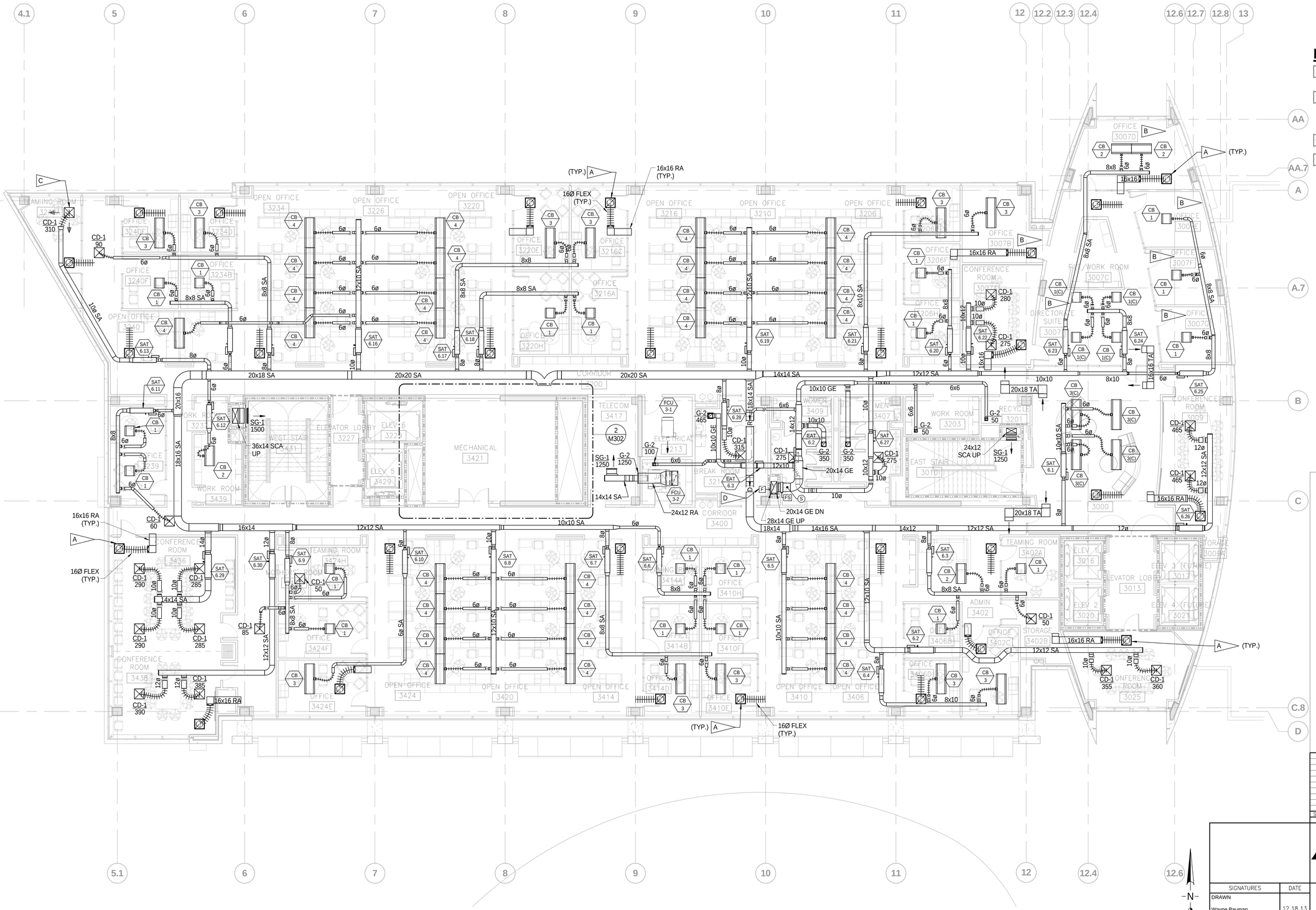
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

- A — OPEN CEILING PLENUM RETURN GRILLE WITH TYPE G-3 GRILLE. REFER TO DETAIL 3, SHEET M501.
- B — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.
- C — PROVIDE 2-WAY, 14Ø CD-1 DIFFUSER.
- D — FIRE DAMPER AT DECK PENETRATION - ACCESS TO SERVICE/INSPECT FIRE DAMPER SHALL BE VIA WALL MOUNTED ACCESS DOOR LOCATED WITHIN BREAK ROOM 3211 SHAFT WALL - REFER TO ARCHITECTURAL.



DUCT PLAN - 3RD LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M131

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 3RD LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 19

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

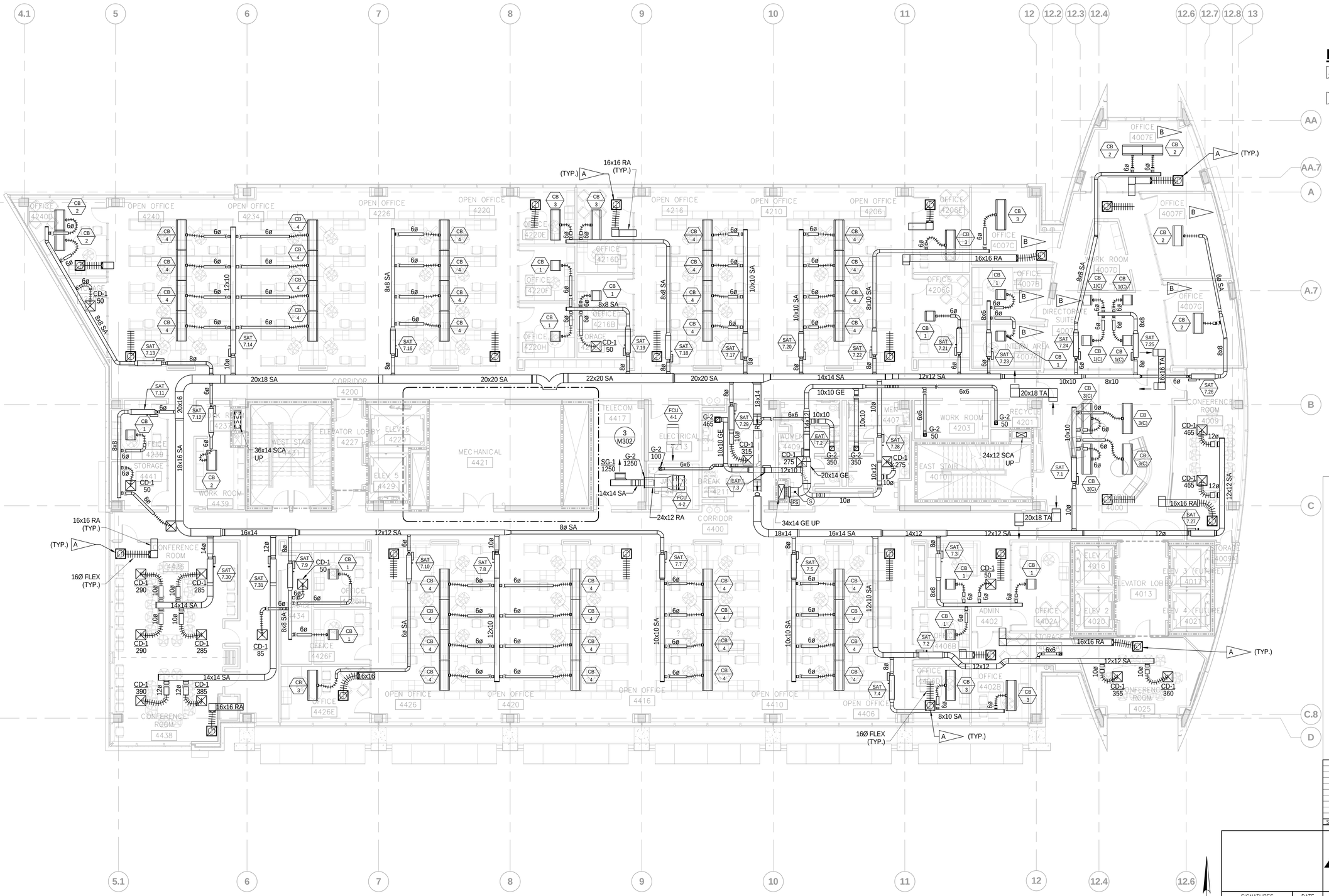
GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

A — OPEN CEILING PLENUM RETURN GRILLE WITH TYPE G-3 GRILLE. REFER TO DETAIL 3, SHEET M501.

B — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



DUCT PLAN - 4TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M141

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 4TH LEVEL

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 20

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

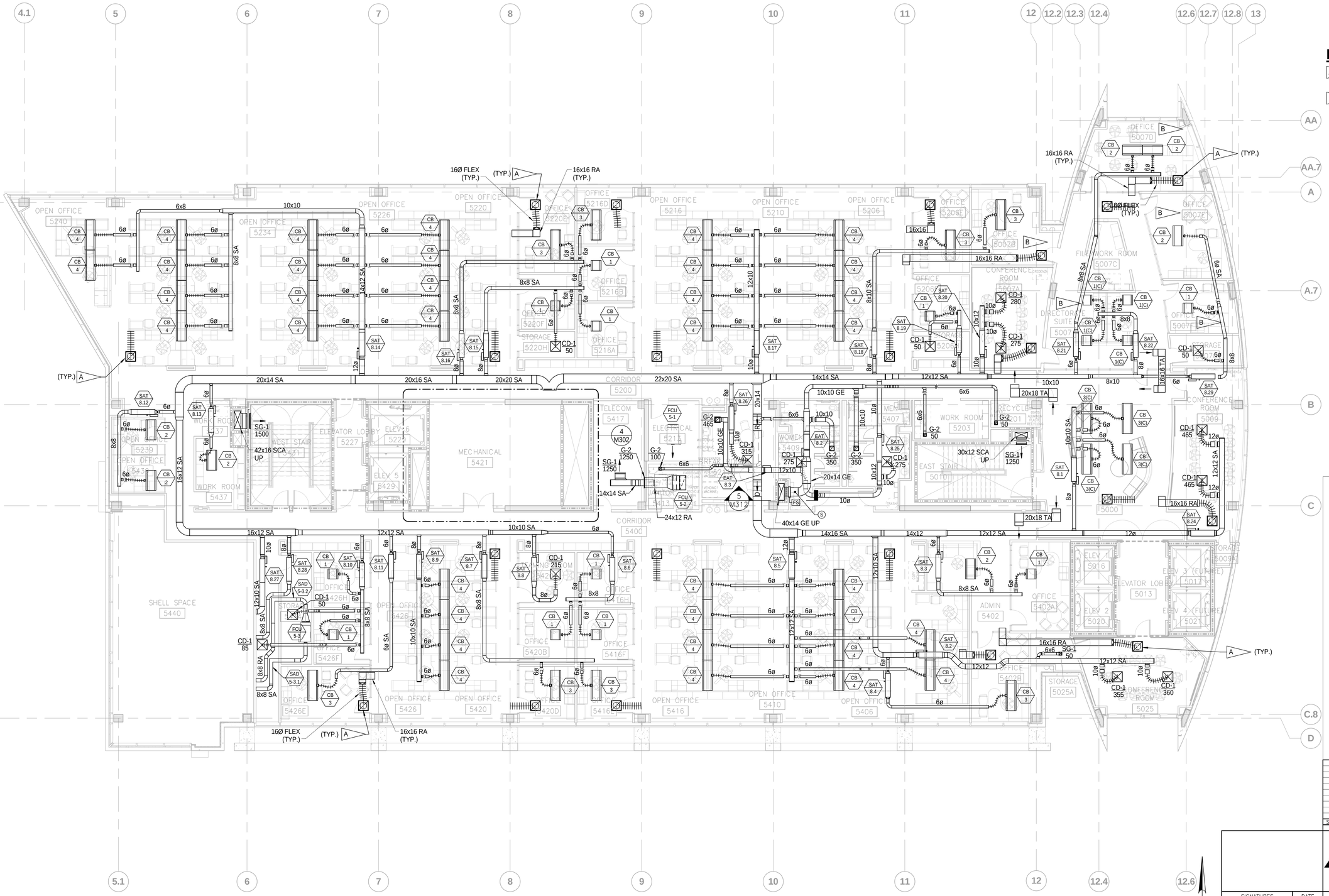
GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

A — OPEN CEILING PLENUM RETURN GRILLE WITH TYPE G-3 GRILLE. REFER TO DETAIL 3, SHEET M501.

B — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



DUCT PLAN - 5TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M151

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 5TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 21

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

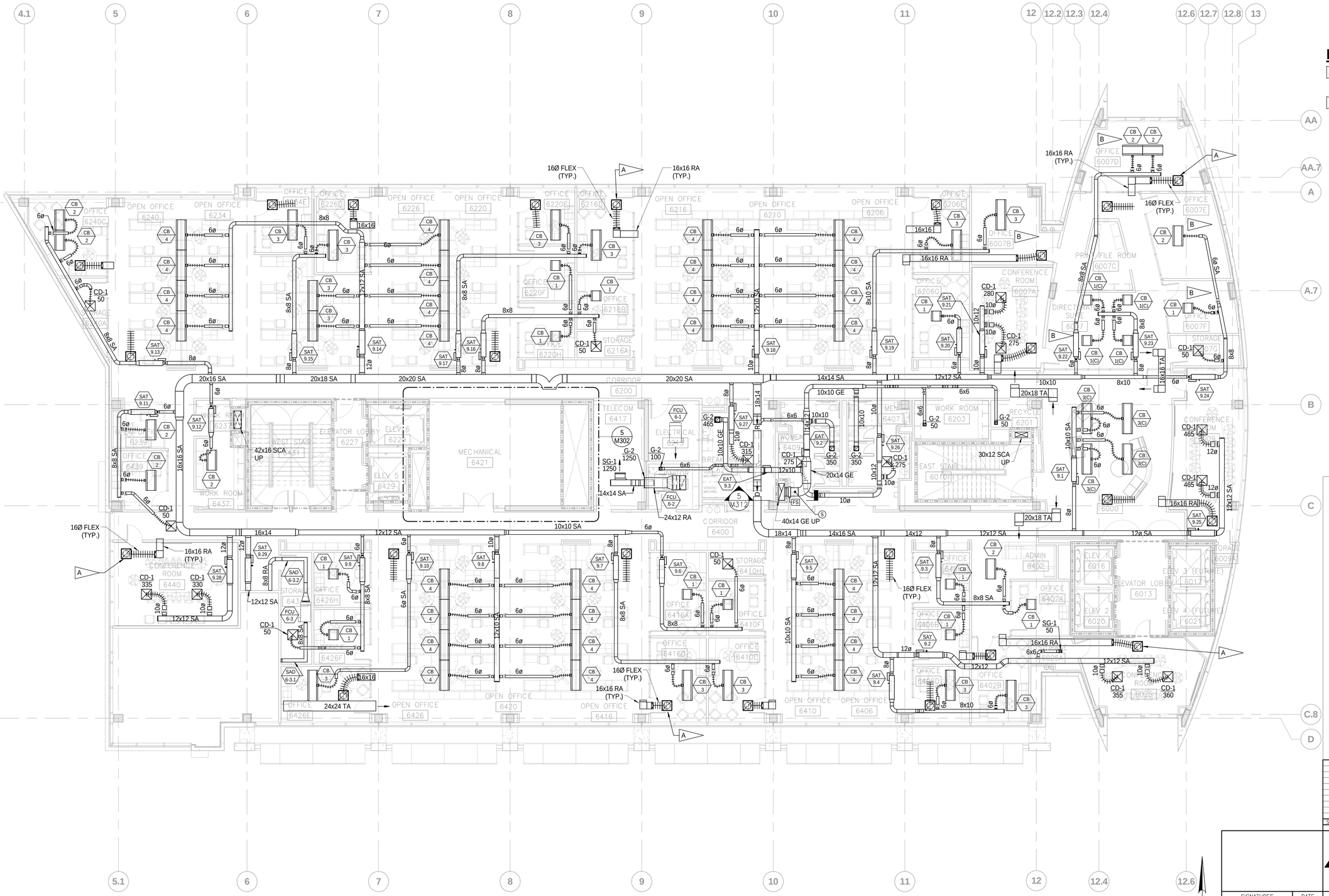
GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

A — OPEN CEILING PLENUM RETURN GRILLE WITH TYPE G-3 GRILLE. REFER TO DETAIL 3, SHEET M501.

B — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



DUCT PLAN - 6TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M161

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 6TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 22

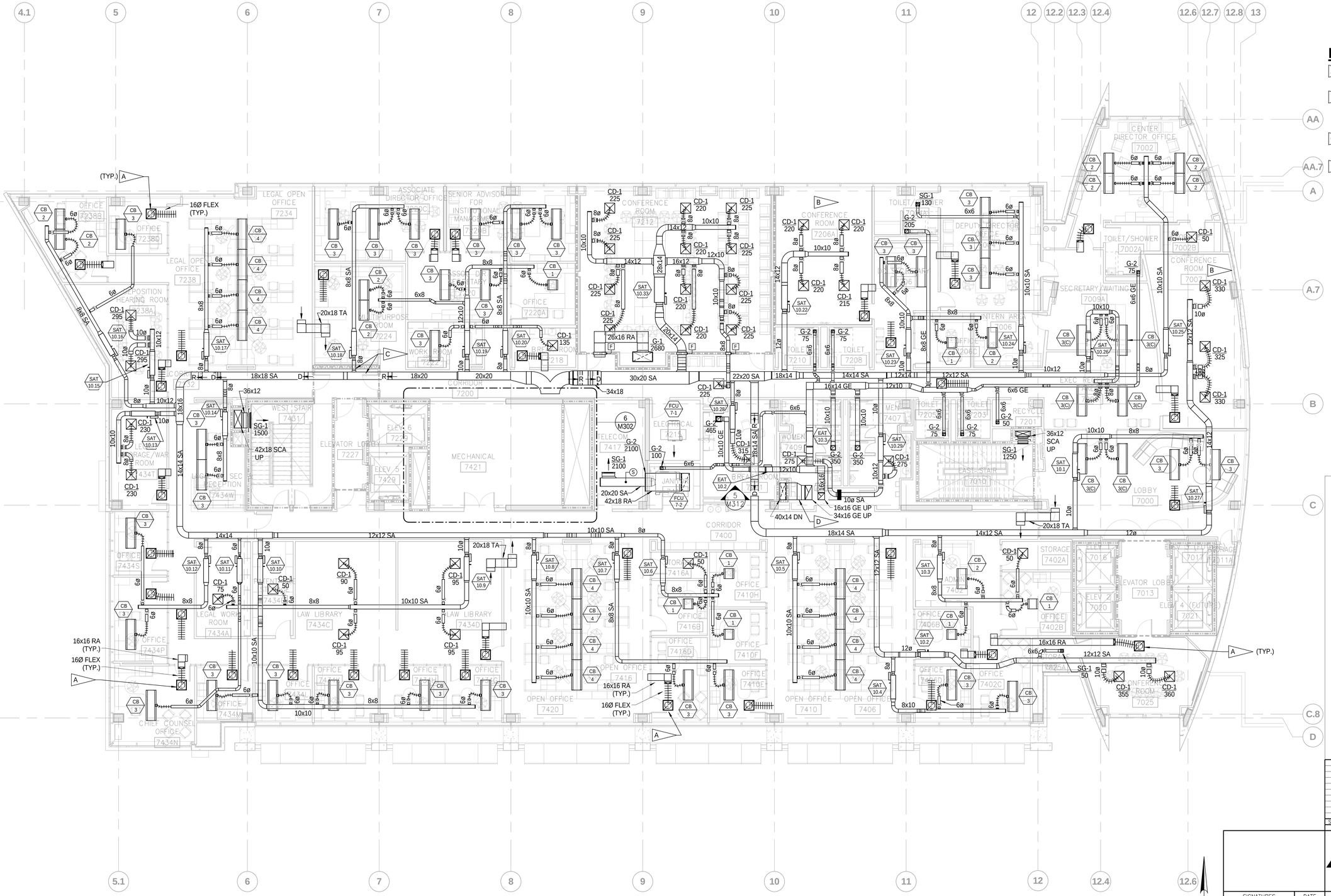
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

- A — OPEN CEILING PLENUM RETURN GRILLE WITH TYPE G-3 GRILLE. REFER TO DETAIL 3, SHEET M501.
- B — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.
- C — DUCT ROUTED ABOVE HORIZONTAL RATED EXIT ENCLOSURE. REFER TO ARCHITECTURAL FOR ADDITIONAL DETAIL.
- D — DUCT ROUTED WITHIN HORIZONTAL RATED SHAFT ENCLOSURE. REFER TO ARCHITECTURAL FOR ADDITIONAL DETAIL.



DUCT PLAN - 7TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M171

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - 7TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 23	

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

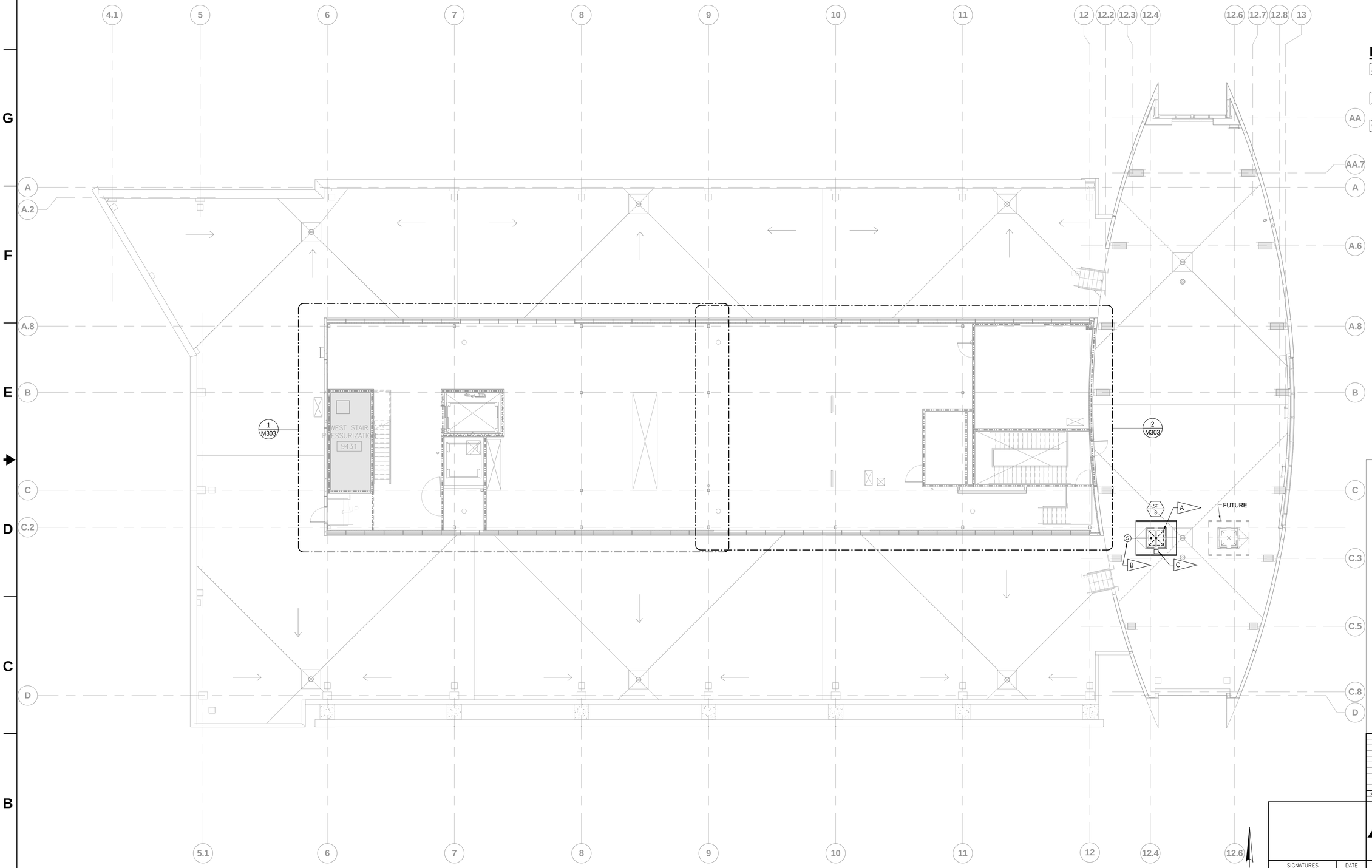
1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

A — 36x36 SCA DN - TERMINATE OPEN ENDED DUCT JUST BELOW UNDERSIDE OF HOISTWAY SHAFT CAP.

B — PLENUM DUCT SMOKE DETECTOR MOUNTED INSIDE FAN BASE - REFER TO DETAIL 5, SHEET M502.

C — REFER TO FIRE ALARM DRAWINGS.



DUCT PLAN - ROOF

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M181

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

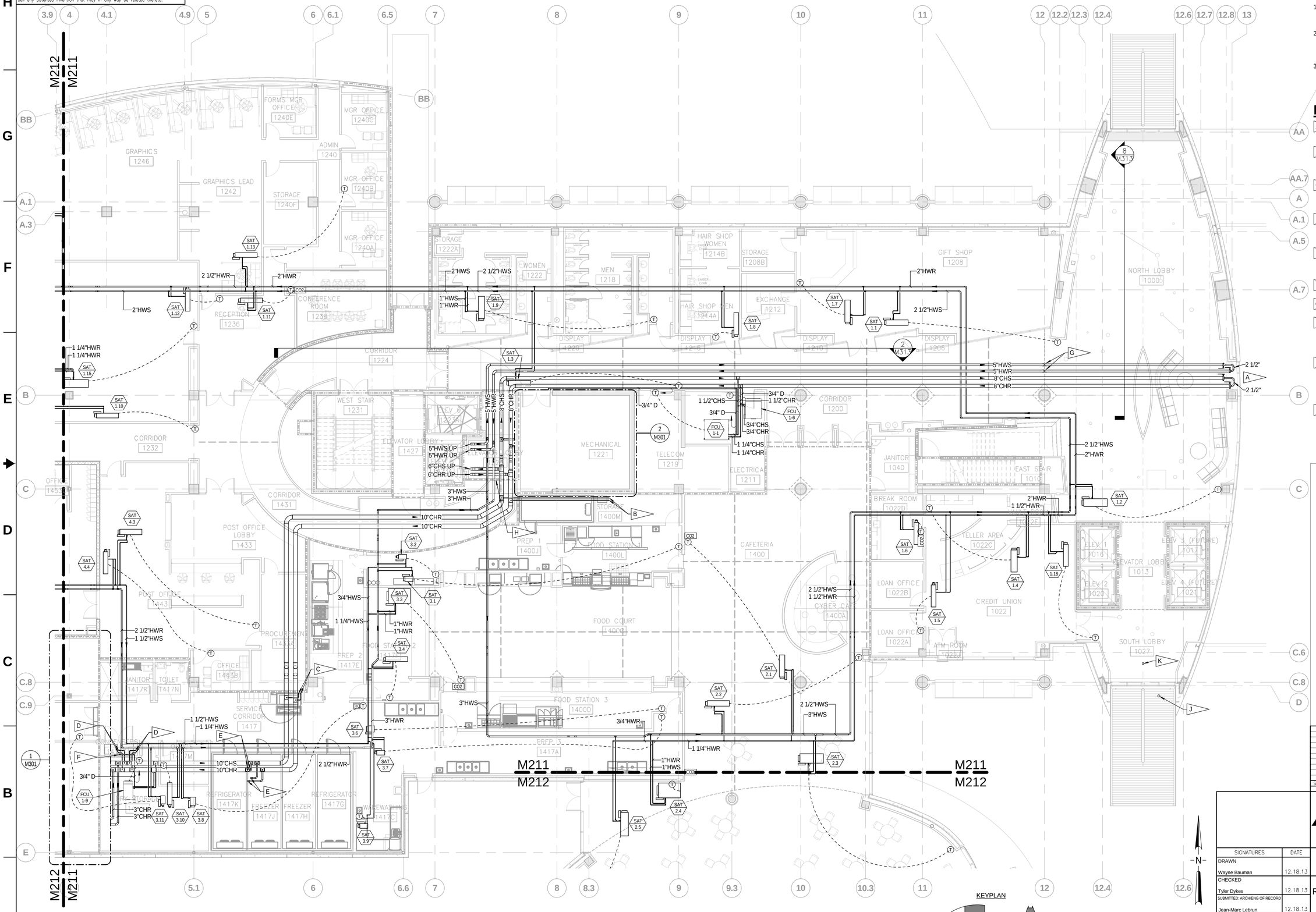
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

DUCT PLAN - ROOF

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 24

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

- A — PROVIDE SHUT OFF VALVES WITH MINIMUM FLOW BYPASS. REFER TO FLOW AND CONTROL DRAWINGS.
- B — 1" CHS & CHR DOWN WITH CONNECTION TO REFRIGERATOR CONDENSING UNIT. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- C — 1" CHS & CHR DOWN WITH CONNECTIONS TO ICE MAKER. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- D — 1" CHS & CHR DOWN WITH CONNECTIONS TO FREEZER CONDENSING UNIT. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- E — 2-1/2" CHS & CHR UP TO MU UNIT ON ROOF. REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- F — 3/4" D DN TO NEAREST FLOOR DRAIN - REFER TO PLUMBING.
- G — ANCHOR HWS & HWR PIPE MAINS AT THIS LOCATION.
- H — EMERGENCY HVAC RECIRCULATION SWITCH. REFER TO CONTROL DRAWINGS. COORDINATE FINAL LOCATION WITH CONTRACTING OFFICER PRIOR TO INSTALLATION.
- J — OUTDOOR STATIC PRESSURE SENSOR - LOCATE DEVICE RECESSED IN UNDERSIDE OF EXTERIOR CANOPY - ALIGN DEVICE WITH CANOPY LIGHTS AND CENTER BETWEEN ACP JOINTS. COORDINATE EXACT LOCATION WITH ARCH.
- K — ROOM STATIC PRESSURE SENSOR - LOCATE DEVICE FLUSH MOUNTED IN SUSPENDED ACOUSTICAL PANEL CEILING.

PIPING PLAN - 1ST LEVEL - AREA 1

1/8" = 1'-0"

KEYPLAN

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

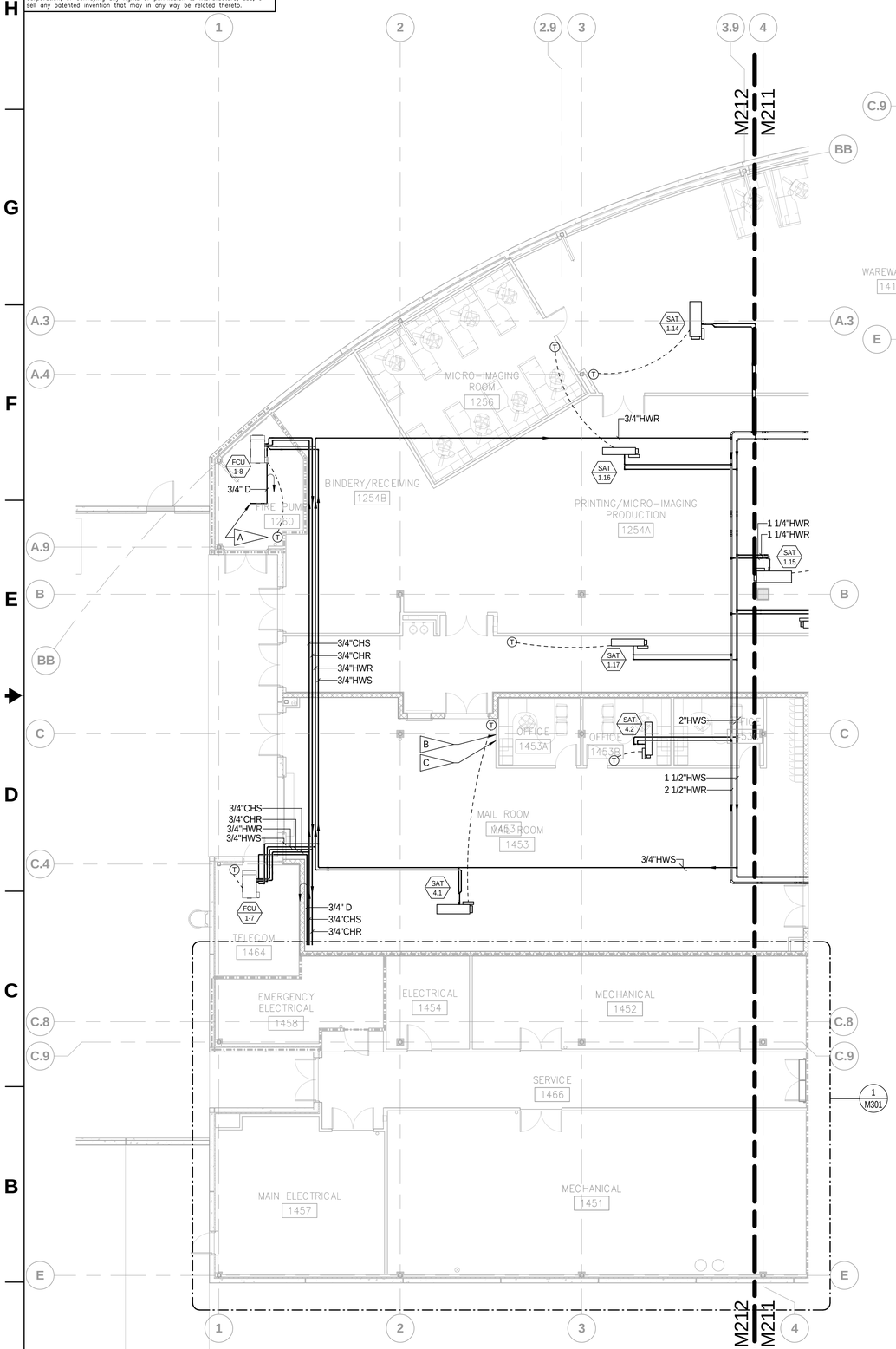
PIPING PLAN - 1ST LEVEL AREA 1

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 25	

M211

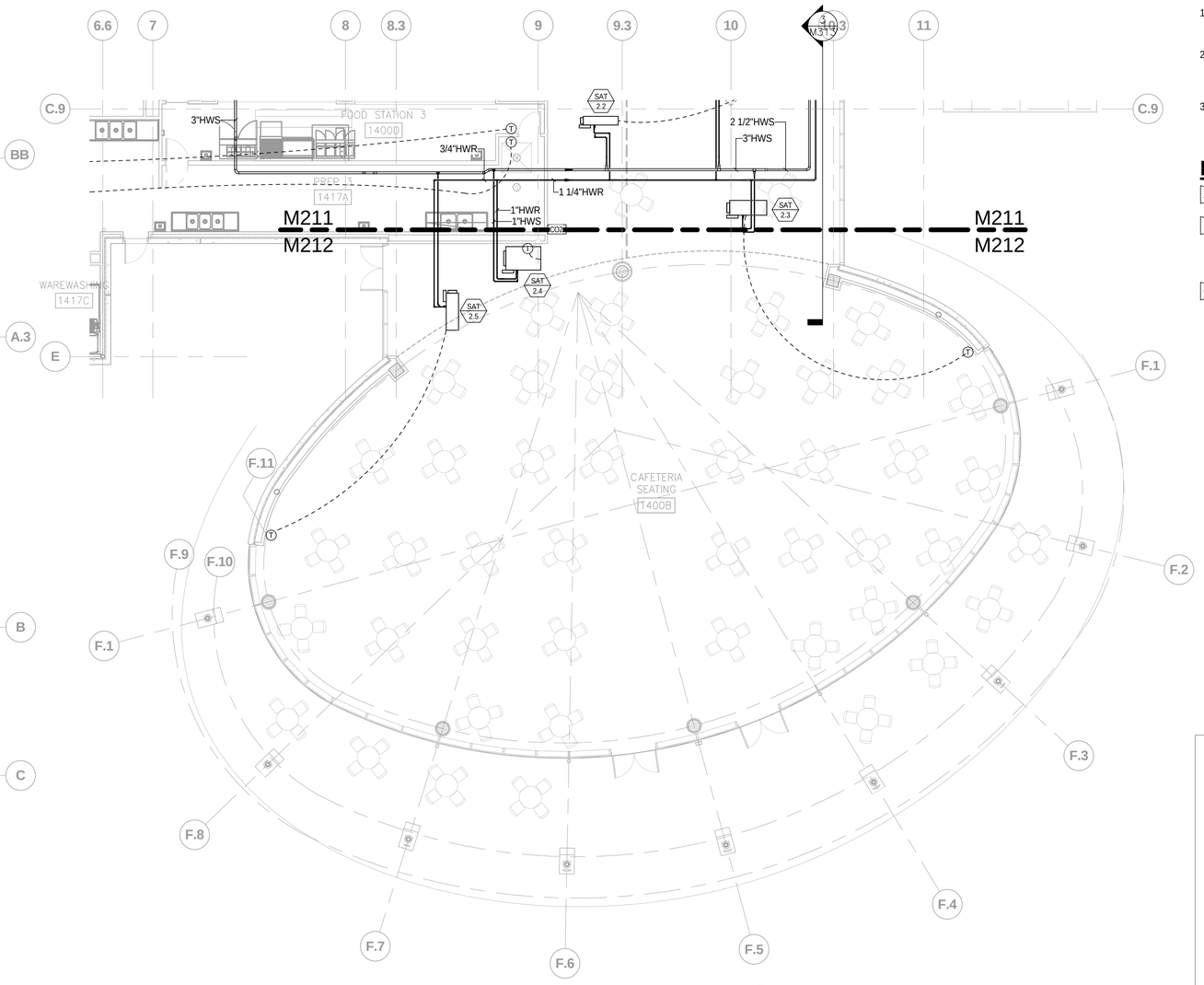
KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PIPING PLAN - 1ST LEVEL - AREA 2 (1)

1/8" = 1'-0"



PIPING PLAN - 1ST LEVEL - AREA 3 (2)

1/8" = 1'-0"

GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

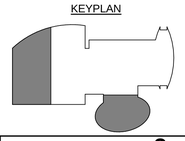
A — 3/4" D DN TO NEAREST FLOOR DRAIN - REFER TO PLUMBING.

B — EMERGENCY HVAC RECIRCULATION SWITCH. REFER TO CONTROL DRAWINGS. COORDINATE FINAL LOCATION WITH CONTRACTING OFFICER PRIOR TO INSTALLATION.

C — EMERGENCY AIR DISTRIBUTION SHUTOFF SWITCH. REFER TO CONTROL DRAWINGS. COORDINATE FINAL LOCATION WITH CONTRACTING OFFICER PRIOR TO INSTALLATION.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

KEYPLAN



GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

M212

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PIPING PLAN - 1ST LEVEL AREA 2 & 3

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 26

KSC FORM 1-11 (3/76)(C/G 3/94)

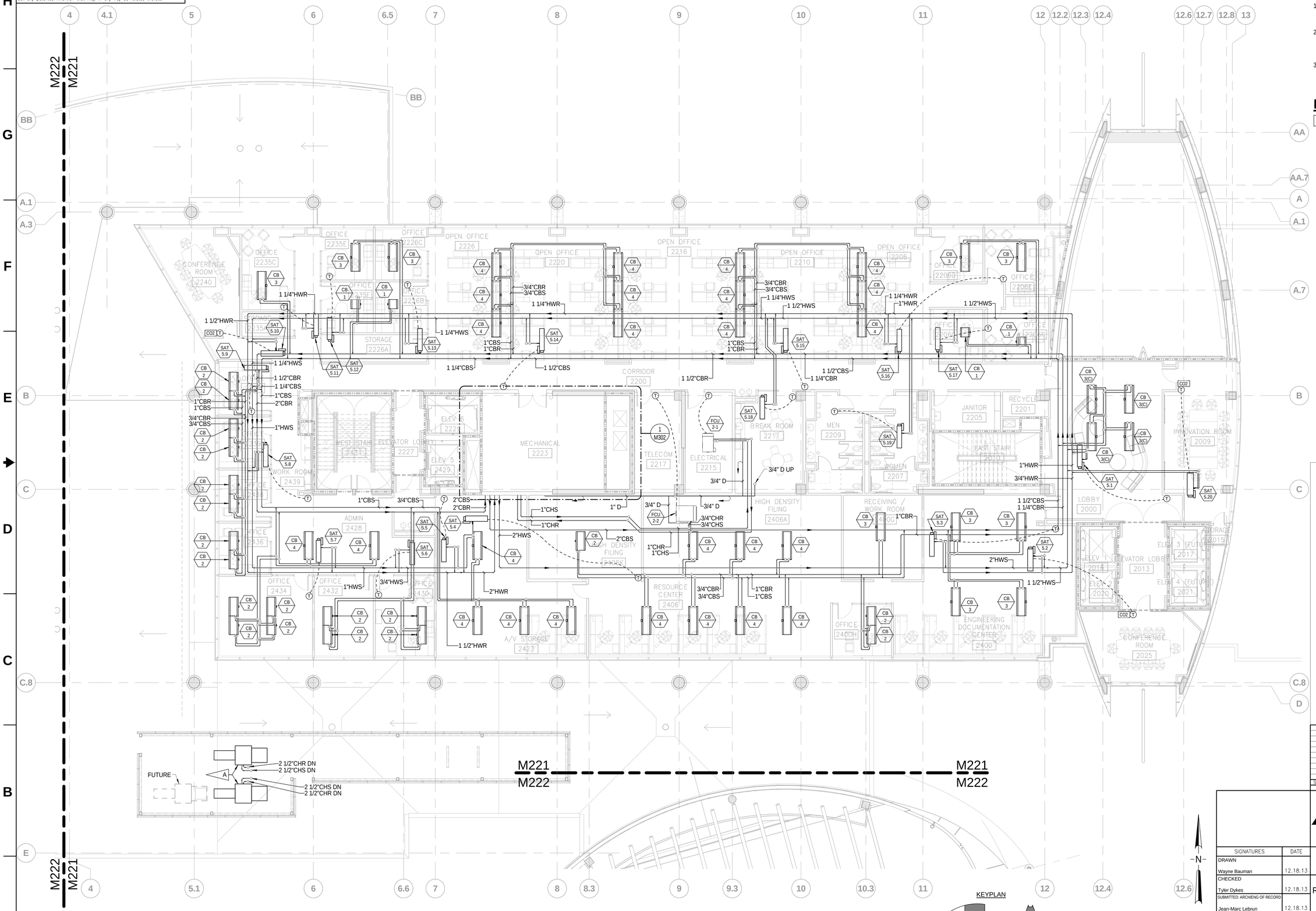
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

A — INSTALL KITCHEN MAKE UP AIR UNIT - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS. PIPE CONDENSATE DRAIN TO NEAREST ROOF DRAIN.



PIPING PLAN - 2ND LEVEL - AREA 1

1/8" = 1'-0"

KEYPLAN

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PIPING PLAN - 2ND LEVEL AREA 1

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 27	

M221

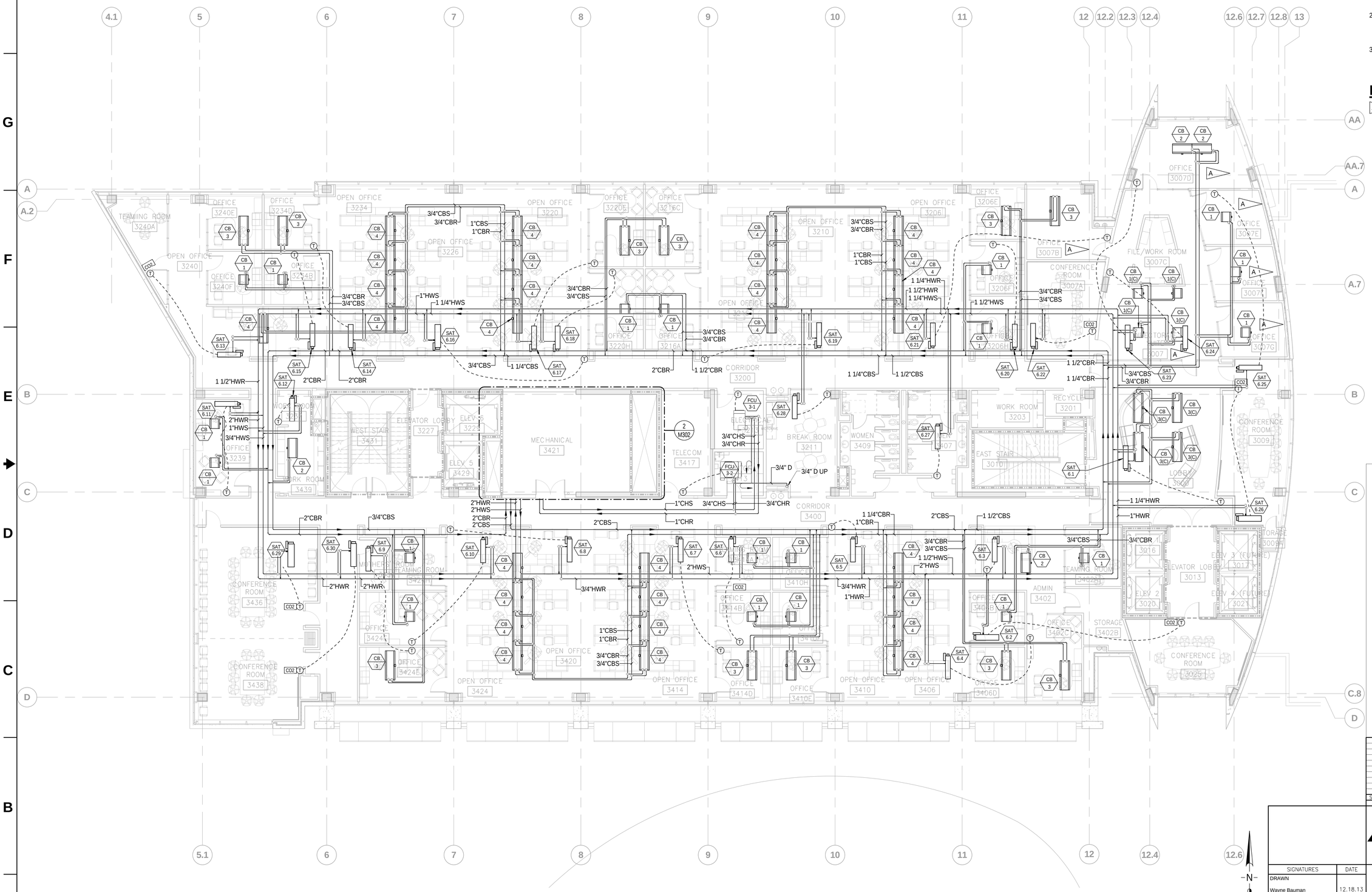
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

A — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



PIPING PLAN - 3RD LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M231

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PIPING PLAN - 3RD LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 28

KSC FORM 1-11 (3/76)(C/G 3/94)

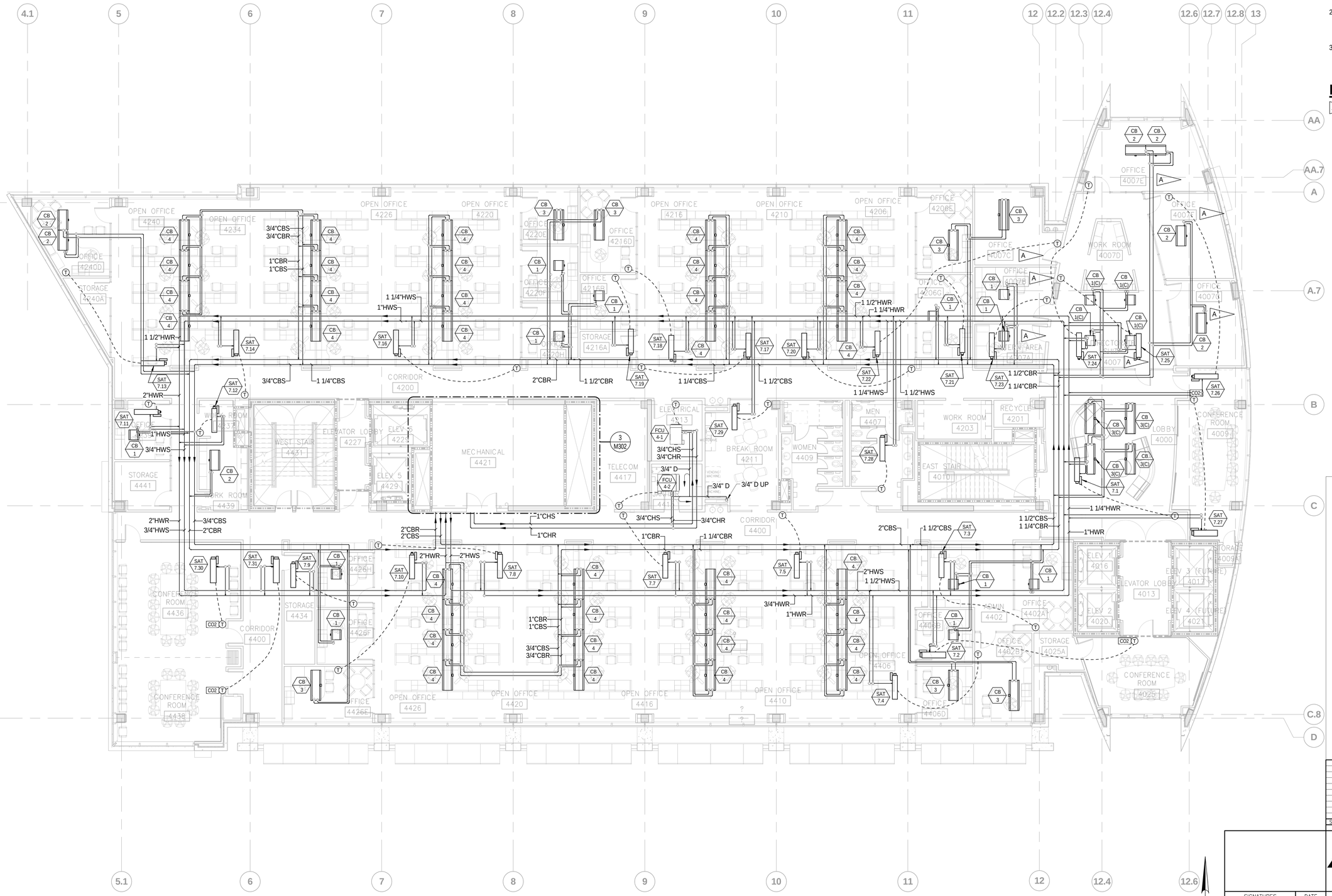
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

A — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



PIPING PLAN - 4TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PIPING PLAN - 4TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 29

M241

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

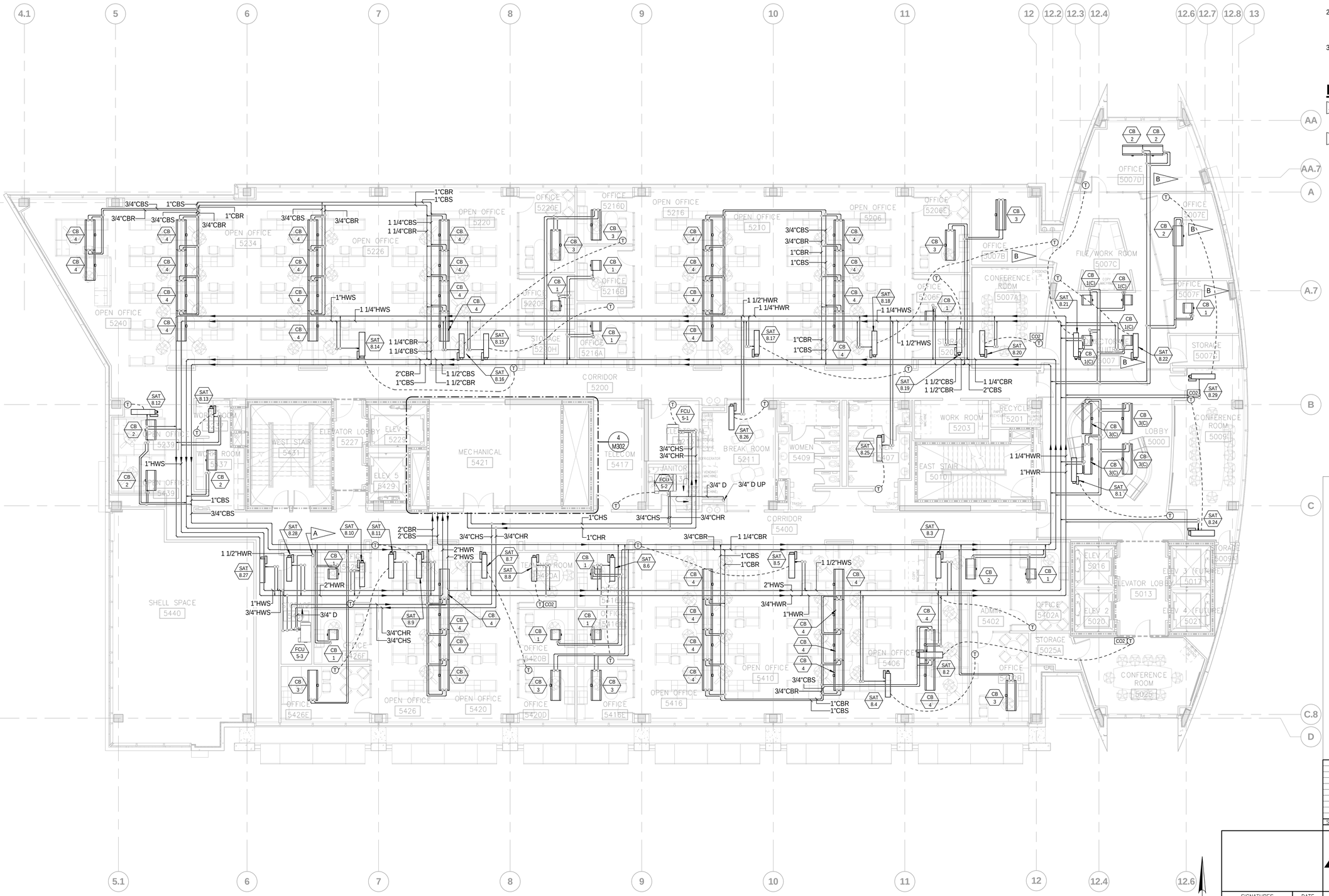
GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

A — 3/4" D DN. ROUTE DRAIN DN INSIDE WALL TO FLOOR LEVEL AND DISCHARGE INTO CWW HUB DRAIN - REFER TO PLUMBING.

B — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



PIPING PLAN - 5TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M251

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PIPING PLAN - 5TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 30

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

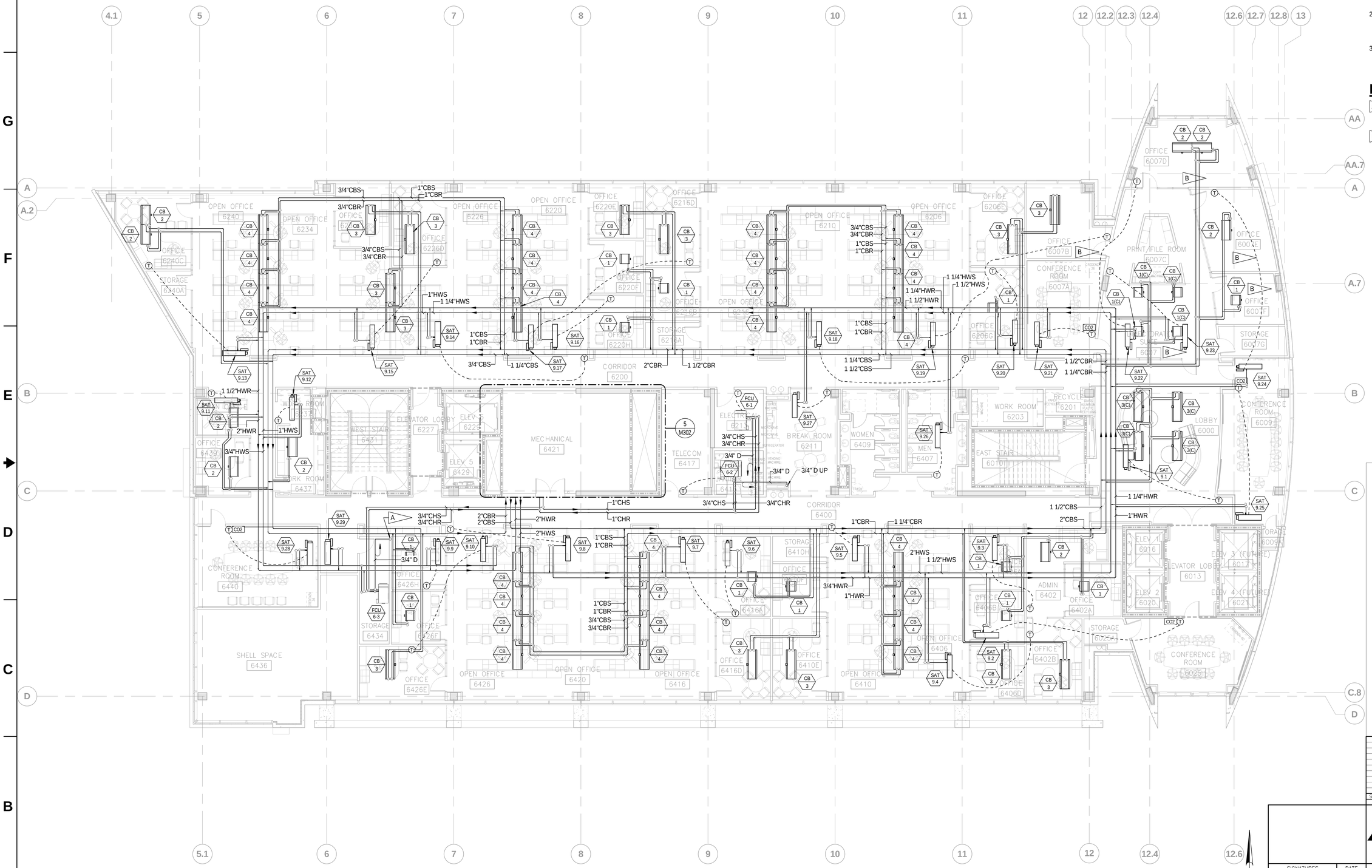
GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

A — 3/4" D DN. ROUTE DRAIN DN INSIDE WALL TO LEVEL 5 FLOOR AND DISCHARGE INTO CWW HUB DRAIN - REFER TO PLUMBING.

B — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



PIPING PLAN - 6TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PIPING PLAN - 6TH LEVEL

M261

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 31

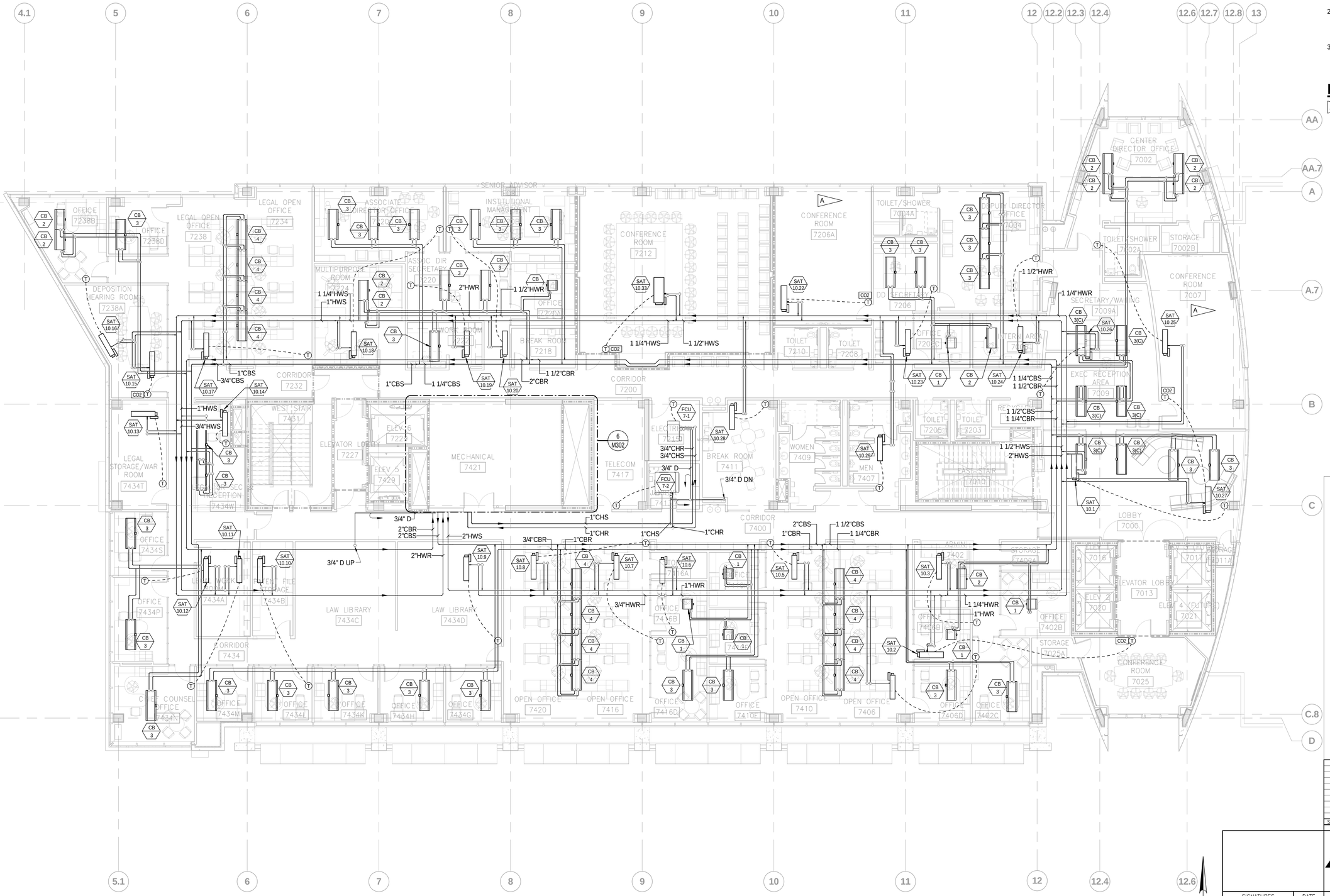
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. BRANCH PIPING NOT IDENTIFIED BY SIZE SHALL BE 3/4". ALL OTHER PIPING SHALL BE SIZED AS IDENTIFIED.
2. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
3. COORDINATE AND ALIGN THERMOSTATS/SENSORS WITH ADJACENT DEVICES ON WALL.

FLAG NOTES:

A — EXISTING FURNITURE GOVERNMENT FURNISHED, GOVERNMENT INSTALLED. COORDINATE LOCATIONS OF ALL FLOOR, WALL AND CEILING DEVICES WITH GOVERNMENT.



PIPING PLAN - 7TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M271

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

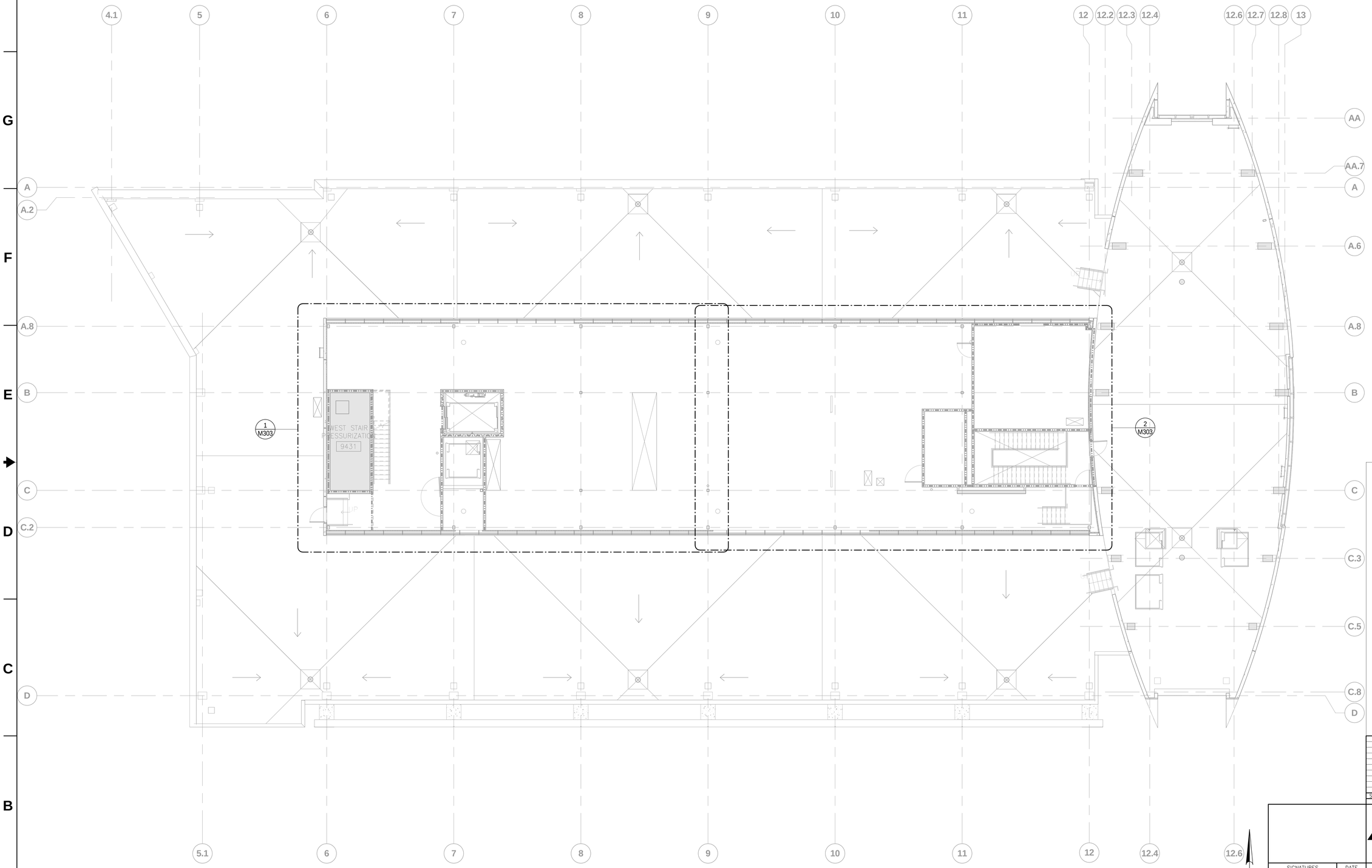
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PIPING PLAN - 7TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 32

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PIPING PLAN - ROOF

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

M281

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

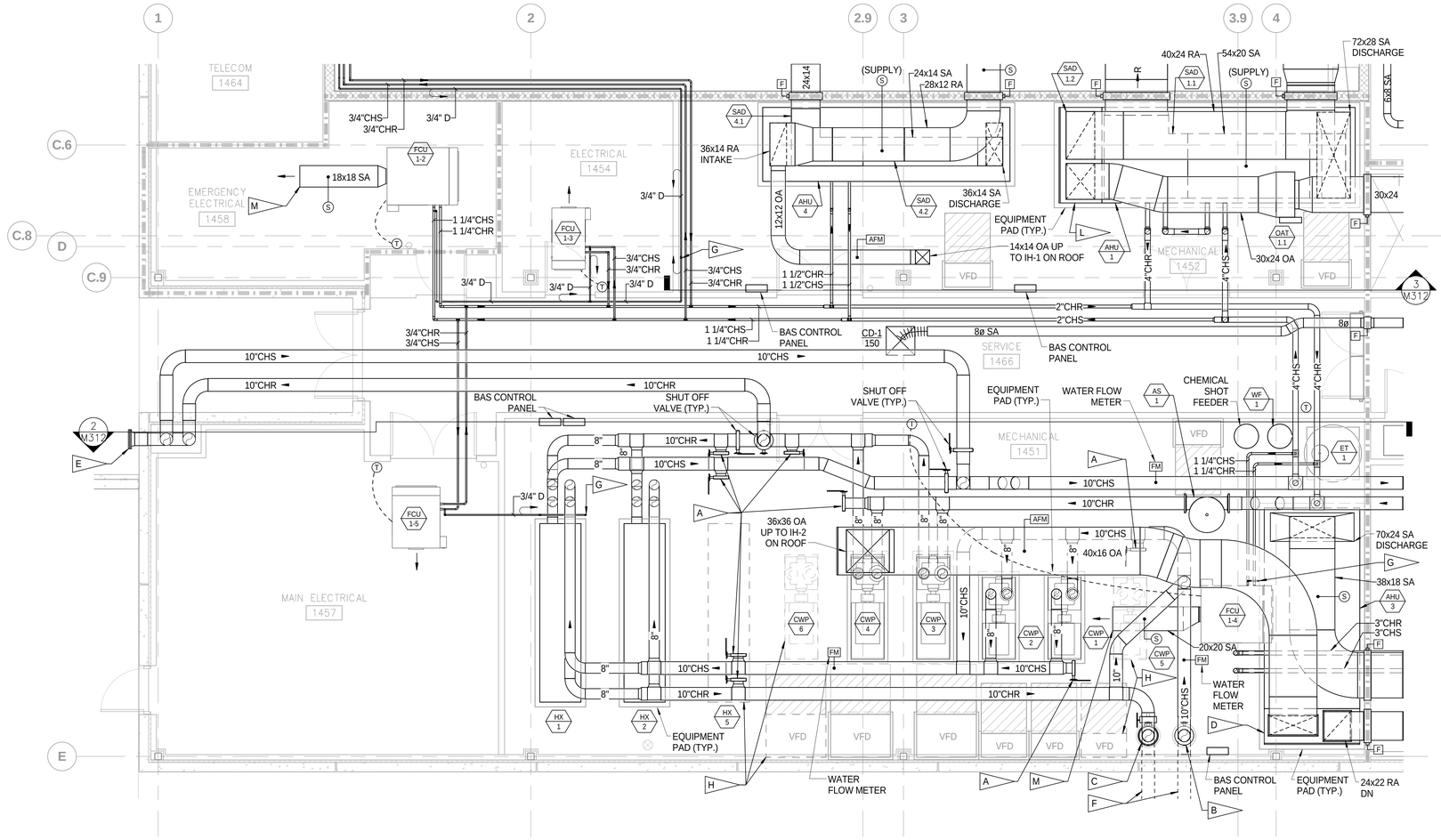
PIPING PLAN - ROOF

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 33

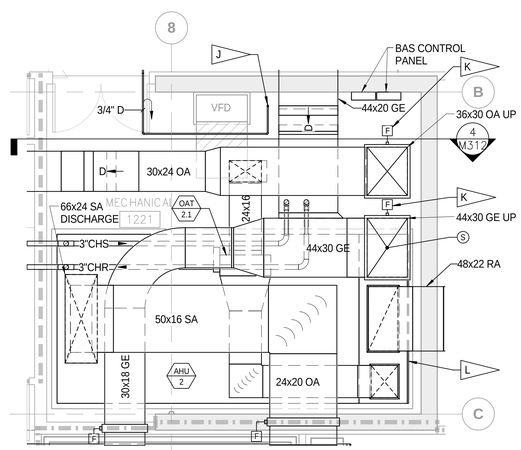
KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



ENLARGED WEST MER PLAN - 1ST LEVEL (1)

1/4" = 1'-0"



ENLARGED EAST MER PLAN - 1ST LEVEL (2)

1/4" = 1'-0"

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

- A — 8" VALVE AND BLIND FLANGE FOR FUTURE CONNECTION.
- B — 10" CHS DN W/ SHUT OFF VALVE IN RISER.
- C — 10" CHR DN W/ CONTROL AND SHUT OFF VALVES IN RISER.
- D — 30" DEEP OA/RA INTAKE PLENUM.
- E — 10" CHS & CHR AUXILIARY CONNECTIONS WITH BLIND FLANGES. LOCATE CONNECTIONS AT 2-0" AND 4-0" ABOVE FINISHED GRADE.
- F — TO/FROM IACP. REFER TO SHEET M101 FOR CONTINUATION OF U/G CHW PIPING.
- G — 3/4" D DN TO NEAREST FLOOR DRAIN - REFER TO PLUMBING.
- H — ASSOCIATED WITH BID OPTION M-1. REFER TO ARCHITECTURAL DRAWINGS.
- J — 3/4" D DN WITH CONNECTION TO CWW RISER - REFER TO PLUMBING FOR CONNECTION DETAILS.
- K — ACCESS TO SERVICE/INSPECT FIRE DAMPER SHALL BE FROM FLOOR ABOVE VIA WALL MOUNTED ACCESS DOOR LOCATED WITHIN MER 2223 SHAFT WALL - REFER TO ARCHITECTURAL.
- L — 36" DEEP OA/RA INTAKE PLENUM.
- M — TERMINATE OPEN ENDED DUCT WITH WIRE MESH GRILLE.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

N

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

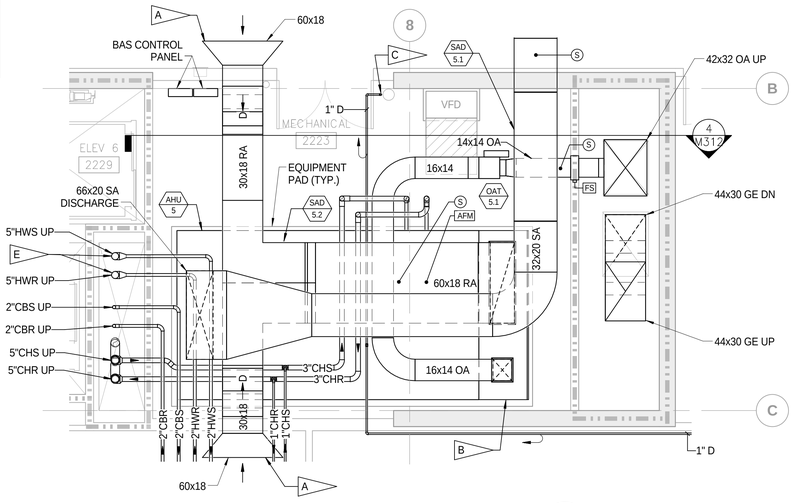
ENLARGED MER PLANS - 1ST LEVEL

M301

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

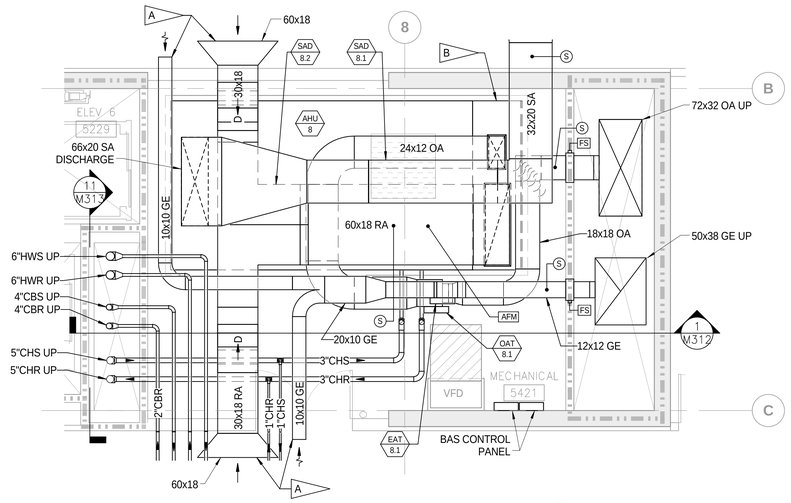
PCN. NO. 98745.1a | SHEET 34

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



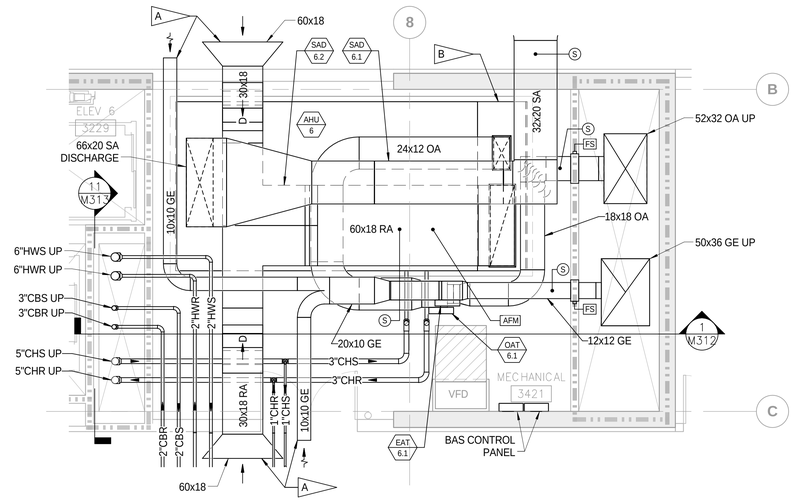
ENLARGED MER PLAN - 2ND LEVEL 1

1/4" = 1'-0"



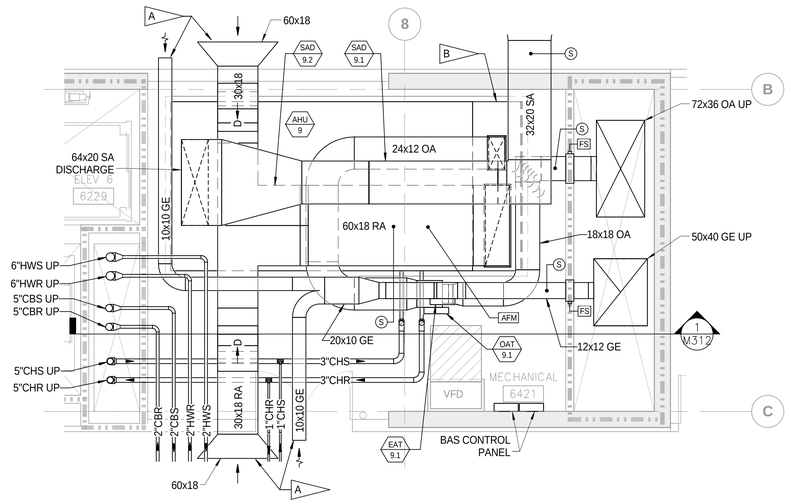
ENLARGED MER PLAN - 5TH LEVEL 4

1/4" = 1'-0"



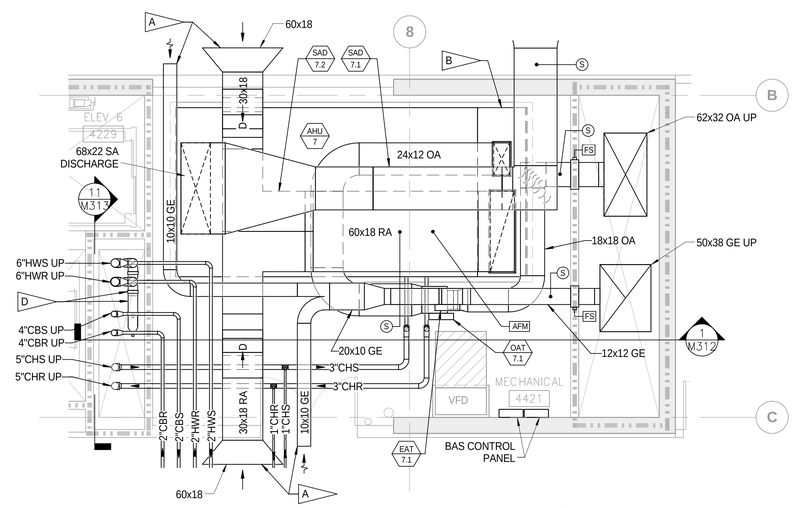
ENLARGED MER PLAN - 3RD LEVEL 2

1/4" = 1'-0"



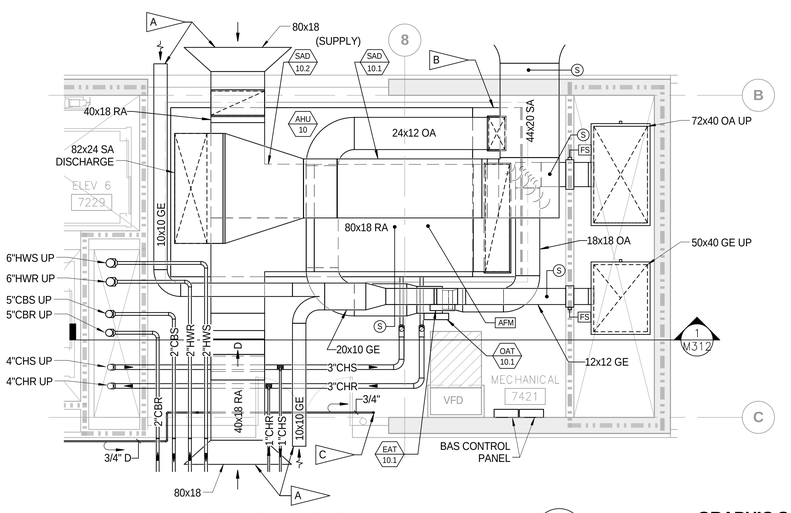
ENLARGED MER PLAN - 6TH LEVEL 5

1/4" = 1'-0"



ENLARGED MER PLAN - 4TH LEVEL 3

1/4" = 1'-0"



ENLARGED MER PLAN - 7TH LEVEL 6

1/4" = 1'-0"

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.
2. DUE TO SPACE LIMITATIONS WITHIN EQUIPMENT ROOMS, PROVIDE AHU'S WITH THE ABILITY OF THE COILS TO BE REMOVED AT AN ANGLE. UNITS SUBMITTED WHICH DO NOT INDICATE THIS ABILITY WILL BE REJECTED.

FLAG NOTES:

- A — TERMINATE OPEN ENDED DUCT WITH WIRE MESH GRILLE.
- B — PROVIDE 36" DEEP OA/RA INTAKE PLENUM.
- C — DRAIN DN WITH CONNECTION TO CWW RISER - REFER TO PLUMBING FOR CONNECTION DETAILS.
- D — PROVIDE FLEXIBLE EXPANSION LOOPS IN HWS & HWR PIPE RISERS.
- E — PROVIDE PIPE ANCHORS FOR HWS & HWR PIPE RISERS AT LEVEL 2.

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

N

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

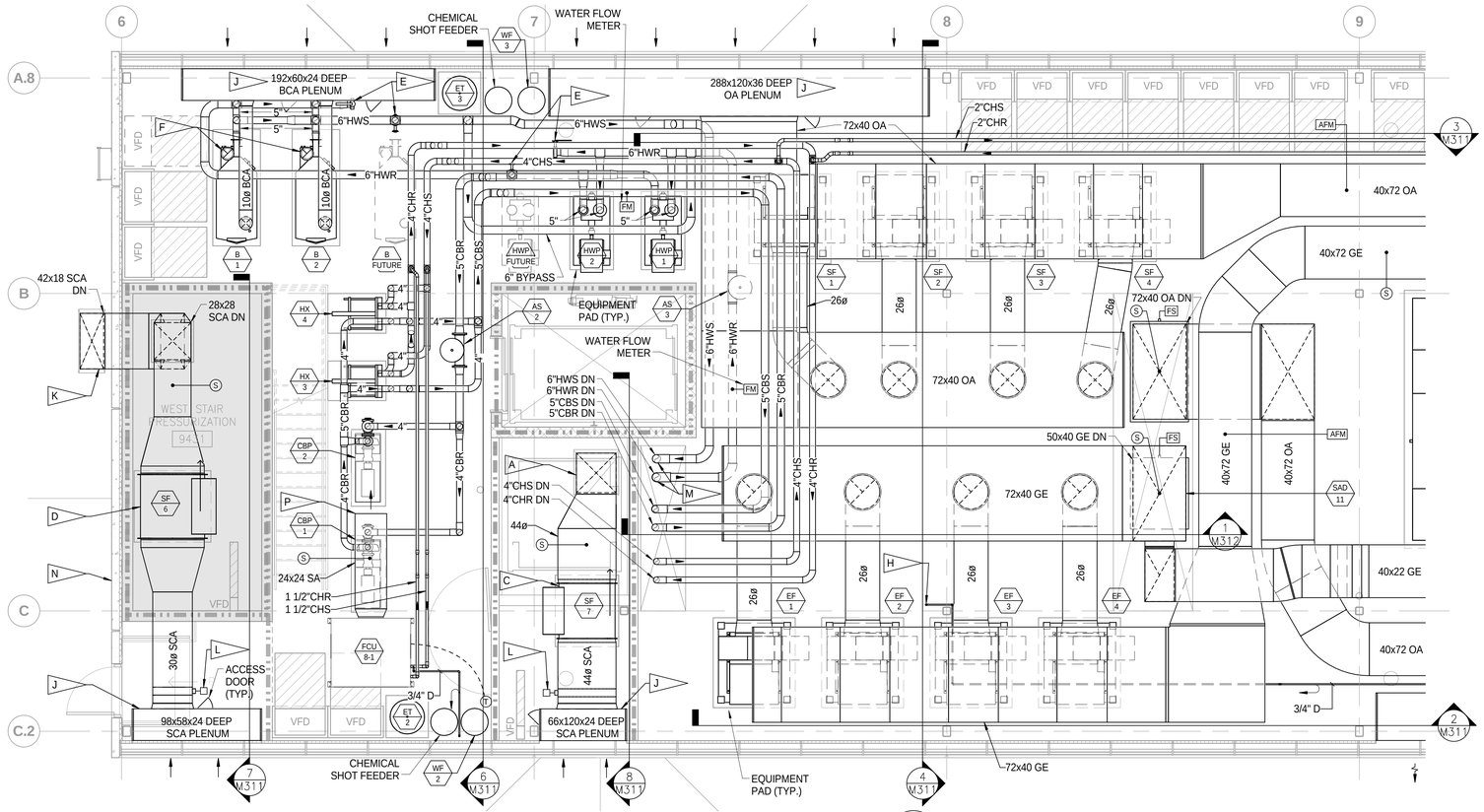
ENLARGED MER PLANS - LEVELS 2-7

M302

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

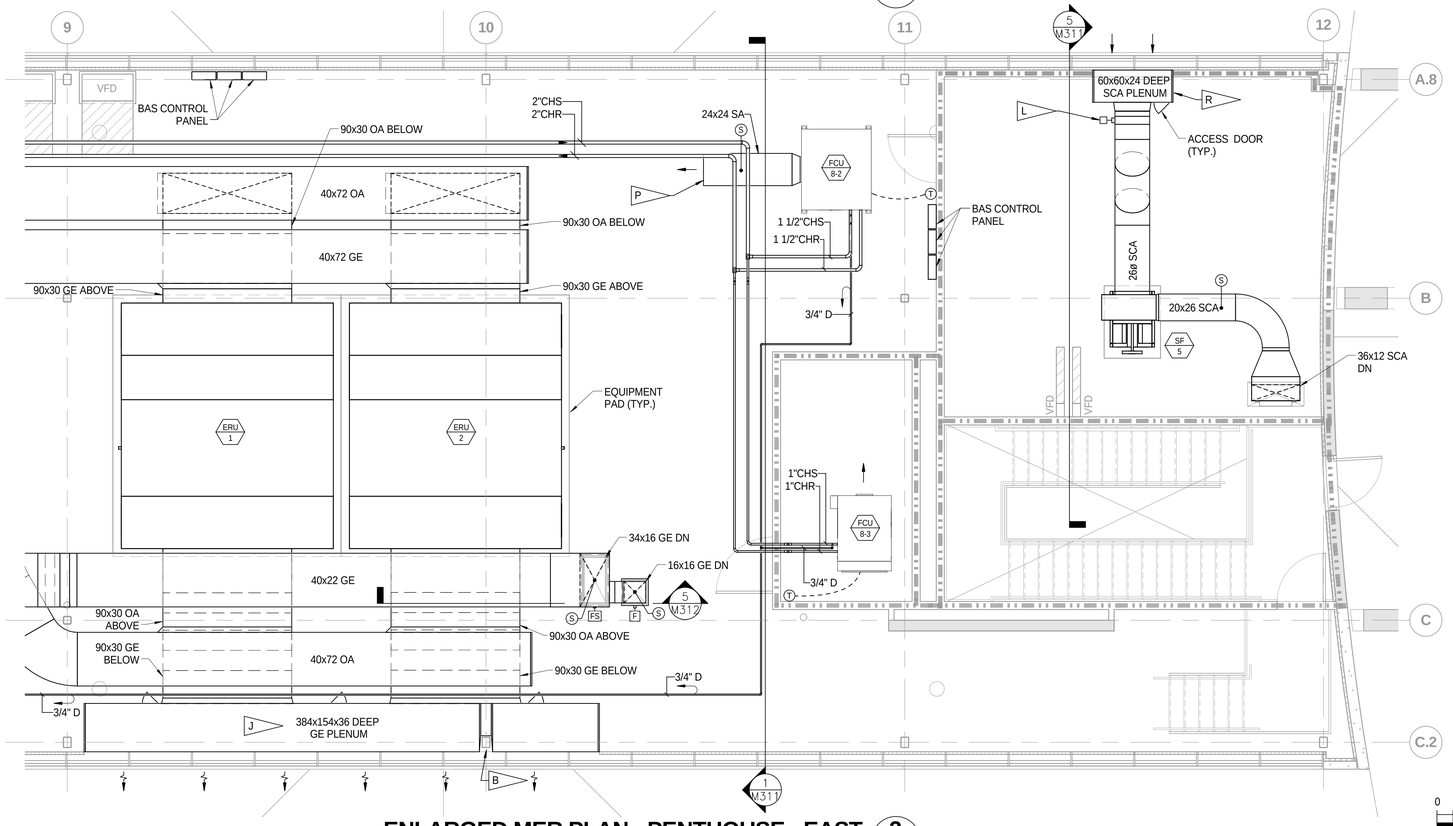
PCN. NO. 98745.1a SHEET 35

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



ENLARGED MER PLAN - PENTHOUSE - WEST (1)

1/4" = 1'-0"



ENLARGED MER PLAN - PENTHOUSE - EAST (2)

1/4" = 1'-0"

GENERAL NOTES:

1. FOR CLARITY, NOT ALL DEVICES SHOWN ON FLOOR PLANS. REFER TO FLOW DIAGRAMS AND CONTROL DRAWINGS FOR ADDITIONAL DEVICES.

FLAG NOTES:

- A — 30x30 SCA DN - TERMINATE OPEN ENDED DUCT JUST BELOW UNDERSIDE OF HOISTWAY SHAFT CAP.
- B — BOX OUT PLENUM AROUND COLUMN SUCH THAT COLUMN IS OUT OF AIRSTREAM.
- C — PROVIDE FLOOR SUPPORTED FAN.
- D — FAN LOCATED ABOVE AT UPPER STAIR PLATFORM. PROVIDE FLOOR SUPPORTED FAN.
- E — 5" VALVE AND BLIND FLANGE FOR FUTURE CONNECTION.
- F — 10Ø BEV UP THROUGH ROOF. REFER TO DETAIL 9, SHEET M-502.
- G — 3/4" D DN TO LEVEL 7.
- H — DRAIN DN WITH DISCHARGE INTO CWW HUB DRAIN - REFER TO PLUMBING.
- J — TOP OF PLENUM ELEVATION - 14'-4". PROVIDE DRAINS AT BOTTOM OF PLENUM - REFER TO DETAIL 2, SHEET M-501.
- K — INSULATE EXTERIOR DUCTWORK.
- L — REFER TO FIRE ALARM DRAWINGS.
- M — PROVIDE PIPE ANCHORS FOR HWS & HWR PIPE RISERS AT PENTHOUSE LEVEL.
- N — MOUNT TEMPERATURE AND HUMIDITY SENSORS ON EXTERIOR WALL AT 6 FEET ABOVE ROOF.
- P — TERMINATE OPEN ENDED DUCT WITH WIRE MESH GRILLE.
- R — TOP OF PLENUM ELEVATION - 9'-4". PROVIDE DRAINS AT BOTTOM OF PLENUM - REFER TO DETAIL 2, SHEET M-501.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

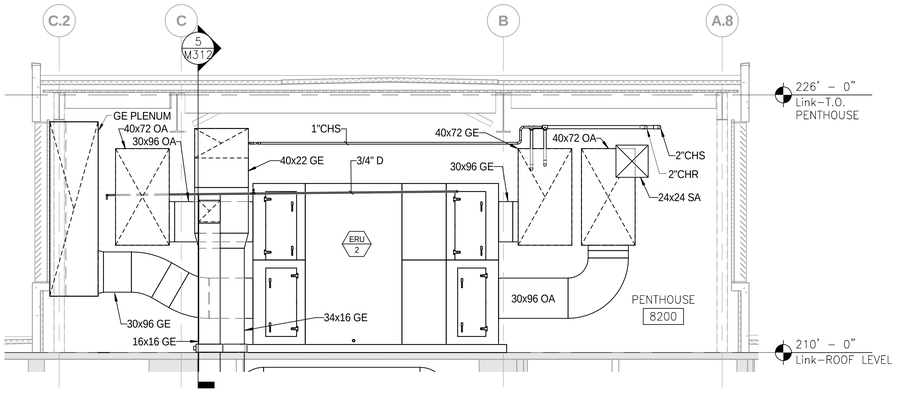
ENLARGED MER PLANS - PENTHOUSE

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 36	

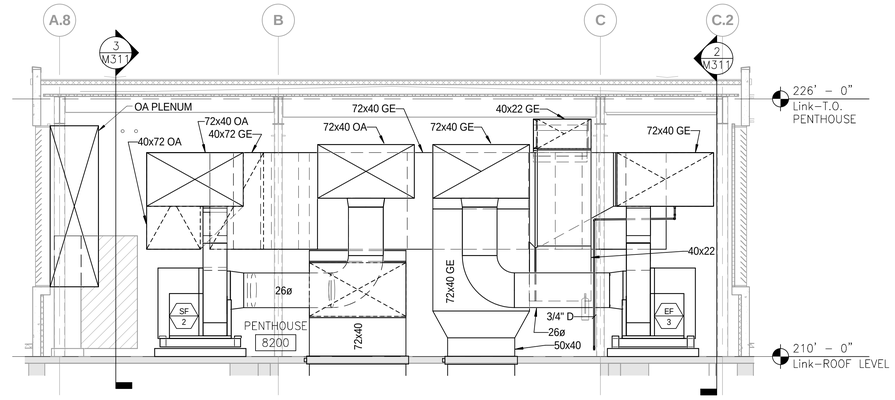
GRAPHIC SCALE
0 4 8 12
SCALE IN FEET
1/4" = 1' - 0"

M303

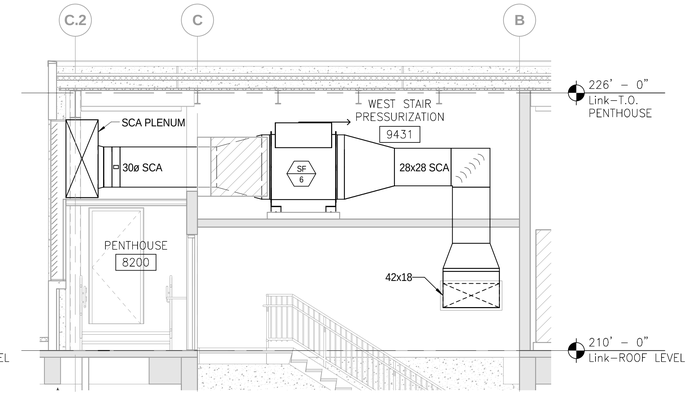
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



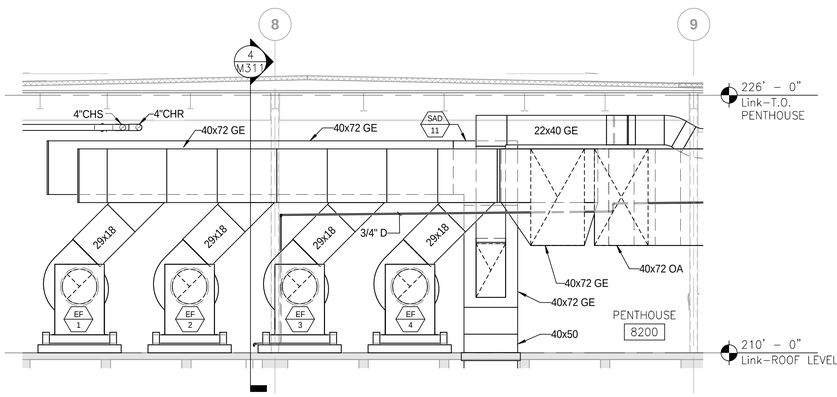
SECTION - PENTHOUSE 1
1/4" = 1'-0"



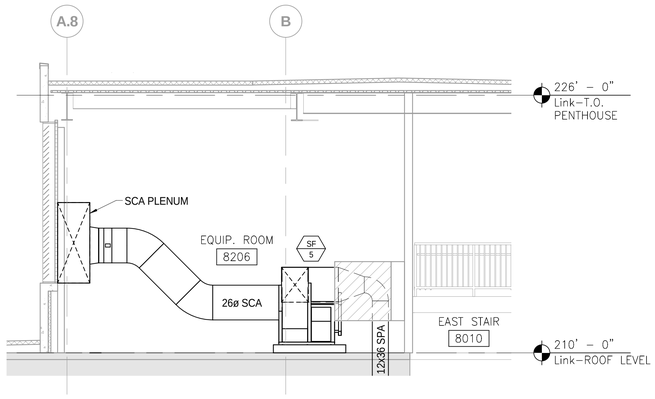
SECTION - PENTHOUSE 4
1/4" = 1'-0"



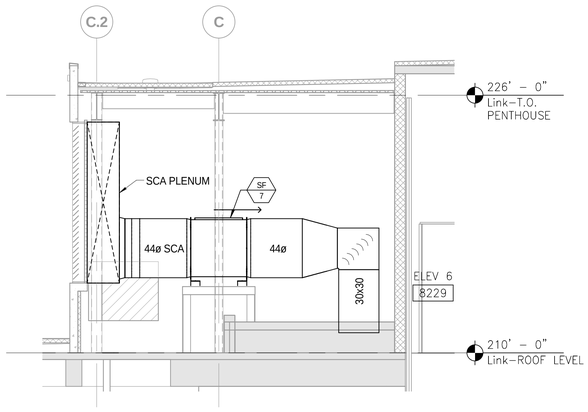
SECTION - PENTHOUSE 7
1/4" = 1'-0"



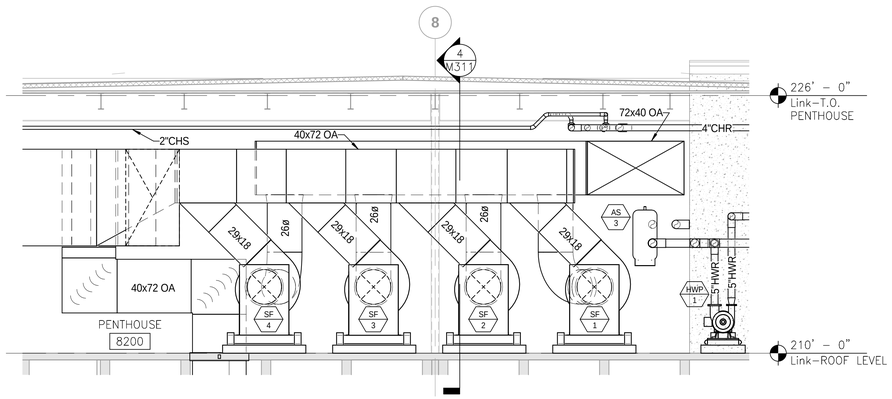
SECTION - PENTHOUSE 2
1/4" = 1'-0"



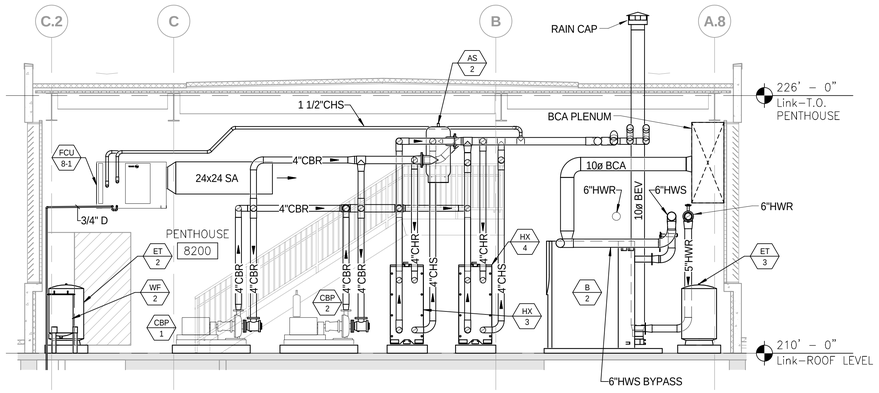
SECTION - PENTHOUSE 5
1/4" = 1'-0"



SECTION - PENTHOUSE 8
1/4" = 1'-0"



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



SECTION - PENTHOUSE 6
1/4" = 1'-0"

GRAPHIC SCALE
0 4 8 12
SCALE IN FEET
1/4" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers
Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

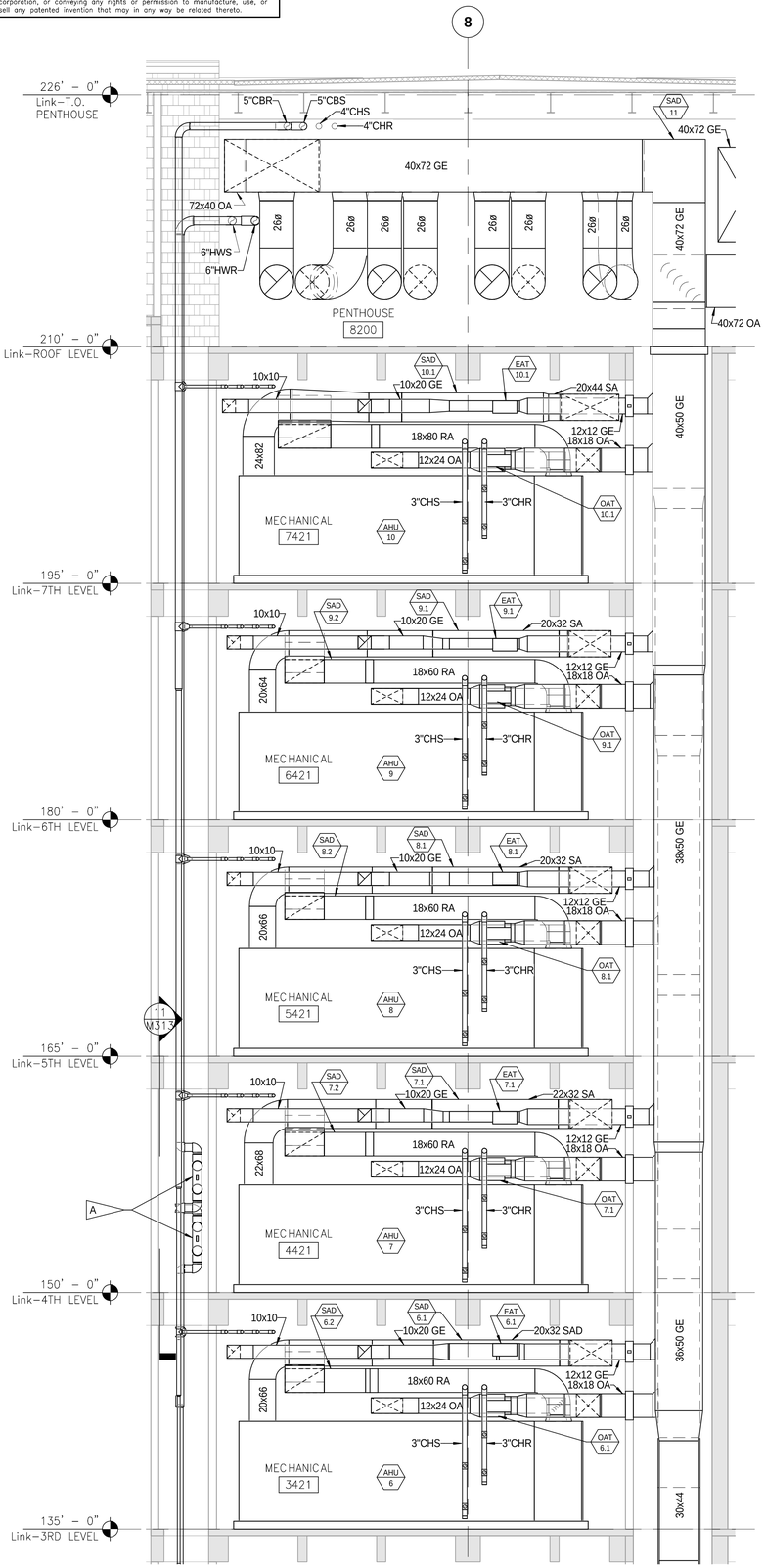
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SECTIONS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 37	

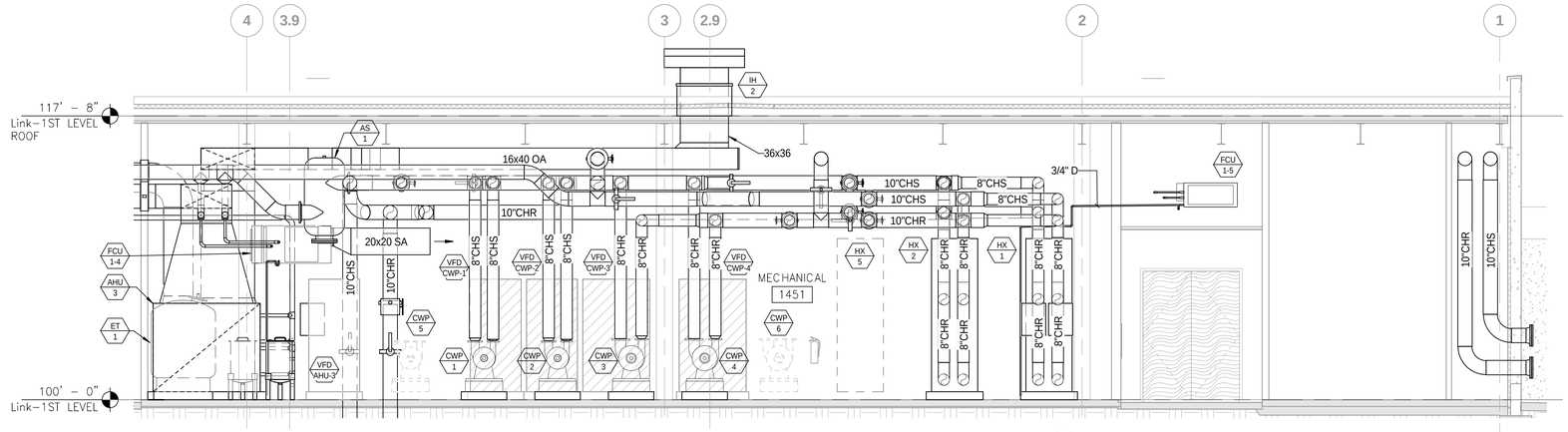
M311

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



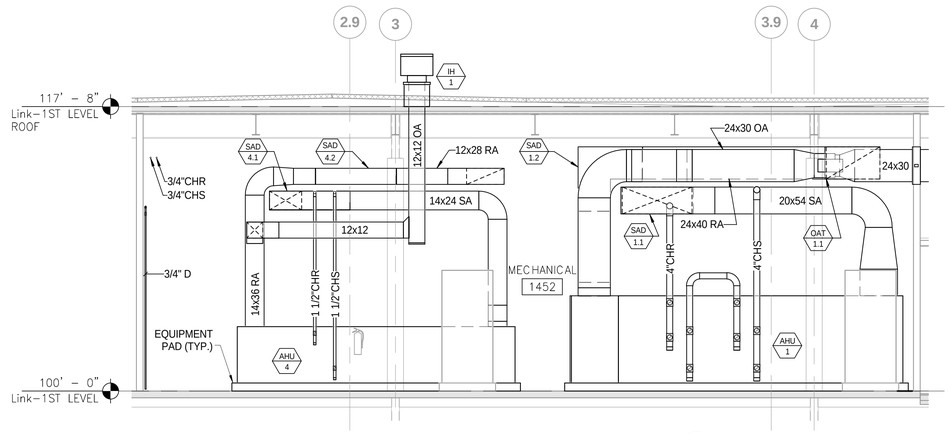
SECTION - EAST MER - 3RD LEVEL - PENTHOUSE 1

1/4" = 1'-0"



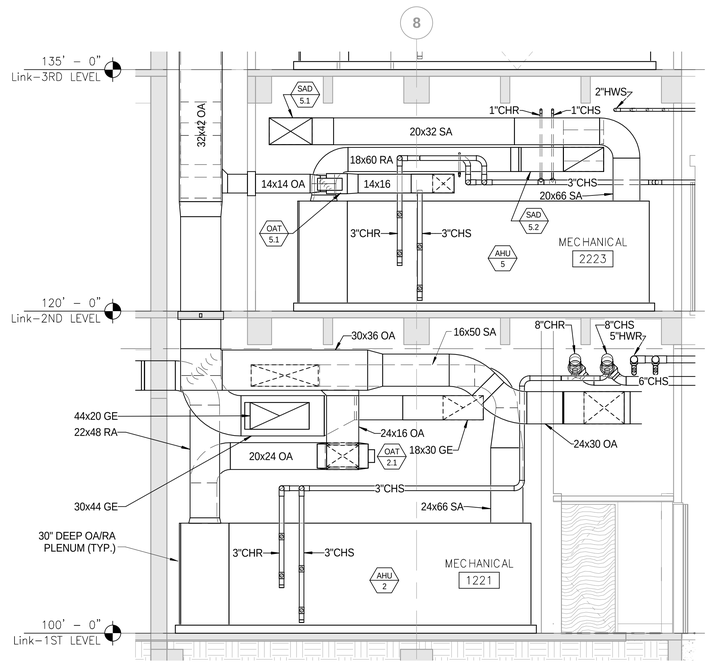
SECTION - WEST MER - 1ST LEVEL 2

1/4" = 1'-0"



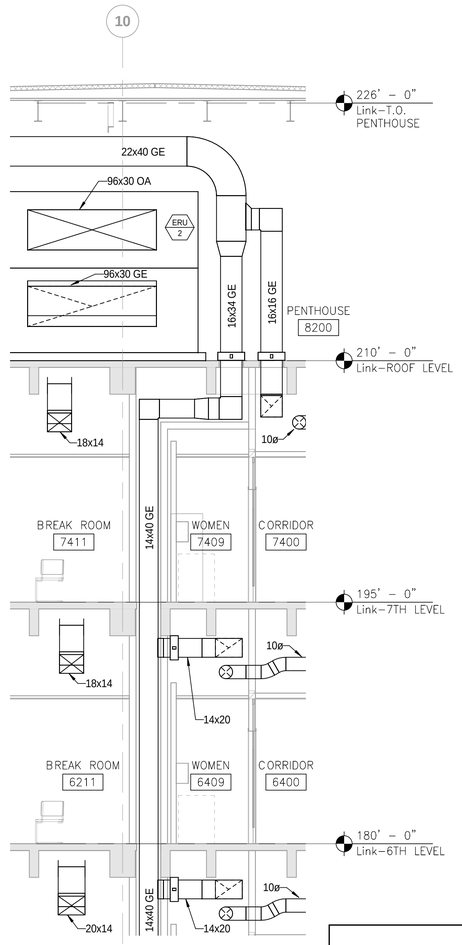
SECTION - WEST MER - 1ST LEVEL 3

1/4" = 1'-0"



SECTION - EAST MER - 1ST & 2ND LEVELS 4

1/4" = 1'-0"



SECTION - GE SHAFT 5

1/4" = 1'-0"

FLAG NOTES:

A PROVIDE FLEXIBLE EXPANSION LOOPS IN HWS & HWR PIPE RISERS. REFER TO SHEETS M302 & M303 FOR ASSOCIATED HHW PIPE RISER ANCHORING LOCATIONS.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

M312

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

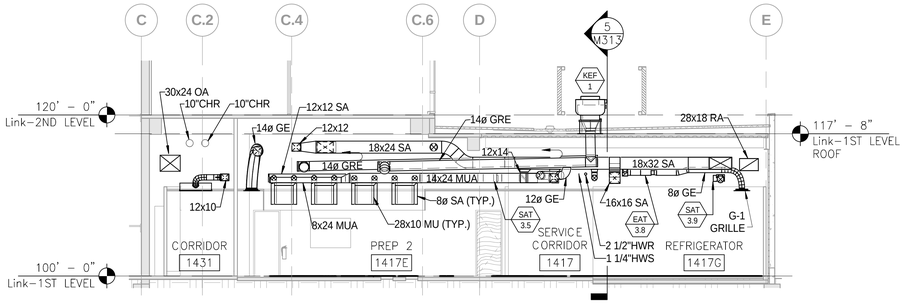
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SECTIONS

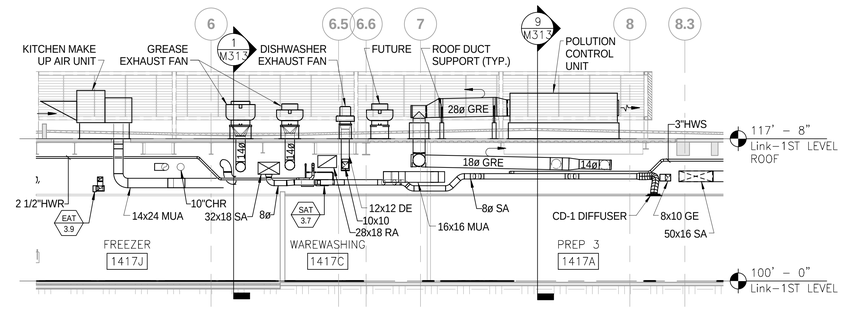
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 38	

KSC FORM 1–11 (3/76)(C/G 3/94)

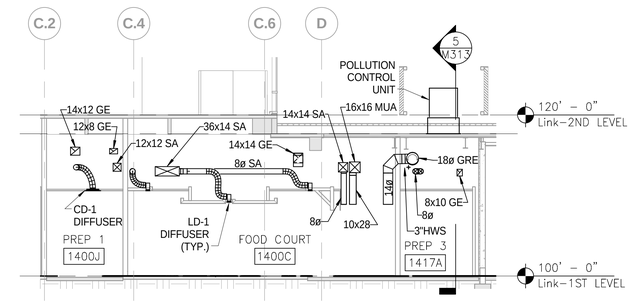
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



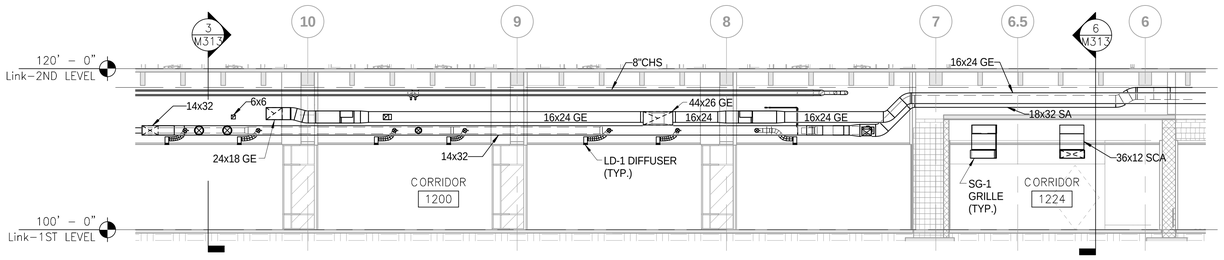
SECTION - KITCHEN - 1ST LEVEL 1
1/8" = 1'-0"



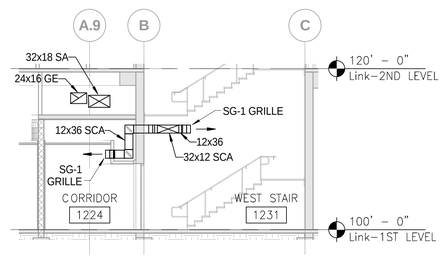
SECTION - KITCHEN - 1ST LEVEL 5
1/8" = 1'-0"



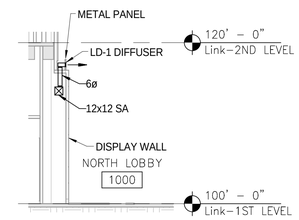
SECTION - FOOD COURT - 1ST LEVEL 9
1/8" = 1'-0"



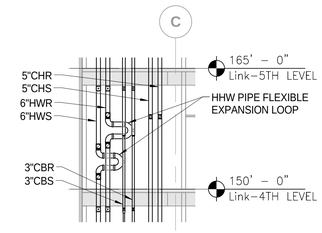
SECTION - CORRIDOR - 1ST LEVEL 2
1/8" = 1'-0"



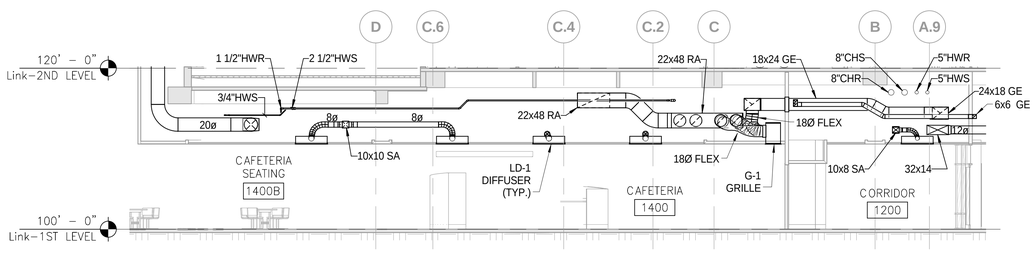
SECTION - CORRIDOR - 1ST LEVEL 6
1/8" = 1'-0"



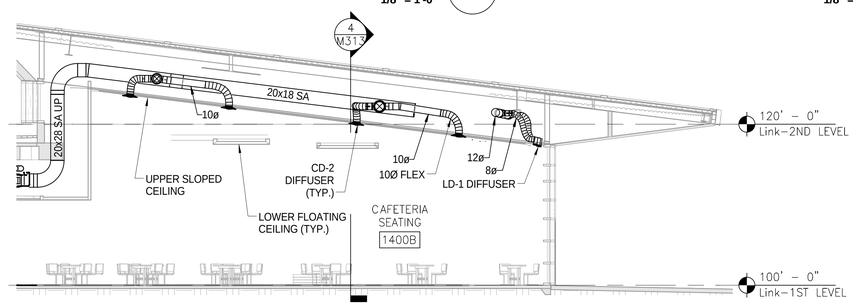
SECTION - LOBBY - 1ST LEVEL 10
1/8" = 1'-0"



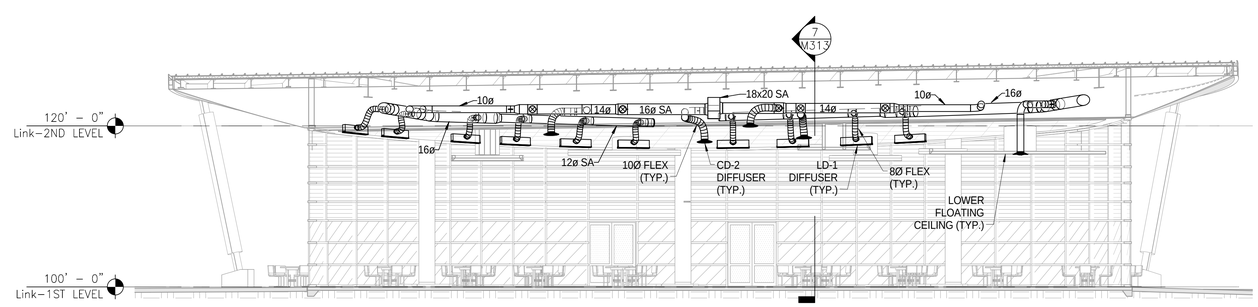
SECTION - PIPE SHAFT 11
1/8" = 1'-0"



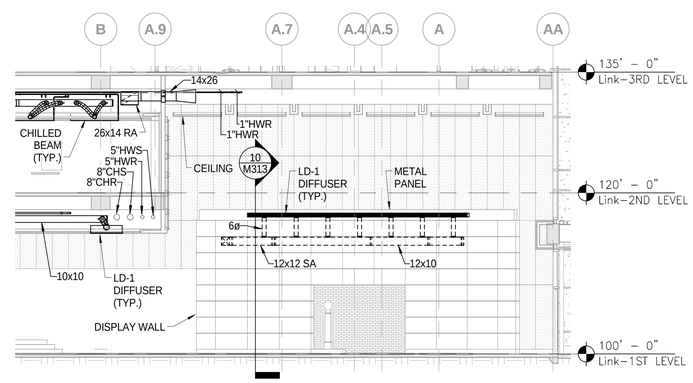
SECTION - CAFETERIA - 1ST LEVEL 3
1/8" = 1'-0"



SECTION - CAFETERIA - 1ST LEVEL 7
1/8" = 1'-0"



SECTION - CAFETERIA - 1ST LEVEL 4
1/8" = 1'-0"



SECTION - LOBBY - 1ST LEVEL 8
1/8" = 1'-0"

GRAPHIC SCALE
0 8 16 24
SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

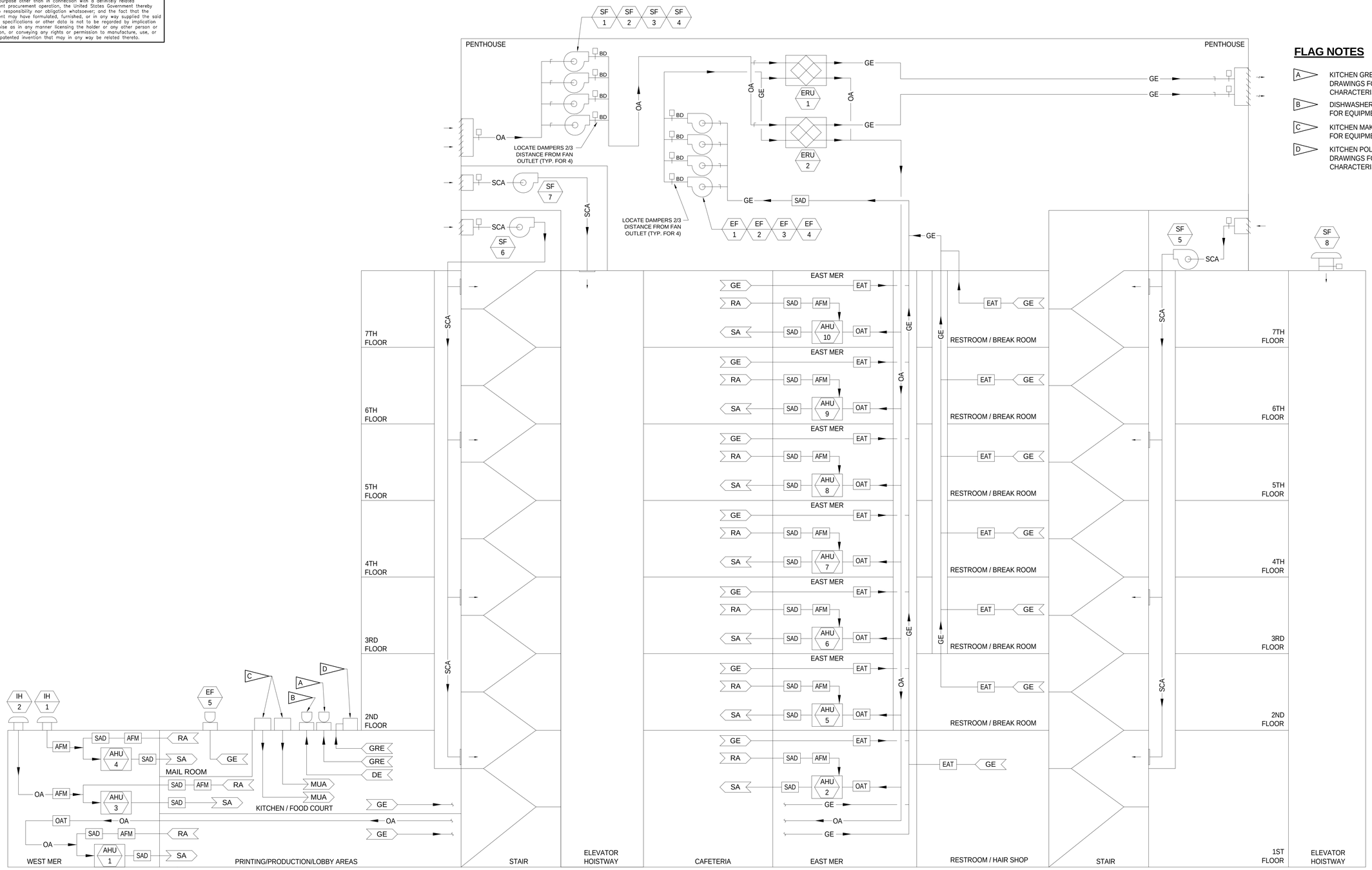
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL SECTIONS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 39	

M313

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

- A — KITCHEN GREASE EXHAUST FAN - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- B — DISHWASHER EXHAUST FAN - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- C — KITCHEN MAKE UP AIR UNIT - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.
- D — KITCHEN POLLUTION CONTROL UNIT - REFER TO FOOD SERVICE DRAWINGS FOR EQUIPMENT PERFORMANCE AND CHARACTERISTICS.

AIR FLOW DIAGRAM

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

AIR FLOW DIAGRAM

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

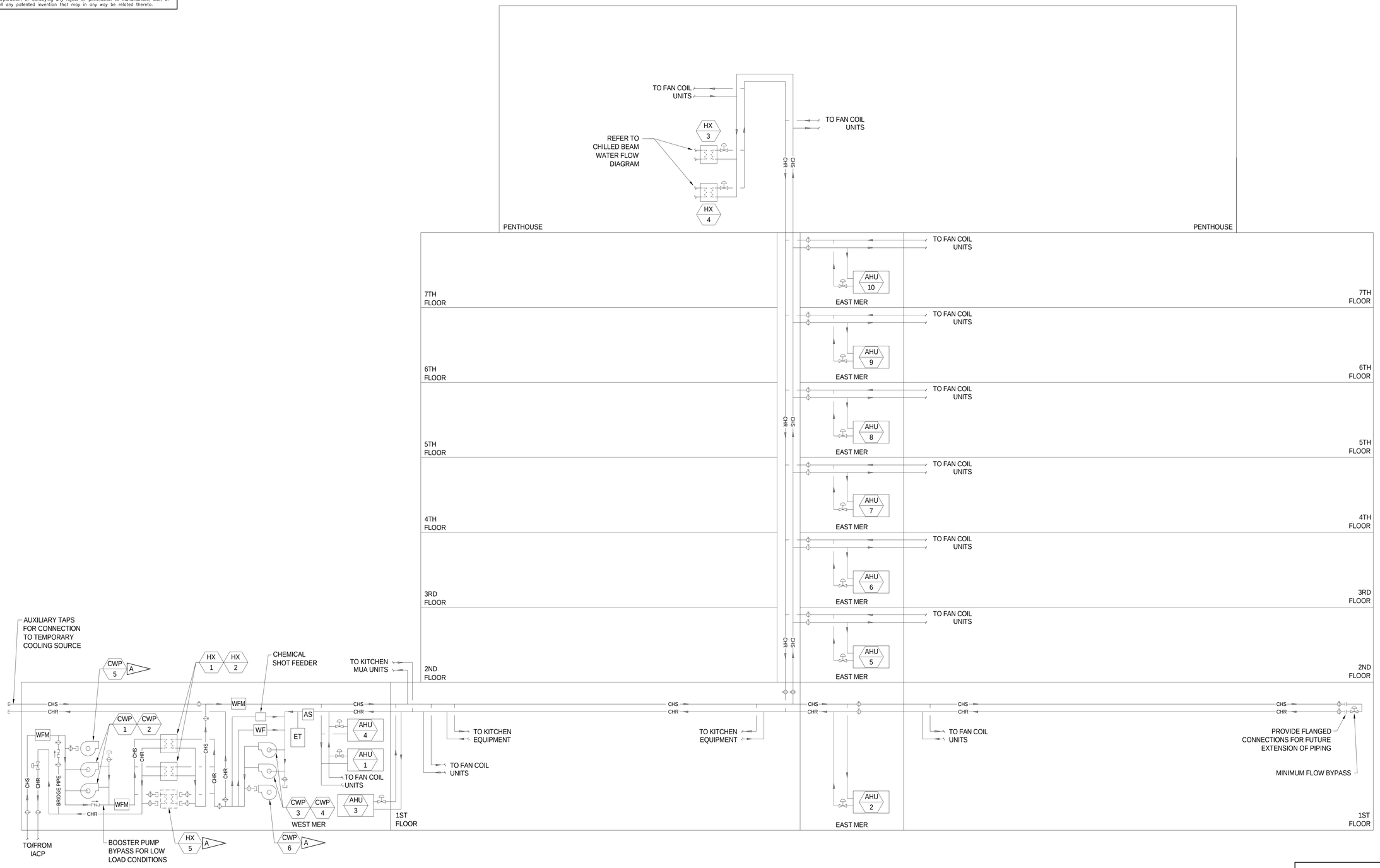
PCN. NO. 98745.1a SHEET 40

M401

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES

A — ASSOCIATED WITH BID OPTION M-1. REFER TO ARCHITECTURAL DRAWINGS.



CHILLED WATER FLOW DIAGRAM

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

CHILLED WATER FLOW DIAGRAM

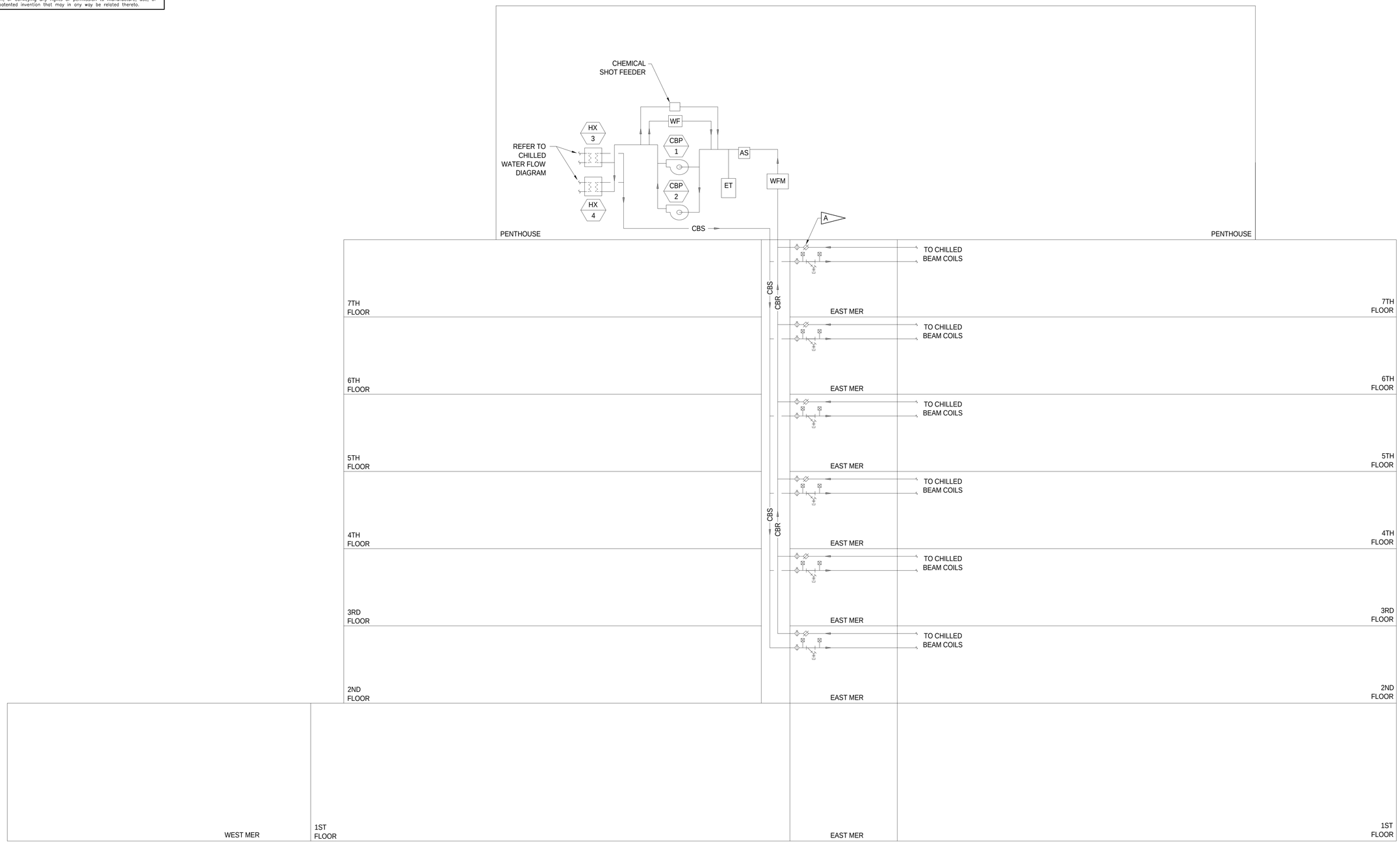
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 41	

M402

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES

A — SET BALANCING VALVE BASED ON TOTALIZED FLOW RATE FOR ALL DOWNSTREAM TERMINAL DEVICES.



CHILLED BEAM WATER FLOW DIAGRAM

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

CHILLED BEAM WATER FLOW DIAGRAM

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 42

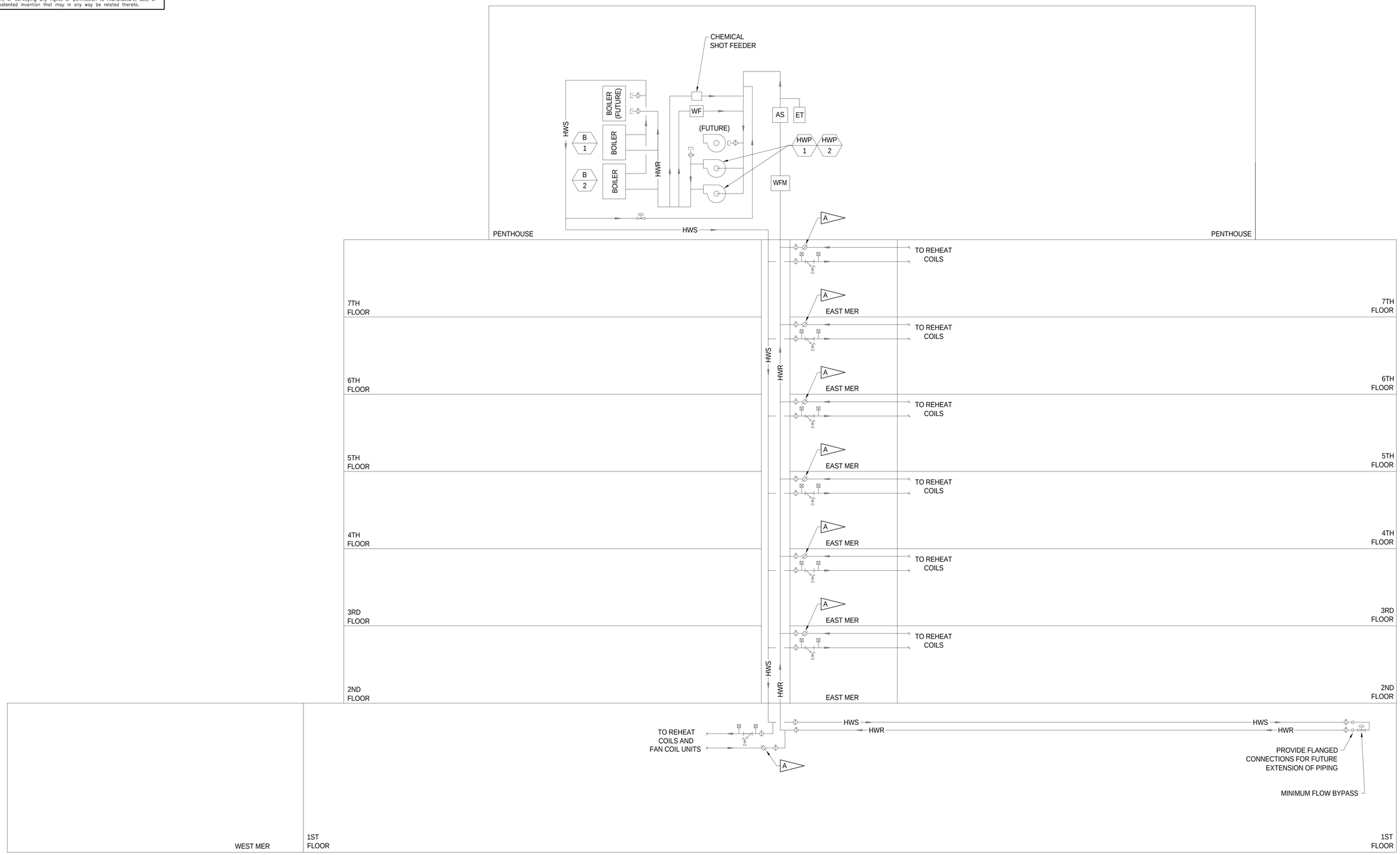
M403

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES

A — SET BALANCING VALVE BASED ON TOTALIZED FLOW RATE FOR ALL DOWNSTREAM TERMINAL DEVICES.



HEATING HOT WATER FLOW DIAGRAM

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

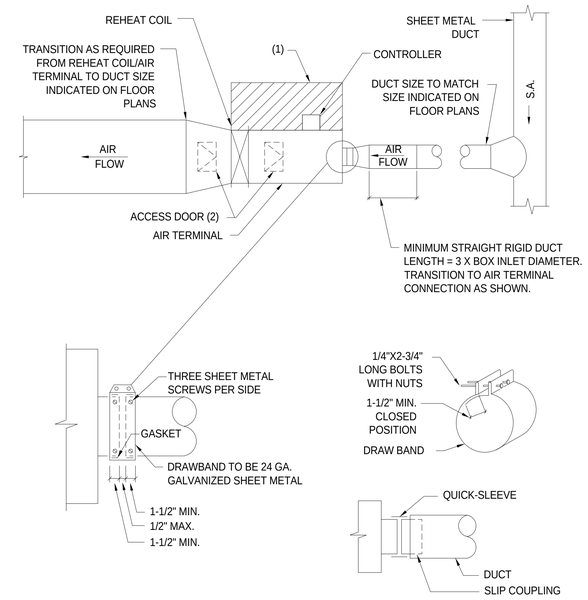
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

HEATING HOT WATER FLOW DIAGRAM

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 43	

M404

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



DETAIL NOTES:

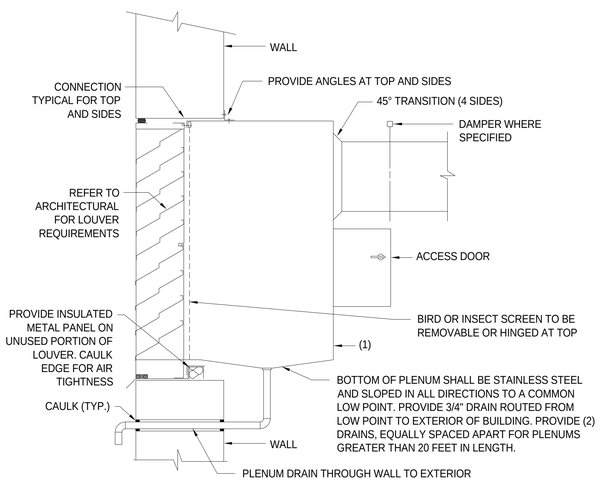
1. DUCTMATE QUICK-SLEEVE MAY BE USED. USE CENTER BEAD SLIP COUPLING FOR
2. DUCTWORK CONNECTION WITH MINIMUM 3 SHEET METAL SCREWS.

DETAIL KEYNOTES:

(1) PROVIDE A MINIMUM CLEARANCE OF 36" IN FRONT OF AIR TERMINAL DEVICE AND CONTROLLER AS SHOWN.
(2) PROVIDE ACCESS DOORS ON BOTH SIDES OF REHEAT COIL.

AIR TERMINAL DEVICE CONNECTION TO DUCT (1)

NO SCALE

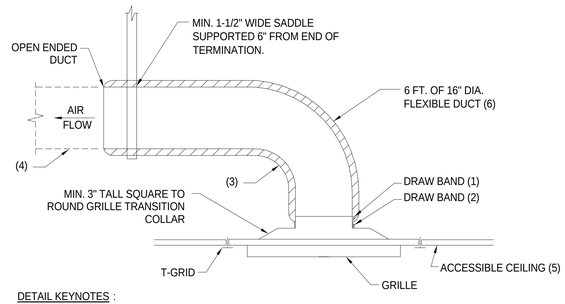


DETAIL KEYNOTES:

(1) USE 16 GA. GALV. WELDED SHEET METAL (UPPER PORTION) / STAINLESS STEEL (BOTTOM PORTION) FOR PLENUM. AS AN ALTERNATE, A FULLY STAINLESS STEEL PLENUM MAY BE. USED IN PLACE OF THE ABOVE. INSULATE PLENUMS UNLESS OTHERWISE NOTED.

PLENUM CONNECTION TO LOUVER (2)

NO SCALE

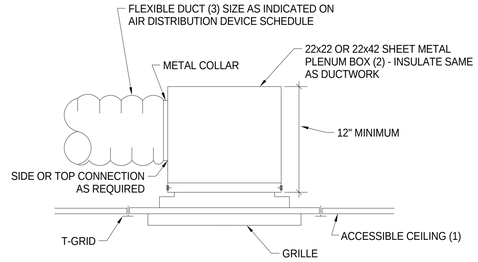


DETAIL KEYNOTES :

(1) PULL FLEXIBLE DUCT'S INNER LINER OVER DIFFUSER COLLAR AND SECURE WITH DRAW BAND.
(2) SECURE FLEXIBLE DUCT INSULATION AND OUTER JACKET WITH DRAW BAND.
(3) MAINTAIN MIN. 1.0 RADIUS ELBOW. ELBOW SUPPORT DEVICE SIMILAR TO FLEXFLOW ELBOW SUPPORT BY THERMAFLEX TO BE USED TO ASSURE RADIUS ELBOW.
(4) WHERE INDICATED ON PLANS, ATTACH OPEN ENDED FLEXIBLE DUCT TO ADDITIONAL LENGTHS OF 16x16 RA METAL DUCT TO ALLOW AIR FLOW TO CROSS FULL HEIGHT WALLS AND REACH ADJACENT OPEN CEILING PLENUM.
(5) ACCESSIBLE CEILING SHOWN. GYP. BOARD CEILING INSTALLATION SIMILAR.
(6) AS AN ALTERNATE, A SOUND DISSIPATER EQUAL TO PRICE TLRD MAY BE USED IN PLACE OF THE FLEXIBLE DUCT.

OPEN CEILING PLENUM RETURN GRILLE (3)

NO SCALE

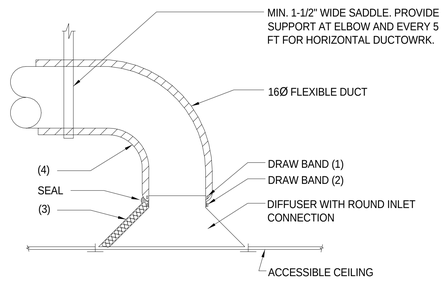


DETAIL KEYNOTES:

(1) ACCESSIBLE CEILING SHOWN. GYP. BOARD CEILING INSTALLATION SIMILAR.
(2) SUPPORT PLENUM BOX FROM STRUCTURE ABOVE.
(3) REFER TO SPECIFICATIONS FOR FLEXIBLE DUCT REQUIREMENTS.

GRILLE PLENUM BOX (4)

NO SCALE

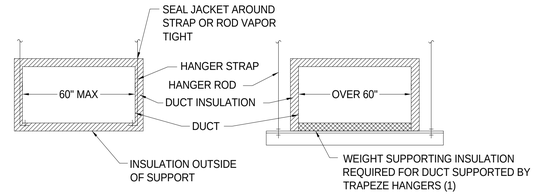


DETAIL KEYNOTES :

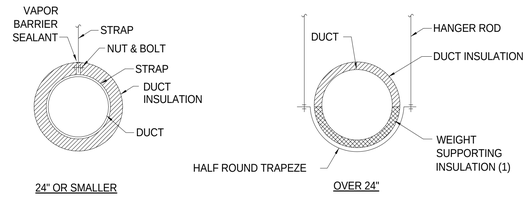
(1) PULL FLEXIBLE DUCT'S INNER LINER OVER DIFFUSER COLLAR AND SECURE WITH DRAW BAND.
(2) SECURE FLEXIBLE DUCT INSULATION AND OUTER JACKET WITH DRAW BAND.
(3) REFER TO SPECIFICATIONS FOR DIFFUSER INSULATION REQUIREMENT.
(4) MAINTAIN MIN. 1.5 RADIUS ELBOW. ELBOW SUPPORT DEVICE SIMILAR TO FLEXFLOW ELBOW SUPPORT BY THERMAFLEX TO BE USED TO ASSURE RADIUS ELBOW.

FLEXIBLE DUCT CONNECTION TO DIFFUSER (5)

NO SCALE



A RECTANGULAR OR OVAL DUCT



B ROUND DUCT

DETAIL NOTES:

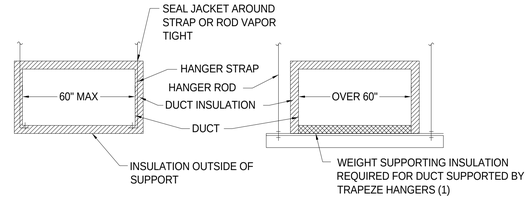
1. INSULATION AND JACKET MUST RUN CONTINUOUSLY BETWEEN DUCT AND DUCT SUPPORTS, EXCEPT ROUND DUCTS 24" OR SMALLER.

DETAIL KEYNOTES:

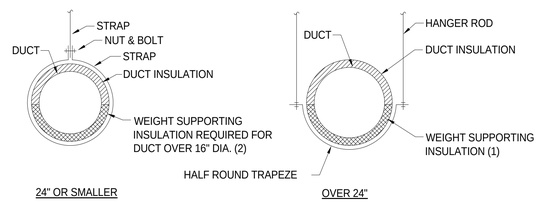
(1) WEIGHT SUPPORTING INSULATION TO BE EQUAL TO HAMFAB INSERTS OR FOAMGLAS INSULATION (TYPE-G). INSERT FOR ROUND DUCTS SHALL BE MULTIPLE INSERTS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATION. WEIGHT SUPPORTING INSULATION INSERTS SHALL BE MINIMUM 6" LONG WITH SAME THICKNESS AS SPECIFIED INSULATION.

INSULATED DUCT SUPPORTS (6)

(FLEXIBLE GLASS FIBER INSULATION-TYPE F) NO SCALE



A RECTANGULAR OR OVAL DUCT



B ROUND DUCT

DETAIL NOTES:

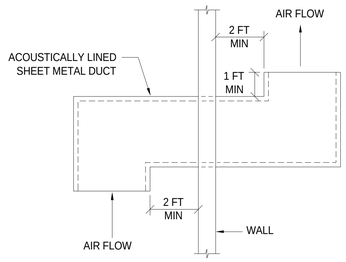
1. INSULATION AND JACKET MUST RUN CONTINUOUSLY BETWEEN DUCT AND DUCT SUPPORTS.

DETAIL KEYNOTES:

(1) WEIGHT SUPPORTING INSULATION SHALL BE EQUAL TO HAMFAB INSERTS OR FOAMGLAS INSULATION (TYPE-G). INSERT FOR ROUND DUCTS SHALL BE MULTIPLE INSERTS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATION. WEIGHT SUPPORTING INSULATION INSERTS SHALL BE MINIMUM 6" LONG WITH SAME THICKNESS AS SPECIFIED INSULATION.

INSULATED DUCT SUPPORTS (7)

(RIGID GLASS FIBER INSULATION-TYPE R) NO SCALE



DETAIL NOTES:

1. REFER TO PLAN FOR DUCT DIMENSIONS.
2. ELBOWS MAY BE INSTALLED VERTICALLY OR HORIZONALLY.
3. Z-BEND SHOWN, U-BEND SIMILAR.

TRANSFER AIR DUCT (8)

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

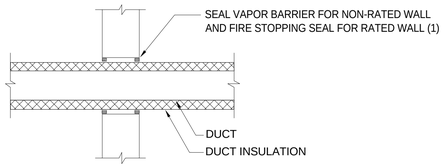
MECHANICAL DETAILS

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 44

M501

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



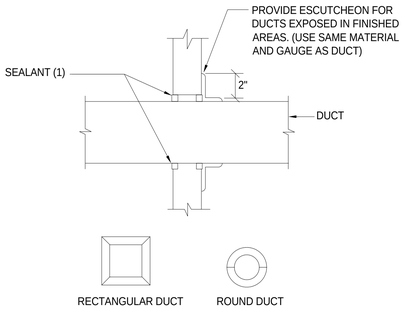
DETAIL KEYNOTES:

(1) THIS DETAIL APPLIES FOR INSULATED DUCTS THRU WALL WHERE FIRE DAMPER IS NOT REQUIRED. WHERE WALL IS FIRE RATED, COMBINATION OF SEALANT, BACKING MATERIAL AND INSULATION SHALL MEET THIS RATING. REFER TO SPECIFICATIONS FOR FIRE STOPPING SYSTEM.

DUCT PENETRATION THRU INTERIOR WALL (1)

(INSULATED DUCTS)

NO SCALE



TYPICAL ESCUTCHEON

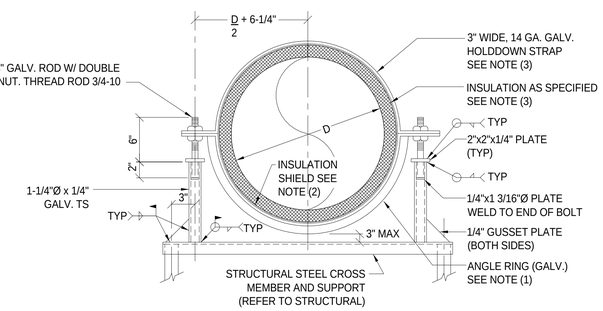
DETAIL KEYNOTES:

(1) THIS DETAIL APPLIES FOR NON-INSULATED DUCTS THRU WALL WHERE FIRE DAMPER IS NOT REQUIRED. WHERE WALL IS FIRE RATED, COMBINATION OF SEALANT AND BACKING MATERIAL SHALL MEET THIS RATING. REFER TO SPECIFICATIONS FOR FIRE STOPPING SYSTEM.

DUCT PENETRATION THRU INTERIOR WALL (2)

(NON-INSULATED DUCTS)

NO SCALE



DETAIL NOTES:

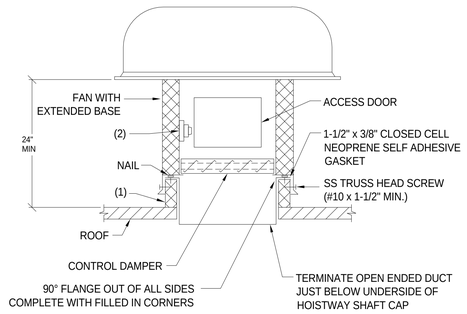
1. PAINT ALL FIELD WELDED GALVANIZED COMPONENTS WITH ZINC PAINT AFTER WELDING.

DETAIL KEYNOTES:

(1) 1-1/2" x 1-1/2" x 1/4" FOR DUCTS SMALLER THAN 48" DIA., 2" x 2" x 1/4" FOR DUCTS 48"-60" DIA. AND 2-1/2" x 2-1/2" x 1/4" FOR DUCTS OVER 60" DIA.
(2) INSULATION SHIELD FOR INSULATED DUCT TO BE GALV. STEEL WITH FOLLOWING WIDTH & THICKNESS: 12" WIDE 16 GA. FOR DUCTS SMALLER THAN 36" DIA., 18" WIDE 16 GA. FOR DUCTS 36"-50" DIA. AND 24" WIDE 16 GA. FOR DUCTS OVER 50" DIA. TOP HALF TO OVERLAP MINIMUM 3" OF BOTTOM HALF. SEAL OVERLAP WITH VAPOR BARRIER MASTIC AND MINIMUM TWO 3" WIDE BANDS. REFER TO SPECIFICATION SECTION 20 0700 FOR WEIGHT-SUPPORTING INSULATION AT SUPPORT POINTS.
(3) FOR UNINSULATED ROUND METAL DUCTWORK, USE 3" WIDE, 14 GA. HOLD DOWN STRAPS OF SAME MATERIAL AS DUCTWORK. FOR NON-METAL ROUND DUCTWORK, USE EITHER NON-METAL HOLD DOWN STRAP OF SIMILAR MATERIAL OR FITTED PIECE OF PROTECTIVE LINING USED ON METAL STRAP BETWEEN STRAP AND DUCT.

ROUND DUCT SUPPORT ON ROOF (3)

NO SCALE



DETAIL NOTES:

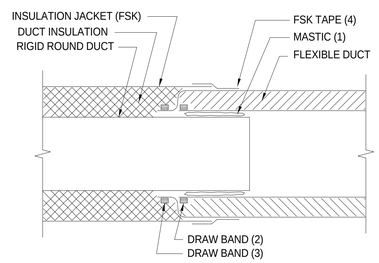
1. DETAIL APPLIES TO HOISTWAY PRESSURIZATION FAN SF-8.

DETAIL KEYNOTES:

(1) PROVIDE FACTORY FABRICATED CURB - REFER TO SPECIFICATIONS.
(2) PLENUM SMOKE DETECTOR EQUAL TO AIR PRODUCTS AND CONTROLS, MODEL HS-100 SERIES. MOUNT DETECTOR INSIDE FAN BASE AHEAD OF CONTROL DAMPER.

PROPELLER HOODED ROOF SUPPLY FAN (5)

NO SCALE

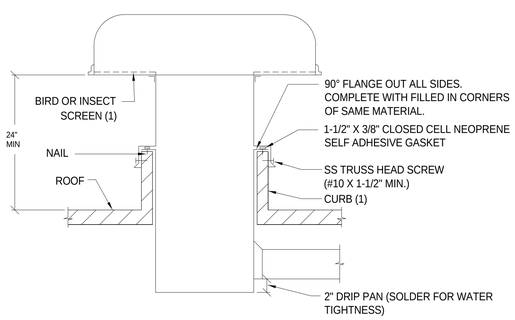


DETAIL KEYNOTES:

(1) PULL FLEXIBLE DUCT INNER LINING OVER RIGID DUCT WITH MINIMUM 4" OVERLAP. SEAL FLEXIBLE DUCT INNER LININ TO RIGID DUCT WITH MASTIC ON THE INSIDE OF THE LINER.
(2) SECURE LINER WITH WITH STAINLESS STEEL DRAWBAND.
(3) SECURE FLEXIBLE DUCT INSULATION AND OUTER JACKET WITH STAINLESS STEEL DRAW BAND.
(4) PULL RIGID DUCT INSULATION AND BUTT JOINT TO TERMINATION OF FLEXIBLE DUCT. APPLY 3" WIDE TAPE SIMILAR TO FSK TAPE TO CREATE VAPOR BARRIER SEAM. TAPE SHALL BE COMPATIBLE WITH FLEXIBLE DUCT INSULATION JACKET AND RIGID DUCT INSULATION JACKET. APPLY MASTIC OVER TAPE FOR DURABILITY.

FLEXIBLE DUCT TO INSULATED DUCT (6)

NO SCALE

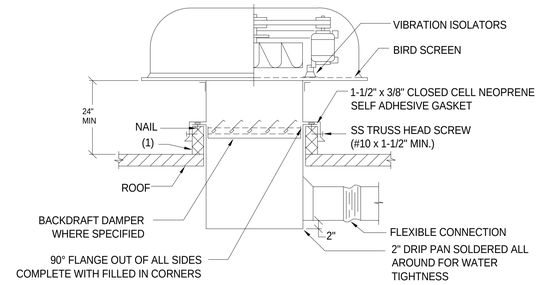


DETAIL KEYNOTES:

(1) PROVIDE FACTORY FABRICATED CURB - REFER TO SPECIFICATIONS.
(2) PROVIDE BIRD SCREEN WHERE FILTER IS SPECIFIED. PROVIDE INSECT SCREEN WHERE NO FILTER IS SPECIFIED.

OUTSIDE AIR INTAKE HOOD (7)

NO SCALE

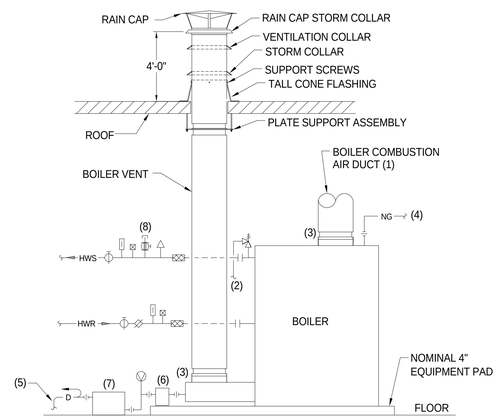


DETAIL KEYNOTES:

(1) PROVIDE FACTORY FABRICATED CURB - REFER TO SPECIFICATIONS.

POWER ROOF EXHAUSTER (8)

NO SCALE



DETAIL NOTES:

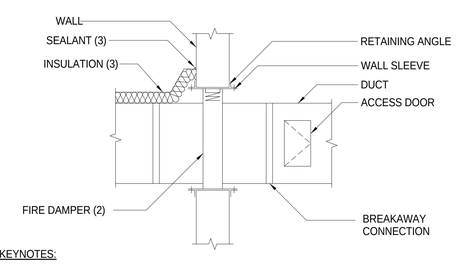
1. REFER TO BOILER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR BOILER CONNECTIONS.
2. BOILER VENT ROOF PENETRATION, SUPPORTS, AND ACCESSORIES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. REFER TO SPECIFICATIONS.

DETAIL KEYNOTES:

(1) WHERE OUTSIDE AIR LOUVER IS NOT PROVIDED WITH AN INTEGRAL SCREEN, PROVIDE WIRE MESH SCREEN WITH MINIMUM 1"X1" OPENINGS IN EACH COMBUSTION AIR DUCT AT THE CONNECTION TO THE OUTSIDE AIR PLENUM.
(2) ROUTE RELIEF VALVE DISCHARGE TO 18" ABOVE NEAREST FLOOR DRAIN.
(3) PROVIDE CONCENTRIC REDUCERS AS REQUIRED AT BOILER CONNECTIONS. BOILER VENTS AND COMBUSTION AIR SUPPLY DUCTS SHALL BE FULL SIZE OVER THE ENTIRE LENGTH AS SHOWN ON DRAWINGS.
(4) REFER TO PLUMBING FOR NATURAL GAS PIPING.
(5) PVC CONDENSATE DRAIN PIPING. DRAIN PIPE MINIMUM SIZE SHALL BE EQUAL TO THE DRAIN CONNECTION ON THE BOILER. ROUTE DRAIN TO THE NEAREST FLOOR DRAIN AS SHOWN ON DRAWINGS.
(6) PROVIDE BOILER MANUFACTURER'S CONDENSATE TRAP.
(7) PROVIDE BOILER MANUFACTURER'S NEUTRALIZER KIT.
(8) 1/2" MANUAL BALL VALVE AND CAP.

BOILER INSTALLATION (9)

NO SCALE



DETAIL KEYNOTES:

(1) ABOVE DETAIL SHOWS BASIC REQUIREMENT. INSTALL FIRE DAMPERS IN STRICT ACCORDANCE WITH MANUFACTURER'S UL INSTALLATION INSTRUCTION.
(2) VERTICAL CURTAIN TYPE DAMPER SHOWN. HORIZONTAL DAMPER, MULTIPLE BLADE DAMPER, AND COMBINATION FIRE/SMOKE DAMPER INSTALLATION SIMILAR.
(3) FOR DUCTWORK REQUIRING INSULATION, INSTALL INSULATION AND JACKET TO WALL (ALL SIDES) AND APPLY VAPOR BARRIER TAPE TO PREVENT CONDENSATION. TAPE SHALL BE COMPATIBLE WITH INSULATION JACKET AND WALL SURFACE. APPLY INSULATION OVER FIRE DAMPER AFTER INSPECTION HAS BEEN COMPLETED.

FIRE & FIRE/SMOKE DAMPER (10)

NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

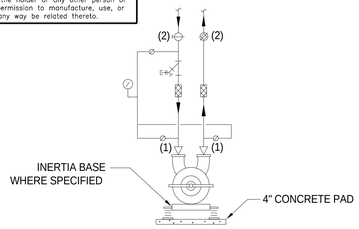
MECHANICAL DETAILS

M502

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 45

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



DETAIL NOTES:

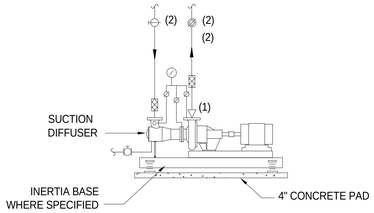
1. INERTIA BASE IF SPECIFIED, SHALL EXTEND UNDER SUCTION DIFFUSER.
2. REFER TO SPECIFICATIONS FOR GROUTING REQUIREMENT.

DETAIL KEYNOTES:

(1) REFER TO SPECIFICATIONS FOR REDUCER REQUIREMENT.
(2) MOUNT VALVES AS LOW AS PRACTICAL.

VERTICAL SPLIT CASE PUMP PIPING (1)

NO SCALE



DETAIL NOTES:

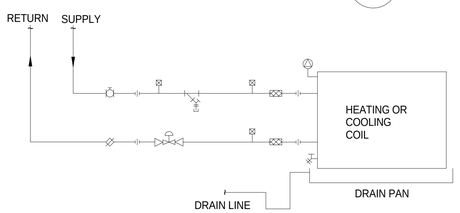
1. INERTIA BASE IF SPECIFIED, SHALL EXTEND UNDER SUCTION DIFFUSER.
2. REFER TO SPECIFICATIONS FOR GROUTING REQUIREMENT.
3. REFER TO SPECIFICATIONS FOR BALANCING VALVE SIZING AND STRAIGHT INLET AND OUTLET PIPING REQUIREMENTS.

DETAIL KEYNOTES:

(1) REFER TO SPECIFICATION FOR REDUCER REQUIREMENT.
(2) MOUNT VALVES AS LOW AS PRACTICAL.

END SUCTION PUMP PIPING (2)

NO SCALE

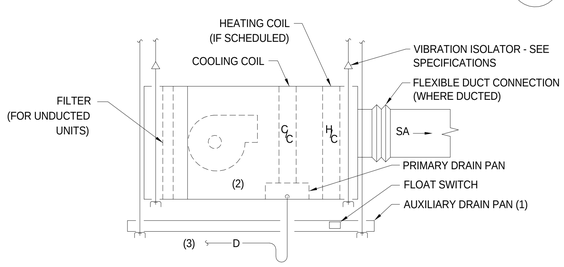


DETAIL NOTES:

1. REFER TO SPECIFICATIONS FOR UNION, FITTING, AND VALVE REQUIREMENTS.
2. PROVIDE MEANS OF BYPASSING COIL, CONTROL AND BALANCING VALVES DURING FLUSHING.

FAN COIL UNIT COOLING & HEATING COIL PIPING (3)

NO SCALE

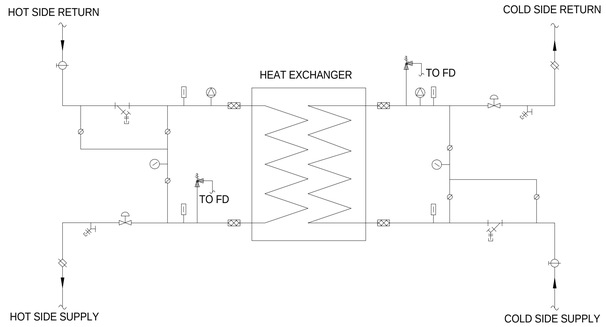


DETAIL KEYNOTES:

(1) REFER TO SPECIFICATIONS FOR AUXILIARY DRAIN PAN REQUIREMENTS.
(2) PROVIDE SERVICE CLEARANCES ON BOTH SIDES OF UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE A MINIMUM CLEARANCE OF 36" IN FRONT OF THE CONTROL BOX.
(3) ROUTE CONDENSATE DRAIN LINE AS SHOWN ON PLANS. PIPE SHALL BE CONCEALED. WHERE PIPING CAN NOT BE SLOPED PER SPECIFICATIONS, PROVIDE CONDENSATE PUMP.

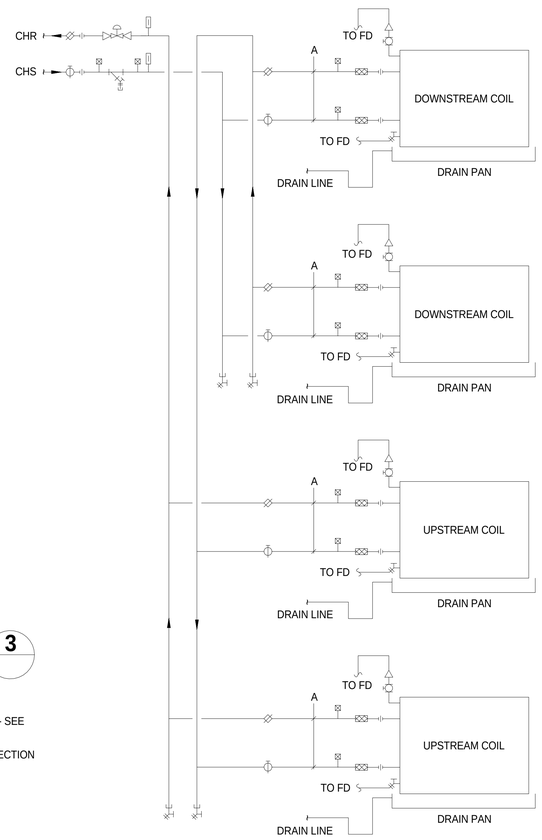
FAN COIL INSTALLATION (4)

NO SCALE



HEAT EXCHANGER PIPING (5)

NO SCALE



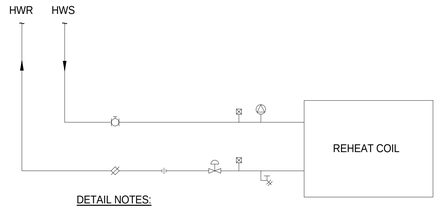
COIL BRANCH PIPE SIZE	
UNIT	A (INCHES)
AHU-1	3

DETAIL NOTES:

1. COIL PIPING IS TYPICAL FOR THREE OR MORE COILS.
2. REFER TO SPECIFICATIONS FOR UNION, FITTING, AND VALVE REQUIREMENTS.
3. PROVIDE MEANS OF BYPASSING COIL, CONTROL AND BALANCING VALVES DURING FLUSHING.

AIR HANDLING UNIT SERIES COOLING COIL PIPING (6)

NO SCALE

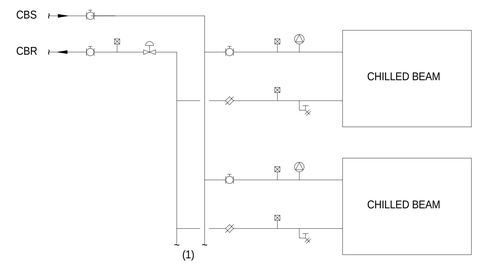


DETAIL NOTES:

1. PROVIDE MEANS OF BYPASSING COIL, CONTROL AND BALANCING VALVES DURING FLUSHING.

TERMINAL REHEAT COIL PIPING (7)

NO SCALE



DETAIL NOTES:

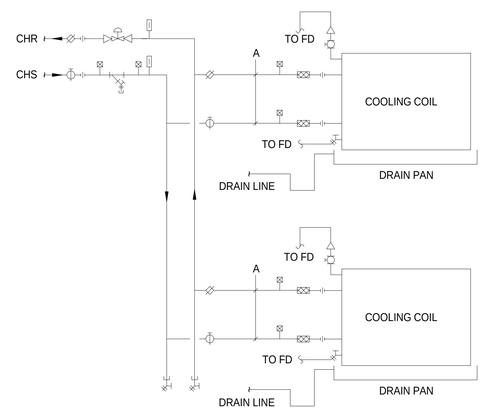
1. ALL VALVES SHALL HAVE SOLDER JOINTS. PROVIDE 12" MIN. STRAIGHT PIPE WITH NO APPURTENANCES BEFORE AND AFTER VALVES.
2. PROVIDE MEANS OF BYPASSING COIL, CONTROL AND BALANCING VALVES DURING FLUSHING.

DETAIL KEYNOTES:

(1) TO/FROM ADDITIONAL CHILLED BEAMS. REFER TO PLANS FOR ZONE GROUPINGS.

CHILLED BEAM PIPING (8)

NO SCALE



COIL BRANCH PIPE SIZE	
UNIT	A (INCHES)
AHU-2	3
AHU-3	3
AHU-4	1-1/2
AHU-5	2-1/2
AHU-6	2-1/2
AHU-7	2-1/2
AHU-8	2-1/2
AHU-9	2-1/2
AHU-10	3

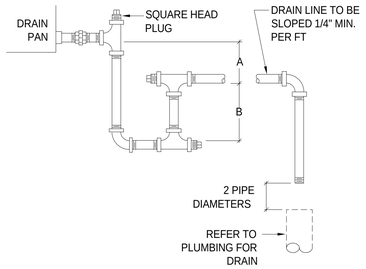
DETAIL NOTES:

1. COIL PIPING IS TYPICAL FOR THREE OR MORE COILS.
2. REFER TO SPECIFICATIONS FOR UNION, FITTING, AND VALVE REQUIREMENTS.
3. PROVIDE MEANS OF BYPASSING COIL, CONTROL AND BALANCING VALVES DURING FLUSHING.

AIR HANDLING UNIT COOLING COIL PIPING (9)

NO SCALE

UNIT	A (IN)	B (IN)
AHU-1	10	5
AHU-2	8	4
AHU-3	8	4
AHU-4	7	3-1/2
AHU-5	9	4-1/2
AHU-6	9	4-1/2
AHU-7	9	4-1/2
AHU-8	9	4-1/2
AHU-9	9	4-1/2
AHU-10	9	4-1/2
FCU's	3-1/2	2
KITCHEN MAKE UP AIR UNIT	7	3-1/2

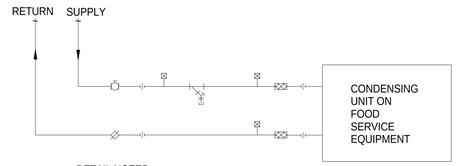


DETAIL NOTES:

1. FILL TRAP MANUALLY ON INITIAL START-UP.
2. TRAP EACH COMPONENT DRAIN CONNECTION.
3. PIPE SIZE SHALL BE 3/4" OR DRAIN PAN CONNECTION, WHICHEVER IS LARGER.
4. RAISE COIL SECTION OR ENTIRE UNIT WITH STRUCTURAL MEMBERS TO PROVIDE REQUIRED TRAP HEIGHT.

COOLING COIL CONDENSATE PIPING (10)

NO SCALE

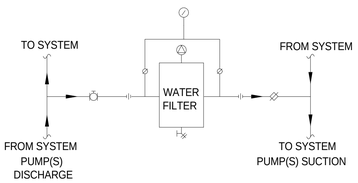


DETAIL NOTES:

1. REFER TO SPECIFICATIONS FOR UNION, FITTING, AND VALVE REQUIREMENTS.
2. PROVIDE MEANS OF BYPASSING COIL AND BALANCING VALVES DURING FLUSHING.

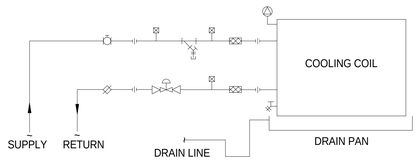
WATER-COOLED CONDENSING UNIT PIPING (11)

NO SCALE



WATER FILTER PIPING (12)

NO SCALE



DETAIL NOTES:

1. REFER TO SPECIFICATIONS FOR UNION, FITTING, AND VALVE REQUIREMENTS.
2. PROVIDE MEANS OF BYPASSING COIL, CONTROL AND BALANCING VALVES DURING FLUSHING.

KITCHEN MAKE UP AIR UNIT COOLING COIL PIPING (13)

NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

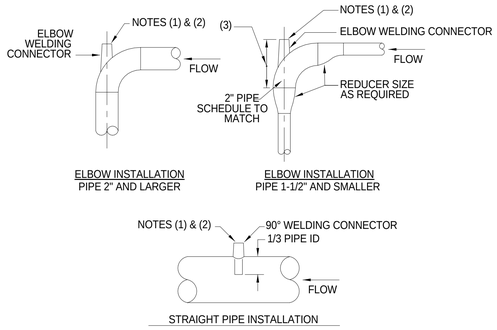
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MECHANICAL DETAILS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 46	

M503

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

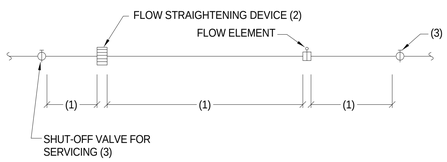


DETAIL KEYNOTES:

(1) USE THREADED CONNECTOR FOR THREADED WELLS. USE SOCKET OR BUTT WELD CONNECTOR AND FLANGE FOR FLANGED WELLS.
(2) FOR DIRECT INSERTION TEMPERATURE INSTRUMENTS. PROVIDE 1/2" WELD-O-LET.
(3) UN-REDUCED RUN MUST EXCEED THERMOWELL LENGTH PLUS 2 INCHES

TEMPERATURE INSTRUMENTS (WELDED PIPE) 1

NO SCALE

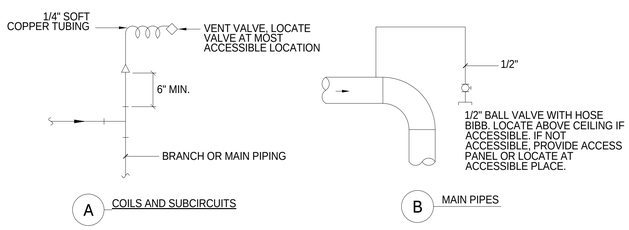


DETAIL KEYNOTES:

(1) INSTALL FLOW ELEMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS WITH RECOMMENDED UPSTREAM AND DOWNSTREAM STRAIGHT PIPE.
(2) INSTALL FLOW STRAIGHTENING DEVICE IF FURNISHED WITH FLOW ELEMENT.
(3) SHUT-OFF VALVES ARE NOT REQUIRED IF FLOW ELEMENT HAS HOT TAP FEATURE.

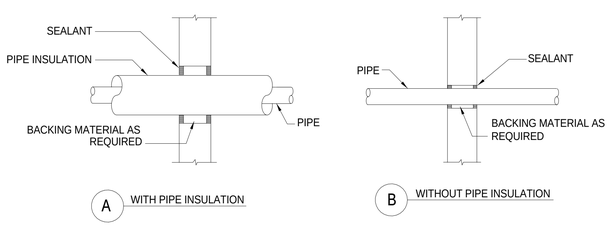
FLOW ELEMENT (MEASURING STATION) 2

NO SCALE



AIR VENT PIPING 3

NO SCALE

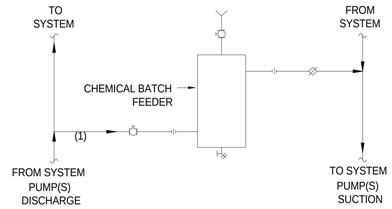


DETAIL NOTES:

1. WHERE WALL IS FIRE RATED, APPLY FIRE STOPPING SYSTEM (COMBINATION OF SEALANT, BACKING MATERIAL AND INSULATION) MEETING THIS RATING. REFER TO SPECIFICATIONS FOR FIRE STOPPING SYSTEM.

PIPE THRU INTERIOR WALL 4

NO SCALE

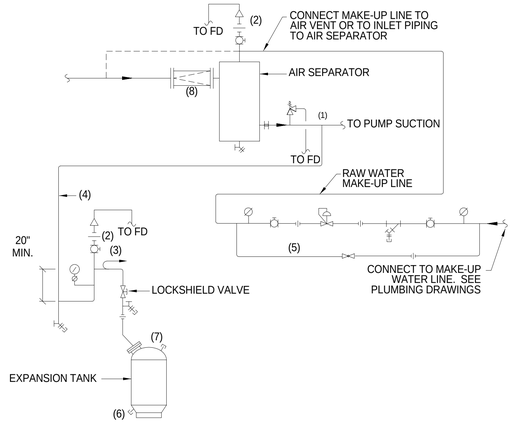


DETAIL KEYNOTES:

(1) PIPE TO BE 3/4" UNLESS OTHERWISE SHOWN ON PLANS.

CHEMICAL BATCH FEEDER PIPING 5

NO SCALE

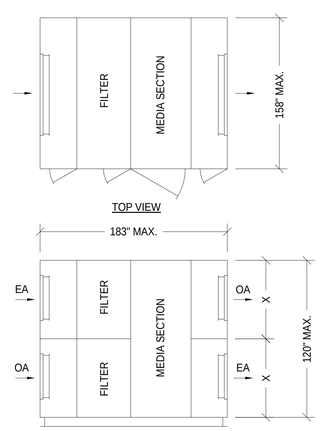


DETAIL KEYNOTES:

(1) CONNECT TO SIDE OF MAIN. AVOID TOP OR BOTTOM CONNECTION.
(2) AUTOMATIC AIR VENT. USE HIGH CAPACITY, FLOAT ACTUATED TYPE AT AIR SEPERATOR WITH MINIMUM AIR ELIMINATION RATE OF 10 CFM AT 100 PSIG, SIMILAR TO B&G MODEL 107A.
(3) PITCH NOT LESS THAN 1" IN 5 FEET.
(4) UNLESS OTHERWISE INDICATED, MINIMUM PIPE SIZE FROM TANK TO SYSTEM TO BE 1-1/4" FOR SYSTEM HAVING HEAT GENERATOR OUTPUT CAPACITY LESS THAN 10 MBH, 1-1/2" FOR CAPACITY BETWEEN 10 AND 16 MBH, AND 2" FOR CAPACITY OVER 16 MBH.
(5) UNLESS OTHERWISE INDICATED, BYPASS LINE SHALL BE THE SAME SIZE AS THE MAKE-UP WATER LINE.
(6) DRAIN PLUG.
(7) AIR CHARGING VALVE PLUG.
(8) FLANGED PIPE SECTION WITH START-UP CONE STRAINER FOR USE DURING FLUSHING.

EXPANSION TANK AND MAKEUP WATER PIPING 6

NO SCALE

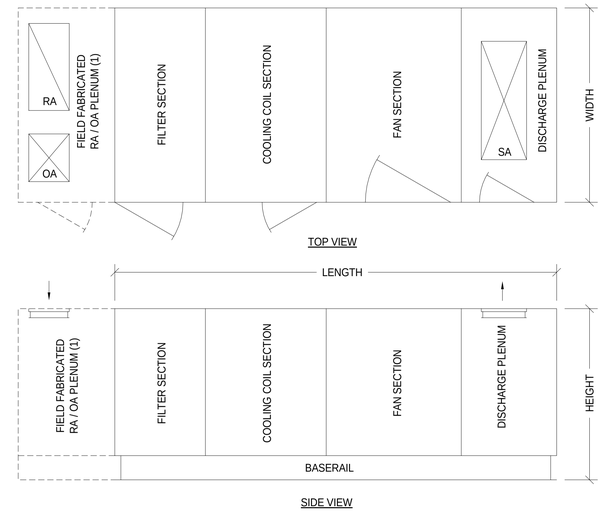


DETAIL NOTES:

1. REFER TO PLANS TO DETERMINE CORRECT ORIENTATION OF ACCESS DOORS .

ERU COMPONENT DETAIL 7

NO SCALE



AHU MAXIMUM OVERALL DIMENSIONS (INCHES)				
AHU	LENGTH	WIDTH	HEIGHT	NOTES
2	225	120	68	(1)
3	168	88	72	(1)
4	207	68	48	(1) (2)
5	225	126	76	(1)
6	225	126	76	(1)
7	225	126	76	(1)
8	225	126	76	(1)
9	225	126	76	(1)
10	225	126	76	(1)

DETAIL NOTES:

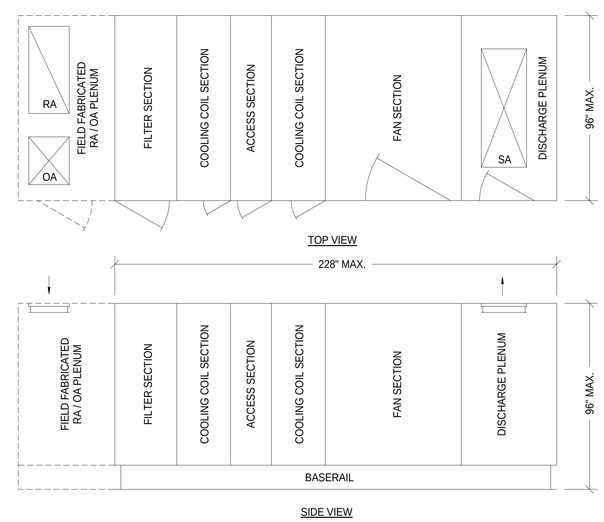
1. REFER TO PLANS TO DETERMINE CORRECT ORIENTATION OF ACCESS DOORS AND PIPING CONNECTIONS.
2. DUE TO SPACE LIMITATIONS WITHIN EQUIPMENT ROOMS, PROVIDE AHU'S WITH THE ABILITY OF THE COILS TO BE REMOVED AT AN ANGLE. UNITS SUBMITTED WHICH DO NOT INDICATE THIS ABILITY WILL BE REJECTED.

DETAIL KEYNOTES:

(1) FOR AHU-4, PROVIDE AHU MANUFACTURER'S MIXING BOX IN LIEU OF FIELD FABRICATED RA/OA PLENUM.

TYPICAL AHU COMPONENT DETAIL 8

NO SCALE



DETAIL NOTES:

1. REFER TO PLANS TO DETERMINE CORRECT ORIENTATION OF ACCESS DOORS AND PIPING CONNECTIONS.
2. DUE TO SPACE LIMITATIONS WITHIN EQUIPMENT ROOMS, PROVIDE AHU'S WITH THE ABILITY OF THE COILS TO BE REMOVED AT AN ANGLE. UNITS SUBMITTED WHICH DO NOT INDICATE THIS ABILITY WILL BE REJECTED.

AHU-1 COMPONENT DETAIL 9

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

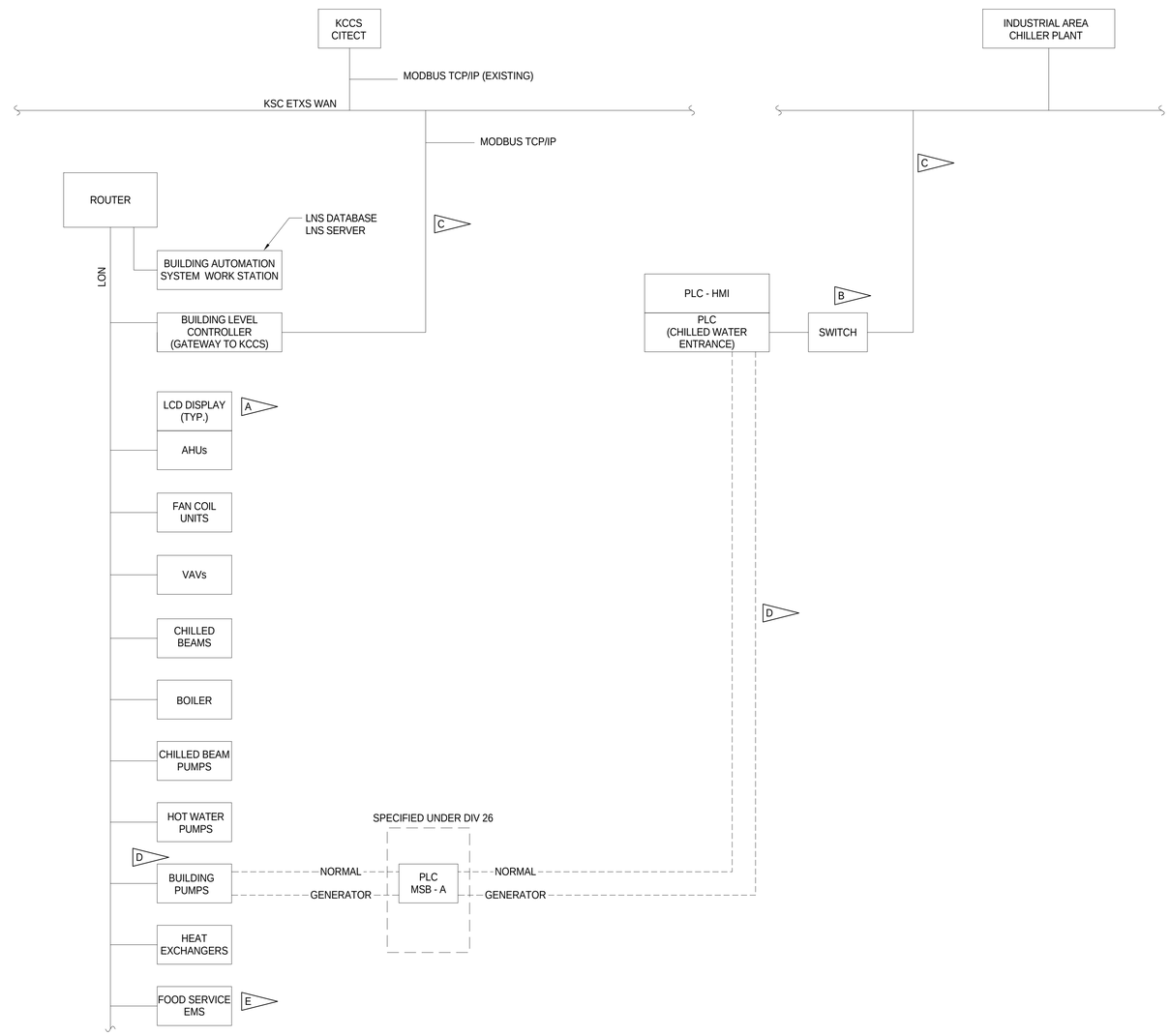
MECHANICAL DETAILS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 47

M504

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



NETWORK ARCHITECTURE DIAGRAM

NO SCALE

GENERAL NOTES

1. DRAWING IS TYPICAL AND MAY REPRESENT MORE THAN ONE SYSTEM.
2. INTENT OF DRAWING IS TO SHOW VARIOUS EQUIPMENT/SYSTEMS CONNECTIVITY.

FLAG NOTES

A — PROVIDE LCD DISPLAY FOR EVERY CUSTOM APPLICATION CONTROLLER.

B — GOVERNMENT FURNISHED CONTRACTOR INSTALLED SWITCH. SIMILAR TO TRANSITION NETWORKS MODEL NUMBER SISGM1040. SWITCH SHALL BE INSTALLED WITHIN AND POWERED FROM THE PLC ENCLOSURE ASSOCIATED WITH THE CHILLED WATER ENTRANCE.

C — CONTRACTOR TO INSTALL CONDUIT AND PULL STRING TO COMMUNICATIONS ROOM. GOVERNMENT TO PROVIDE CABLE AND ASSOCIATED TERMINATIONS. COORDINATE FINAL LOCATION OF CONDUIT IN THE COMMUNICATION ROOM WITH CONTRACTING OFFICER.

D — HARD WIRED POINTS.

E — REFER TO FOOD SERVICE DRAWINGS FOR KITCHEN EQUIPMENT AND PACKAGED ENERGY MANAGEMENT SYSTEM (EMS) PANELS.

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

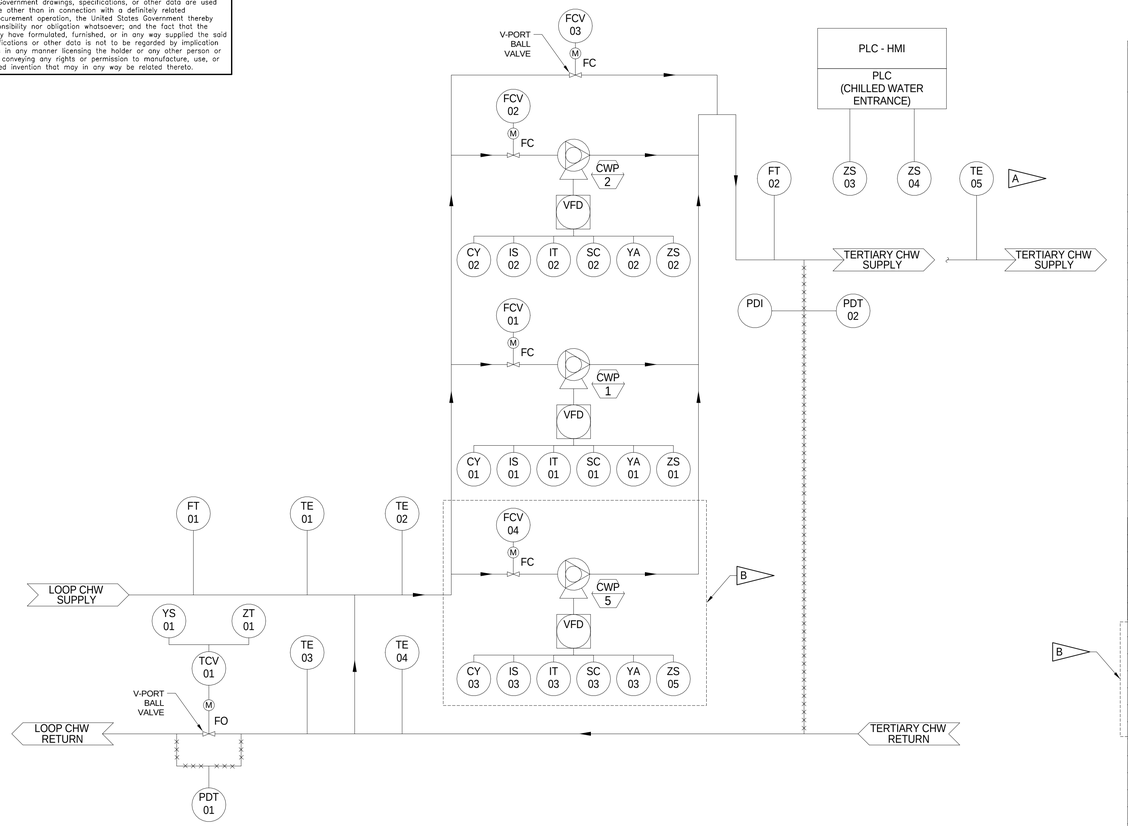
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

NETWORK ARCHITECTURE DIAGRAM

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 48	

M601

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



SECONDARY CHILLED WATER - CONTROL SEQUENCE

A. GENERAL
1. CHILLED WATER ENTRANCE PROVIDES VARIABLE CHILLED WATER FLOW AND CONSTANT PRESSURE
2. PUMPS ARE ARRANGED IN N+1 CONFIGURATION
3. MANUAL-OFF-AUTO MODES (DEFINED BY OPERATOR AT THE SCADA OR PLC HMI

B. MANUAL MODE:
1. NUMBER OF PUMPS, PUMP SPEED, AND VALVE POSITIONS ARE DEFINED BY OPERATOR AT WORKSTATION OR PLC HMI

C. OFF MODE:
1. ALL PUMPS ARE OFF
2. LOOP CONTROL VALVE CLOSES
3. PUMP BYPASS VALVE CLOSES

D. AUTOMATIC MODE:
1. PUMP DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES
2. LOOP VALVE CONTROL SEQUENCE ACTIVATES
3. SETPOINTS ARE ADJUSTABLE FROM SCADA AND PLC HMI

E. TRANSITION FROM MANUAL TO AUTOMATIC MODE:
1. PUMPS AND CONTROL VALVES USE RAMP CONTROL
2. TRANSFER SHALL BE SEAMLESS WITH GRADUAL, CONTROLLED CHANGE TO PRESENT OPERATING CONDITIONS

F. TRANSITION FROM AUTOMATIC TO MANUAL MODE:
1. NUMBER OF PUMPS, PUMP SPEED, AND VALVE POSITION REMAIN CONSTANT AT THE LAST COMMANDED VALUE
2. TRANSFER SHALL BE SEAMLESS WITH NO DISRUPTION OR CHANGE TO PRESENT OPERATING CONDITIONS

G. SYSTEM START:
1. THE SYSTEM SHALL OPERATE CONTINUOUSLY. UPON INITIAL START COMMAND OR START/STOP UPON POWER FAILURE, THE FOLLOWING SHALL OCCUR:
   a. DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES
   b. DIFFERENTIAL PRESSURE RESET CONTROL SEQUENCE ENABLES
   c. LOOP VALVE CONTROL SEQUENCE ACTIVATES PUMP ROTATION SEQUENCE ENABLE

H. TERTIARY DIFFERENTIAL PRESSURE CONTROL:
1. PUMP BYPASS VALVE CLOSES ANY TIME PUMPS OPERATE
2. THE PUMP WITH THE LOWEST NUMBER OF RUN HOURS SHALL START AS THE LEAD PUMP
3. AS TERTIARY DIFFERENTIAL PRESSURE RISES ABOVE SETPOINT:
   a. LEAD PUMP VFD SPEED DECREASES. MINIMUM VFD SPEED SHALL BE 15 HERTZ (ADJ).
   b. WHEN LEAD PUMP IS AT MINIMUM SPEED, FOR A PERIOD OF 3 MINUTES (ADJ) AND DIFFERENTIAL PRESSURE SETPOINT IS ABOVE SETPOINT, FOR A PERIOD OF 3 MINUTES (ADJ), PUMP BYPASS MODE ACTIVATES.
   c. WHEN LEAD AND LAG PUMPS ARE OPERATING AND THE SPEED OF THE PUMPS ARE AT 30% (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), STOP THE PUMP WITH THE GREATEST NUMBER OF RUN HOURS.
4. AS TERTIARY DIFFERENTIAL PRESSURE FALLS BELOW SETPOINT, THE FOLLOWING OCCURS:
   a. LEAD PUMP VFD SPEED INCREASES
   b. WHEN LEAD PUMP REACHES 95% OR GREATER (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), THE LAG PUMP STARTS AND RAMPS UP TO MATCH THE SPEED OF THE LEAD PUMP, THEN BOTH PUMPS MODULATE IN UNISON TO MAINTAIN PRESSURE SETPOINT.
5. UPON DIFFERENTIAL PRESSURE TRANSMITTER FAILURE, PUMPS SHALL BE CONTROLLED AT LAST KNOWN SPEED.

I. PUMP BYPASS MODE:
1. PUMP BYPASS VALVE IS COMMANDED 100% OPEN
2. PUMPS ARE COMMANDED OFF AND ARE PROVEN
3. PUMP ISOLATION VALVES CLOSE
4. IF TERTIARY DIFFERENTIAL PRESSURE SETPOINT IS NOT SATISFIED FOR 5 MINUTES (ADJ) , DEACTIVATE PUMP BYPASS MODE

J. LOOP VALVE CONTROL:
1. THE LOOP VALVE SHALL MODULATE TO MAINTAIN THE TERTIARY SUPPLY TEMPERATURE SETPOINT; AS TERTIARY SUPPLY TEMPERATURE INCREASES, THE LOOP VALVE SHALL MODULATE OPEN.
2. THE TERTIARY SUPPLY TEMPERATURE SETPOINT SHALL BE DEFINED BY THE OPERATOR AT EITHER THE SCADA OR PLC HMI.
3. THERE SHALL BE A LOWER LIMIT ON THE TERTIARY SUPPLY TEMPERATURE SETPOINT SUCH THAT IT IS ALWAYS HIGHER THAN THE LOOP SUPPLY TEMPERATURE BY A OPERATOR-INPUT VALUE EQUAL TO THE TERTIARY DIFFERENTIAL TEMPERATURE SETPOINT.
4. IF TERTIARY SUPPLY TEMPERATURE IS GREATER THAN THE TERTIARY SUPPLY TEMPERATURE LIMIT, THE LOOP VALVE SHALL MODULATE TO ITS DEFAULT POSITION.

K. PUMP ROTATION:
1. UPON ROTATION COMMAND, VIA SCHEDULE OR OPERATOR INPUT:
   a. DIFFERENTIAL PRESSURE CONTROL SEQUENCE REMAINS ACTIVE
   b. LAG PUMP GRADUALLY RAMPS UP TO 20 HERTZ (ADJ) AND HOLDS
   c. LEAD PUMP GRADUALLY RAMPS DOWN AND TURNS OFF
   d. LEAD/LAG DESIGNATIONS ROTATE

L. MAINTENANCE STATE:
1. OPERATOR SHALL HAVE THE ABILITY TO PLACE ANY PUMP IN 'MAINTENANCE STATE' USING THE WORKSTATION OR PLC HMI. PUMPS ARE NOT ALLOWED TO OPERATE WHILE IN MAINTENANCE STATE.

M. SAFETIES:
1. TURN PUMP(S) OFF AND GENERATE ALARM IF CHILLED WATER SUPPLY PRESSURE EXCEEDS THE MAXIMUM LIMIT
2. GENERATE ALARM IF TERTIARY SUPPLY TEMPERATURE IS GREATER THAN SETPOINT BY 2 DEGREES (ADJ)
3. GENERATE ALARM IF SPEED FEEDBACK FROM A VFD DOES NOT MATCH THE ASSOCIATED PUMP COMMAND
4. GENERATE ALARM IF LOOP RETURN TEMPERATURE IS LOWER THAN BUILDING RETURN TEMPERATURE BY MORE THAN 2 DEGREES (ADJ)
5. GENERATE ALARM IF LOOP CONTROL VALVE IS 100% OPEN

N. POWER FAILURE MODE:
1. IF ALL PUMPS ARE COMMANDED ON, AND STATUS IS OFF, DISABLE PRESSURE CONTROL LOOP. INTENT IS TO PREVENT CONTROL LOOPS FROM WINDING UP DURING MOMENTARY LOSS OF POWER, PRIOR TO GENERATOR START.
2. UPON LOSS OF NORMAL POWER AS INDICATED BY POWER MANAGEMENT PLC:
   a. IF SYSTEM IS IN PUMP BYPASS MODE, THIS MODE SHALL CONTINUE.
   b. IF PUMPS ARE ACTIVE PUMPS SHALL CONTINUE TO SPIN UNTIL GENERATOR POWER IS ESTABLISHED.
   c. WHEN GENERATOR POWER IS ESTABLISHED NORMAL PUMP CONTROL SEQUENCE SHALL BE INITIATED.
3. UPON RESUMPTION OF NORMAL POWER AS INDICATED BY POWER MANAGEMENT PLC NORMAL PUMP CONTROL SEQUENCE SHALL RESTART AUTOMATICALLY.

CHILLED WATER CONTROL DIAGRAM (PLC SYSTEM)

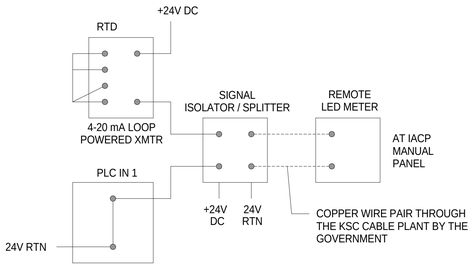
NO SCALE

WORKSTATION			USER INFORMATION						
			POINT TYPE				ALARM CONDITION		
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)
HARDWARE									
FT 01	LOOP FLOW	GPM	X						
TE 01	LOOP SUPPLY TEMPERATURE	DEG F	X						
TE 02	TERTIARY SUPPLY TEMPERATURE	DEG F	X						
TCV 01	LOOP VALVE COMMAND	% OPEN	X						
YS 01	LOOP VALVE END SWITCH	OPEN/CLOSED		X					
ZT 01	LOOP VALVE POSITION	% OPEN	X						
PDT 01	LOOP VALVE DIFFERENTIAL PRESSURE	PSID	X						
TE 03	LOOP RETURN TEMPERATURE	DEG F	X						
TE 04	TERTIARY RETURN TEMPERATURE	DEG F							
CY 01	PUMP COMMAND	ON/OFF		X					
IS 01	PUMP STATUS	ON/OFF		X					
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X						
SC 01	VFD SPEED COMMAND	% FULL SPEED	X						
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X					
ZS 01	VFD HAND STATUS	ON/OFF		X					
FCV 01	PUMP ISOLATION VALVE	OPEN/CLOSED		X					
CY 02	PUMP COMMAND	ON/OFF		X					
IS 02	PUMP STATUS	ON/OFF		X					
IT 02	VFD SPEED FEEDBACK	% FULL SPEED	X						
SC 02	VFD SPEED COMMAND	% FULL SPEED	X						
YA 02	VFD FAULT ALARM	NORMAL/ALARM		X					
ZS 02	VFD HAND STATUS	ON/OFF		X					
FCV 02	PUMP ISOLATION VALVE	OPEN/CLOSED		X					
CY 03	PUMP COMMAND	ON/OFF		X					
IS 03	PUMP STATUS	ON/OFF		X					
IT 03	VFD SPEED FEEDBACK	% FULL SPEED	X						
SC 03	VFD SPEED COMMAND	% FULL SPEED	X						
YA 03	VFD FAULT ALARM	NORMAL/ALARM		X					
ZS 05	VFD HAND STATUS	ON/OFF		X					
FCV 04	PUMP ISOLATION VALVE	OPEN/CLOSED		X					
FCV 03	TERTIARY PUMP BYPASS VALVE	% OPEN	X						
FT 02	TERTIARY LOOP CHILLED WATER FLOW	GPM	X						
PDT 02	TERTIARY DIFFERENTIAL PRESSURE	PSID	X						
ZS 03	AC POWER SUPERVISION FOR PLC POWER SUPPLY	NORMAL/ALARM		X					
ZS 04	LOW BATTERY SUPERVISION FOR PLC POWER SUPPLY	NORMAL/ALARM		X					
TE 05	BUILDING SUPPLY WATER TEMPERATURE	DEG F	X						
SOFTWARE									
SDP	TERTIARY SUPPLY TEMPERATURE SETPOINT	DEG F	X						
SDP	TERTIARY DIFFERENTIAL TEMPERATURE SETPOINT	DEG F	X			0.5 (ADJ)			
SDP	TERTIARY SUPPLY TEMPERATURE LIMIT	DEG F	X						
SDP	TERTIARY DIFFERENTIAL PRESSURE SETPOINT	PSID	X						
SDP	DEFAULT LOOP VALVE POSITION	% OPEN	X						
SDP	MAXIMUM LOOP VALVE LIMIT	% OPEN	X						
SDP	MINIMUM LOOP VALVE LIMIT	% OPEN	X						
SDP	MAXIMUM CHILLED WATER SUPPLY PRESSURE LIMIT	PSI	X						
SDP	LEAD PUMP DESIGNATION	1 OR 2		X					
SDP	PUMP 1 NUMBER OF STARTS	STARTS	X						
SDP	PUMP 1 NUMBER OF FAILED STARTS	FAILED STARTS	X						
SDP	PUMP 1 RUN TIME	HOURS	X						
SDP	PUMP 1 OFF TIME	HOURS	X						
SDP	PUMP 1 MAINTENANCE TIME	HOURS	X						
SDP	PUMP 1 MAINTENANCE STATE	ON/OFF		X					
SDP	PUMP 2 NUMBER OF STARTS	STARTS	X						
SDP	PUMP 2 NUMBER OF FAILED STARTS	FAILED STARTS	X						
SDP	PUMP 2 RUN TIME	HOURS	X						
SDP	PUMP 2 OFF TIME	HOURS	X						
SDP	PUMP 2 MAINTENANCE TIME	HOURS	X						
SDP	PUMP 2 MAINTENANCE STATE	ON/OFF		X					
SDP	PUMP 5 NUMBER OF STARTS	STARTS	X						
SDP	PUMP 5 NUMBER OF FAILED STARTS	FAILED STARTS	X						
SDP	PUMP 5 RUN TIME	HOURS	X						
SDP	PUMP 5 OFF TIME	HOURS	X						
SDP	PUMP 5 MAINTENANCE TIME	HOURS	X						
SDP	PUMP 5 MAINTENANCE STATE	ON/OFF		X					
SDP	PUMP OPERATING HOUR DEADBAND	HOURS	X						
SDP	DAILY BUILDING ENERGY CONSUMPTION	TON-HOURS	X						
SDP	MONTHLY BUILDING ENERGY CONSUMPTION	TON-HOURS	X						
SDP	YEARLY BUILDING ENERGY CONSUMPTION	TON-HOURS	X						
SDP	PEAK DAILY ENERGY CONSUMPTION	TON-HOURS	X						
SDP	MINIMUM DAILY ENERGY CONSUMPTION	TON-HOURS	X						
SDP	PEAK MONTHLY ENERGY CONSUMPTION	TON-HOURS	X						
SDP	MINIMUM MONTHLY ENERGY CONSUMPTION	TON-HOURS	X						
SDP	INSTANTANEOUS BUILDING COOLING LOAD	TONS	X						
SDP	PEAK BUILDING COOLING LOAD	TONS	X						
SDP	MINIMUM BUILDING COOLING LOAD	TONS	X						
SDP	NORMAL POWER STATUS	ON/OFF		X					
SDP	EMERGENCY POWER STATUS	ON/OFF		X					

FLAG NOTES

A. DEDICATED TEMPERATURE SENSOR FOR PLC SYSTEM, INSTALLED IN MAIN BUILDING CHILLED WATER SUPPLY ON HOT SIDE OF HEAT EXCHANGERS. CONNECT SENSOR SIGNAL TO SPLITTER. CONNECT ONE SIGNAL TO PLC. CONNECT THE OTHER TO CABLEFAST BLOCK AND ROUTE TO COMM ROOM. COIL UP 50 FEET FOR TERMINATION BY OTHERS. REFER TO SIGNAL ISOLATOR (TEMPERATURE) DIAGRAM.

B. REFER TO ARCHITECTURAL SHEETS FOR BID OPTION M-1. OPTION M-1 INCLUDES INSTRUMENTATION, SEQUENCES, AND SOFTWARE POINTS ASSOCIATED WITH A THIRD PUMP (CWP-5) AND VFD. INSTRUMENTATION, SEQUENCES, AND SOFTWARE POINTS SHALL BE EQUAL TO THOSE SHOWN IN THE DASHED REGION.



SIGNAL ISOLATOR (TEMPERATURE)

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

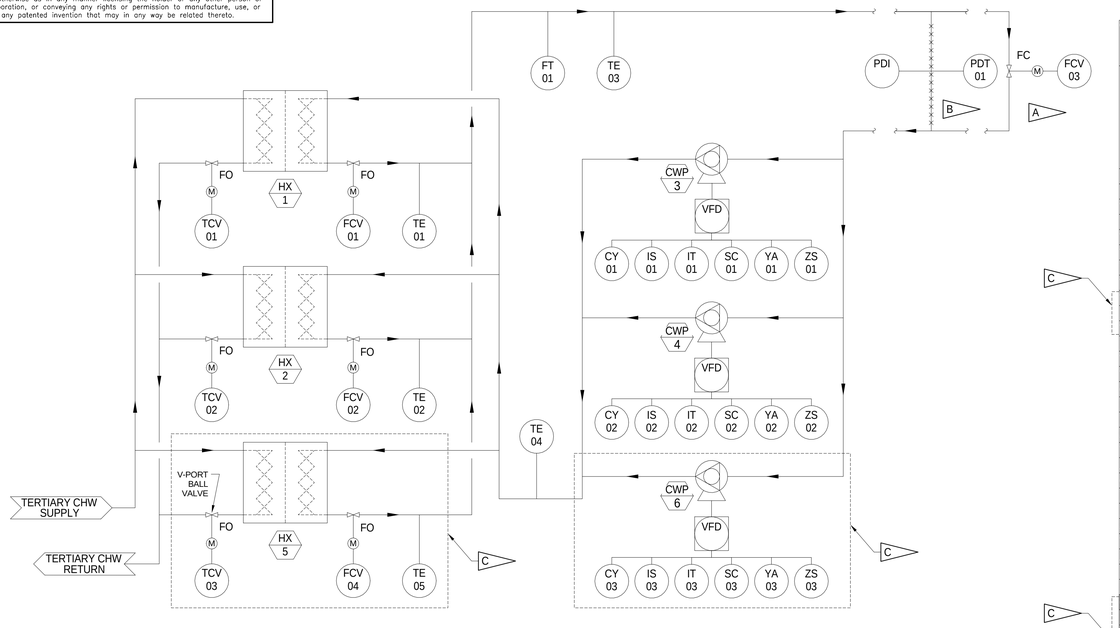
CHILLED WATER CONTROL DIAGRAM (PLC SYSTEM)

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 49

M611

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



BUILDING CHILLED WATER - CONTROL SEQUENCE

A. GENERAL
1. CHILLED WATER PUMPS PROVIDE VARIABLE CHILLED WATER FLOW AND CONSTANT PRESSURE.
2. PUMPS ARE ARRANGED IN N+1 CONFIGURATION
3. MANUAL-OFF-AUTO MODES (DEFINED BY OPERATOR AT THE WORKSTATION)

B. MANUAL MODE:
1. NUMBER OF PUMPS, PUMP SPEED, AND VALVE POSITIONS ARE DEFINED BY OPERATOR AT WORKSTATION

C. OFF MODE:
1. ALL PUMPS ARE OFF
2. ISOLATION VALVES CLOSE
3. TEMPERATURE CONTROL VALVES CLOSE

D. AUTOMATIC MODE:
1. PUMP DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES
2. TEMPERATURE CONTROL SEQUENCE ACTIVATES
3. SETPOINTS ARE ADJUSTABLE FROM WORKSTATION
4. TRANSITION FROM MANUAL TO AUTOMATIC MODE
5. PUMPS AND CONTROL VALVES USE RAMP CONTROL
6. TRANSFER SHALL BE SEAMLESS WITH GRADUAL, CONTROLLED CHANGE TO PRESENT OPERATING CONDITIONS

E. TRANSITION FROM AUTOMATIC TO MANUAL MODE
1. NUMBER OF PUMPS, PUMP SPEED, AND VALVE POSITION REMAIN CONSTANT AT THE LAST COMMANDED VALUE
2. TRANSFER SHALL BE SEAMLESS WITH NO DISRUPTION OR CHANGE TO PRESENT OPERATING CONDITIONS

F. SYSTEM START:
1. THE SYSTEM SHALL OPERATE CONTINUOUSLY. UPON INITIAL START COMMAND OR START/STOP UPON POWER FAILURE:
   a. MINIMUM WATER FLOW CONTROL SEQUENCE ACTIVATES
   b. DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES
   c. DIFFERENTIAL PRESSURE RESET CONTROL SEQUENCE ENABLES
   d. TEMPERATURE CONTROL SEQUENCE ACTIVATES
   e. BUILDING SUPPLY TEMPERATURE RESET CONTROL SEQUENCE ENABLES
   f. PUMP ROTATION SEQUENCE ENABLES

G. DIFFERENTIAL PRESSURE CONTROL:
1. THE PUMP WITH THE LOWEST NUMBER OF RUN HOURS SHALL START AS THE LEAD PUMP
2. AS DIFFERENTIAL PRESSURE RISES ABOVE SETPOINT:
   a. LEAD PUMP VFD SPEED DECREASES. MINIMUM VFD SPEED SHALL BE 15 HERTZ (ADJ).
   b. WHEN LEAD AND LAG PUMPS ARE OPERATING AND THE SPEED OF THE PUMPS ARE AT 30% (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), STOP THE PUMP WITH THE GREATEST NUMBER OF RUN HOURS.
3. AS DIFFERENTIAL PRESSURE FALLS BELOW SETPOINT, THE FOLLOWING OCCURS:
   a. LEAD PUMP VFD SPEED INCREASES
   b. WHEN LEAD PUMP REACHES 95% OR GREATER (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), THE LAG PUMP STARTS AND RAMPS UP TO MATCH THE SPEED OF THE LEAD PUMP, THEN BOTH PUMPS MODULATE IN UNISON TO MAINTAIN PRESSURE SETPOINT.

H. UPON DIFFERENTIAL PRESSURE TRANSMITTER FAILURE, PUMPS SHALL BE CONTROLLED AT LAST KNOWN SPEED.

I. DIFFERENTIAL PRESSURE RESET:
1. PERFORM EVERY 15 MINUTES (ADJ)
2. IF ANY VALVE COMMAND IS GREATER THAN 90% (ADJ), INCREASE PRESSURE SETPOINT BY 0.1 PSID
3. IF ALL VALVE COMMANDS ARE LESS THAN 80% (ADJ), DECREASE THE PRESSURE SETPOINT BY 0.1 PSID

J. MINIMUM WATER FLOW CONTROL:
1. AS WATER FLOW DECREASES BELOW MINIMUM FLOW SETPOINT, THE MINIMUM FLOW BYPASS VALVE MODULATES OPEN
2. AS WATER FLOW RISES ABOVE MINIMUM FLOW SETPOINT, THE MINIMUM FLOW BYPASS VALVE MODULATES CLOSED

K. BUILDING SUPPLY TEMPERATURE CONTROL:
1. LEAD HEAT EXCHANGER TEMPERATURE CONTROL VALVE MODULATES TO MAINTAIN BUILDING SUPPLY TEMPERATURE SETPOINT.
2. HEAT EXCHANGER ISOLATION VALVE OPENS ANY TIME THE ASSOCIATED TEMPERATURE CONTROL VALVE OPENS
3. WHEN THE LEAD TEMPERATURE CONTROL VALVE REACHES 95% OR GREATER (ADJ) FOR A PERIOD OF 3 MINUTES (ADJ), THE TEMPERATURE CONTROL VALVE FOR THE LAG HEAT EXCHANGER SHALL OPEN AND MODULATE TO MATCH THE LEAD TEMPERATURE CONTROL VALVE. ONCE BOTH TEMPERATURE CONTROL VALVES MATCH POSITION, VALVE MODULATE IN UNISON TO MAINTAIN TEMPERATURE SETPOINT.
4. WHEN LEAD AND LAG TEMPERATURE CONTROL VALVES ARE OPEN TO 30% OR LESS (ADJ) FOR A PERIOD OF 3 MINUTES (ADJ), CLOSE THE TEMPERATURE CONTROL VALVE ASSOCIATED WITH THE LAG HEAT EXCHANGER.
5. HEAT EXCHANGER ISOLATION VALVE CLOSES ANY TIME THE ASSOCIATED TEMPERATURE CONTROL VALVE CLOSES
6. LEAD/LAG DESIGNATIONS ROTATE EVERY 30 DAYS (ADJ). TRANSFER SHALL BE SEAMLESS WITH NO DISRUPTION OR CHANGE TO PRESENT OPERATING CONDITIONS.

L. BUILDING SUPPLY TEMPERATURE RESET:
1. RESET SEQUENCE IS ONLY ACTIVE WHEN WHEN DIFFERENTIAL PRESSURE SETPOINT IS AT MINIMUM.
2. RESET THE BUILDING SUPPLY TEMPERATURE BASED ON THE FOLLOWING SCHEDULE:
   a. IF 100% (ADJ) OF COOLING CONTROL VALVES HAVE A VALVE COMMAND AT 40% (ADJ) OR LESS: INCREASE BUILDING SUPPLY TEMPERATURE 1 DEG F EVERY 10 MINUTES (ADJ)
   b. IF ANY COOLING CONTROL VALVE COMMAND IS 90% OR GREATER (ADJ): DECREASE BUILDING SUPPLY TEMPERATURE 1 DEG F EVERY 10 MINUTES (ADJ)
3. BUILDING SUPPLY TEMPERATURE RESET STOPS WHEN ANY COOLING CONTROL VALVE COMMAND IS 80% OR GREATER (ADJ)

M. PUMP ROTATION:
1. UPON ROTATION COMMAND, VIA SCHEDULE OR OPERATOR INPUT:
   a. DIFFERENTIAL PRESSURE CONTROL SEQUENCE REMAINS ACTIVE
   b. LAG PUMP GRADUALLY RAMPS UP TO 20 HERTZ (ADJ) AND HOLDS
   c. LEAD PUMP GRADUALLY RAMPS DOWN AND TURNS OFF
   d. LEAD/LAG DESIGNATIONS ROTATE

N. MAINTENANCE STATE:
1. OPERATOR SHALL HAVE THE ABILITY TO PLACE ANY PUMP OR HEAT EXCHANGER IN 'MAINTENANCE STATE' USING THE WORKSTATION. A PUMP OR HEAT EXCHANGER IS NOT ALLOWED TO OPERATE WHILE IN MAINTENANCE STATE.

O. SAFETIES:
1. TURN PUMP(S) OFF AND GENERATE ALARM IF CHILLED WATER SUPPLY PRESSURE EXCEEDS THE MAXIMUM LIMIT
2. GENERATE ALARM IF BUILDING SUPPLY TEMPERATURE IS GREATER THAN SETPOINT BY 2 DEGREES (ADJ)
3. GENERATE ALARM IF SPEED FEEDBACK FROM A VFD DOES NOT MATCH THE ASSOCIATED PUMP COMMAND

P. POWER FAILURE MODE:
1. IF ALL PUMPS ARE COMMANDED ON, AND STATUS IS OFF, DISABLE PRESSURE CONTROL LOOP. INTENT IS TO PREVENT CONTROL LOOPS FROM WINDING UP DURING MOMENTARY LOSS OF POWER, PRIOR TO GENERATOR START.
2. UPON LOSS OF NORMAL POWER AS INDICATED BY POWER MANAGEMENT PLC:
   a. IF SYSTEM IS IN PUMP BYPASS MODE, THIS MODE SHALL CONTINUE.
   b. IF PUMPS ARE ACTIVE PUMPS SHALL CONTINUE TO SPIN UNTIL GENERATOR POWER IS ESTABLISHED.
   c. WHEN GENERATOR POWER IS ESTABLISHED NORMAL PUMP CONTROL SEQUENCE SHALL BE INITIATED.
3. UPON RESUMPTION OF NORMAL POWER AS INDICATED BY POWER MANAGEMENT PLC NORMAL PUMP CONTROL SEQUENCE SHALL RESTART AUTOMATICALLY.

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
TCV 01	HEAT EXCHANGER TEMPERATURE CONTROL VALVE	% OPEN	X								X
FCV 01	HEAT EXCHANGER ISOLATION VALVE	OPEN/CLOSED		X							X
TE 01	HEAT EXCHANGER SUPPLY TEMPERATURE	DEG F	X								X
TCV 02	HEAT EXCHANGER TEMPERATURE CONTROL VALVE	% OPEN	X								X
FCV 02	HEAT EXCHANGER ISOLATION VALVE	OPEN/CLOSED		X							X
TE 02	HEAT EXCHANGER SUPPLY TEMPERATURE	DEG F	X								X
TCV 03	HEAT EXCHANGER TEMPERATURE CONTROL VALVE	% OPEN	X								X
FCV 04	HEAT EXCHANGER ISOLATION VALVE	OPEN/CLOSED		X							X
TE 05	HEAT EXCHANGER SUPPLY TEMPERATURE	DEG F	X								X
FT 01	BUILDING FLOW	GPM	X							X	X
TE 03	BUILDING SUPPLY TEMPERATURE	DEG F	X							X	X
TE 04	BUILDING RETURN TEMPERATURE	DEG F	X							X	X
CY 01	PUMP COMMAND	ON/OFF		X						X	X
IS 01	PUMP STATUS	ON/OFF		X						X	X
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 01	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 01	VFD HAND STATUS	ON/OFF		X						X	X
CY 02	PUMP COMMAND	ON/OFF		X						X	X
IS 02	PUMP STATUS	ON/OFF		X						X	X
IT 02	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 02	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 02	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 02	VFD HAND STATUS	ON/OFF		X						X	X
PDT 01	BUILDING DIFFERENTIAL PRESSURE	PSID	X							X	X
FCV 03	MINIMUM FLOW BYPASS VALVE	% OPEN	X								X
CY 03	PUMP COMMAND	ON/OFF		X						X	X
IS 03	PUMP STATUS	ON/OFF		X						X	X
IT 03	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 03	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 03	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 03	VFD HAND STATUS	ON/OFF		X						X	X
SOFTWARE											
SDP	HEAT EXCHANGER 1 SUPPLY TEMPERATURE SETPOINT	DEG F	X								X
SDP	HEAT EXCHANGER 1 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	HEAT EXCHANGER 2 SUPPLY TEMPERATURE SETPOINT	DEG F	X								X
SDP	HEAT EXCHANGER 2 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	HEAT EXCHANGER 5 SUPPLY TEMPERATURE SETPOINT	DEG F	X								X
SDP	HEAT EXCHANGER 5 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	BUILDING SUPPLY TEMPERATURE SETPOINT	DEG F	X							X	X
SDP	MAXIMUM BUILDING SUPPLY TEMPERATURE LIMIT	DEG F	X								X
SDP	MINIMUM BUILDING SUPPLY TEMPERATURE LIMIT	DEG F	X								X
SDP	BUILDING DIFFERENTIAL PRESSURE SETPOINT	PSID	X							X	X
SDP	MAXIMUM BUILDING DIFFERENTIAL PRESSURE LIMIT	PSID	X								X
SDP	MINIMUM BUILDING DIFFERENTIAL PRESSURE LIMIT	PSID	X								X
SDP	MINIMUM BUILDING FLOW SETPOINT	GPM	X			(1)					X
SDP	LEAD BUILDING PUMP DESIGNATION	1 OR 2		X							X
SDP	PUMP 3 NUMBER OF STARTS	STARTS	X							X	X
SDP	PUMP 3 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	PUMP 3 RUN TIME	HOURS	X							X	X
SDP	PUMP 3 OFF TIME	HOURS	X								X
SDP	PUMP 3 MAINTENANCE TIME	HOURS	X								X
SDP	PUMP 3 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	PUMP 4 NUMBER OF STARTS	STARTS	X							X	X
SDP	PUMP 4 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	PUMP 4 RUN TIME	HOURS	X							X	X
SDP	PUMP 4 OFF TIME	HOURS	X								X
SDP	PUMP 4 MAINTENANCE TIME	HOURS	X								X
SDP	PUMP 4 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	PUMP 6 NUMBER OF STARTS	STARTS	X							X	X
SDP	PUMP 6 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	PUMP 6 RUN TIME	HOURS	X							X	X
SDP	PUMP 6 OFF TIME	HOURS	X								X
SDP	PUMP 6 MAINTENANCE TIME	HOURS	X								X
SDP	PUMP 6 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	PUMP OPERATING HOUR DEADBAND	HOURS	X								X
SDP	DAILY BUILDING ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	MONTHLY BUILDING ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	YEARLY BUILDING ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	PEAK DAILY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	MINIMUM DAILY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	PEAK MONTHLY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	MINIMUM MONTHLY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	INSTANEOUS BUILDING COOLING LOAD	TONS	X								X
SDP	PEAK BUILDING COOLING LOAD	TONS	X								X
SDP	MINIMUM BUILDING COOLING LOAD	TONS	X								X
SDP	NORMAL POWER STATUS	ON/OFF		X							X
SDP	EMERGENCY POWER STATUS	ON/OFF		X							X

NOTES:
1. DETERMINE SETPOINTS IN COORDINATION WITH SUCCESSFUL BIDDERS FOR PUMPS AND PRIMARY EQUIPMENT, TO MEET REQUIREMENTS FOR MINIMUM FLOW.

FLAG NOTES

A. MINIMUM FLOW BYPASS VALVE.

B. REMOTE DIFFERENTIAL PRESSURE TRANSMITTER LOCATED 2/3 DOWN THE LENGTH OF THE MOST HYDRUALICALLY REMOTE BRANCH.

C. REFER TO ARCHITECTURAL SHEETS FOR BID OPTION M-1. OPTION M-1 INCLUDES INSTRUMENTATION, SEQUENCES, AND SOFTWARE POINTS ASSOCIATED WITH A THIRD PUMP (CWP-6), VFD, AND HEAT EXCHANGER. INSTRUMENTATION, SEQUENCES, AND SOFTWARE POINTS SHALL BE EQUAL TO THOSE SHOWN IN THE DASHED REGION.

CHILLED WATER CONTROL DIAGRAM (BAS)

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

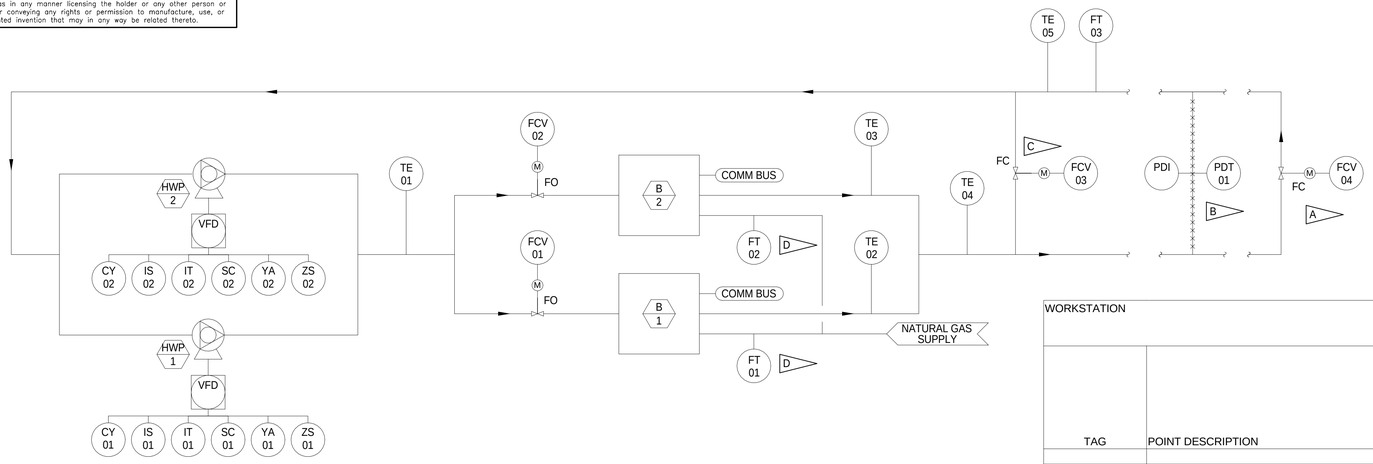
CHILLED WATER CONTROL DIAGRAM (BAS)

M612

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 50

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



HEATING HOT WATER - CONTROL SEQUENCE

A. GENERAL
1. HOT WATER SYSTEM PROVIDES VARIABLE HOT WATER FLOW AND CONSTANT PRESSURE.
2. ACTIVATE START UP SEQUENCE UPON OPERATOR INPUT OR WHEN ANY SINGLE AIR HANDLING UNIT OR FAN COIL UNIT IS IN OCCUPIED OR UNOCCUPIED STATE.
3. ACTIVATE SHUT DOWN SEQUENCE UPON OPERATOR INPUT OR WHEN ALL AIR HANDLING UNITS AND FAN COIL UNITS ARE OFF.

B. START UP
1. UPON START COMMAND
   a. WARM UP SEQUENCE ACTIVATES
   b. MINIMUM WATER FLOW CONTROL SEQUENCE ACTIVATES
   c. DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES
   d. DIFFERENTIAL PRESSURE RESET CONTROL SEQUENCE ENABLES
   e. TEMPERATURE CONTROL SEQUENCE ACTIVATES
   f. BUILDING SUPPLY TEMPERATURE RESET CONTROL SEQUENCE ACTIVATES
   g. PUMPS ROTATION SEQUENCE ACTIVATES
   h. BOILER ROTATION SEQUENCE ACTIVATES
   i. LEAD SECONDARY PUMP STARTS AND IS PROVEN.

C. SHUT DOWN
1. UPON SHUT DOWN COMMAND
   a. BOILERS STOP
   b. PUMPS STOP
   c. ISOLATION VALVES CLOSE
   d. MINIMUM FLOW BYPASS VALVE CLOSES
   e. ALL OTHER SEQUENCES DISABLE
   f. SUPRESS NUISANCE ALARMS

D. WARM UP SEQUENCE
1. WARM UP BYPASS VALVE OPENS UPON INITIAL START UP TO ALLOW GRADUAL WARM UP OF HOT WATER LOOP
2. BYPASS VALVE OPENS UNTIL BOILER INLET WATER TEMPERATURE REACHES 90 DEG F (ADJ), THEN BYPASS VALVE SHALL CLOSE.

E. DIFFERENTIAL PRESSURE CONTROL:
1. THE PUMP WITH THE LOWEST NUMBER OF RUN HOURS SHALL START AS THE LEAD PUMP
2. AS DIFFERENTIAL PRESSURE RISES ABOVE SETPOINT:
   a. LEAD PUMP VFD SPEED DECREASES. MINIMUM VFD SPEED SHALL BE 15 HERTZ (ADJ).
   b. WHEN LEAD AND LAG PUMPS ARE OPERATING AND THE SPEED OF THE PUMPS ARE AT 30% (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), STOP THE PUMP WITH THE GREATEST NUMBER OF RUN HOURS.
3. AS DIFFERENTIAL PRESSURE FALLS BELOW SETPOINT, THE FOLLOWING OCCURS:
   a. LEAD PUMP VFD SPEED INCREASES
   b. WHEN LEAD PUMP REACHES 95% OR GREATER (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), THE LAG PUMP STARTS AND RAMPS UP TO MATCH THE SPEED OF THE LEAD PUMP, THEN BOTH PUMPS MODULATE IN UNISON TO MAINTAIN PRESSURE SETPOINT.

F. UPON DIFFERENTIAL PRESSURE TRANSMITTER FAILURE, PUMPS SHALL BE CONTROLLED AT LAST KNOWN SPEED.

G. DIFFERENTIAL PRESSURE RESET:
1. PERFORM EVERY 15 MINUTES (ADJ)
2. IF ANY VALVE COMMAND IS GREATER THAN 90% (ADJ), INCREASE PRESSURE SETPOINT BY 0.1 PSID
3. IF ALL VALVE COMMANDS ARE LESS THAN 80% (ADJ), DECREASE THE PRESSURE SETPOINT BY 0.1 PSID

H. MINIMUM WATER FLOW CONTROL
1. AS WATER FLOW DECREASES BELOW MINIMUM FLOW SETPOINT, THE MINIMUM FLOW BYPASS VALVE MODULATES OPEN
2. AS WATER RISES ABOVE MINIMUM FLOW SETPOINT, THE MINIMUM FLOW BYPASS VALVE MODULATES CLOSED

I. TEMPERATURE CONTROL
1. THE BOILER WITH THE LOWEST NUMBER OF RUN HOURS SHALL START AS THE LEAD BOILER
2. BOILERS' INTERNAL CONTROLS MAINTAIN LEAVING WATER TEMPERATURE AT EACH INDIVIDUAL BOILER TO MEET THE BUILDING SUPPLY TEMPERATURE SETPOINT
3. BOILERS' INTERNAL CONTROLS STAGE INDIVIDUAL BOILERS ON AND OFF.

J. BUILDING SUPPLY TEMPERATURE RESET:
1. RESET SEQUENCE IS ONLY ACTIVE WHEN WHEN DIFFERENTIAL PRESSURE SETPOINT IS AT MINIMUM.
2. RESET THE BUILDING SUPPLY TEMPERATURE BASED ON THE FOLLOWING SCHEDULE:
   a. IF 100% (ADJ) OF HEATING CONTROL VALVES HAVE A VALVE COMMAND AT 40% (ADJ) OR LESS: DECREASE BUILDING SUPPLY TEMPERATURE 1 DEG F EVERY 10 MINUTES (ADJ)
   b. IF ANY HEATING CONTROL VALVE COMMAND IS 90% OR GREATER (ADJ): INCREASE BUILDING SUPPLY TEMPERATURE 1 DEG F EVERY 10 MINUTES (ADJ)
3. BUILDING SUPPLY TEMPERATURE RESET STOPS WHEN ANY HEATING CONTROL VALVE COMMAND IS 80% OR GREATER (ADJ)

K. PUMP ROTATION:
1. UPON ROTATION COMMAND, VIA SCHEDULE OR OPERATOR INPUT:
   a. DIFFERENTIAL PRESSURE CONTROL SEQUENCE REMAINS ACTIVE
   b. LAG PUMP GRADUALLY RAMPS UP TO 20 HERTZ (ADJ) AND HOLDS
   c. LEAD PUMP GRADUALLY RAMPS DOWN AND TURNS OFF
   d. LEAD/LAG DESIGNATIONS ROTATE

L. BOILER ROTATION
1. UPON ROTATION COMMAND, VIA SCHEDULE OR OPERATOR INPUT:
   a. TEMPERATURE CONTROL SEQUENCE REMAINS ACTIVE
   b. LAG BOILER GRADUALLY RAMPS UP TO MATCH SETPOINT AND HOLDS
   c. LEAD BOILER GRADUALLY RAMPS DOWN AND TURNS OFF
   d. LEAD/LAG DESIGNATIONS ROTATE

M. MAINTENANCE STATE:
1. OPERATOR SHALL HAVE THE ABILITY TO PLACE ANY PUMP OR BOILER IN 'MAINTENANCE STATE' USING THE WORKSTATION. A PUMP OR BOILER IS NOT ALLOWED TO OPERATE WHILE IN MAINTENANCE STATE.

N. SAFETIES
1. GENERATE ALARM IF SPEED FEEDBACK FROM A VFD DOES NOT MATCH THE ASSOCIATED PUMP COMMAND

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
CY 01	PUMP COMMAND	ON/OFF		X						X	X
IS 01	PUMP STATUS	ON/OFF		X						X	X
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 01	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 01	VFD HAND STATUS	ON/OFF		X						X	X
CY 02	PUMP COMMAND	ON/OFF		X						X	X
IS 02	PUMP STATUS	ON/OFF		X						X	X
IT 02	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 02	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 02	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 02	VFD HAND STATUS	ON/OFF		X						X	X
TE 01	BOILER INLET WATER TEMPERATURE	DEG F	X								X
FCV 01	BOILER ISOLATION VALVE	OPEN/CLOSED		X							X
FCV 02	BOILER ISOLATION VALVE	OPEN/CLOSED		X							X
TE 02	BOILER DISCHARGE WATER TEMPERATURE	DEG F	X								X
TE 03	BOILER DISCHARGE WATER TEMPERATURE	DEG F	X								X
TE 04	BUILDING SUPPLY TEMPERATURE	DEG F	X								X
FCV 03	WARM UP BYPASS VALVE	%OPEN	X								X
TE 05	BUILDING RETURN TEMPERATURE	DEG F	X								X
FT 03	BUILDING WATER FLOW	GPM	X								X
PDT 01	DIFFERENTIAL PRESSURE	PSID	X								X
FCV 04	MINIMUM FLOW BYPASS VALVE	%OPEN	X								X
SOFTWARE											
SDP	BOILER 1 DISCHARGE TEMPERATURE SETPOINT	DEG F	X								X
SDP	BOILER 2 DISCHARGE TEMPERATURE SETPOINT	DEG F	X								X
SDP	BUILDING SUPPLY TEMPERATURE SETPOINT	DEG F	X							X	X
SDP	MAXIMUM BUILDING SUPPLY TEMPERATURE LIMIT	DEG F	X								X
SDP	MINIMUM BUILDING SUPPLY TEMPERATURE LIMIT	DEG F	X								X
SDP	BUILDING DIFFERENTIAL PRESSURE SETPOINT	PSID	X							X	X
SDP	MAXIMUM BUILDING DIFFERENTIAL PRESSURE LIMIT	PSID	X								X
SDP	MINIMUM BUILDING DIFFERENTIAL PRESSURE LIMIT	PSID	X								X
SDP	MINIMUM BUILDING FLOW SETPOINT	GPM	X			(1)					X
SDP	LEAD BUILDING PUMP DESIGNATION	1 OR 2		X							X
SDP	BOILER 1 COMMAND	ON/OFF		X							X
SDP	BOILER 1 STATUS	ON/OFF		X							X
SDP	BOILER 1 FAULT ALARM	NORMAL/ALARM	X								X
SDP	BOILER 1 COMMAND	ON/OFF		X							X
SDP	BOILER 1 STATUS	ON/OFF		X							X
SDP	BOILER 1 FAULT ALARM	NORMAL/ALARM	X								X
SDP	BOILER 1 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	BOILER 2 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	BOILER 1 NUMBER OF STARTS	STARTS	X							X	X
SDP	BOILER 1 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	BOILER 1 RUN TIME	HOURS	X							X	X
SDP	BOILER 1 OFF TIME	HOURS	X								X
SDP	BOILER 1 MAINTENANCE TIME	HOURS	X								X
SDP	BOILER 1 NUMBER OF STARTS	STARTS	X							X	X
SDP	BOILER 1 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	BOILER 2 RUN TIME	HOURS	X							X	X
SDP	BOILER 2 OFF TIME	HOURS	X								X
SDP	BOILER 2 MAINTENANCE TIME	HOURS	X								X
SDP	BOILER OPERATING HOUR DEADBAND	HOURS	X								X
SDP	PUMP 1 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	PUMP 2 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	PUMP 1 NUMBER OF STARTS	STARTS	X							X	X
SDP	PUMP 1 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	PUMP 1 RUN TIME	HOURS	X							X	X
SDP	PUMP 1 OFF TIME	HOURS	X								X
SDP	PUMP 1 MAINTENANCE TIME	HOURS	X								X
SDP	PUMP 1 NUMBER OF STARTS	STARTS	X							X	X
SDP	PUMP 1 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	PUMP 2 RUN TIME	HOURS	X							X	X
SDP	PUMP 2 OFF TIME	HOURS	X								X
SDP	PUMP 2 MAINTENANCE TIME	HOURS	X								X
SDP	PUMP OPERATING HOUR DEADBAND	HOURS	X								X

NOTES:
1. DETERMINE SETPOINTS IN COORDINATION WITH SUCCESSFUL BIDDERS FOR PUMPS AND PRIMARY EQUIPMENT, TO MEET REQUIREMENTS FOR MINIMUM FLOW.

FLAG NOTES

A — MINIMUM FLOW BYPASS VALVE.

B — REMOTE DIFFERENTIAL PRESSURE TRANSMITTER LOCATED 2/3 DOWN THE LENGTH OF THE MOST HYDRUALICALLY REMOTE BRANCH.

C — WARM-UP BYPASS.

D — NATURAL GAS SUB-METER FOR MEASUREMENT AND VERIFICATION. REFER TO PLUMBING DRAWINGS FOR LOCATION. REFER TO ELECTRICAL DRAWINGS FOR INTEGRATION REQUIREMENTS.

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

HEATING HOT WATER CONTROL DIAGRAM

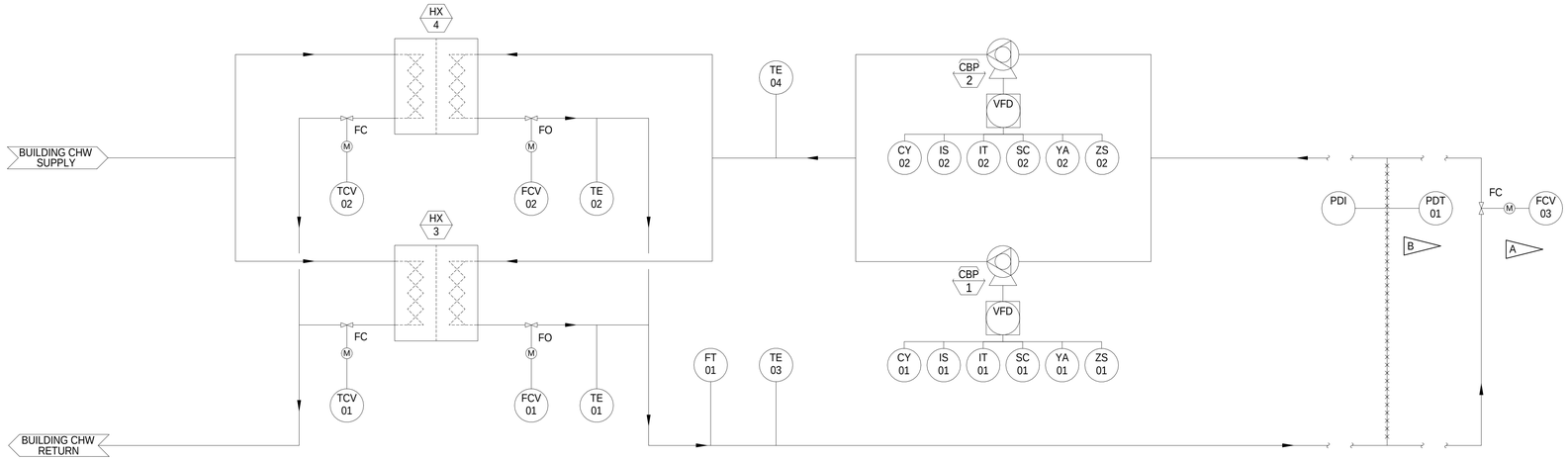
FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A
PCN. NO. 98745.1a | SHEET 51

M613

HEATING HOT WATER CONTROL DIAGRAM

NO SCALE

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

A — MINIMUM FLOW BYPASS VALVE

B — REMOTE DIFFERENTIAL PRESSURE TRANSMITTER LOCATED 2/3 DOWN THE LENGTH OF THE MOST HYDRUALICALLY REMOTE BRANCH.

CHILLED BEAM WATER - CONTROL SEQUENCE

A. GENERAL
1. CHILLED BEAM PUMPS PROVIDE VARIABLE CHILLED BEAM WATER FLOW AND CONSTANT PRESSURE.
2. MANUAL-OFF-AUTO MODES (DEFINED BY OPERATOR AT THE WORKSTATION)

B. MANUAL MODE:
1. NUMBER OF PUMPS, PUMP SPEED, AND VALVE POSITIONS ARE DEFINED BY OPERATOR AT WORKSTATION

C. OFF MODE:
1. ALL PUMPS ARE OFF
2. ISOLATION VALVES CLOSE
3. TEMPERATURE CONTROL VALVES CLOSE

D. AUTOMATIC MODE:
1. PUMP DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES
2. TEMPERATURE CONTROL SEQUENCE ACTIVATES
3. SETPOINTS ARE ADJUSTABLE FROM WORKSTATION
4. TRANSITION FROM MANUAL TO AUTOMATIC MODE
5. PUMPS AND CONTROL VALVES USE RAMP CONTROL
6. TRANSFER SHALL BE SEAMLESS WITH GRADUAL, CONTROLLED CHANGE TO PRESENT OPERATING CONDITIONS

E. TRANSITION FROM AUTOMATIC TO MANUAL MODE
1. NUMBER OF PUMPS, PUMP SPEED, AND VALVE POSITION REMAIN CONSTANT AT THE LAST COMMANDED VALUE
2. TRANSFER SHALL BE SEAMLESS WITH NO DISRUPTION OR CHANGE TO PRESENT OPERATING CONDITIONS

F. SYSTEM START:
1. UPON INITIAL START COMMAND, VIA SCHEDULE OR OPERATOR INPUT:
2. MINIMUM WATER FLOW CONTROL SEQUENCE ACTIVATES
3. DIFFERENTIAL PRESSURE CONTROL SEQUENCE ACTIVATES
4. DIFFERENTIAL PRESSURE RESET CONTROL SEQUENCE ENABLES
5. TEMPERATURE CONTROL SEQUENCE ACTIVATES
6. BUILDING SUPPLY TEMPERATURE RESET CONTROL SEQUENCE ENABLES
7. PUMP ROTATION SEQUENCE ENABLES

G. DIFFERENTIAL PRESSURE CONTROL:
1. THE PUMP WITH THE LOWEST NUMBER OF RUN HOURS SHALL START AS THE LEAD PUMP
2. AS DIFFERENTIAL PRESSURE RISES ABOVE SETPOINT:
   a. LEAD PUMP VFD SPEED DECREASES. MINIMUM VFD SPEED SHALL BE 15 HERTZ (ADJ).
   b. WHEN LEAD AND LAG PUMPS ARE OPERATING AND THE SPEED OF THE PUMPS ARE AT 30% (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), STOP THE PUMP WITH THE GREATEST NUMBER OF RUN HOURS.
3. AS DIFFERENTIAL PRESSURE FALLS BELOW SETPOINT, THE FOLLOWING OCCURS:
   a. LEAD PUMP VFD SPEED INCREASES
   b. WHEN LEAD PUMP REACHES 95% OR GREATER (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), THE LAG PUMP STARTS AND RAMPS UP TO MATCH THE SPEED OF THE LEAD PUMP, THEN BOTH PUMPS MODULATE IN UNISON TO MAINTAIN PRESSURE SETPOINT.

H. UPON DIFFERENTIAL PRESSURE TRANSMITTER FAILURE, PUMPS SHALL BE CONTROLLED AT LAST KNOWN SPEED.

I. DIFFERENTIAL PRESSURE RESET:
1. PERFORM EVERY 15 MINUTES (ADJ)
2. IF ANY VALVE COMMAND IS GREATER THAN 90% (ADJ), INCREASE PRESSURE SETPOINT BY 0.1 PSID
3. IF ALL VALVE COMMANDS ARE LESS THAN 80% (ADJ), DECREASE THE PRESSURE SETPOINT BY 0.1 PSID

J. MINIMUM WATER FLOW CONTROL:
1. AS WATER FLOW DECREASES BELOW MINIMUM FLOW SETPOINT, THE MINIMUM FLOW BYPASS VALVE MODULATES OPEN
2. AS WATER FLOW RISES ABOVE MINIMUM FLOW SETPOINT, THE MINIMUM FLOW BYPASS VALVE MODULATES CLOSED

K. BUILDING SUPPLY TEMPERATURE CONTROL:
1. LEAD HEAT EXCHANGER TEMPERATURE CONTROL VALVE MODULATES TO MAINTAIN BUILDING SUPPLY TEMPERATURE SETPOINT.
2. HEAT EXCHANGER ISOLATION VALVE OPENS ANY TIME THE ASSOCIATED TEMPERATURE CONTROL VALVE OPENS
3. WHEN THE LEAD TEMPERATURE CONTROL VALVE REACHES 95% OR GREATER (ADJ) FOR A PERIOD OF 3 MINUTES (ADJ), THE TEMPERATURE CONTROL VALVE FOR THE LAG HEAT EXCHANGER SHALL OPEN AND MODULATE TO MATCH THE LEAD TEMPERATURE CONTROL VALVE. ONCE BOTH TEMPERATURE CONTROL VALVES MATCH POSITION, VALVE MODULATE IN UNISON TO MAINTAIN TEMPERATURE SETPOINT.
4. WHEN LEAD AND LAG TEMPERATURE CONTROL VALVES ARE OPEN TO 30% OR LESS (ADJ) FOR A PERIOD OF 3 MINUTES (ADJ), CLOSE THE TEMPERATURE CONTROL VALVE ASSOCIATED WITH THE LAG HEAT EXCHANGER.
5. HEAT EXCHANGER ISOLATION VALVE CLOSES ANY TIME THE ASSOCIATED TEMPERATURE CONTROL VALVE CLOSES
6. LEAD/LAG DESIGNATIONS ROTATE EVERY 30 DAYS (ADJ). TRANSFER SHALL BE SEAMLESS WITH NO DISRUPTION OR CHANGE TO PRESENT OPERATING CONDITIONS.

L. PUMP ROTATION:
1. UPON ROTATION COMMAND, VIA SCHEDULE OR OPERATOR INPUT:
   a. DIFFERENTIAL PRESSURE CONTROL SEQUENCE REMAINS ACTIVE
   b. LAG PUMP GRADUALLY RAMPS UP TO 20 HERTZ (ADJ) AND HOLDS
   c. LEAD PUMP GRADUALLY RAMPS DOWN AND TURNS OFF
   d. LEAD/LAG DESIGNATIONS ROTATE

M. MAINTENANCE STATE:
1. OPERATOR SHALL HAVE THE ABILITY TO PLACE ANY PUMP OR HEAT EXCHANGER IN 'MAINTENANCE STATE' USING THE WORKSTATION. A PUMP OR HEAT EXCHANGER IS NOT ALLOWED TO OPERATE WHILE IN MAINTENANCE STATE.

N. SAFETIES:
1. GENERATE ALARM IF BUILDING SUPPLY TEMPERATURE VARIES FROM SETPOINT BY 2 DEGREES (ADJ)
2. GENERATE ALARM IF SPEED FEEDBACK FROM A VFD DOES NOT MATCH THE ASSOCIATED PUMP COMMAND

O. POWER FAILURE MODE:
1. UPON RESUMPTION OF NORMAL POWER AS INDICATED BY POWER MANAGEMENT PLC NORMAL PUMP CONTROL SEQUENCE SHALL RESTART AUTOMATICALLY.

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
TCV 01	HEAT EXCHANGER CONTROL VALVE	% OPEN	X								X
TCV 02	HEAT EXCHANGER CONTROL VALVE	%OPEN	X								X
FCV 01	HEAT EXCHANGER ISOLATION VALVE	OPEN/CLOSED		X							X
TE 01	HEAT EXCHANGER SUPPLY TEMPERATURE	DEG F	X								X
FCV 02	HEAT EXCHANGER ISOLATION VALVE	OPEN/CLOSED		X							X
TE 02	HEAT EXCHANGER SUPPLY TEMPERATURE	DEG F	X								X
FT 01	BUILDING FLOW	GPM	X							X	X
TE 03	BUILDING SUPPLY TEMPERATURE	DEG F	X							X	X
TE 04	BUILDING RETURN TEMPERATURE	DEG F	X							X	X
CY 01	PUMP COMMAND	ON/OFF		X						X	X
IS 01	PUMP STATUS	ON/OFF		X						X	X
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 01	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 01	VFD HAND STATUS	ON/OFF		X						X	X
CY 02	PUMP COMMAND	ON/OFF		X						X	X
IS 02	PUMP STATUS	ON/OFF		X						X	X
IT 02	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 02	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 02	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 02	VFD HAND STATUS	ON/OFF		X						X	X
PDT 01	BUILDING DIFFERENTIAL PRESSURE	PSID	X							X	X
FCV 03	MINIMUM FLOW BYPASS VALVE	% OPEN	X								X
SOFTWARE											
SDP	HEAT EXCHANGER 1 SUPPLY TEMPERATURE SETPOINT	DEG F	X								X
SDP	HEAT EXCHANGER 2 SUPPLY TEMPERATURE SETPOINT	DEG F	X								X
SDP	HEAT EXCHANGER 1 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	HEAT EXCHANGER 2 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	BUILDING SUPPLY TEMPERATURE SETPOINT	DEG F	X			60.0				X	X
SDP	BUILDING DIFFERENTIAL PRESSURE SETPOINT	PSID	X							X	X
SDP	MAXIMUM BUILDING DIFFERENTIAL PRESSURE LIMIT	PSID	X								X
SDP	MINIMUM BUILDING DIFFERENTIAL PRESSURE LIMIT	PSID	X								X
SDP	MINIMUM BUILDING FLOW SETPOINT	GPM	X			(1)					X
SDP	LEAD BUILDING PUMP DESIGNATION	1 OR 2		X							X
SDP	PUMP 1 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	PUMP 2 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	PUMP 1 NUMBER OF STARTS	STARTS	X							X	X
SDP	PUMP 1 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	PUMP 1 RUN TIME	HOURS	X							X	X
SDP	PUMP 1 OFF TIME	HOURS	X								X
SDP	PUMP 1 MAINTENANCE TIME	HOURS	X								X
SDP	PUMP 1 NUMBER OF STARTS	STARTS	X							X	X
SDP	PUMP 1 NUMBER OF FAILED STARTS	FAILED STARTS	X							X	X
SDP	PUMP 2 RUN TIME	HOURS	X							X	X
SDP	PUMP 2 OFF TIME	HOURS	X								X
SDP	PUMP 2 MAINTENANCE TIME	HOURS	X								X
SDP	PUMP OPERATING HOUR DEADBAND	HOURS	X								X
SDP	DAILY BUILDING ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	MONTHLY BUILDING ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	YEARLY BUILDING ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	PEAK DAILY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	MINIMUM DAILY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	PEAK MONTHLY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	MINIMUM MONTHLY ENERGY CONSUMPTION	TON-HOURS	X								X
SDP	INSTANEOUS BUILDING COOLING LOAD	TONS	X								X
SDP	PEAK BUILDING COOLING LOAD	TONS	X								X
SDP	MINIMUM BUILDING COOLING LOAD	TONS	X								X

NOTES:
1. DETERMINE SETPOINTS IN COORDINATION WITH SUCCESSFUL BIDDERS FOR PUMPS AND PRIMARY EQUIPMENT, TO MEET REQUIREMENTS FOR MINIMUM FLOW.

CHILLED BEAM WATER CONTROL DIAGRAM

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

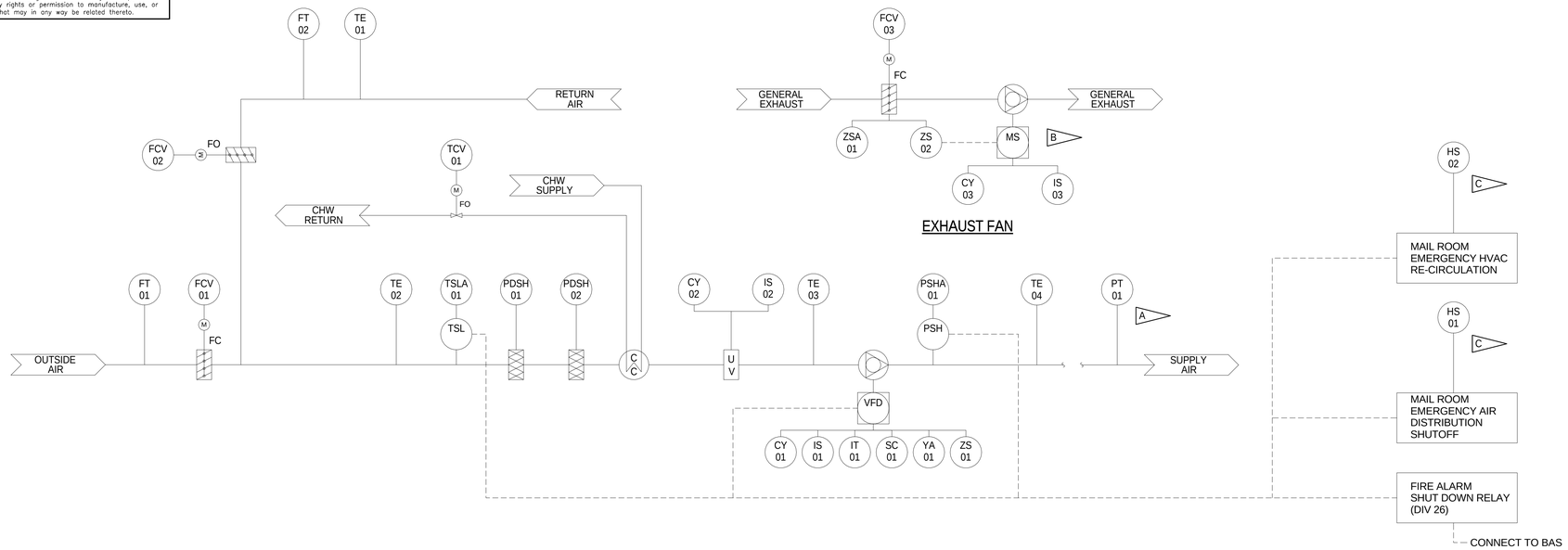
CHILLED BEAM WATER CONTROL DIAGRAM

M614

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 52

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

A. REMOTE DUCT PRESSURE SENSOR LOCATED 2/3 DOWNSTREAM OF HIGH PRESSURE SUPPLY DUCT. HARDWIRE STATIC PRESSURE TRANSMITTER TO AIR HANDLING UNIT CONTROLLER.

B. EXHAUST FANS ARE ASSOCIATED WITH SPECIFIC AIR HANDLING UNITS. REFER TO SCHEDULES AND FLOW DIAGRAMS FOR EXHAUST FANS.

C. LOCATE WALL-MOUNTED SWITCH AS SHOWN ON FIRST LEVEL - AREA 2 PIPING PLAN. SWITCH SHALL BE RED, MAINTAINED MUSHROOM HEAD PUSHBUTTON SIMILAR TO EATON M22S-DP-R MODEL WITH SEALING SHROUD ACCESORY SIMILAR TO EATON M22-PL-PV. PROVIDE YELLOW LAMINATED PLASTIC NAMEPLATE ADJACENT TO SWITCH, LABELED AS MARKED HERE.

MIXED AIR UNIT - CONTROL SEQUENCE

A. GENERAL:
1. VARIABLE AIR VOLUME (VAV) RE-CIRCULATING AIR HANDLING SYSTEM DISTRIBUTES AIR TO VAV AIR TERMINAL UNITS
2. SYSTEM OPERATION:
   a. OCCUPIED MODE OCCURS MON TO FRI 7AM TO 6PM (ADJ).
   b. START UP SEQUENCE ACTIVATES AT A TIME DETERMINED BY OPTIMUM START FUNCTION.
   c. UNOCCUPIED MODE OCCURS MON TO FRI 6 PM TO 7AM, SAT AND SUN ALL DAY.
   d. OVERRIDE OF "UNOCCUPIED" MODE IS ACCOMPLISHED BY ACTIVATION OF ANY SINGLE PUSHBUTTON OVERRIDE SWITCH AT ZONE LEVEL; REFER ROOM TYPE CONTROL SEQUENCES.
3. SYSTEM SHALL RESTART AUTOMATICALLY ACCORDING TO TIME-OF-DAY SCHEDULE ONCE NORMAL POWER IS RESTORED FOLLOWING A POWER OUTAGE.

B. START UP:
1. UPON START UP COMMAND:
   a. RETURN AIR DAMPER OPENS FULLY.
   b. SUPPLY FAN VFD STARTS SUPPLY FAN(S); VFD AND EACH FAN ARE PROVEN.
   c. SUPPLY STATIC PRESSURE CONTROL SEQUENCE ACTIVATES.
   d. SUPPLY FAN STATIC PRESSURE RESET SEQUENCE ACTIVATES.
   e. COOLING COIL TEMPERATURE CONTROL SEQUENCE ACTIVATES.
   f. SUPPLY AIR TEMPERATURE RESET SEQUENCE ACTIVATES.
   g. OUTSIDE AIR CONTROL SEQUENCE ACTIVATES.
   h. ENERGIZE UV LIGHTS.

C. OCCUPIED:
1. UPON OCCUPIED COMMAND:
   a. OUTSIDE AIR CONTROL SEQUENCE ACTIVATES, WITH OCCUPIED SETPOINTS.
   b. ASSOCIATED EXHAUST FAN(S) STARTS, AND IS PROVEN.

D. UNOCCUPIED:
1. UPON UNOCCUPIED COMMAND, VIA SCHEDULE OR OPERATOR, THE FOLLOWING OCCURS:
   a. SHUT DOWN SEQUENCE ACTIVATES
   b. SPACE UNOCCUPIED SETPOINTS ARE ACTIVATED
   c. OUTSIDE AIR CONTROL SEQUENCE DEACTIVATES AND DAMPER CLOSES.
2. IF 25% OF ZONE TEMPERATURE/HUMIDITY SENSORS ARE ABOVE SETPOINT, THE FOLLOWING OCCURS:
   a. START UP SEQUENCE ACTIVATES AND UNIT OPERATES FOR A DURATION EQUAL TO THE MINIMUM RUN TIME SETPOINT
   b. ASSOCIATED EXHAUST DAMPERS REMAIN CLOSED
   c. ASSOCIATED OUTSIDE AIR DAMPER REMAINS CLOSED
3. AS ZONE TEMPERATURE/HUMIDITY IS SATISFIED, THE FOLLOWING OCCURS:
   a. SHUT DOWN SEQUENCE ACTIVATES

E. SHUT DOWN:
1. UPON SHUT DOWN COMMAND:
   a. SUPPLY FANS STOP.
   b. OUTSIDE AIR DAMPERS CLOSE.
   c. COOLING COIL TEMPERATURE CONTROL SEQUENCE DEACTIVATES AND VALVE CLOSES.
   d. ALL OTHER SEQUENCES DISABLE.
   e. ASSOCIATED EXHAUST FAN(S) STOP AND EXHAUST DAMPER(S) CLOSE.
   f. NUISANCE ALARMS ARE SUPPRESSED.
   g. UV LIGHTS DE-ENERGIZE 10 MINS (ADJ) AFTER SHUT DOWN COMMAND.

F. SUPPLY FAN STATIC PRESSURE CONTROL:
1. VFD CONTROLS THE SUPPLY FAN SPEED.
2. SUPPLY FAN VFD SPEED MODULATES TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SETPOINT.

G. SUPPLY DUCT STATIC PRESSURE RESET:
1. PERFORM EVERY 15 MINUTES (ADJ)
2. IF ANY VAV BOX DAMPER COMMAND IS GREATER THAN 90% (ADJ), INCREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.
3. IF ALL VAV BOX DAMPER COMMANDS ARE LESS THAN 60% (ADJ), DECREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.

H. COOLING COIL TEMPERATURE CONTROL:
1. COOLING COIL VALVE MODULATES TO MAINTAIN COOLING COIL LEAVING AIR SETPOINT.

I. SUPPLY AIR TEMPERATURE RESET CONTROL:
1. RESET SEQUENCE IS ONLY ACTIVE WHEN STATIC PRESSURE SETPOINT IS AT MINIMUM.
2. RESET THE COOLING COIL LEAVING AIR TEMPERATURE (LAT) BASED ON THE FOLLOWING SCHEDULE:
   a. 50% (ADJ) OF THE ZONE SERVED HAVE A REHEAT VALVE COMMAND AT 75% (ADJ) OR HIGHER: INCREASE LAT 1 DEG F EVERY 10 MINUTES (ADJ) UNTIL 75% (ADJ) OF ZONE REHEAT COIL COMMANDS ARE BELOW 65% (ADJ)
   b. 75% (ADJ) OF THE ZONE SERVED HAVE A REHEAT VALVE COMMAND AT 25% (ADJ) OR LOWER: DECREASE LAT 1 DEG F EVERY 10 MINUTES (ADJ) UNTIL 50% (ADJ) OF ZONE REHEAT COIL COMMANDS ARE ABOVE 35% (ADJ)
3. SUPPLY AIR TEMPERATURE RESET STOPS WHEN ANY HUMIDITY SENSOR MEASURES 60% RH OR GREATER

J. OUTSIDE AIR CONTROL:
1. OUTSIDE AIR VOLUME CONTROL:
   a. OUTSIDE AIR DAMPER MODULATES TO MAINTAIN OUTSIDE AIRFLOW SETPOINT.
   b. IF OUTSIDE AIR DAMPER IS 100% OPEN, RETURN AIR DAMPER MODULATES TO MAINTAIN OUTSIDE AIRFLOW SETPOINT.
2. RETURN AIR DAMPER SHALL BE PREVENTED FROM CLOSING LESS THAN 30% OPEN (ADJ), TO PREVENT HIGH AIR HANDLING UNIT SUCTION PRESSURES.

K. KCCS INPUT TO BAS:
1. KCCS WILL PROVIDE THE FOLLOWING VALUES AS INPUT:
2. "0" - BAS ACTION - SHUT DOWN SEQUENCE ACTIVATES
3. "1" - BAS ACTION - START UP SEQUENCE ACTIVATES
4. "2" - BAS ACTION - NORMAL BAS CONTROL
5. "3" - BAS ACTION - RECIRCULATION MODE ACTIVATES

L. RECIRCULATION MODE:
1. UPON RE-CIRCULATION COMMAND BY KCCS, INPUT FROM BAS WORKSTATION, OR INPUT FROM EMERGENCY HVAC RE-CIRCULATION SWITCH THE FOLLOWING SHALL OCCUR:
   a. OUTSIDE AIR DAMPER CLOSES
   b. EXHAUST FAN STOPS
   c. EXHAUST DAMPER CLOSES
   d. NUISANCE ALARMS ARE SUPPRESSED

M. EMERGENCY AIR DISTRIBUTION SHUTOFF:
1. UPON ACTIVATION OF EMERGENCY AIR DISTRIBUTION SHUTOFF SWITCH, IMMEDIATELY SHUT DOWN THE AIR DISTRIBUTION SYSTEM THAT FEEDS THE MAIL ROOM.

N. SAFETIES:
1. IF THE MIXED AIR TEMPERATURE IS 38 DEG F OR LESS (ADJ), COOLING COIL CONTROL VALVE SHALL MODULATE TO 100% (ADJ) OPEN.
2. THE FOLLOWING SAFETIES SHUT DOWN SUPPLY FAN AND ACTIVATE SHUT DOWN SEQUENCE:
   a. TEMPERATURE LOW LIMIT
   b. HIGH SUPPLY AIR STATIC PRESSURE
   c. BUILDING FIRE ALARM

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM			MONITORING	
							CONDITION			KCCS	BAS
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)		
HARDWARE											
FT 01	OUTSIDE AIR FLOW	CFM	X							X	X
FCV 01	OUTSIDE AIR DAMPER COMMAND	% OPEN	X								X
TE 01	RETURN AIR TEMPERATURE	DEG F	X							X	X
FT 02	RETURN AIR FLOW	CFM	X							X	X
FCV 02	RETURN AIR DAMPER COMMAND	% OPEN	X								X
TCV 01	COOLING COIL VALVE COMMAND	% OPEN	X								X
TE 02	MIXED AIR TEMPERATURE	DEG F	X							X	X
TSLA 01	LOW LIMIT ALARM STATUS	NORMAL/ALARM		X				35 F		X	X
PDSH 01	PREFILTER STATUS	NORMAL/DIRTY		X							X
PDSH 02	FINAL FILTER STATUS	NORMAL/DIRTY		X							X
CY 01	FAN COMMAND	ON/OFF		X						X	X
IS 01	FAN STATUS	ON/OFF		X						X	X
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 01	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 01	VFD HAND STATUS	ON/OFF		X						X	X
CY 02	UV LIGHT COMMAND	ON/OFF		X							X
IS 02	UV LIGHT STATUS	ON/OFF		X							X
TE 03	COOLING COIL LEAVING AIR TEMPERATURE	DEG F	X							X	X
PSHA 01	HIGH STATIC ALARM	NORMAL/ALARM		X						X	X
TE 04	SUPPLY AIR TEMPERATURE	DEG F	X							X	X
PT 01	SUPPLY STATIC PRESSURE	IN WG	X								X
CY 03	FAN COMMAND	ON/OFF		X						X	X
IS 03	FAN STATUS	ON/OFF		X						X	X
FCV 03	EXHAUST DAMPER COMMAND	OPEN/CLOSED		X						X	X
ZS 02	EXHAUST DAMPER END SWITCH	OPEN/CLOSED		X						X	X
ZSA 01	EXHAUST DAMPER END SWITCH ALARM	OPEN/CLOSED		X						X	X
HS 01	EMERGENCY AIR DISTRIBUTION SHUTOFF	NORMAL/ALARM		X						X	X
HS 02	EMERGENCY HVAC RE-CIRCULATION SWITCH	NORMAL/ALARM		X							
SOFTWARE											
SDP	SYSTEM START-UP	ON/OFF		X						X	X
SDP	OCCUPANCY STATE	OCCCUPIED/UNOCCUPIED		X						X	X
SDP	COOLING COIL LEAVING AIR SETPOINT	DEG F	X								X
SDP	MAXIMUM LEAVING AIR TEMPERATURE LIMIT	DEG F	X								X
SDP	MINIMUM LEAVING AIR TEMPERATURE LIMIT	DEG F	X								X
SDP	DUCT STATIC PRESSURE SETPOINT	IN WG	X								X
SDP	MAXIMUM STATIC PRESSURE LIMIT	IN WG	X								X
SDP	MINIMUM STATIC PRESSURE LIMIT	IN WG	X								X
SDP	OUTSIDE AIR FLOW SETPOINT	CFM	X								X
SDP	MINIMUM RUN TIME SET POINT	HOURS	X								X
SDP	SUPPLY FAN RUN TIME	HOURS	X								X
SDP	EXHAUST FAN RUN TIME	HOURS	X								X
SDP	UV LIGHT RUN TIME	HOURS	X								X
SDP	FAN SPEED	HERTZ	X								X
SDP	KCCS OVERRIDE VALUE	0/1/2/3	X							X	
SDP	RECIRCULATION MODE	ON/OFF		X						X	X

AHU - MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM

AHU-4

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

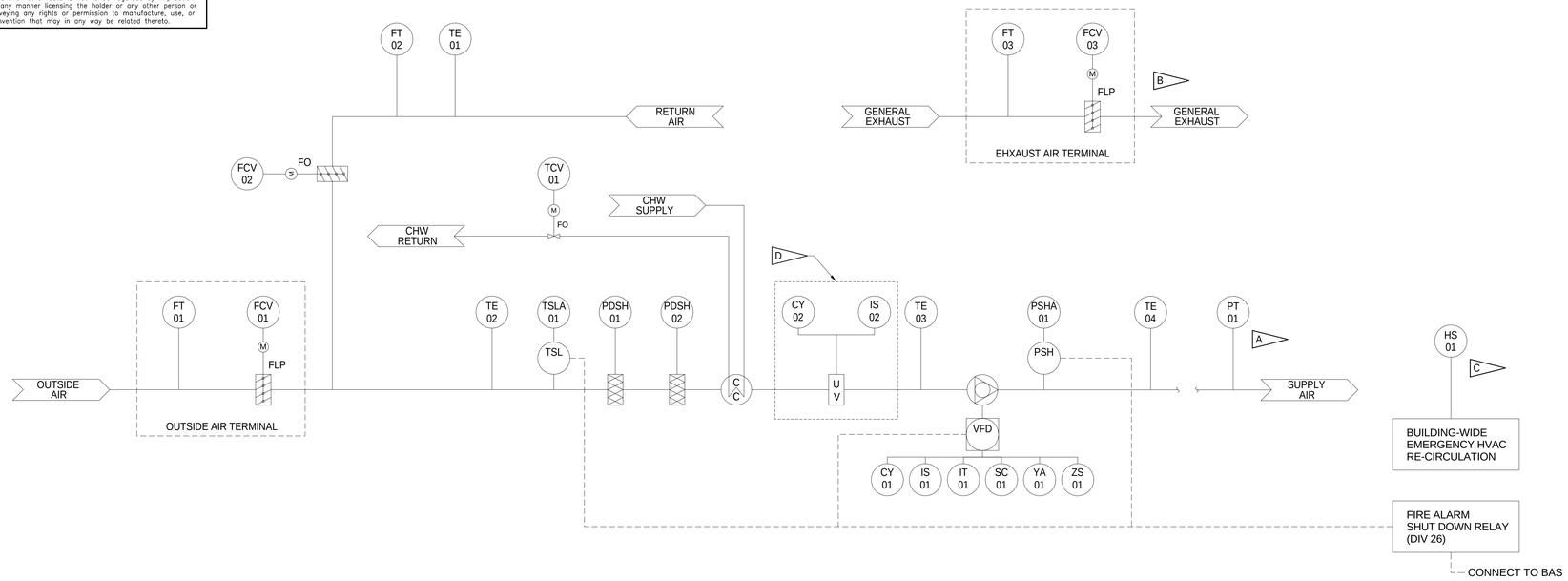
AHU - MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM

M621

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 53

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

A. REMOTE DUCT PRESSURE SENSOR LOCATED 2/3 DOWNSTREAM OF HIGH PRESSURE SUPPLY DUCT. HARDWIRE STATIC PRESSURE TRANSMITTER TO AIR HANDLING UNIT CONTROLLER.

B. TYPICAL FOR MULTIPLE EXHAUST AIR TERMINALS ASSOCIATED WITH SPECIFIC AIR HANDLING UNITS. REFER TO SCHEDULES AND PLANS FOR EXHAUST AIR TERMINALS.

C. LOCATE WALL-MOUNTED SWITCH AS SHOWN ON FIRST LEVEL - AREA 1 PIPING PLAN. SWITCH SHALL BE RED, MAINTAINED MUSHROOM HEAD PUSHBUTTON SIMILAR TO EATON M22S-DP-R MODEL WITH SEALING SHROUD ACCESORY SIMILAR TO EATON M22-PL-PV. PROVIDE YELLOW LAMINATED PLASTIC NAMEPLATE ADJACENT TO SWITCH, LABELED AS MARKED HERE.

D. TYPICAL FOR EACH OF TWO SETS OF UV LIGHTS FOR AHU-1. PROVIDE INDIVIDUAL INSTRUMENTATION AND PROGRAMMING FOR EACH SET OF UV LIGHTS WITHIN AHU-1.

MIXED AIR UNIT - CONTROL SEQUENCE

A. GENERAL:
1. VARIABLE AIR VOLUME (VAV) RE-CIRCULATING AIR HANDLING SYSTEM DISTRIBUTES AIR TO VAV AIR TERMINAL UNITS
2. SYSTEM OPERATION:
   a. OCCUPIED MODE OCCURS MON TO FRI 7AM TO 6PM (ADJ).
   b. START UP SEQUENCE ACTIVATES AT A TIME DETERMINED BY OPTIMUM START FUNCTION.
   c. UNOCCUPIED MODE OCCURS MON TO FRI 6 PM TO 7AM, SAT AND SUN ALL DAY.
   d. OVERRIDE OF "UNOCCUPIED" MODE IS ACCOMPLISHED BY ACTIVATION OF ANY SINGLE PUSHBUTTON OVERRIDE SWITCH AT ZONE LEVEL; REFER ROOM TYPE CONTROL SEQUENCES.
3. SYSTEM SHALL RESTART AUTOMATICALLY ACCORDING TO TIME-OF-DAY SCHEDULE ONCE NORMAL POWER IS RESTORED FOLLOWING A POWER OUTAGE.

B. START UP:
1. UPON START UP COMMAND:
   a. RETURN AIR DAMPER OPENS FULLY.
   b. SUPPLY FAN VFD STARTS SUPPLY FAN(S); VFD AND EACH FAN ARE PROVEN.
   c. SUPPLY STATIC PRESSURE CONTROL SEQUENCE ACTIVATES.
   d. SUPPLY FAN STATIC PRESSURE RESET SEQUENCE ACTIVATES.
   e. COOLING COIL TEMPERATURE CONTROL SEQUENCE ACTIVATES.
   f. SUPPLY AIR TEMPERATURE RESET SEQUENCE ACTIVATES.
   g. OUTSIDE AIR CONTROL SEQUENCE ACTIVATES.
   h. ENERGIZE UV LIGHTS.
   i. DEMAND CONTROLLED VENTILATION SEQUENCE ACTIVATES.
   j. PRESSURIZATION CONTROL SEQUENCE ACTIVATES.

C. OCCUPIED:
1. UPON OCCUPIED COMMAND:
   a. OUTSIDE AIR CONTROL SEQUENCE ACTIVATES, WITH OCCUPIED SETPOINTS.
   b. DEMAND CONTROLLED VENTILATION SEQUENCE ACTIVATES.
   c. ASSOCIATED EXHAUST FAN(S) STARTS, AND IS PROVEN.

D. UNOCCUPIED:
1. UPON UNOCCUPIED COMMAND, VIA SCHEDULE OR OPERATOR, THE FOLLOWING OCCURS:
   a. SHUT DOWN SEQUENCE ACTIVATES
   b. SPACE UNOCCUPIED SETPOINTS ARE ACTIVATED
   c. OUTSIDE AIR CONTROL SEQUENCE DEACTIVATES AND DAMPER CLOSES.
2. IF 25% OF ZONE TEMPERATURE/HUMIDITY SENSORS ARE ABOVE SETPOINT, THE
   a. START UP SEQUENCE ACTIVATES AND UNIT OPERATES FOR A DURATION EQUAL TO THE MINIMUM RUN TIME SETPOINT
   b. ASSOCIATED EXHAUST DAMPERS REMAIN CLOSED
   c. ASSOCIATED OUTSIDE AIR DAMPER REMAINS CLOSED
3. AS ZONE TEMPERATURE/HUMIDITY IS SATISFIED, THE FOLLOWING OCCURS:
   a. SHUT DOWN SEQUENCE ACTIVATES

E. SHUT DOWN:
1. UPON SHUT DOWN COMMAND:
   a. SUPPLY FANS STOP.
   b. OUTSIDE AIR DAMPERS CLOSE.
   c. COOLING COIL TEMPERATURE CONTROL SEQUENCE DEACTIVATES AND VALVE CLOSES.
   d. ALL OTHER SEQUENCES DISABLE.
   e. EXHAUST DAMPERS CLOSE.
   f. NUISANCE ALARMS ARE SUPPRESSED.
   g. UV LIGHTS DE-ENERGIZE 10 MINS (ADJ) AFTER SHUT DOWN COMMAND.

F. SUPPLY FAN STATIC PRESSURE CONTROL:
1. VFD CONTROLS THE SUPPLY FAN SPEED.
2. SUPPLY FAN VFD SPEED MODULATES TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SETPOINT.

G. SUPPLY DUCT STATIC PRESSURE RESET:
1. PERFORM EVERY 15 MINUTES (ADJ)
2. IF ANY VAV BOX DAMPER COMMAND IS GREATER THAN 90% (ADJ), INCREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.
3. IF ALL VAV BOX DAMPER COMMANDS ARE LESS THAN 60% (ADJ), DECREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.

H. COOLING COIL TEMPERATURE CONTROL:
1. COOLING COIL VALVE MODULATES TO MAINTAIN COOLING COIL LEAVING AIR SETPOINT.

I. SUPPLY AIR TEMPERATURE RESET CONTROL:
1. RESET SEQUENCE IS ONLY ACTIVE WHEN STATIC PRESSURE SETPOINT IS AT MINIMUM.
2. RESET THE COOLING COIL LEAVING AIR TEMPERATURE (LAT) BASED ON THE FOLLOWING SCHEDULE:
   a. 50% (ADJ) OF THE ZONE SERVED HAVE A REHEAT VALVE COMMAND AT 75% (ADJ) OR HIGHER: INCREASE LAT 1 DEG F EVERY 10 MINUTES (ADJ) UNTIL 75% (ADJ) OF ZONE REHEAT COIL COMMANDS ARE BELOW 65% (ADJ)
   b. 75% (ADJ) OF THE ZONE SERVED HAVE A REHEAT VALVE COMMAND AT 25% (ADJ) OR LOWER: DECREASE LAT 1 DEG F EVERY 10 MINUTES (ADJ) UNTIL 50% (ADJ) OF ZONE REHEAT COIL COMMANDS ARE ABOVE 35% (ADJ)
3. SUPPLY AIR TEMPERATURE RESET STOPS WHEN ANY HUMIDITY SENSOR MEASURES 60% RH OR GREATER

J. OUTSIDE AIR CONTROL:
1. OUTSIDE AIR VOLUME CONTROL:
   a. OUTSIDE AIR DAMPER MODULATES TO MAINTAIN OUTSIDE AIRFLOW SETPOINT.
   b. IF OUTSIDE AIR DAMPER IS 100% OPEN, RETURN AIR DAMPER MODULATES TO MAINTAIN OUTSIDE AIRFLOW SETPOINT.
2. RETURN AIR DAMPER SHALL BE PREVENTED FROM CLOSING LESS THAN 30% OPEN (ADJ), TO PREVENT HIGH AIR HANDLING UNIT SUCTION PRESSURES.

K. DEMAND CONTROLLED VENTILATION, FOR AHU-2 ONLY:
1. AHU OUTSIDE AIRFLOW SETPOINT MAY BE REDUCED BASED UPON REDUCED OCCUPANCY.
2. PERFORM A HIGH SELECT FUNCTION ON ZONES FITTED WITH CO2 SENSORS EVERY 15 MINUTES (ADJ), TO DETERMINE THE HIGHEST ZONE RETURN AIR CO2 CONCENTRATION.
3. AS HIGHEST ZONE CO2 CONCENTRATION DECREASES BELOW ZONE SET POINT, OUTSIDE AIR FLOW SET POINT RESETS DOWN TOWARD MINIMUM OUTSIDE AIR SET POINT.
4. AS HIGHEST ZONE CO2 CONCENTRATION RISES ABOVE ZONE CO2 SET POINT, OUTSIDE AIRFLOW SET POINT RESETS UP TOWARD MAXIMUM OUTSIDE AIR FLOW SET POINT.
5. OUTDOOR AIRFLOW SETPOINT MUST NEVER BE RESET BELOW THE SCHEDULED MINIMUM, TO PREVENT THE BUILDING FROM BEING BECOMING NEGATIVELY PRESSURIZED.

L. PRESSURIZATION CONTROL, FOR AHU-2 ONLY:
1. THE GENERAL EXHAUST DAMPER SHALL TRACK THE OUTSIDE AIR DAMPER TO MAINTAIN A CONSTANT DIFFERENCE BETWEEN THE OUTSIDE AIR FLOW RATE AND EXHAUST FLOW RATE.

M. KCCS INPUT TO BAS:
1. KCCS WILL PROVIDE THE FOLLOWING VALUES AS INPUT:
2. "0" - BAS ACTION - SHUT DOWN SEQUENCE ACTIVATES
3. "1" - BAS ACTION - START UP SEQUENCE ACTIVATES
4. "2" - BAS ACTION - NORMAL BAS CONTROL
5. "3" - BAS ACTION - RECIRCULATION MODE ACTIVATES

N. RECIRCULATION MODE:
1. UPON RE-CIRCULATION COMMAND BY KCCS, INPUT FROM BAS WORKSTATION, OR INPUT EMERGENCY HVAC RE-CIRCULATION SWITCH THE FOLLOWING SHALL OCCUR:
   a. ALL OUTSIDE AIR DAMPERS CLOSE
   b. ALL EXHAUST FANS STOP
   c. EXHAUST DAMPERS CLOSE
   d. NUISANCE ALARMS ARE SUPPRESSED

O. SAFETIES:
1. IF THE MIXED AIR TEMPERATURE IS 38 DEG F OR LESS (ADJ), COOLING COIL CONTROL VALVE SHALL MODULATE TO 100% (ADJ) OPEN.
2. THE FOLLOWING SAFETIES SHUT DOWN SUPPLY FAN AND ACTIVATE SHUT DOWN SEQUENCE:
   a. TEMPERATURE LOW LIMIT
   b. HIGH SUPPLY AIR STATIC PRESSURE
   c. BUILDING FIRE ALARM

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM			MONITORING	
							CONDITION			KCCS	BAS
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)		
HARDWARE											
FT 01	OUTSIDE AIR FLOW	CFM	X							X	X
FCV 01	OUTSIDE AIR DAMPER COMMAND	% OPEN	X								X
TE 01	RETURN AIR TEMPERATURE	DEG F	X							X	X
FT 02	RETURN AIR FLOW	CFM	X							X	X
FCV 02	RETURN AIR DAMPER COMMAND	% OPEN	X								X
TCV 01	COOLING COIL VALVE COMMAND	% OPEN	X								X
TE 02	MIXED AIR TEMPERATURE	DEG F	X							X	X
TSLA 01	LOW LIMIT ALARM STATUS	NORMAL/ALARM		X				35 F		X	X
PDSH 01	PREFILTER STATUS	NORMAL/DIRTY		X							X
PDSH 02	FINAL FILTER STATUS	NORMAL/DIRTY		X							X
CY 01	FAN COMMAND	ON/OFF		X						X	X
IS 01	FAN STATUS	ON/OFF		X						X	X
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 01	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 01	VFD HAND STATUS	ON/OFF		X						X	X
CY 02	UV LIGHT COMMAND	ON/OFF		X							X
IS 02	UV LIGHT STATUS	ON/OFF		X							X
TE 03	COOLING COIL LEAVING AIR TEMPERATURE	DEG F	X							X	X
PSHA 01	HIGH STATIC ALARM	NORMAL/ALARM		X						X	X
TE 04	SUPPLY AIR TEMPERATURE	DEG F	X							X	X
PT 01	SUPPLY STATIC PRESSURE	IN WG	X								X
FT 03	GENERAL EXHAUST AIR FLOW	CFM	X							X	X
FCV 03	GENERAL EXHAUST DAMPER COMMAND	% OPEN	X								X
HS 01	EMERGENCY HVAC RE-CIRCULATION SWITCH	NORMAL/ALARM	X							X	X
SOFTWARE											
SDP	SYSTEM START-UP	ON/OFF		X						X	X
SDP	OCCUPANCY STATE	OCCCUPIED/UNOCCUPIED		X						X	X
SDP	COOLING COIL LEAVING AIR SETPOINT	DEG F	X								X
SDP	MAXIMUM LEAVING AIR TEMPERATURE LIMIT	DEG F	X								X
SDP	MINIMUM LEAVING AIR TEMPERATURE LIMIT	DEG F	X								X
SDP	DUCT STATIC PRESSURE SETPOINT	IN WG	X								X
SDP	MAXIMUM STATIC PRESSURE LIMIT	IN WG	X								X
SDP	MINIMUM STATIC PRESSURE LIMIT	IN WG	X								X
SDP	OUTSIDE AIR FLOW SETPOINT	CFM	X								X
SDP	MAXIMUM OUTSIDE AIR FLOW LIMIT	CFM	X								X
SDP	MINIMUM OUTSIDE AIR FLOW LIMIT	CFM	X								X
SDP	PRESSURIZATION AIR FLOW SETPOINT	CFM	X								X
SDP	GENERAL EXHAUST AIR FLOW SETPOINT	XFM	X								X
SDP	MINIMUM RUN TIME SET POINT	HOURS	X								X
SDP	SUPPLY FAN RUN TIME	HOURS	X								X
SDP	EXHAUST FAN RUN TIME	HOURS	X								X
SDP	UV LIGHT RUN TIME	HOURS	X								X
SDP	FAN SPEED	HERTZ	X								X
SDP	KCCS OVERRIDE VALUE	0/1/2/3	X							X	
SDP	RECIRCULATION MODE	ON/OFF		X						X	X

D

B

D

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

AHU - MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM

M622

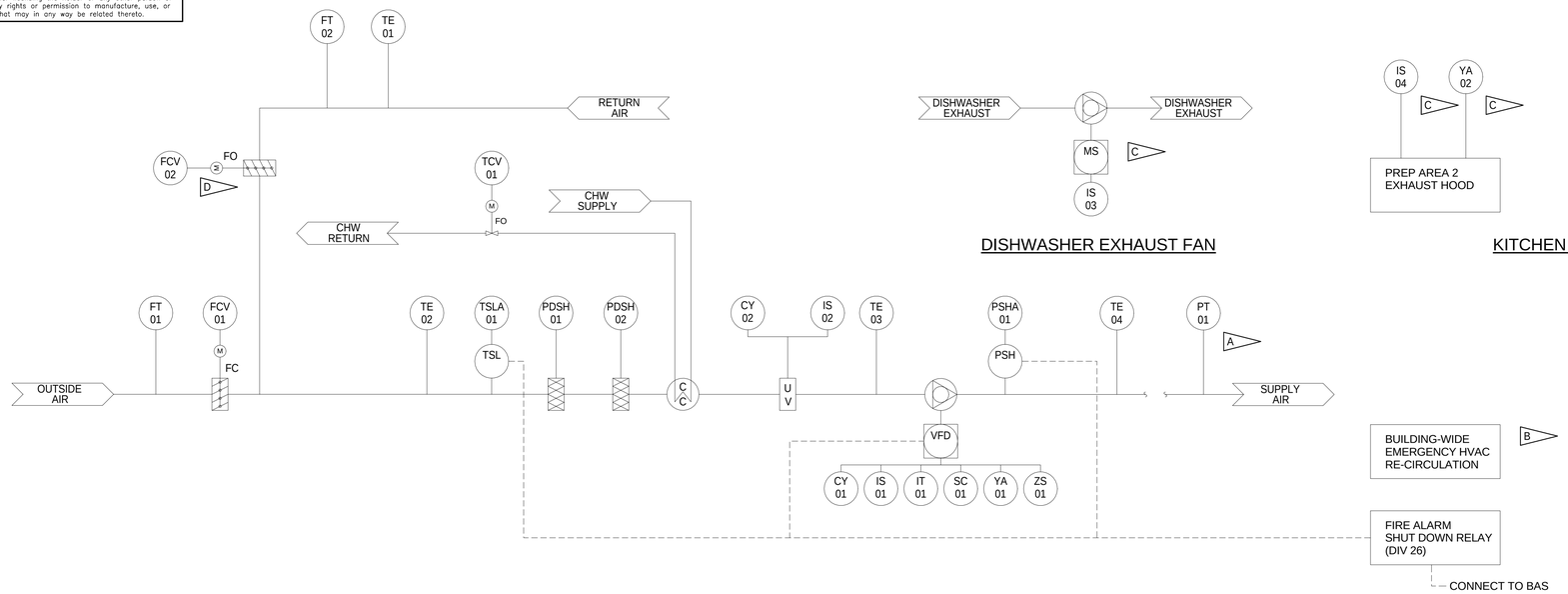
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 54

AHU - MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM

AHU-1, AHU-2, AND AHU-5 THRU 10 **NO SCALE**

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

- A — REMOTE DUCT PRESSURE SENSOR LOCATED 2/3 DOWNSTREAM OF HIGH PRESSURE SUPPLY DUCT. HARDWIRE STATIC PRESSURE TRANSMITTER TO AIR HANDLING UNIT CONTROLLER.
- B — REFER TO M622 FOR BUILDING-WIDE RE-CIRCULATION SWITCH.
- C — REFER TO FOOD SERVICE DRAWINGS FOR KITCHEN EQUIPMENT AND PACKAGED ENERGY MANAGEMENT SYSTEM (EMS) PANELS.
- D — RETURN AIR DAMPER SHALL BE PREVENTED FROM CLOSING LESS THAN 30% OPEN (ADJ).

MIXED AIR UNIT - CONTROL SEQUENCE

A. GENERAL:
1. VARIABLE AIR VOLUME (VAV) RE-CIRCULATING AIR HANDLING SYSTEM DISTRIBUTES AIR TO VAV AIR TERMINAL UNITS
2. SYSTEM OPERATION:
   a. COORDINATE OPERATING SCHEDULE WITH THE ENERGY MANAGEMENT SYSTEM PROVIDED AS PART OF THE FOOD SERVICE EQUIPMENT. REFER TO FOOD SERVICE DRAWINGS.
   b. START UP SEQUENCE ACTIVATES AT A TIME DETERMINED BY OPTIMUM START FUNCTION.
   c. OVERRIDE OF "UNOCCUPIED" MODE IS ACCOMPLISHED BY ACTIVATION OF ANY EXHAUST HOOD AT ZONE LEVEL OR BY ACTIVATION OF THE DISHWASHER EXHAUST FAN; REFER TO ROOM TYPE CONTROL SEQUENCES.
3. SYSTEM SHALL RESTART AUTOMATICALLY ONCE NORMAL POWER IS RESTORED FOLLOWING A POWER OUTAGE.

B. START UP:
1. UPON START UP COMMAND:
   a. RETURN AIR DAMPER OPENS FULLY.
   b. SUPPLY FAN VFD STARTS SUPPLY FAN(S); VFD AND EACH FAN ARE PROVEN.
   c. SUPPLY STATIC PRESSURE CONTROL SEQUENCE ACTIVATES.
   d. SUPPLY FAN STATIC PRESSURE RESET SEQUENCE ACTIVATES.
   e. COOLING COIL TEMPERATURE CONTROL SEQUENCE ACTIVATES.
   f. SUPPLY AIR TEMPERATURE RESET SEQUENCE ACTIVATES.
   g. OUTSIDE AIR CONTROL SEQUENCE ACTIVATES.
   h. ENERGIZE UV LIGHTS.

C. OCCUPIED:
1. UPON OCCUPIED COMMAND:
   a. OUTSIDE AIR CONTROL SEQUENCE ACTIVATES, WITH OCCUPIED SETPOINTS.

D. UNOCCUPIED:
1. UPON UNOCCUPIED COMMAND, VIA SCHEDULE, THE FOLLOWING OCCURS:
   a. SHUT DOWN SEQUENCE ACTIVATES
   b. SPACE UNOCCUPIED SETPOINTS ARE ACTIVATED
   c. OUTSIDE AIR CONTROL SEQUENCE DEACTIVATES AND DAMPER CLOSES.
2. IF 25% OF ZONE TEMPERATURE/HUMIDITY SENSORS ARE ABOVE SETPOINT, THE FOLLOWING OCCURS:
   a. START UP SEQUENCE ACTIVATES AND UNIT OPERATES FOR A DURATION EQUAL TO THE MINIMUM RUN TIME SETPOINT
   b. ASSOCIATED EXHAUST DAMPER(S) REMAIN CLOSED AND EXHAUST FAN(S) REMAIN OFF
   c. ASSOCIATED OUTSIDE AIR DAMPER REMAINS CLOSED
3. AS ZONE TEMPERATURE/HUMIDITY IS SATISFIED, THE FOLLOWING OCCURS:
   a. SHUT DOWN SEQUENCE ACTIVATES

E. SHUT DOWN:
1. UPON SHUT DOWN COMMAND:
   a. SUPPLY FANS STOP.
   b. OUTSIDE AIR DAMPERS CLOSE.
   c. COOLING COIL TEMPERATURE CONTROL SEQUENCE DEACTIVATES AND VALVE CLOSES.
   d. ALL OTHER SEQUENCES DISABLE.
   e. ASSOCIATED EXHAUST DAMPER(S) CLOSE.
   f. NUISANCE ALARMS ARE SUPPRESSED.
   g. UV LIGHTS DE-ENERGIZE 10 MINS (ADJ) AFTER SHUT DOWN COMMAND.

F. SUPPLY FAN STATIC PRESSURE CONTROL:
1. VFD CONTROLS THE SUPPLY FAN SPEED.
2. SUPPLY FAN VFD SPEED MODULATES TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SETPOINT.

G. SUPPLY DUCT STATIC PRESSURE RESET:
1. PERFORM EVERY 15 MINUTES (ADJ)
2. IF ANY VAV BOX DAMPER COMMAND IS GREATER THAN 90% (ADJ), INCREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.
3. IF ALL VAV BOX DAMPER COMMANDS ARE LESS THAN 60% (ADJ), DECREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.

H. COOLING COIL TEMPERATURE CONTROL:
1. COOLING COIL VALVE MODULATES TO MAINTAIN COOLING COIL LEAVING AIR SETPOINT.

I. SUPPLY AIR TEMPERATURE RESET CONTROL:
1. RESET SEQUENCE IS ONLY ACTIVE WHEN STATIC PRESSURE SETPOINT IS AT MINIMUM.
2. RESET THE COOLING COIL LEAVING AIR TEMPERATURE (LAT) BASED ON THE FOLLOWING SCHEDULE:
   a. 50% (ADJ) OF THE ZONE SERVED HAVE A REHEAT VALVE COMMAND AT 75% (ADJ) OR HIGHER: INCREASE LAT 1 DEG F EVERY 10 MINUTES (ADJ) UNTIL 75% (ADJ) OF ZONE REHEAT COIL COMMANDS ARE BELOW 65% (ADJ)
   b. 75% (ADJ) OF THE ZONE SERVED HAVE A REHEAT VALVE COMMAND AT 25% (ADJ) OR LOWER: DECREASE LAT 1 DEG F EVERY 10 MINUTES (ADJ) UNTIL 50% (ADJ) OF ZONE REHEAT COIL COMMANDS ARE ABOVE 35% (ADJ)
3. SUPPLY AIR TEMPERATURE RESET STOPS WHEN ANY HUMIDITY SENSOR MEASURES 60% RH OR GREATER

J. OUTSIDE AIR CONTROL:
1. OUTSIDE AIR VOLUME CONTROL:
   a. THE OUTSIDE AIR DAMPER MODULATES TO MAINTAIN CFM SETPOINT.
   b. IF OUTSIDE AIR DAMPER IS 100% OPEN AND OUTSIDE AIRFLOW IS STILL BELOW SETPOINT, THE RETURN AIR DAMPER MODULATES CLOSED UNTIL SETPOINT IS REACHED.
   c. REVERSE SEQUENCE IF OUTSIDE AIRFLOW IS ABOVE SETPOINT.

2. OUTSIDE AIRFLOW SETPOINT SHALL BE CALCULATED AS FOLLOWS:
   a. IF EXHAUST FAN STATUS EQUALS "ON", INCLUDE CFM SETPOINT.
   b. IF EXHAUST FAN STATUS EQUALS "OFF", EXCLUDE CFM SETPOINT.

BASE OUTSIDE AIRFLOW SETPOINT
+ ACTIVE AHU-3 EXHAUST AIR TERMINAL AIRFLOW SETPOINTS
+ DISHWASHER EXHAUST AIRFLOW SETPOINT
+ PREP AREA 2 EXHAUST HOOD AIRFLOW SETPOINT
+ FOOD STATION 3 EXHAUST HOOD AIRFLOW SETPOINT
ACTIVE OUTSIDE AIRFLOW SETPOINT

K. KITCHEN HOOD FIRE SUPPRESSION MODE:
1. UPON ACTIVATION OF A MANUAL PULL STATION AT AN INDIVIDUAL HOOD:
   a. ACTIVATE AIR HANDLING UNIT SHUTDOWN SEQUENCE
   b. REFER TO FOOD SERVICE DRAWINGS

L. KCCS INPUT TO BAS:
1. KCCS WILL PROVIDE THE FOLLOWING VALUES AS INPUT:
2. "0" - BAS ACTION - SHUT DOWN SEQUENCE ACTIVATES
3. "1" - BAS ACTION - START UP SEQUENCE ACTIVATES
4. "2" - BAS ACTION - NORMAL BAS CONTROL
5. "3" - BAS ACTION - RECIRCULATION MODE ACTIVATES

M. RECIRCULATION MODE:
1. UPON RE-CIRCULATION COMMAND BY KCCS, INPUT FROM BAS WORKSTATION, OR INPUT FROM EMERGENCY HVAC RE-CIRCULATION SWITCH THE FOLLOWING SHALL OCCUR:
   a. OUTSIDE AIR DAMPER CLOSES
   b. EXHAUST DAMPERS CLOSE
   c. NUISANCE ALARMS ARE SUPPRESSED

N. EMERGENCY AIR DISTRIBUTION SHUTOFF:
1. UPON ACTIVATION OF EMERGENCY AIR DISTRIBUTION SHUTOFF SWITCH, IMMEDIATELY SHUT DOWN THE AIR DISTRIBUTION SYSTEM THROUGHOUT THE ENTIRE BUILDING EXCEPT FOR THE MAIL ROOM AND FAN COIL UNITS.

O. SAFETIES:
1. IF THE MIXED AIR TEMPERATURE IS 38 DEG F OR LESS (ADJ), COOLING COIL CONTROL VALVE SHALL MODULATE TO 100% (ADJ) OPEN.
2. THE FOLLOWING SAFETIES ACTIVATE SHUT DOWN SEQUENCE:
   a. TEMPERATURE LOW LIMIT
   b. HIGH SUPPLY AIR STATIC PRESSURE
   c. BUILDING FIRE ALARM

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM			MONITORING	
							CONDITION			KCCS	BAS
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)		
HARDWARE											
FT 01	OUTSIDE AIR FLOW	CFM	X							X	X
FCV 01	OUTSIDE AIR DAMPER COMMAND	% OPEN	X								X
TE 01	RETURN AIR TEMPERATURE	DEG F	X							X	X
FT 02	RETURN AIR FLOW	CFM	X							X	X
FCV 02	RETURN AIR DAMPER COMMAND	% OPEN	X								X
TCV 01	COOLING COIL VALVE COMMAND	% OPEN	X								X
TE 02	MIXED AIR TEMPERATURE	DEG F	X							X	X
TSLA 01	LOW LIMIT ALARM STATUS	NORMAL/ALARM		X				35 F		X	X
PDSH 01	PREFILTER STATUS	NORMAL/DIRTY		X							X
PDSH 02	FINAL FILTER STATUS	NORMAL/DIRTY		X							X
CY 01	FAN COMMAND	ON/OFF		X						X	X
IS 01	FAN STATUS	ON/OFF		X						X	X
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 01	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 01	VFD HAND STATUS	ON/OFF		X						X	X
CY 02	UV LIGHT COMMAND	ON/OFF		X							X
IS 02	UV LIGHT STATUS	ON/OFF		X							X
TE 03	COOLING COIL LEAVING AIR TEMPERATURE	DEG F	X							X	X
PSHA 01	HIGH STATIC ALARM	NORMAL/ALARM		X						X	X
TE 04	SUPPLY AIR TEMPERATURE	DEG F	X							X	X
PT 01	SUPPLY STATIC PRESSURE	IN WG	X								X
IS 03	FAN STATUS	ON/OFF		X							X
IS 04	EXHAUST HOOD STATUS	ON/OFF		X							X
YA 02	EXHAUST HOOD ALARM	NORMAL/ALARM		X							X
IS 05	EXHAUST HOOD STATUS	ON/OFF		X							X
YA 03	EXHAUST HOOD ALARM	NORMAL/ALARM		X							X
SOFTWARE											
SDP	SYSTEM START-UP	ON/OFF		X						X	X
SDP	OCCUPANCY STATE	OCCCUPIED/UNOCCUPIED		X						X	X
SDP	COOLING COIL LEAVING AIR SETPOINT	DEG F	X								X
SDP	MAXIMUM LEAVING AIR TEMPERATURE LIMIT	DEG F	X								X
SDP	MINIMUM LEAVING AIR TEMPERATURE LIMIT	DEG F	X								X
SDP	DUCT STATIC PRESSURE SETPOINT	IN WG	X								X
SDP	MAXIMUM STATIC PRESSURE LIMIT	IN WG	X								X
SDP	MINIMUM STATIC PRESSURE LIMIT	IN WG	X								X
SDP	OUTSIDE AIR FLOW SETPOINT	CFM	X								X
SDP	BASE OUTSIDE AIR FLOW SETPOINT	CFM	X			400					X
SDP	DISHWASHER EXHAUST AIR FLOW SETPOINT	CFM	X			525					X
SDP	PREP AREA 2 EXHAUST HOOD FLOW SETPOINT	CFM	X			840					X
SDP	FOOD STATION 3 EXHAUST FLOW SETPOINT	CFM	X			600					X
SDP	MINIMUM RUN TIME SET POINT	HOURS	X								X
SDP	SUPPLY FAN RUN TIME	HOURS	X								X
SDP	EXHAUST FAN RUN TIME	HOURS	X								X
SDP	UV LIGHT RUN TIME	HOURS	X								X
SDP	FAN SPEED	HERTZ	X								X
SDP	KCCS OVERRIDE VALUE	0/1/2/3	X							X	
SDP	RECIRCULATION MODE	ON/OFF		X						X	X

AHU - KITCHEN MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM

AHU-3 NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST OF LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

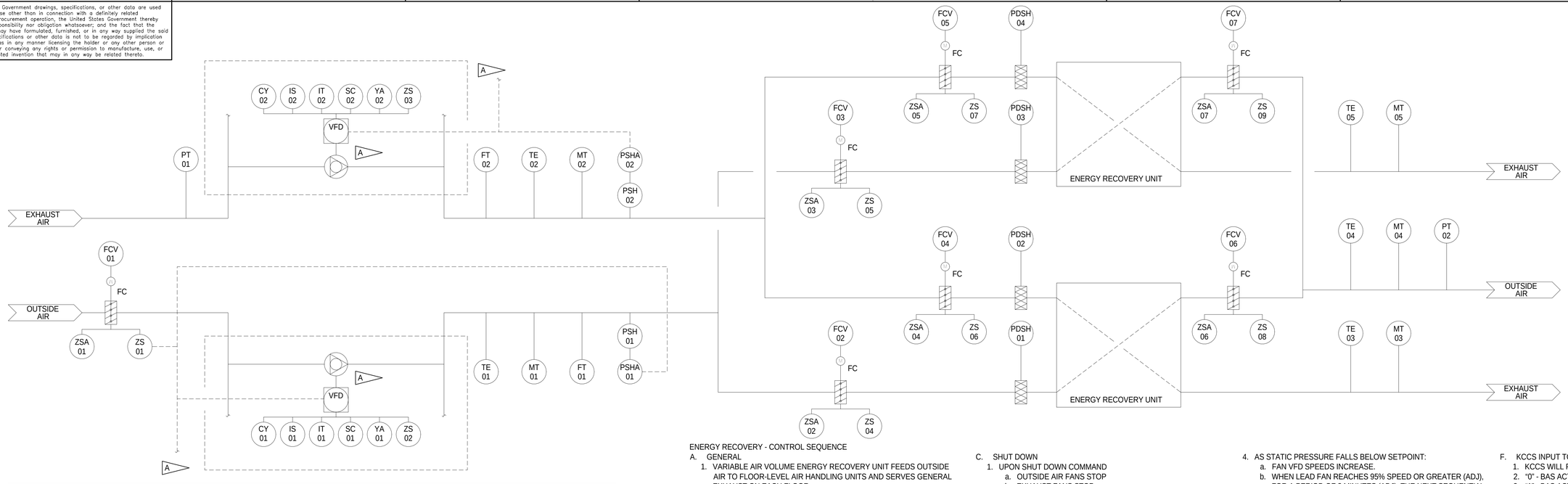
AHU - KITCHEN MIXED AIR UNIT WITH COOLING COIL CONTROL DIAGRAM

M623

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 55

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

A — TYPICAL FOR FOUR FANS.

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	ALARM DELAY (MIN)	KCCS	BAS
HARDWARE											
FCV 01	OUTSIDE AIR ISOLATION DAMPER COMMAND	OPEN/CLOSED		X							X
ZS 01	OUTSIDE AIR ISOLATION DAMPER END SWITCH	OPEN/CLOSED		X							X
ZSA 01	OUTSIDE AIR ISOLATION DAMPER ALARM	NORMAL/ALARM		X						X	X
CY 01	FAN COMMAND	ON/OFF		X						X	X
IS 01	FAN STATUS	ON/OFF		X						X	X
IT 01	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 01	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 01	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 02	VFD HAND STATUS	ON/OFF		X						X	X
PT 01	EXHAUST STATIC PRESSURE	IN WG	X								X
CY 02	FAN COMMAND	ON/OFF		X						X	X
IS 02	FAN STATUS	ON/OFF		X						X	X
IT 02	VFD SPEED FEEDBACK	% FULL SPEED	X							X	X
SC 02	VFD SPEED COMMAND	% FULL SPEED	X							X	X
YA 02	VFD FAULT ALARM	NORMAL/ALARM		X						X	X
ZS 03	VFD HAND STATUS	ON/OFF		X						X	X
TE 01	ENTERING OUTSIDE AIR TEMPERATURE	DEG F	X								X
MT 01	ENTERING OUTSIDE AIR DEW POINT	DEG F	X								X
FT 01	OUTSIDE AIR FLOW	CFM	X							X	X
PSH 01	HIGH STATIC PRESSURE SWITCH	NORMAL/ALARM		X							X
PSHA 01	HIGH STATIC PRESSURE ALARM	NORMAL/ALARM		X						X	X
FT 02	EXHAUST AIR FLOW	CFM	X							X	X
TE 02	ENTERING EXHAUST AIR TEMPERATURE	DEG F	X								X
MT 02	ENTERING EXHAUST AIR DEW POINT	DEG F	X								X
PSH 02	HIGH STATIC PRESSURE SWITCH	NORMAL/ALARM		X							X
PSHA 02	HIGH STATIC PRESSURE ALARM	NORMAL/ALARM		X						X	X
FCV 02	ERU 1 OUTSIDE AIR DAMPER	% OPEN	X								X
ZS 04	ERU 1 OUTSIDE AIR DAMPER END SWITCH	OPEN/CLOSED		X							X
ZSA 02	ERU 1 OUTSIDE AIR DAMPER END ALARM	NORMAL/ALARM		X						X	X
FCV 03	ERU 2 OUTSIDE AIR DAMPER	% OPEN	X								X
ZS 05	ERU 2 OUTSIDE AIR DAMPER END SWITCH	OPEN/CLOSED		X							X
ZSA 03	ERU 2 OUTSIDE AIR DAMPER END ALARM	NORMAL/ALARM		X						X	X
FCV 04	ERU 1 EXHAUST DAMPER	% OPEN	X								X
ZS 06	ERU 1 EXHAUST DAMPER END SWITCH	OPEN/CLOSED		X							X
ZSA 04	ERU 1 EXHAUST DAMPER END ALARM	NORMAL/ALARM		X						X	X
FCV O5	ERU 2 EXHAUST DAMPER	% OPEN	X								X
ZS 07	ERU 2 EXHAUST DAMPER END SWITCH	OPEN/CLOSED		X							X
ZSA 05	ERU 2 EXHAUST DAMPER END ALARM	NORMAL/ALARM		X						X	X
PDSH 01	ERU 1 OUTSIDE AIR FILTER STATUS	NORMAL/DIRTY		X							X
PDSH 02	ERU 1 EXHAUST AIR FILTER STATUS	NORMAL/DIRTY		X							X
PDSH 03	ERU 2 OUTSIDE AIR FILTER STATUS	NORMAL/DIRTY		X							X
PDSH 04	ERU 2 EXHAUST AIR FILTER STATUS	NORMAL/DIRTY		X							X
FCV 06	ERU 1OUTSIDE AIR ISOLATION DAMPER COMMAND	OPEN/CLOSED		X							X
ZS 08	ERU 1 EXHAUST ISOLATION DAMPER END SWITCH	OPEN/CLOSED		X							X
ZSA 06	ERU 1 EXHAUST ISOLATION DAMPER ALARM	NORMAL/ALARM		X						X	X
FCV 07	ERU 1OUTSIDE AIR ISOLATION DAMPER COMMAND	OPEN/CLOSED		X							X
ZS 09	ERU 1 EXHAUST ISOLATION DAMPER END SWITCH	OPEN/CLOSED		X							X
ZSA 07	ERU 1 EXHAUST ISOLATION DAMPER ALARM	NORMAL/ALARM		X						X	X
TE 03	ERU 1 LEAVING EXHAUST AIR TEMPERATURE	DEG F	X								X
MT 03	ERU 1 LEAVING EXHAUST AIR DEW POINT	DEG F	X								X
TE 04	LEAVING OUTSIDE AIR TEMPERATURE	DEG F	X								X
MT 04	LEAVING OUTSIDE AIR DEW POINT	DEG F	X								X
PT 02	OUTSIDE AIR STATIC PRESSURE	IN WG	X								X
TE 05	ERU 2 LEAVING EXHAUST AIR TEMPERATURE	DEG F	X								X
MT 05	ERU 2 LEAVING EXHAUST AIR DEW POINT	DEG F	X								X

ENERGY RECOVERY - CONTROL SEQUENCE

A. GENERAL
1. VARIABLE AIR VOLUME ENERGY RECOVERY UNIT FEEDS OUTSIDE AIR TO FLOOR-LEVEL AIR HANDLING UNITS AND SERVES GENERAL EXHAUST ON EACH FLOOR.
2. ACTIVATE START UP SEQUENCE UPON OPERATOR INPUT OR WHEN ANY SINGLE ASSOCIATED AIR HANDLING UNIT IS IN OCCUPIED STATE.
3. ACTIVATE SHUT DOWN SEQUENCE UPON OPERATOR INPUT OR WHEN ALL AIR HANDLINGS ARE IN EITHER OFF OR UNOCCUPIED STATE

B. START UP
1. UPON START UP COMMAND
   a. OUTSIDE AIR ISOLATION DAMPER OPENS AND IS PROVEN
   b. EXHAUST AIR ISOLATION DAMPER OPENS AND IS PROVEN
   c. OUTSIDE AIR FAN VFDS START OUTSIDE AIR FANS; VFDS AND FANS ARE PROVEN
   d. OUTSIDE AIR STATIC PRESSURE CONTROL SEQUENCE ACTIVATES
   e. OUTSIDE AIR STATIC PRESSURE RESET SEQUENCE ACTIVATES
   f. EXHAUST FAN VFDS START EXHAUST FANS; VFDS AND FANS ARE PROVEN
   g. EXHAUST STATIC PRESSURE CONTROL SEQUENCE ACTIVATES
   h. EXHAUST STATIC PRESSURE RESET SEQUENCE ACTIVATES

C. SHUT DOWN
1. UPON SHUT DOWN COMMAND
   a. OUTSIDE AIR FANS STOP
   b. EXHAUST FANS STOP
   c. OUTSIDE AIR ISOLATION DAMPER CLOSES
   d. EXHAUST ISOLATION CLOSES
   e. ALL OTHER SEQUENCE DISABLE
   f. SUPRESS NUISANCE ALARMS

D. STATIC PRESSURE CONTROL
1. FANS OPERATE IN PARALLEL AND MODULATE IN UNISON IN RESPONSE TO A COMMON COMMAND.
2. THE FAN WITH THE LOWEST NUMBER OF RUN HOURS SHALL START AS THE LEAD FAN.
3. AS STATIC PRESSURE RISES ABOVE SETPOINT:
   a. FAN VFD SPEEDS DECREASE. MINIMUM VFD SPEED SHALL BE 15 HERTZ (ADJ).
   b. WHEN MULTIPLE FANS ARE OPERATING AND THE SPEED OF THE FANS ARE AT 30% (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), STOP THE FAN WITH THE GREATEST NUMBER OF RUN HOURS.
   c. IF STATIC PRESSURE REMAINS ABOVE SETPOINT FOR ANOTHER PERIOD OF 3 MINUTES (ADJ), STOP THE NEXT SEQUENTIAL FAN.
   d. CONTINUE TO STAGE FANS OFF EVERY 3 MINUTES (ADJ) UNTIL SETPOINT IS MET.
4. AS STATIC PRESSURE FALLS BELOW SETPOINT:
   a. FAN VFD SPEEDS INCREASE.
   b. WHEN LEAD FAN REACHES 95% SPEED OR GREATER (ADJ), FOR A PERIOD OF 3 MINUTES (ADJ), THE NEXT SEQUENTIAL FAN SHALL START AND RAMP TO MATCH THE SPEED OF THE OPERATING FAN.
   c. IF STATIC PRESSURE REMAINS BELOW SETPOINT FOR ANOTHER PERIOD OF 3 MINUTES (ADJ), START THE NEXT SEQUENTIAL FAN.
   d. CONTINUE TO STAGE FANS ON EVERY 3 MINUTES (ADJ) UNTIL SETPOINT IS MET.
5. IF AN ISOLATION DAMPER ASSOCIATED WITH EITHER INDIVIDUAL ENERGY RECOVERY UNIT CLOSES:
   a. FAN SPEED SHALL REMAIN CONSTANT AT LAST COMMANDED SPEED
   b. DISABLE STATIC PRESSURE RESET SEQUENCE
   c. WHEN ISOLATION DAMPER OPENS, RESUME NORMAL OPERATION

E. STATIC PRESSURE RESET SEQUENCE
1. PERFORM EVERY 15 MINUTES (ADJ)
2. IF ANY VAV BOX DAMPER COMMAND IS GREATER THAN 90% (ADJ), INCREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.
3. IF ALL VAV BOX DAMPER COMMANDS ARE LESS THAN 60% (ADJ), DECREASE DUCT STATIC PRESSURE SETPOINT BY 0.1 IN.WG.

F. KCCS INPUT TO BAS
1. KCCS WILL PROVIDE THE FOLLOWING VALUES AS INPUT:
2. "0" - BAS ACTION - SHUT DOWN SEQUENCE ACTIVATES
3. "1" - BAS ACTION - START UP SEQUENCE ACTIVATES
4. "2" - BAS ACTION - NORMAL BAS CONTROL
5. "3" - BAS ACTION - RECIRCULATION MODE ACTIVATES

G. MAINTENANCE STATE:
1. OPERATOR SHALL HAVE THE ABILITY TO PLACE ANY FAN OR IN 'MAINTENANCE STATE' USING THE WORKSTATION. A FAN IS NOT ALLOWED TO OPERATE WHILE IN MAINTENANCE STATE.

H. SAFETIES
1. THE FOLLOWING SAFETIES SHUT DOWN ALL FANS AND ACTIVATE SHUT DOWN SEQUENCE:
   a. OUTSIDE AIR ISOLATION DAMPER END SWITCH
   b. EXHAUST AIR ISOLATION DAMPER END SWITCH
   c. BUILDING FIRE ALARM

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	ALARM DELAY (MIN)	KCCS	BAS
SOFTWARE											
SDP	SYSTEM START-UP	ON/OFF		X						X	X
SDP	OUTSIDE AIR STATIC PRESSURE SETPOINT	IN WG	X								X
SDP	MAXIMUM OUTSIDE AIR STATIC PRESSURE LIMIT	IN WG	X								X
SDP	MINIMUM OUTSIDE AIR STATIC PRESSURE LIMIT	IN WG	X								X
SDP	EXHAUST STATIC PRESSURE SETPOINT	IN WG	X								X
SDP	MAXIMUM EXHAUST STATIC PRESSURE LIMIT	IN WG	X								X
SDP	MINIMUM EXHAUST STATIC PRESSURE LIMIT	IN WG	X								X
SDP	ENTERING OUTSIDE AIR ENTHALPY	BTU/LB	X								X
SDP	LEAVING OUTSIDE AIR ENTHALPY	BTU/LB	X								X
SDP	ENTERING EXHAUST ENTHALPY	BTU/LB	X								X
SDP	LEAVING EHXAUST ENTHALPY	BTU/LB	X								X
SDP	ENERGY RECOVERY EFFECTIVENESS	%	X								X
SDP	ERU 1 OUTSIDE AIR DAMPER MAXIMUM LIMIT	% OPEN	X								X
SDP	ERU 1 OUTSIDE AIR DAMPER MINIMUM LIMIT	% OPEN	X								X
SDP	ERU 2 OUTSIDE AIR DAMPER MAXIMUM LIMIT	% OPEN	X								X
SDP	ERU 2 OUTSIDE AIR DAMPER MINIMUM LIMIT	% OPEN	X								X
SDP	ERU 1 EXHAUST DAMPER MAXIMUM LIMIT	% OPEN	X								X
SDP	ERU 1 EXHAUST DAMPER MINIMUM LIMIT	% OPEN	X								X
SDP	ERU 2 EXHAUST DAMPER MAXIMUM LIMIT	% OPEN	X								X
SDP	ERU 2 EXHAUST DAMPER MINIMUM LIMIT	% OPEN	X								X
SDP	ERU 1 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	ERU 2 MAINTENANCE STATE	ON/OFF		X						X	X
SDP	OUTSIDE AIR FAN MAINTENANCE STATE	ON/OFF		X						X	X
SDP	EXHAUST FAN MAINTENANCE STATE	ON/OFF		X						X	X
SDP	MINIMUM RUN TIME SET POINT	HOURS	X								X
SDP	OUTSIDE AIR FAN RUN TIME	HOURS	X								X
SDP	OUTSIDE AIR FAN SPEED	HERTZ	X								X
SDP	EXHAUST FAN RUN TIME	HOURS	X								X
SDP	EXHAUST FAN SPEED	HERTZ	X								X
SDP	KCCS OVERRIDE VALUE	0/1/2/3	X							X	

ENERGY RECOVERY SYSTEM CONTROL DIAGRAM

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

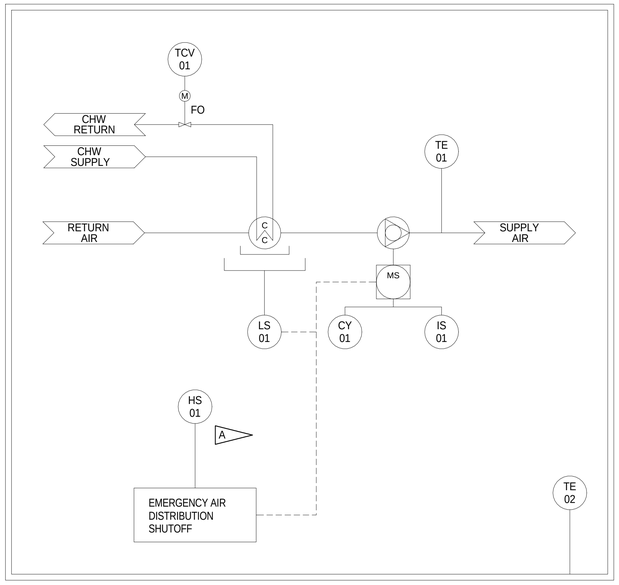
ENERGY RECOVERY SYSTEM CONTROL DIAGRAM

M624

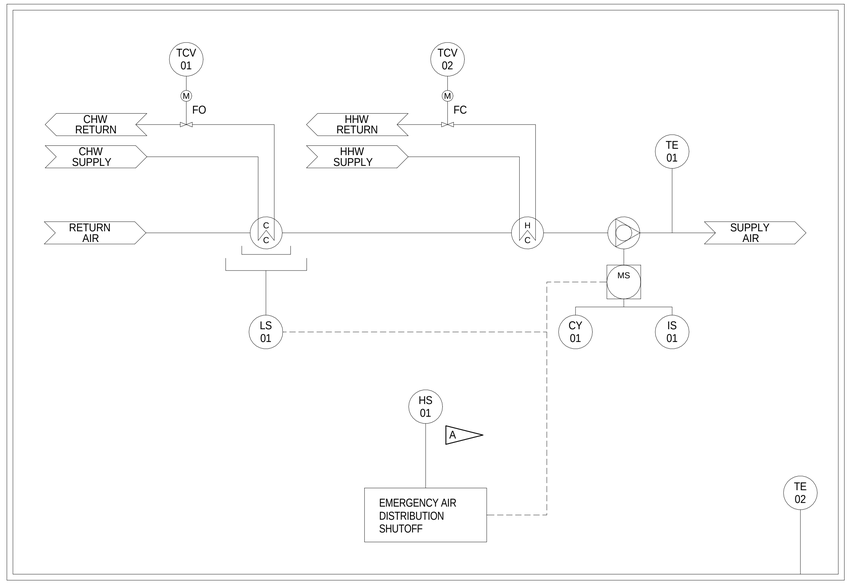
FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 56

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



TYPICAL SPACE



TYPICAL SPACE

FLAG NOTES

A — LOCATE WALL-MOUNTED EMERGENCY AIR DISTRIBUTION SHUTOFF SWITCH INSIDE ASSOCIATED ROOM. SWITCH SHALL BE RED, MAINTAINED MUSHROOM HEAD PUSHBUTTON SIMILAR TO EATON M22S-DP-R MODEL WITH SEALING SHROUD ACCESSORY SIMILAR TO EATON M22-PL-PV. PROVIDE YELLOW LAMINATED PLASTIC NAMEPLATE ADJACENT TO SWITCH, LABELED "FAN COIL UNIT EMERGENCY SHUTOFF"

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
TCV 01	COOLING COIL VALVE COMMAND	% OPEN	X								X
LS 01	DRAIN PAN FLOAT SWITCH	NORMAL/ALARM		X							X
CY 01	FAN COMMAND	ON/OFF		X						X	X
IS 01	FAN STATUS	ON/OFF		X						X	X
TE 01	SUPPLY AIR TEMPERATURE	DEG F	X							X	X
HS 01	EMERGENCY AIR DISTRIBUTION SHUTOFF	NORMAL/ALARM	X							X	X
TE 02	SPACE TEMPERATURE	DEG F	X							X	X
SOFTWARE											
SDP	SPACE COOLING SETPOINT	DEG F	X								X
SDP	COOLING LEAVING AIR SETPOINT	DEG F	X								X
SDP	MINIMUM RUN TIME SET POINT	HOURS	X								X
SDP	SUPPLY FAN RUN TIME	HOURS	X								X
SDP	KCCS OVERRIDE VALUE	0/1/2/3	X							X	

A. GENERAL
1. CONSTANT VOLUME FAN COIL UNIT. SPACE TEMPERATURE IS MONITORED BY A SPACE TEMPERATURE SENSOR.

B. TEMPERATURE CONTROL
1. AS ROOM AIR TEMPERATURE INCREASES ABOVE COOLING SETPOINT:
   a. FAN TURNS ON AND IS PROVEN
   b. COOLING CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT
2. AS ROOM TEMPERATURE DECREASES BELOW COOLING SETPOINT:
   a. COOLING CONTROL VALVE MODULATES CLOSED
   b. FAN TURNS OFF

C. EMERGENCY AIR DISTRIBUTION SHUTOFF
1. UPON ACTIVATION OF FAN COIL UNIT EMERGENCY SHUTOFF SWITCH, IMMEDIATELY SHUT DOWN ASSOCIATED FAN COIL UNIT.

D. SAFETIES
1. SHUT DOWN UNIT AND GENERATE ALARM UPON ACTIVATION OF DRAIN PAN OVERFLOW SWITCH.
2. UNITS ASSOCIATED WITH IT ROOMS, COMMUNICATION CLOSETS, AND ELECTRICAL ROOMS DO NOT SHUTDOWN UPON A BUILDING FIRE ALARM OR EMERGENCY POWER MODE.

E. ALARMS
1. FAN STATUS IS MONITORED BY THE BAS. GENERATE AN ALARM UPON FAN FAILURE OR WHEN COMMAND DOES NOT MATCH STATUS.

COOLING ONLY FAN COIL UNIT CONTROL DIAGRAM

NO SCALE

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
TCV 01	COOLING COIL VALVE COMMAND	% OPEN	X								X
LS 01	DRAIN PAN FLOAT SWITCH	NORMAL/ALARM		X							X
TCV 02	HEATING COIL VALVE COMMAND	% OPEN	X								X
CY 01	FAN COMMAND	ON/OFF		X						X	X
IS 01	FAN STATUS	ON/OFF		X						X	X
TE 01	SUPPLY AIR TEMPERATURE	DEG F	X							X	X
HS 01	EMERGENCY AIR DISTRIBUTION SHUTOFF	NORMAL/ALARM	X							X	X
TE 02	SPACE TEMPERATURE	DEG F	X							X	X
SOFTWARE											
SDP	SPACE COOLING SETPOINT	DEG F	X								X
SDP	SPACE HEATING SETPOINT	DEG F	X								X
SDP	COOLING LEAVING AIR SETPOINT	DEG F	X								X
SDP	HEATING LEAVING AIR SETPOINT	DEG F	X								X
SDP	MINIMUM RUN TIME SET POINT	HOURS	X								X
SDP	SUPPLY FAN RUN TIME	HOURS	X								X
SDP	KCCS OVERRIDE VALUE	0/1/2/3	X							X	

A. GENERAL
1. CONSTANT VOLUME FAN COIL UNIT. SPACE TEMPERATURE IS MONITORED BY A SPACE TEMPERATURE SENSOR.

B. TEMPERATURE CONTROL
1. AS ROOM AIR TEMPERATURE INCREASES ABOVE COOLING SETPOINT:
   a. FAN TURNS ON AND IS PROVEN
   b. COOLING CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT
   c. HEATING CONTROL VALVE REMAINS CLOSED
2. AS ROOM TEMPERATURE DECREASES BELOW COOLING SETPOINT:
   a. COOLING CONTROL VALVE MODULATES CLOSED
   b. FAN TURNS OFF
   c. HEATING CONTROL VALVE REMAINS CLOSED
3. AS ROOM TEMPERATURE DECREASES BELOW HEATING SETPOINT:
   a. FAN TURNS ON AND IS PROVEN
   b. HEATING CONTROL VALVE MODULATES TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT
   c. COOLING CONTROL VALVE REMAINS CLOSED
4. AS ROOM TEMPERATURE INCREASE ABOVE HEATING SETPOINT:
   a. HEATING CONTROL VALVE MODULATES CLOSED
   b. FAN TURNS OFF
   c. COOLING CONTROL VALVE REMAINS CLOSED

C. EMERGENCY AIR DISTRIBUTION SHUTOFF
1. UPON ACTIVATION OF FAN COIL UNIT EMERGENCY SHUTOFF SWITCH, IMMEDIATELY SHUT DOWN ASSOCIATED FAN COIL UNIT.

D. SAFETIES
1. SHUT DOWN UNIT AND GENERATE ALARM UPON ACTIVATION OF DRAIN PAN OVERFLOW SWITCH.
2. UNITS ASSOCIATED WITH IT ROOMS, COMMUNICATION CLOSETS, AND ELECTRICAL ROOMS DO NOT SHUTDOWN UPON A BUILDING FIRE ALARM OR EMERGENCY POWER MODE.

E. ALARMS
1. FAN STATUS IS MONITORED BY THE BAS. GENERATE AN ALARM UPON FAN FAILURE OR WHEN COMMAND DOES NOT MATCH STATUS.

HEATING AND COOLING FAN COIL UNIT CONTROL DIAGRAM

NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

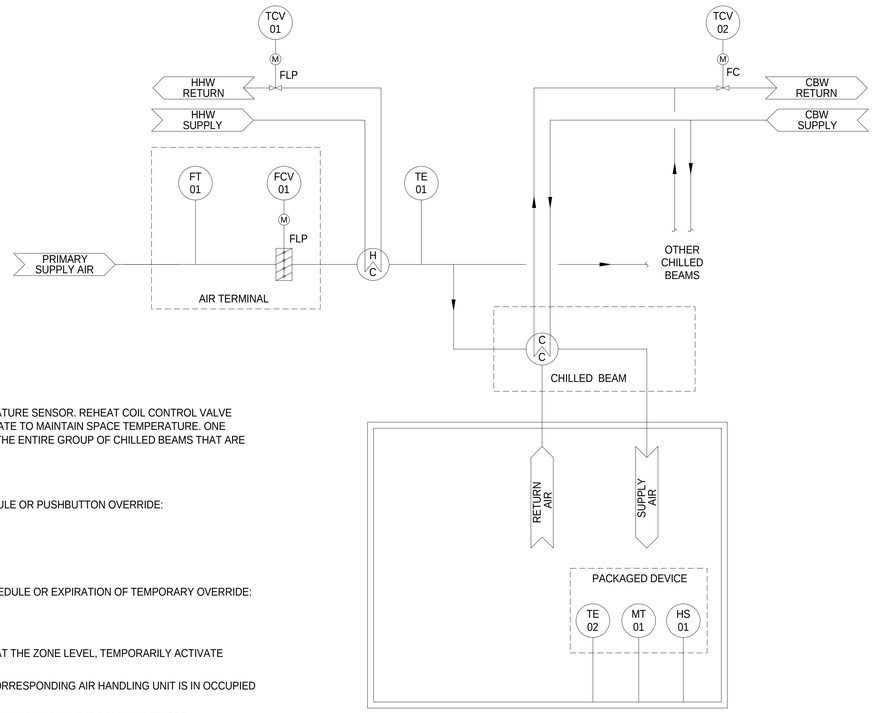
FAN COIL UNIT CONTROL DIAGRAM

M625

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 57

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



A. GENERAL:
1. SPACE TEMPERATURE IS MONITORED BY A SPACE TEMPERATURE SENSOR. REHEAT COIL CONTROL VALVE AND CHILLED BEAM COOLING COIL CONTROL VALVE MODULATE TO MAINTAIN SPACE TEMPERATURE. ONE CHILLED BEAM COOLING COIL CONTROL VALVE CONTROLS THE ENTIRE GROUP OF CHILLED BEAMS THAT ARE FED FROM A SINGLE COMMON AIR TERMINAL DEVICE.

B. OCCUPIED MODE:
1. UPON OCCUPIED COMMAND VIA AIR HANDLING UNIT SCHEDULE OR PUSHBUTTON OVERRIDE:
   a. ACTIVATE OCCUPIED TEMPERATURE SETPOINTS.
   b. ACTIVATE OCCUPIED AIR FLOW SETPOINTS.

C. UNOCCUPIED MODE:
1. UPON UNOCCUPIED COMMAND VIA AIR HANDLING UNIT SCHEDULE OR EXPIRATION OF TEMPORARY OVERRIDE:
   a. ACTIVATE UNOCCUPIED TEMPERATURE SETPOINTS.
   b. ACTIVATE UNOCCUPIED AIR FLOW SETPOINTS.
   c. UPON MANUAL ACTIVATION OF PUSHBUTTON OVERRIDE AT THE ZONE LEVEL, TEMPORARILY ACTIVATE OCCUPIED MODE IN THE ASSOCIATED ZONE.
2. TEMPORARY OVERRIDE SHALL FUNCTION WHETHER THE CORRESPONDING AIR HANDLING UNIT IS IN OCCUPIED OR UNOCCUPIED MODE.
3. SUSPEND AIR FLOW SETPOINTS WHEN THE ASSOCIATED AIR HANDLING UNIT IS COMMANDED OFF.

D. TEMPERATURE CONTROL:
1. AS ROOM AIR TEMPERATURE INCREASES ABOVE COOLING SETPOINT:
   a. COOLING CONTROL VALVE MODULATES TO MAINTAIN SPACE TEMPERATURE SETPOINT.
   b. HEATING CONTROL VALVE REMAINS CLOSED.
2. AS ROOM TEMPERATURE DECREASES BELOW COOLING SETPOINT:
   a. COOLING CONTROL VALVE MODULATES CLOSED.
   b. HEATING CONTROL VALVE REMAINS CLOSED.
3. AS ROOM TEMPERATURE DECREASES BELOW HEATING SETPOINT:
   a. HEATING CONTROL VALVE MODULATES TO MAINTAIN SPACE TEMPERATURE SETPOINT.
   b. COOLING CONTROL VALVE REMAINS CLOSED.
4. AS ROOM TEMPERATURE INCREASE ABOVE HEATING SETPOINT:
   a. HEATING CONTROL VALVE MODULATES CLOSED.
   b. COOLING CONTROL VALVE REMAINS CLOSED.

E. HUMIDITY CONTROL:
1. CLOSE CHILLED BEAM COOLING COIL CONTROL VALVE ANY TIME THE CORRESPONDING AIR HANDLING UNIT IS SHUT DOWN.
2. CHILLED BEAM COOLING COIL CONTROL VALVE SHALL REMAIN CLOSED FOR 30 MINUTES (ADJ) AFTER THE CORRESPONDING AIR HANDLING UNIT STARTS UP.
3. IF SPACE DEWPOINT TEMPERATURE INCREASES TO 55 DEG F (ADJ):
   a. GENERATE ALARM AT BAS WORKSTATION.
   b. INCREASE SUPPLY AIR FLOW TO THE MAXIMUM AIRFLOW SETPOINT.
   c. AUTOMATICALLY DECREASE SUPPLY AIR FLOW TO NORMAL SETPOINT AND RESET ALARM AS DEWPOINT DECREASES BELOW SETPOINT.
4. IF DEWPOINT REMAINS ABOVE SETPOINT FOR 5 MINUTES (ADJ) OR LONGER:
   a. CLOSED CHILLED BEAM COOLING COIL CONTROL VALVE.
   b. GENERATE ALARM AT BAS WORKSTATION.
   c. ALARM REQUIRES MANUAL RESET.

F. SAFETIES:
1. CLOSE CHILLED BEAM COOLING COIL CONTROL VALVE IF CORRESPONDING AIR HANDLING UNIT FAILS.

G. ALARMS:
1. GENERATE ALARM IF SUPPLY AIR DAMPER COMMAND IS AT 100% AND SUPPLY AIR FLOW DOES NOT MEET SETPOINT.

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
FT 01	SUPPLY AIR FLOW	CFM	X								X
FCV 01	SUPPLY AIR DAMPER COMMAND	% OPEN	X								X
TCV 01	HEATING COIL VALVE COMMAND	% OPEN	X								X
TE 01	DISCHARGE AIR TEMPERATURE	DEG F	X								X
TCV 02	COOLING COIL VALVE COMMAND	% OPEN	X								X
TE 02	SPACE TEMPERATURE	DEG F	X							X	X
MT 01	SPACE DEWPOINT	DEG F	X							X	X
HS 01	TEMPORARY PUSHBUTTON OVERRIDE	NORMAL/OVERRIDE		X							X
SOFTWARE											
SDP	OCCUPIED SPACE COOLING SETPOINT	DEG F	X			76	78	74	5		X
SDP	OCCUPIED SPACE HEATING SETPOINT	DEG F	X			70	72	68	5		X
SDP	UNOCCUPIED SPACE COOLING SETPOINT	DEG F	X			80	82	78	5		X
SDP	UNOCCUPIED SPACE HEATING SETPOINT	DEG F	X			60	62	58	5		X
SDP	SUPPLY AIR FLOW SETPOINT	CFM	X								X
SDP	STARVED SUPPLY AT BOX ALARM	NORMAL/ALARM		X							X
SDP	TEMPORARY OVERRIDE SETPOINT	HOURS	X			1					X
SDP	MAXIMUM SPACE DEW POINT LIMIT	DEG F	X			57		1			X
SDP	HUMIDITY ALARM	NORMAL/ALARM		X							X

CHILLED BEAM CONTROL DIAGRAM
NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

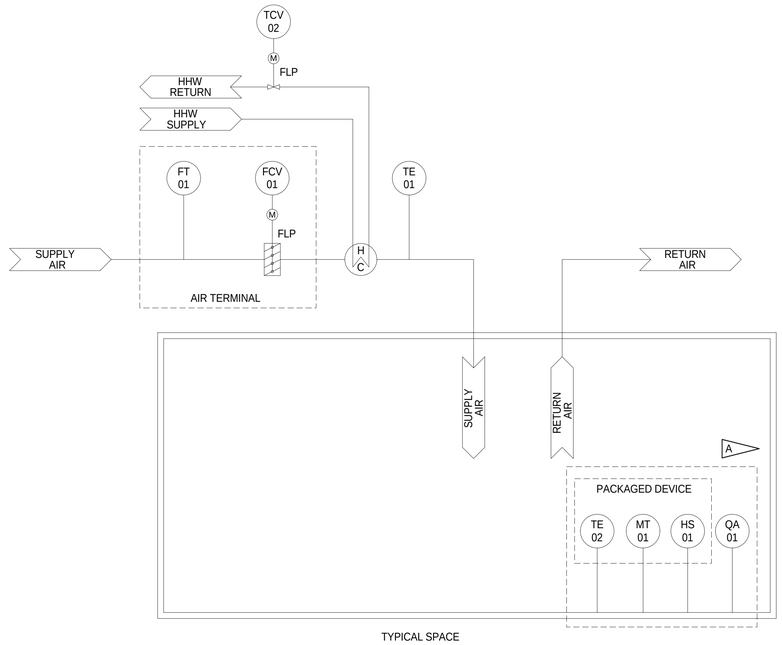
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

CHILLED BEAM CONTROL DIAGRAM

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A
PCN. NO. 98745.1a | SHEET 58

M631

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

A — COMBINATION TEMPERATURE / HUMIDITY SENSORS WITH PUSHBUTTON OVERRIDES SHALL BE PROVIDED IN THE MAIL ROOM AND IN ALL SPACES SHOWN WITH CO2 SENSORS. REFER TO MECHANICAL FLOOR PLANS FOR CO2 SENSOR LOCATIONS AND QUANTITIES. ALL OTHER AIR TERMINAL UNITS SHALL BE PROVIDED WITH TEMPERATURE SENSORS AND PUSHBUTTON OVERRIDES ONLY.

B — SETPOINT FOR CONFERENCE ROOMS SHALL BE 78 DEGREES, WITH HIGH LIMIT OF 80 DEGREES AND LOW LIMIT OF 76 DEGREES.

A. GENERAL
1. SPACE TEMPERATURE IS MONITORED BY A SPACE TEMPERATURE SENSOR. SUPPLY AIR DAMPER AND REHEAT COIL CONTROL VALVE MODULATE TO MAINTAIN SPACE TEMPERATURE.

B. OCCUPIED MODE
1. UPON OCCUPIED COMMAND VIA AIR HANDLING UNIT SCHEDULE OR PUSHBUTTON OVERRIDE:
   a. ACTIVATE OCCUPIED TEMPERATURE SETPOINTS.
   b. ACTIVATE OCCUPIED AIR FLOW SETPOINTS.

C. UNOCCUPIED MODE - GENERAL AREAS
1. UPON UNOCCUPIED COMMAND VIA AIR HANDLING UNIT SCHEDULE OR EXPIRATION OF TEMPORARY OVERRIDE:
   a. ACTIVATE UNOCCUPIED TEMPERATURE SETPOINTS.
   b. ACTIVATE UNOCCUPIED AIR FLOW SETPOINTS.
   c. UPON MANUAL ACTIVATION OF PUSHBUTTON OVERRIDE AT THE ZONE LEVEL, TEMPORARILY ACTIVATE OCCUPIED MODE IN THE ASSOCIATED ZONE.
2. TEMPORARY OVERRIDE SHALL FUNCTION WHETHER THE CORRESPONDING AIR HANDLING UNIT IS IN OCCUPIED OR UNOCCUPIED MODE.
3. SUSPEND AIR FLOW SETPOINTS WHEN THE ASSOCIATED AIR HANDLING UNIT IS COMMANDED OFF.

D. TEMPERATURE CONTROL
1. AIR TERMINAL DAMPER MODULATES TO MAINTAIN SUPPLY AIR FLOW SETPOINT.
2. AS ROOM AIR TEMPERATURE INCREASES ABOVE COOLING SETPOINT:
   a. SUPPLY AIR FLOW SETPOINT INCREASES TOWARD MAXIMUM AIR FLOW SETPOINT.
   b. HEATING CONTROL VALVE REMAINS CLOSED.
3. AS ROOM TEMPERATURE DECREASES BELOW COOLING SETPOINT:
   a. SUPPLY AIR FLOW SETPOINT DECREASES TOWARD MINIMUM OCCUPIED SETPOINT.
   b. HEATING CONTROL VALVE REMAINS CLOSED.
4. AS ROOM TEMPERATURE DECREASES BELOW HEATING SETPOINT:
   a. SUPPLY AIR FLOW REMAINS AT MINIMUM OCCUPIED SETPOINT.
   b. HEATING CONTROL VALVE MODULATES TO MAINTAIN SPACE TEMPERATURE SETPOINT.
5. AS HEATING CONTROL VALVE MODULATES MORE THAN 20% OPEN (ADJ):
   a. SUPPLY AIR FLOW SETPOINT INCREASES TO REHEAT AIRFLOW SETPOINT.
   b. HEATING CONTROL VALVE MODULATES TO MAINTAIN SPACE TEMPERATURE SETPOINT.
6. AS ROOM TEMPERATURE INCREASES ABOVE HEATING SETPOINT:
   a. HEATING CONTROL VALVE MODULATES CLOSED.
   b. SUPPLY AIR FLOW SETPOINT RESETS TO MINIMUM OCCUPIED SETPOINT.

E. ALARMS
1. GENERATE ALARM IF SUPPLY AIR DAMPER COMMAND IS AT 100% AND SUPPLY AIR FLOW DOES NOT MEET SETPOINT.

WORKSTATION			USER INFORMATION									
			POINT TYPE				ALARM CONDITION			MONITORING		
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS	
HARDWARE												
FT 01	SUPPLY AIR FLOW	CFM	X								X	
FCV 01	SUPPLY AIR DAMPER COMMAND	% OPEN	X								X	
TCV 01	HEATING COIL VALVE COMMAND	% OPEN	X								X	
TE 01	DISCHARGE AIR TEMPERATURE	DEG F	X								X	
TE 02	SPACE TEMPERATURE	DEG F	X							X	X	
MT 01	SPACE DEWPOINT	DEG F	X							X	X	A
HS 01	TEMPORARY PUSHBUTTON OVERRIDE	NORMAL/OVERRIDE		X							X	
QA 01	SPACE CO2 SENSOR	PPM	X								X	A
SOFTWARE												
SDP	OCCUPIED SPACE COOLING SETPOINT	DEG F	X			76	78	74	5		X	
SDP	OCCUPIED SPACE HEATING SETPOINT	DEG F	X			70	72	68	5		X	
SDP	UNOCCUPIED SPACE COOLING SETPOINT	DEG F	X			80	82	78	5		X	B
SDP	UNOCCUPIED SPACE HEATING SETPOINT	DEG F	X			60	62	58	5		X	
SDP	SUPPLY AIR FLOW SETPOINT	CFM	X								X	
SDP	STARVED SUPPLY AT BOX ALARM	NORMAL/ALARM		X							X	
SDP	TEMPORARY OVERRIDE SETPOINT	HOURS	X			1					X	
SDP	MAXIMUM SPACE HUMIDITY LIMIT	DEG F	X			60			5.0		X	A
SDP	MAXIMUM SPACE CO2 LIMIT	PPM	X								X	A

AIR TERMINAL UNIT CONTROL DIAGRAM

NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

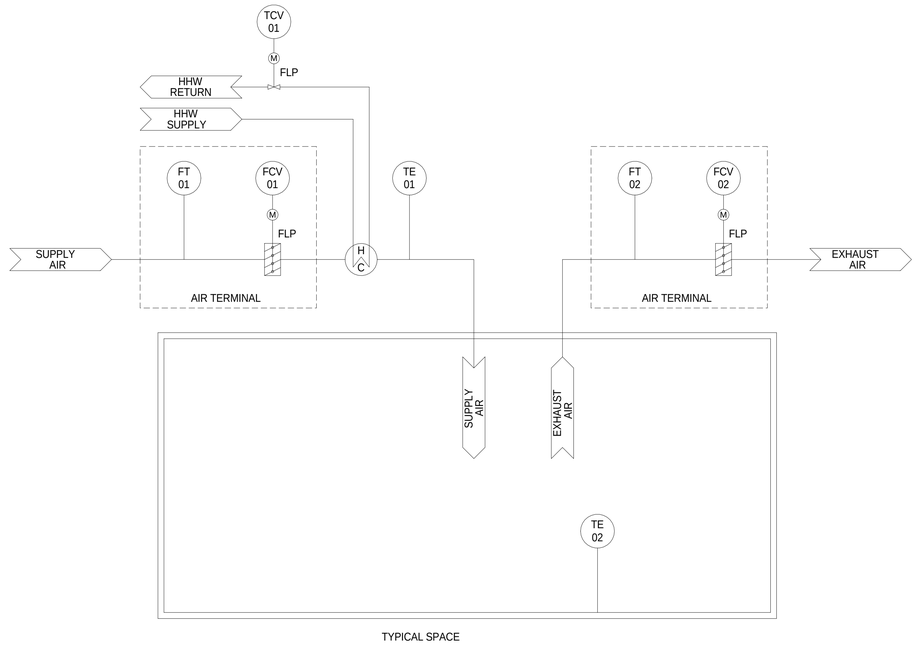
AIR TERMINAL UNIT CONTROL DIAGRAM

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

M632

PCN. NO. 98745.1a SHEET 59

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES

A — REFER TO AIR HANDLING UNIT CONTROL DIAGRAM FOR STATUS INPUT FROM KITCHEN EXHAUST SYSTEM.

A. GENERAL
1. SPACE TEMPERATURE IS MONITORED BY A SPACE TEMPERATURE SENSOR. SUPPLY AIR DAMPER AND REHEAT COIL CONTROL VALVE MODULATE TO MAINTAIN SPACE TEMPERATURE.
2. SUPPLY AND EXHAUST AIR DAMPERS MODULATE TO MAINTAIN SPACE OFFSET AIRFLOW.

B. OCCUPIED MODE
1. ACTIVATE OCCUPIED MODE WHEN THE ASSOCIATED HOOD EXHAUST SYSTEM TURNS ON OR ACCORDING TO THE AIR HANDLING UNIT SCHEDULE. REFER TO THE AIR HANDLING UNIT CONTROL DIAGRAM FOR INTEGRATION WITH HOOD EXHAUST SYSTEMS.
   a. ACTIVATE OCCUPIED TEMPERATURE SETPOINTS.
   b. ACTIVATE OCCUPIED AIR FLOW SETPOINTS.

C. UNOCCUPIED MODE
1. ACTIVATE UNOCCUPIED MODE WHEN THE ASSOCIATED HOOD EXHAUST SYSTEM SHUTS DOWN OR ACCORDING TO THE AIR HANDLING UNIT SCHEDULE. REFER TO THE AIR HANDLING UNIT CONTROL DIAGRAM FOR INTEGRATION WITH HOOD EXHAUST SYSTEMS.
   a. ACTIVATE UNOCCUPIED TEMPERATURE SETPOINTS.
   b. ACTIVATE UNOCCUPIED AIR FLOW SETPOINTS.

D. SPACE PRESSURIZATION CONTROL
1. SUPPLY AIR DAMPERS IN ZONES WITH HOOD EXHAUST SYSTEMS MODULATE IN RESPONSE TO THE STATUS OF THE HOOD EXHAUST SYSTEM.
   a. SUPPLY AIR DAMPER SHALL MODULATE TO THE UNOCCUPIED MINIMUM FLOW SETPOINT WHEN THE ASSOCIATED HOOD EXHAUST SYSTEM SHUTS OFF.
2. EXHAUST AIR DAMPERS MODULATE IN RESPONSE TO THE POSITION OF THE SUPPLY AIR DAMPER.

E. TEMPERATURE CONTROL
1. AIR TERMINAL DAMPER MODULATES TO MAINTAIN SUPPLY AIR FLOW SETPOINT.
2. AS ROOM AIR TEMPERATURE INCREASES ABOVE COOLING SETPOINT:
   a. SUPPLY AIR FLOW SETPOINT INCREASES TOWARD MAXIMUM AIR FLOW SETPOINT.
   b. HEATING CONTROL VALVE REMAINS CLOSED.
3. AS ROOM TEMPERATURE DECREASES BELOW COOLING SETPOINT:
   a. SUPPLY AIR FLOW SETPOINT MODULATES TOWARD REHEAT AIRFLOW SETPOINT.
   b. HEATING CONTROL VALVE REMAINS CLOSED.
4. AS ROOM TEMPERATURE DECREASES BELOW HEATING SETPOINT:
   a. SUPPLY AIR FLOW REMAINS AT REHEAT AIRFLOW SETPOINT.
   b. HEATING CONTROL VALVE MODULATES TO MAINTAIN SPACE TEMPERATURE SETPOINT.
5. AS ROOM TEMPERATURE INCREASES ABOVE HEATING SETPOINT:
   a. HEATING CONTROL VALVE MODULATES CLOSED.
   b. SUPPLY AIR FLOW SETPOINT RESETS TO MINIMUM OCCUPIED SETPOINT.

F. ALARMS
1. GENERATE ALARM IF SUPPLY AIR DAMPER COMMAND IS AT 100% AND SUPPLY AIR FLOW DOES NOT MEET SETPOINT.

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM			MONITORING	
							CONDITION			KCCS	BAS
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)		
HARDWARE											
FT 01	SUPPLY AIR FLOW	CFM	X								X
FCV 01	SUPPLY AIR DAMPER COMMAND	% OPEN	X								X
TCV 01	HEATING COIL VALVE COMMAND	% OPEN	X								X
TE 01	DISCHARGE AIR TEMPERATURE	DEG F	X								X
TE 02	SPACE TEMPERATURE	DEG F	X							X	X
FT 02	EXHAUST AIR FLOW	CFM	X								X
FCV 02	EXHAUST AIR DAMPER COMMAND	% OPEN	X								X
SOFTWARE											
SDP	OCCUPIED SPACE COOLING SETPOINT	DEG F	X			76	78	74	5		X
SDP	OCCUPIED SPACE HEATING SETPOINT	DEG F	X			70	72	68	5		X
SDP	UNOCCUPIED SPACE COOLING SETPOINT	DEG F	X			80	82	78	5		X
SDP	UNOCCUPIED SPACE HEATING SETPOINT	DEG F	X			60	62	58	5		X
SDP	SUPPLY AIR FLOW SETPOINT	CFM	X								X
SDP	EXHAUST AIR FLOW SETPOINT	CFM	X								X
SDP	KITCHEN EXHAUST SYSTEM STATUS	ON/OFF		X							X (A)
SDP	STARVED SUPPLY AT BOX ALARM	NORMAL/ALARM		X							X
SDP	STARVED EXHAUST AT BOX ALARM	NORMAL/ALARM		X							X

KITCHEN AIR TERMINAL UNIT CONTROL DIAGRAM

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCH/ENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

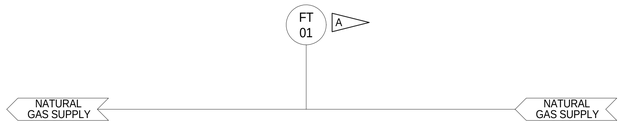
KITCHEN AIR TERMINAL UNIT CONTROL DIAGRAM

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

M633

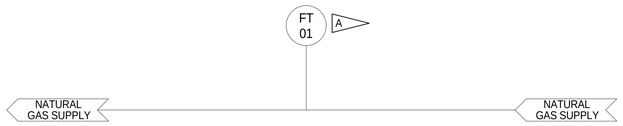
PCN. NO. 98745.1a SHEET 60

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



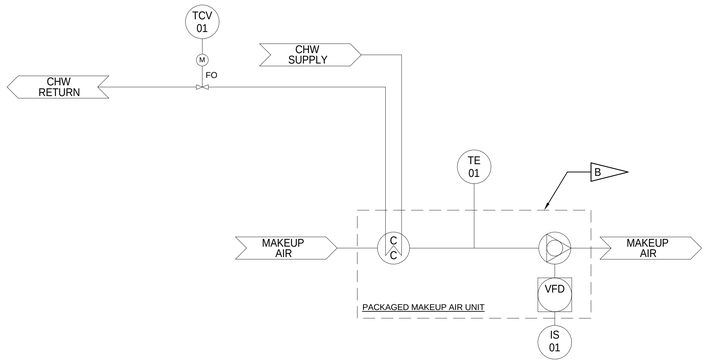
KITCHEN NATURAL GAS METER

NO SCALE



BUILDING NATURAL GAS METER

NO SCALE



GENERAL NOTES

1. DRAWING IS TYPICAL AND MAY REPRESENT MORE THAN ONE SYSTEM.
2. COORDINATE INSTALLATION AND FINAL LOCATION OF INSTRUMENTS WITH OTHER TRADES.
3. VERIFY ALL CABLE REQUIREMENTS PRIOR TO TERMINATING.

FLAG NOTES

A — NATURAL GAS SUB-METER FOR MEASUREMENT AND VERIFICATION. REFER TO PLUMBING DRAWINGS FOR LOCATION. REFER TO ELECTRICAL DRAWINGS FOR INTEGRATION REQUIREMENTS.

B — REFER TO FOOD SERVICE DRAWINGS FOR KITCHEN EQUIPMENT.

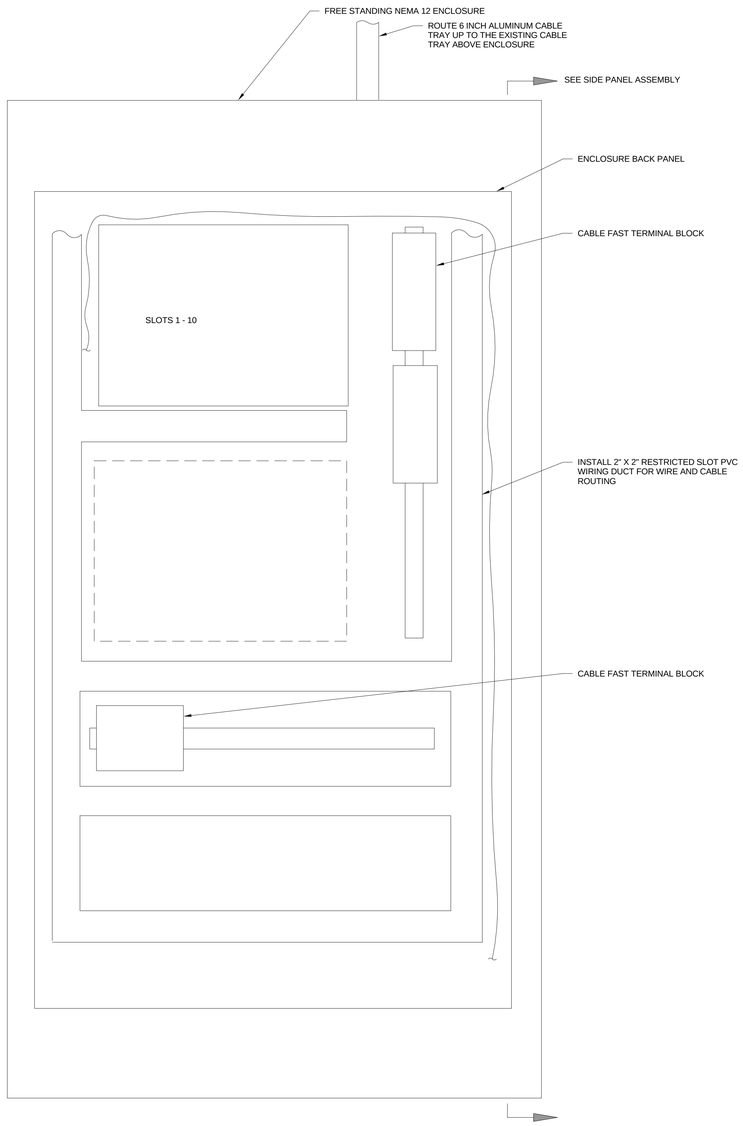
WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM			MONITORING	
							CONDITION			KCCS	BAS
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)		
HARDWARE											
TCV 01	COOLING COIL VALVE COMMAND	% OPEN	X								X
TE 01	COOLING COIL LEAVING AIR TEMPERATURE	DEG F	X							X	X
IS 01	FAN STATUS	ON/OFF		X							X
SOFTWARE											
SDP	COOLING COIL LEAVING AIR SETPOINT	DEG F	X								X
SDP	SUPPLY FAN RUN TIME	HOURS	X								X

MAKEUP AIR UNIT COOLING COIL - CONTROL SEQUENCE

A. COOLING COIL TEMPERATURE CONTROL:
   1. COOLING COIL VALVE MODULATES TO MAINTAIN COOLING COIL LEAVING AIR SETPOINT.
B. COOLING COIL VALVE SHALL REMAIN CLOSED ANY TIME FAN STATUS IS OFF.
C. IF THE LEAVING AIR TEMPERATURE IS 38 DEG F OR LESS (ADJ), COOLING COIL CONTROL VALVE SHALL MODULATE TO 100% (ADJ) OPEN.

MAKEUP AIR UNIT COOLING COIL CONTROL

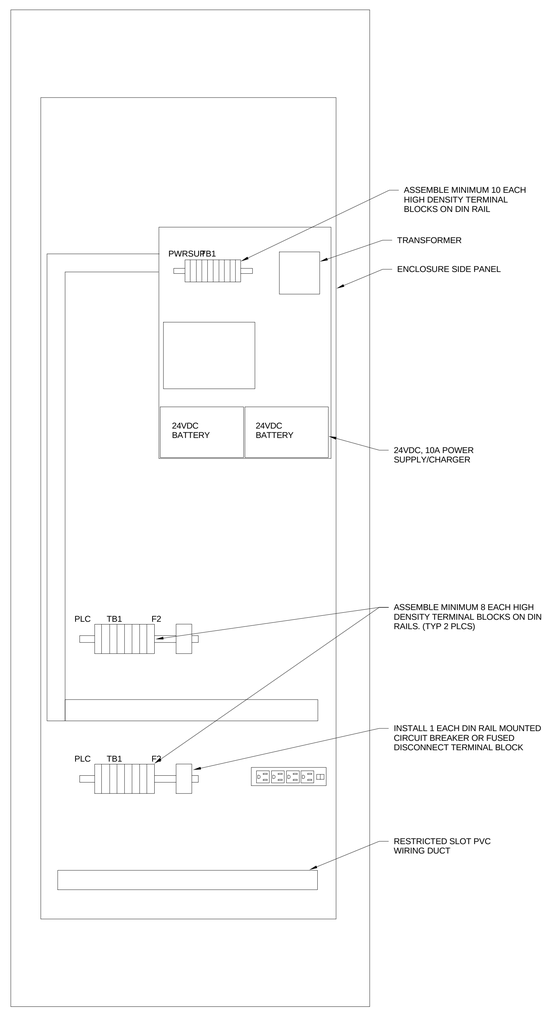
NO SCALE



PLC CABINET ASSEMBLY

SCALE: NONE

DOOR REMOVED FOR CLARITY



SIDE PANEL ASSEMBLY

SCALE: NONE

DOOR REMOVED FOR CLARITY

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MISCELLANEOUS EQUIPMENT MONITORING

M641

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 61

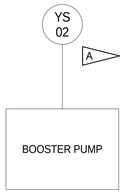
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES

1. DRAWING IS TYPICAL AND MAY REPRESENT MORE THAN ONE SYSTEM.
2. COORDINATE INSTALLATION AND FINAL LOCATION OF INSTRUMENTS WITH OTHER TRADES.
3. VERIFY ALL CABLE REQUIREMENTS PRIOR TO TERMINATING.

FLAG NOTES

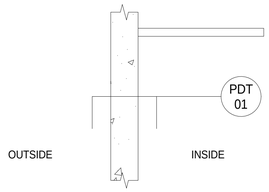
A — REFER TO PLUMBING PLANS FOR QUANTITY AND LOCATION.



WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
YS 01	BOOSTER PUMP ALARM	NORMAL/ALARM		X						X	X

PLUMBING EQUIPMENT MONITORING DIAGRAM

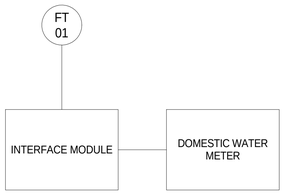
NO SCALE



WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
PDT 01	BUILDING DIFFERENTIAL PRESSURE	IN WG	X								X

BUILDING DIFFERENTIAL PRESSURE

NO SCALE



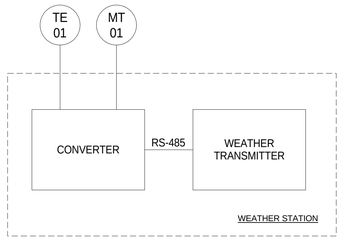
DETAIL NOTES:

1. REFER TO WATER DISTRIBUTION SPECIFICATION FOR DOMESTIC WATER METER.
2. INTERFACE MODULE SHALL BE SENSUS REMOTE MONITORING ACT-PAK OR APPROVED EQUAL, FROM THE SAME MANUFACTURER AS THE DOMESTIC WATER METER.
3. INSTALL PER MANUFACTURE'S RECOMMENDATIONS.

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
FT 01	TOTALIZED WATER USAGE	GALLONS	X								X
SOFTWARE											
SDP	MONTHLY WATER USAGE	GALLONS PER MONTH	X								X

DOMESTIC WATER METER

NO SCALE



DETAIL NOTES:

1. WEATHER TRANSMITTER SHALL BE SIMILAR TO VAISALA MODEL NUMBER WXT 520 OR APPROVED EQUAL.
2. CONVERTER SHALL BE SIMILAR TO NOKEVAL 7470 OR APPROVED EQUAL.
3. INSTALL PER MANUFACTURE'S RECOMMENDATIONS.

WORKSTATION			USER INFORMATION								
			POINT TYPE				ALARM CONDITION			MONITORING	
TAG	POINT DESCRIPTION	UNITS	ANALOG	DIGITAL	INTEGRATED	SETPOINT VALUE	HIGH LIMIT	LOW LIMIT	DELAY (MIN)	KCCS	BAS
HARDWARE											
TE 01	GLOBAL OUTDOOR AIR TEMPERATURE	DEG F	X								X
MT 01	GLOBAL OUTDOOR AIR HUMIDITY	% RH	X								X
SOFTWARE											
SDP	GLOBAL OUTDOOR AIR DEWPOINT	DEG F	X								X

WEATHERSTATION

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Wayne Bauman	12.18.13
CHECKED Tyler Dykes	12.18.13
SUBMITTED: ARCHENG OF RECORD Jean-Marc Lebrun	12.18.13
ST of LICENSURE: FL LICENSE NO. 58090	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

MISCELLANEOUS EQUIPMENT MONITORING

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 62

M642

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PLUMBING SYMBOLS AND ABBREVIATIONS

PIPE FITTINGS

- FLANGE
- UNION
- ANCHOR
- PIPE GUIDE
- PIPE SLEEVE
- ECCENTRIC REDUCER
- CONCENTRIC REDUCER
- WATER PIPING CONNECTION
- ELBOW DOWN
- ELBOW UP
- TEE DOWN
- TEE UP
- PIPE CAP
- SOIL, STORM, OR WASTE PLUG
- VALVE IN VERTICAL

PIPING SYSTEM LABELS

- DCW-UL — DOMESTIC COLD WATER UPPER LEVEL
- DCW-LL — DOMESTIC COLD WATER LOWER LEVEL
- DHW-UL — DOMESTIC HOT WATER UPPER LEVEL
- DHW-LL — DOMESTIC HOT WATER LOWER LEVEL
- DHW-140° — DOMESTIC HOT WATER 140°
- DSCW — DOMESTIC SOFT COLD WATER
- DHR-LL — DOMESTIC HOT WATER RETURN LOWER LEVEL
- DHR-UL — DOMESTIC HOT WATER RETURN UPPER LEVEL
- DHR-140° — DOMESTIC HOT WATER RETURN 140°
- NG — NATURAL GAS
- NP — NONPOTABLE WATER
- SAN — WASTE OR SOIL LINE
- GW — GREASE WASTE
- ST — STORM
- OST — OVERFLOW STORM
- FM — FORCE MAIN
- CWW — CLEARWATER WASTE
- V — SANITARY VENT
- GWV — GREASE WASTE VENT
- FOS — FUEL OIL SUPPLY
- FOR — FUEL OIL RETURN

PIPE VALVES AND SPECIALTIES

- SHUTOFF VALVE
- GATE VALVE
- GLOBE VALVE
- BALANCING VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- DUAL CHECK VALVE
- PRESSURE REDUCING VALVE
- SOLENOID VALVE
- PRESSURE RELIEF VALVE
- 3-WAY MIXING VALVE
- REDUCED PRESSURE BACKFLOW PREVENTER
- PIPELINE STRAINER
- MECHANICAL SHOCKSTOP
- PIPE FLEXIBLE CONNECTION
- EXPANSION JOINT
- FLOW SENSING DEVICE
- GAS REGULATOR
- WATER METER
- THERMOMETER
- PRESSURE GAUGE (WITH VALVE)
- WALL HYDRANT
- HOSE BIBB
- FILTER
- DIRECTION OF FLOW
- M — SECONDARY GAS METER

REFERENCE SYMBOLS

- NAME / # — EQUIPMENT NAME AND NUMBER
- B — FLAG NOTE
- # — REVISION NUMBER
- # — KITCHEN EQUIPMENT TAG
- ELEVATION SYMBOL
- NEW CONNECTION TO EXISTING
- 1 / P402 — DETAIL REFERENCE SYMBOL

DRAINS AND CLEANOUTS

- FLOOR DRAIN
- ROOF DRAIN
- HUB DRAIN
- PIPE TRAP
- FIXTURE WASTE TRAP
- CLEANOUT
- FLOOR CLEANOUT / YARD CLEANOUT

ABBREVIATIONS

ACC	-	ACCESS
ADJ	-	ADJUSTABLE
AFF	-	ABOVE FINISHED FLOOR
ALT	-	ALTERNATE
AP	-	ACCESS PANEL
APPROX	-	APPROXIMATE
ARCH	-	ARCHITECTURAL
ASSY	-	ASSEMBLY
BFP	-	BACKFLOW PREVENTER
BLDG	-	BUILDING
BOP	-	BOTTOM OF PIPE ELEVATION
BOT	-	BOTTOM
BT	-	BATHTUB
BTU	-	BRITISH THERMAL UNIT
BTUH	-	BRITISH THERMAL UNITS PER HOUR
BTWN	-	BETWEEN
CFCI	-	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFM	-	CUBIC FEET PER MINUTE
CLG	-	CEILING
CMU	-	CONCRETE MASONRY UNIT
CO	-	CLEANOUT
CO2	-	CARBON DIOXIDE
CONN	-	CONNECTION/CONNECT
CONTR	-	CONTRACTOR
CORR	-	CORRIDOR
CTG	-	CLEANOUT TO GRADE
CTR	-	CENTER
CU	-	COPPER
CWW	-	CLEARWATER WASTE
DCW	-	DOMESTIC COLD WATER
DET	-	DETAIL
DFU	-	DRAINAGE FIXTURE UNIT
DHR	-	DOMESTIC HOT WATER RETURN
DHW	-	DOMESTIC HOT WATER
DIA	-	DIAMETER
DIM	-	DIMENSION
DN	-	DOWN
DS	-	DOWNSPOUT
DWG	-	DRAWING
EA	-	EACH
EJ	-	EXPANSION JOINT
ELEC	-	ELECTRICAL
ELEV	-	ELEVATION
EM	-	EMERGENCY SHOWER
ETP	-	ELECTRONIC TRAP PRIMER
EQUIP	-	EQUIPMENT
ET	-	EXPANSION TANK
ETR	-	EXISTING TO REMAIN
EWC	-	ELECTRIC WATER COOLER
EXP	-	EXPANSION
EXT	-	EXTERIOR
FCO	-	FLOOR CLEANOUT
FD	-	FLOOR DRAIN
FLR	-	FLOOR
FM	-	FORCE MAIN
FP	-	FIREPROOF
FPM	-	FEET PER MINUTE
FTG	-	FOOTING
G	-	GAS
GA	-	GAUGE
GAL	-	GALLON
GALV	-	GALVANIZED
GPM	-	GALLONS PER MINUTE
GW	-	GREASE WASTE
HB	-	HOSE BIBB
HD	-	HUB DRAIN
HP	-	HORSEPOWER/HIGH POINT
HR	-	HOSE REEL
HT	-	HEAT TRACE HOT WATER
HTR	-	HEATER
HVAC	-	HEATING VENTILATING & AIR CONDITIONING
ID	-	INSIDE DIAMETER
IE	-	INVERT ELEVATION
IN	-	INCHES
IOA	-	INSTITUTE ON AGING
L	-	LENGTH
LAV	-	LAVATORY
LBS	-	POUNDS
LCW	-	LAB COLD WATER
LCSW	-	LAB COLD SOFT WATER
LHW	-	LAB HOT WATER
LHWR	-	LAB HOT WATER RETURN
LTG	-	LIGHTING
LV	-	LABORATORY VACUUM
MAX	-	MAXIMUM
MB	-	MOP BASIN
MEZZ	-	MEZZANINE
MFR	-	MANUFACTURER
MH	-	MANHOLE
MIN	-	MINIMUM/MINUTE
MISC	-	MISCELLANEOUS
MTD	-	MOUNTED
MTG	-	MOUNTING
N2	-	NITROGEN
NG	-	NATURAL GAS
NIC	-	NOT IN CONTRACT
NO	-	NUMBER
NOM	-	NOMINAL
NPT	-	NATIONAL PIPE THREAD
NTS	-	NOT TO SCALE
OC	-	ON CENTER
OD	-	OVERFLOW DRAIN
OFCI	-	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	-	OWNER FURNISHED OWNER INSTALLED
ORD	-	OVERFLOW DRAIN
OST	-	OVERFLOW STORM
P	-	PUMP
PIV	-	POST INDICATOR VALVE
PLBG	-	PLUMBING
PRV	-	PRESSURE REDUCING VALVE
PRESS	-	PRESSURE
PSF	-	POUNDS PER SQUARE FOOT
PSI	-	POUNDS PER SQUARE INCH
PSIG	-	POUNDS PER SQUARE INCH GAUGE
RAD	-	RADIUS
RD	-	ROOF DRAIN
REC	-	RECESSED
RECPT	-	RECEPTACLE
REQD	-	REQUIRED
RPBP	-	REDUCED PRESSURE PRINCIPLE BACKFLOW PRVENTER
RPM	-	REVOLUTIONS PER MINUTE
RV	-	RELIEF VALVE
SCH	-	SCHEDULE
ST	-	STORM
SA	-	MECHANICAL SHOCK ARRESTOR
SAN	-	SANITARY
SD	-	SUBSOIL DRAIN
SF	-	SQUARE FEET
SH	-	SHOWER
SHT	-	SHEET
SM	-	SQUARE METERS
SPEC	-	SPECIFICATION
SQ	-	SQUARE
SR	-	SERVICE RECEPTOR
STRU	-	STRUCTURAL/STRUCTURE
S/S	-	STAINLESS STEEL
STD	-	STANDARD
TEMP	-	TEMPERATURE
TOB	-	TOP OF BEAM
TOD	-	TOP OF DECK
TOJ	-	TOP OF JOIST
TOS	-	TOP OF SLAB/TOP OF STEEL
TF	-	TRAP FILLER
TP	-	TRAP PRIMER
TYP	-	TYPICAL
UR	-	URINAL
V	-	VENT
VAC	-	VACUUM
VC	-	VACUUM CLEANING
VCV	-	VACUUM CLEANING VALVE
VEL	-	VELOCITY
VIB	-	VALVE-IN-BOX
VOL	-	VOLUME
VTR	-	VENT THRU ROOF
W	-	WASTE/WATER
W/	-	WITH
W/O	-	WITHOUT
WC	-	WATER CLOSET
WCO	-	WALL CLEANOUT
WGE	-	WASTE GAS EVACUATION
WSFU	-	WATER SUPPLY FIXTURE UNIT
WS	-	WATER SOFTENER
WH	-	WALL HYDRANT
YCO	-	YARD CLEANOUT

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCH/ENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

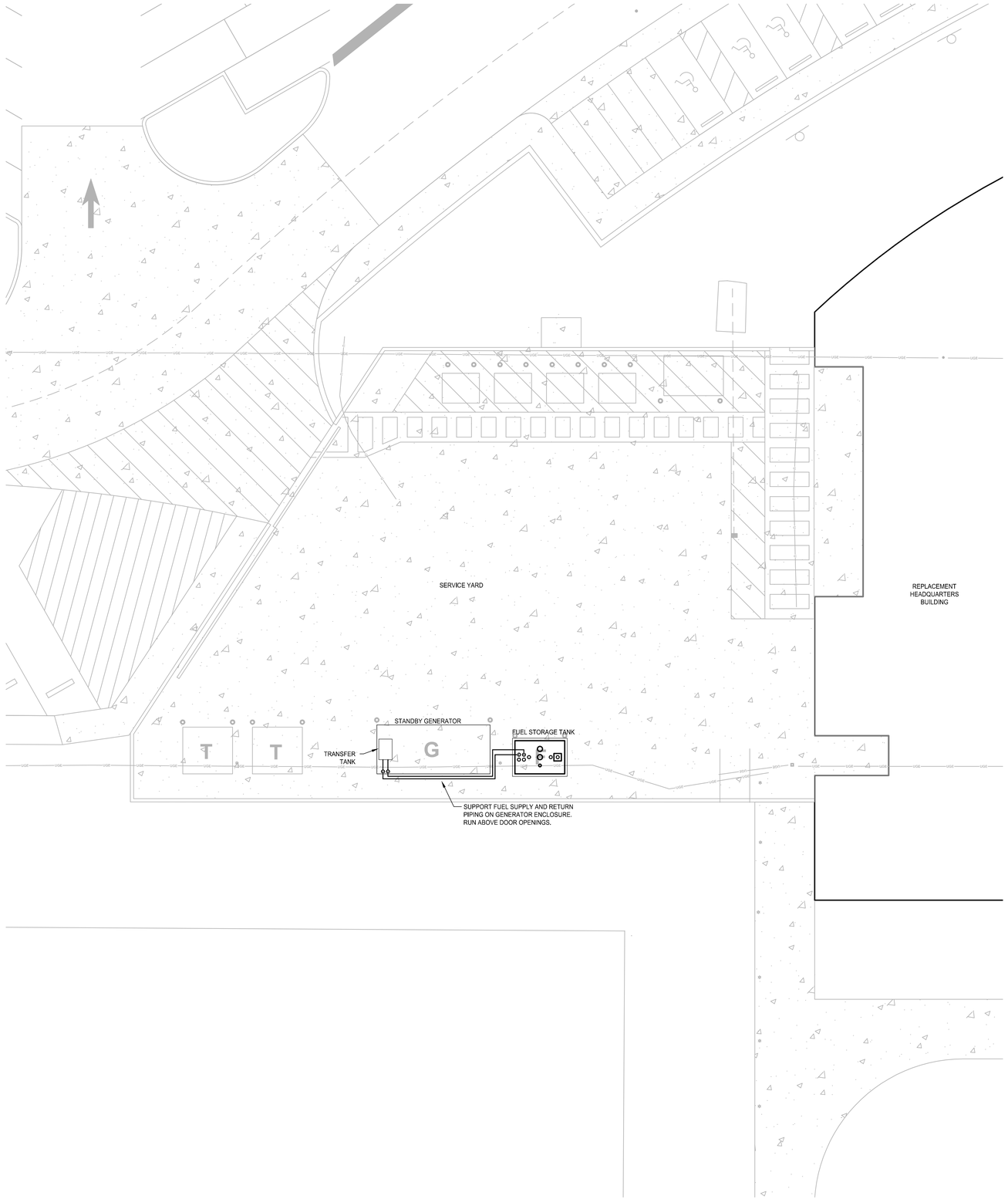
PLUMBING SYMBOLS & ABBREVIATIONS

P001

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

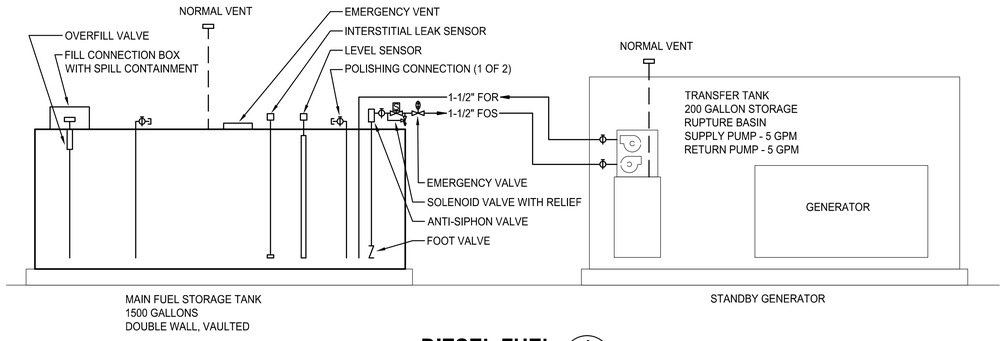
PCN. NO. 98745.1a | SHEET 63

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING SITE PLAN

1" = 10'-0"



DIESEL FUEL 1

NO SCALE

GRAPHIC SCALE

0 10 20 30

SCALE IN FEET
1" = 10'-0"

N

P101

SYM	ZONE		DATE	APPD
6		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

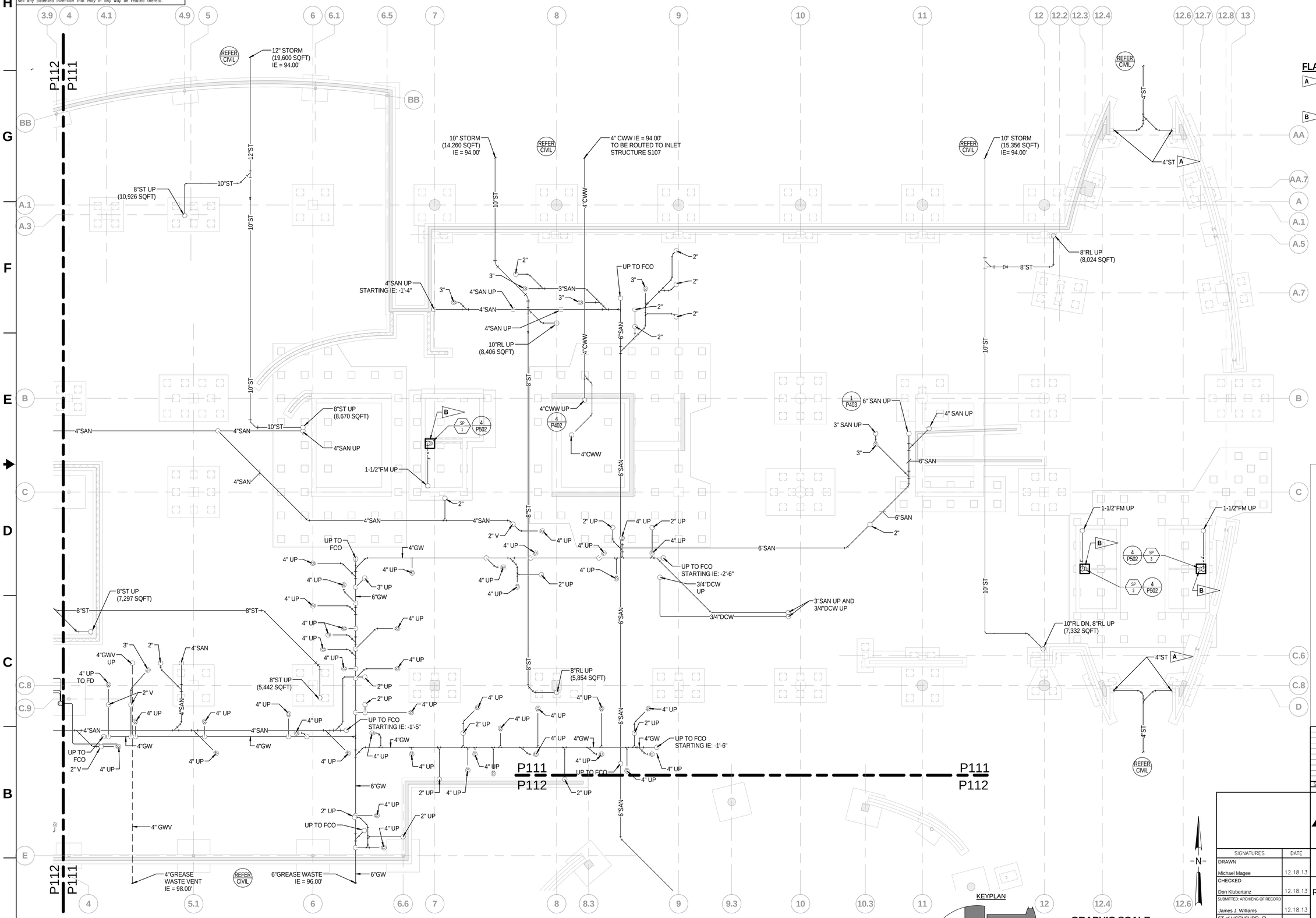
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING SITE PLAN

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 64	

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES:

A — CONNECT 4" STORM DRAIN TO HORIZONTAL STORM OUTLET WITH A "FERNCO-TYPE" ADAPTOR COUPLING. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF OUTLET.

B — CORRDINATE THE LOCATION FOR THE ELEVATOR SUMP PUMP (SP-1) WITH THE LOCATION OF THE PIT AT THE BOTTOM OF THE ELEVATOR SHAFTS AND WITH STRUCTURE DRAWINGS.

PLUMBING PLAN - UNDERFLOOR - AREA 1

1/8" = 1'-0"

KEYPLAN

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING PLAN - UNDERFLOOR AREA 1

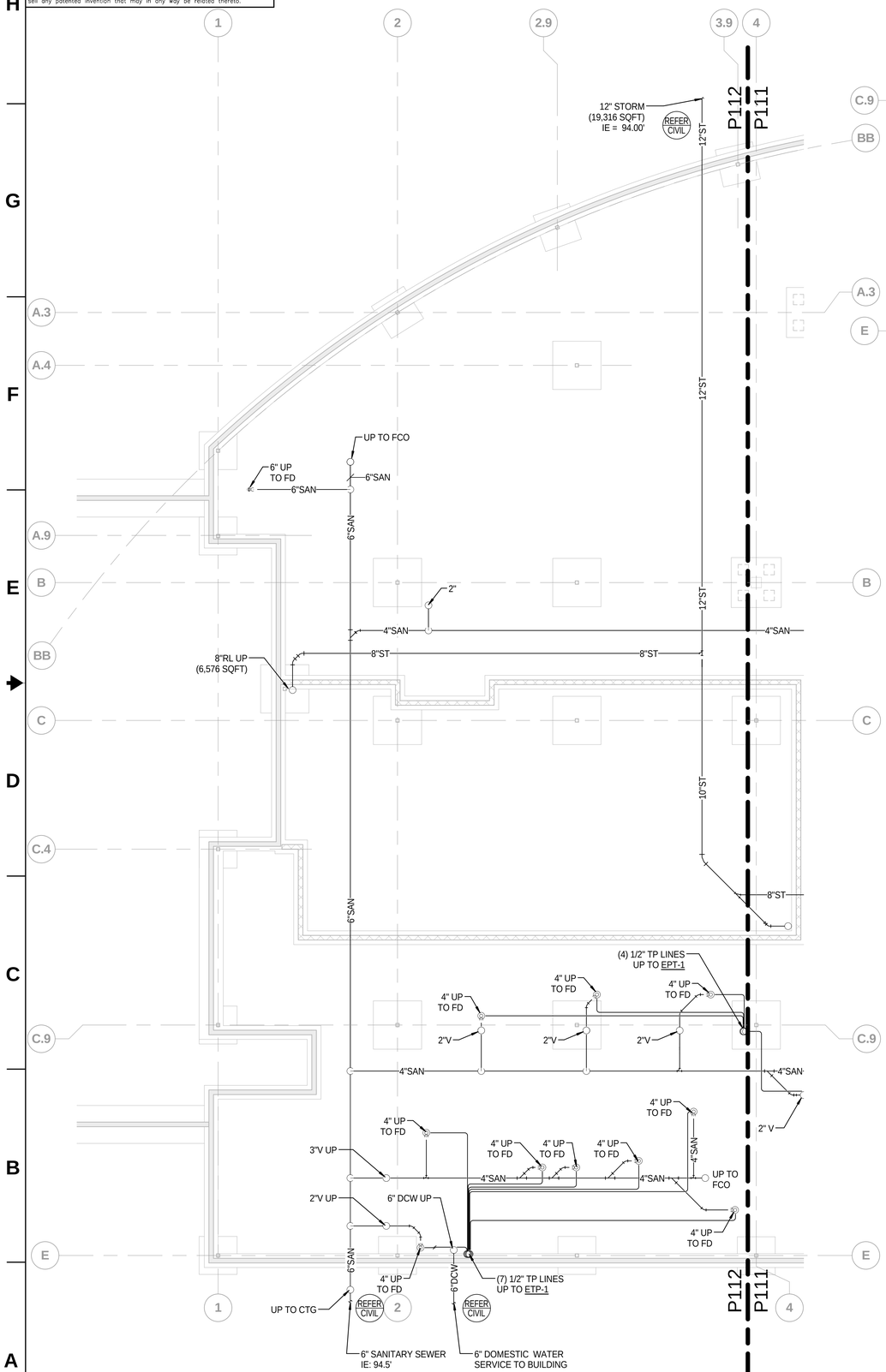
P111

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 65

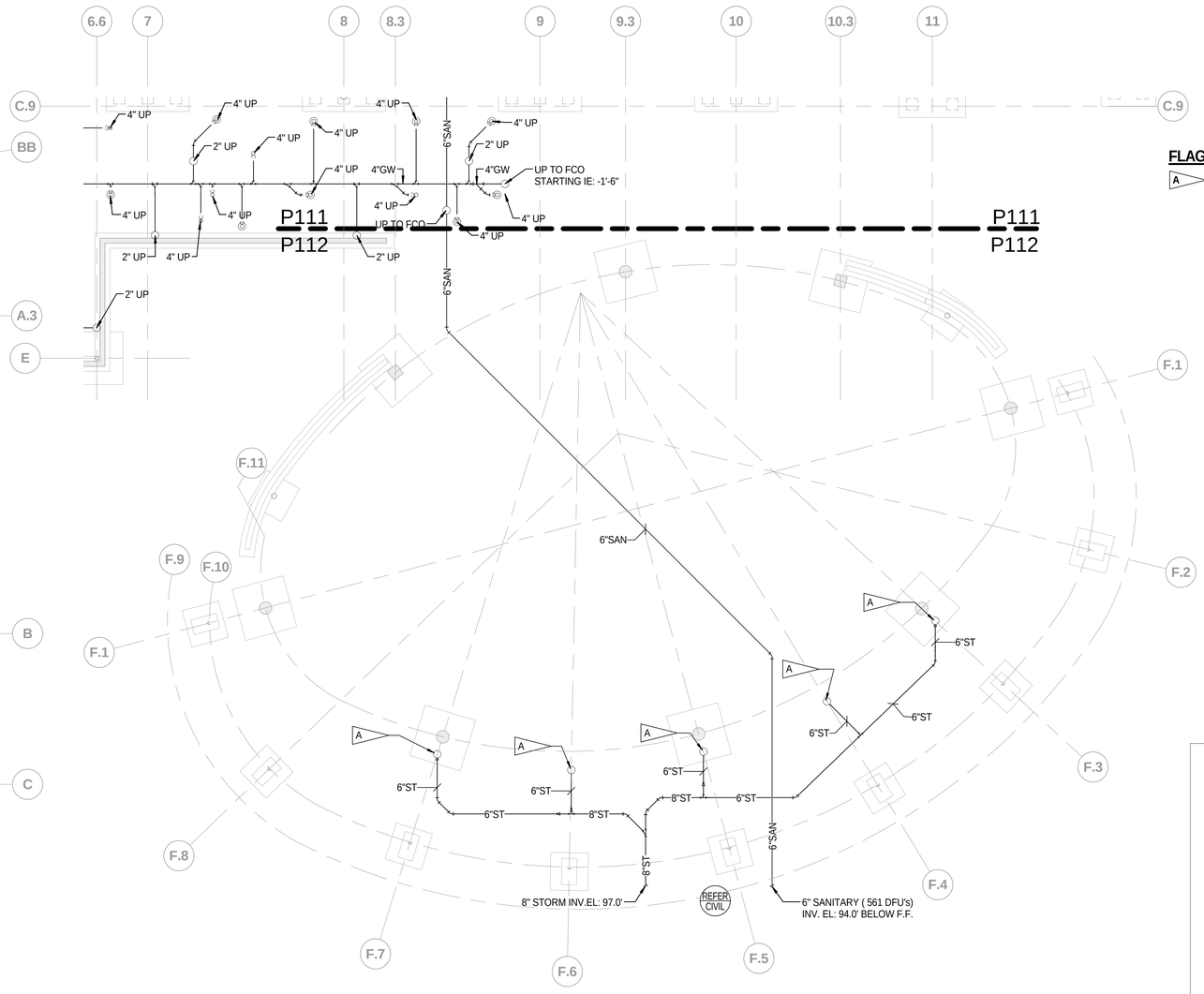
KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - UNDERFLOOR - AREA 2 (1)

1/8" = 1'-0"



PLUMBING PLAN - UNDERFLOOR - AREA 3 (2)

1/8" = 1'-0"

FLAG NOTES:

A — CONNECT STORM DRAIN TO VERTICAL DOWNSPOUT OUTLET WITH A "FERNCO-TYPE" ADAPTOR COUPLING. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF OUTLET.

KEYPLAN

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING PLAN - UNDERFLOOR AREA 2 & 3

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 66

P112

KSC FORM 1-11 (3/76)(C/G 3/94)

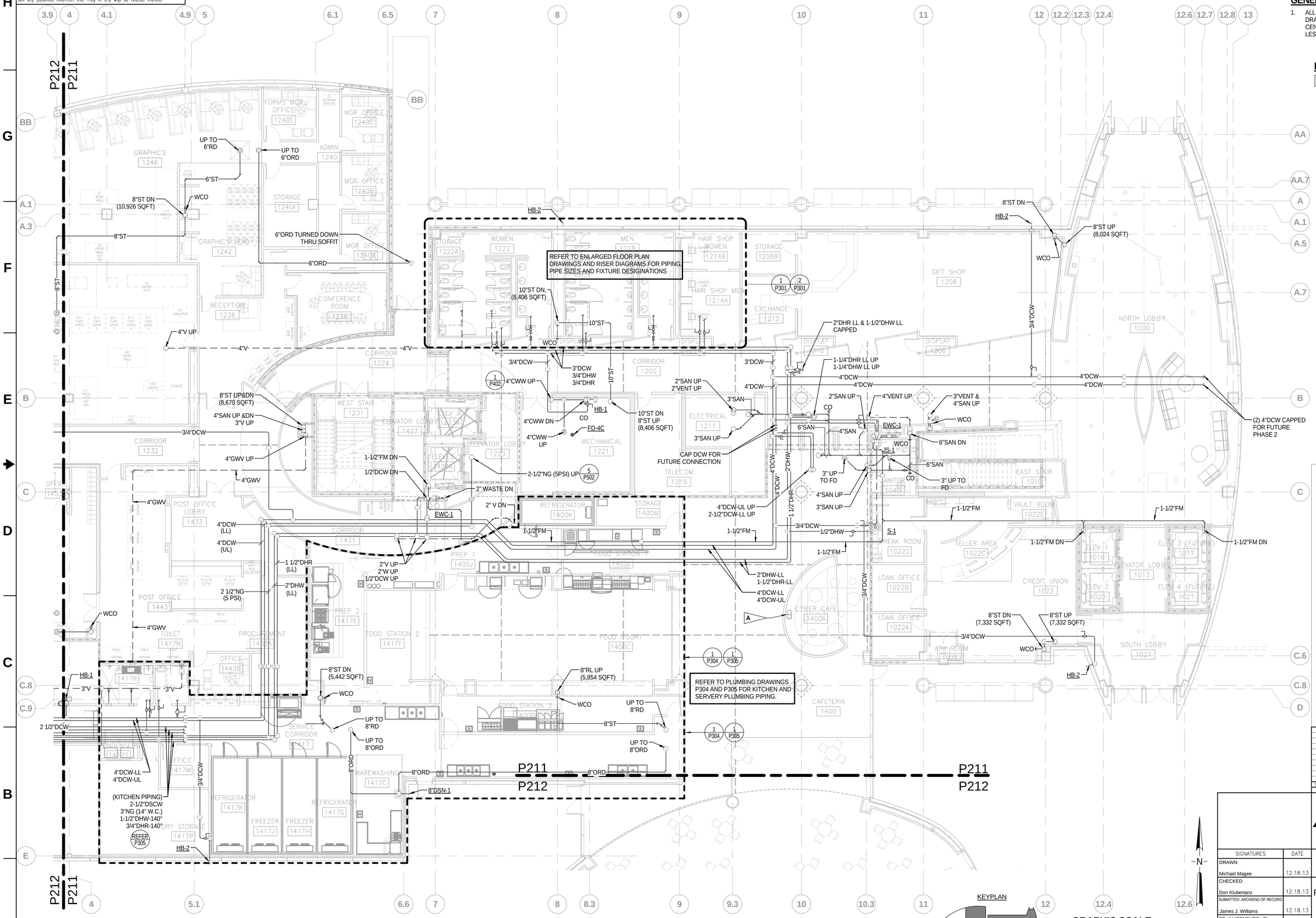
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

GENERAL NOTES:

1. ALL WALL CLEANOUTS (WCO) INDICATED ON DRAWING SHALL BE INSTALLED WITH IT CENTERLINE AT 18" AFF MAXIMUM, BUT NOT LESS THAN 12" AFF MINIMUM.

FLAG NOTES:

A — 3" SANITARY AND 3/4" DCW RISERS. PROVIDE 12" HIGH STUBS ABOVE FINISHED FLOOR WITHIN CABINET SPACE FOR EACH UTILITY. PROVIDE SHUT-OFF VALVE WITH CAPPED NIPPLE ON THE DCW WATER SUPPLY, AND A CLEANOUT PLUG ON THE SANITARY LINE. COORDINATE EXACT RISER LOCATIONS WITH ARCHITECTURAL DRAWINGS. PROVISION FOR FUTURE EXTENSION.



PLUMBING PLAN - 1ST LEVEL - AREA 1

1/8" = 1'-0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

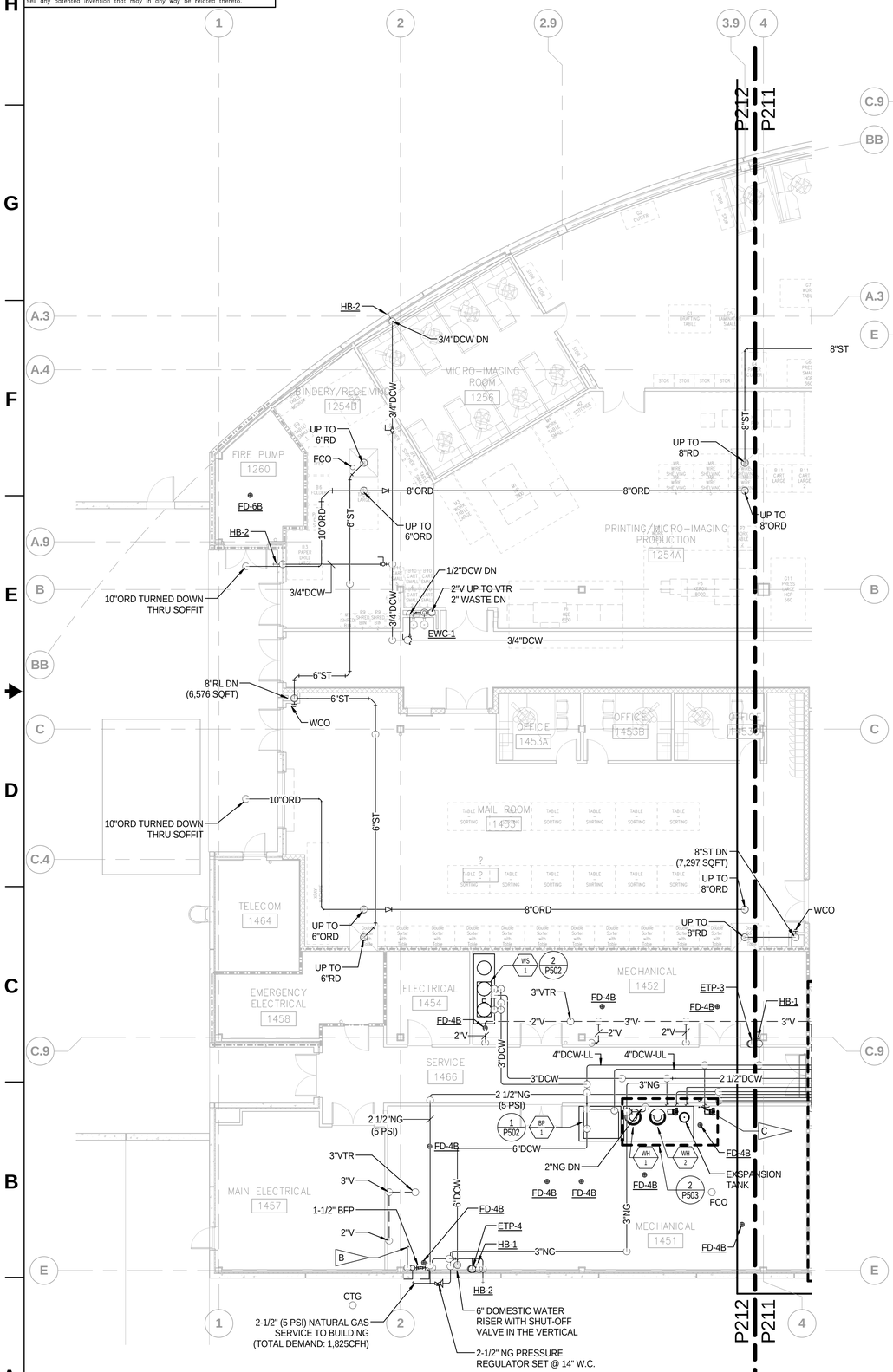
PLUMBING PLAN - 1ST LEVEL AREA 1

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 67

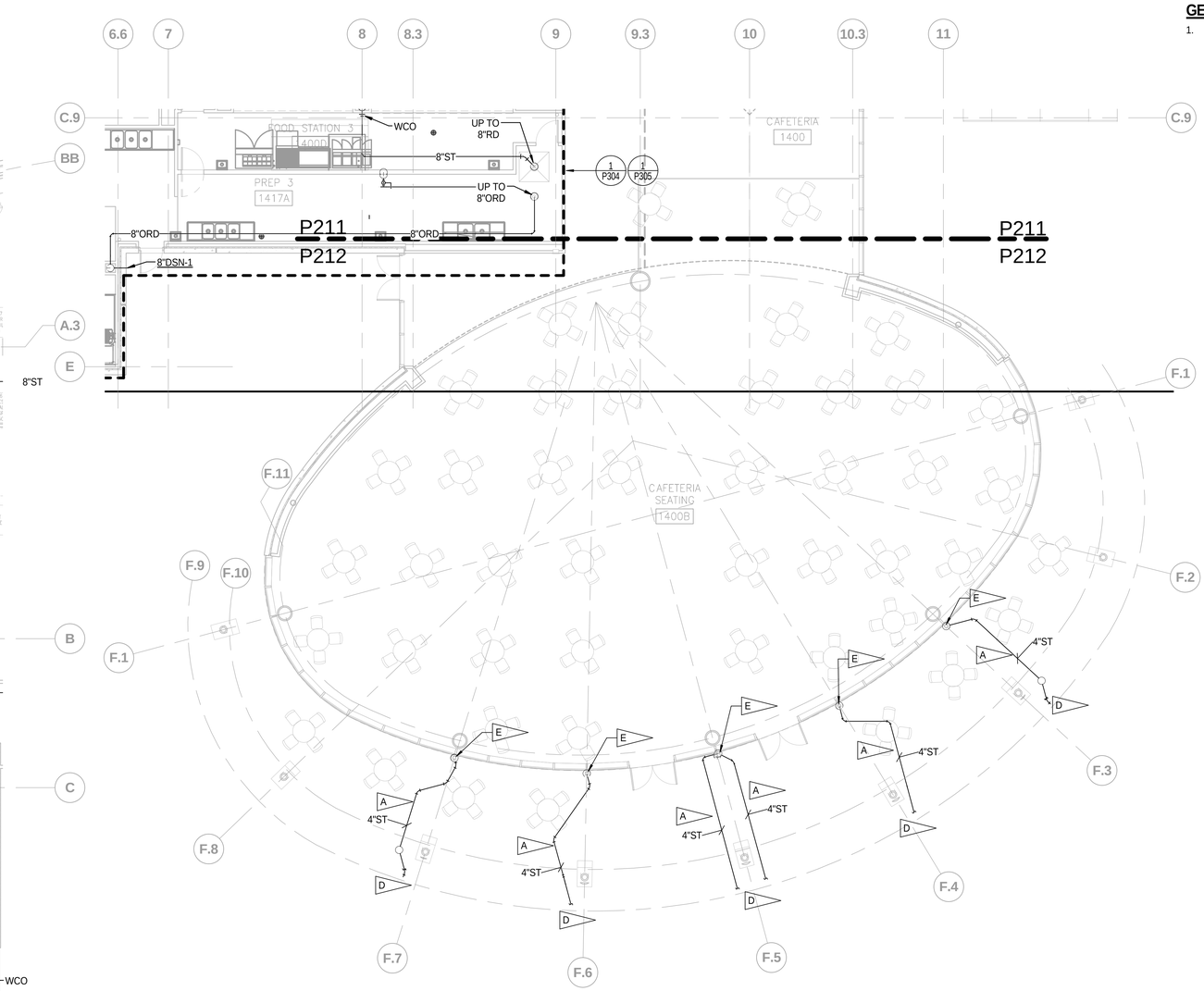
P211

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - 1ST LEVEL - AREA 2 (1)

1/8" = 1'-0"



PLUMBING PLAN - 1ST LEVEL - AREA 3 (2)

1/8" = 1'-0"

GENERAL NOTES:

1. ALL WALL CLEANOUTS (WCO) INDICATED ON DRAWING SHALL BE INSTALLED WITH IT CENTERLINE AT 18" AFF MAXIMUM, BUT NOT LESS THAN 12" AFF MINIMUM.

FLAG NOTES:

A. THE SECTION OF 4" STORM PIPING TO BE INSTALLED BY THE PLUMBING CONTRACTOR. FIELD COORDINATE THE EXACT CONNECTION POINTS FROM THE ROOF GUTTER TO THE DOWN SPOUT. REFER TO ARCHITECTURAL DETAIL.

B. 1-1/2"NP WATER. PROVISION FOR HVAC MAKE-UP. REFER TO MECHANICAL FOR CONTINUATION.

C. THERMOSTATIC MIXING VALVE, BASES OF DESIGN: "ARMSTRONG" MODEL: DRV40R, DIGITAL Re-CIRULATING VALVE WITH PRE-PIPED Re-CIRCULATION MANIFOLD, OR APPROVED EQUAL. SET OUTLET TEMPERATURE FOR 120° DEGREES MAX.

D. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS FOR GUTTER CONNECTIONS TO STORM PIPE.

E. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS FOR RAIN LEADER CONNECTION TO STORM PIPE.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

KEYPLAN

GRAPHIC SCALE 0 8 16 24

SCALE IN FEET 1/8" = 1' - 0"

N

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

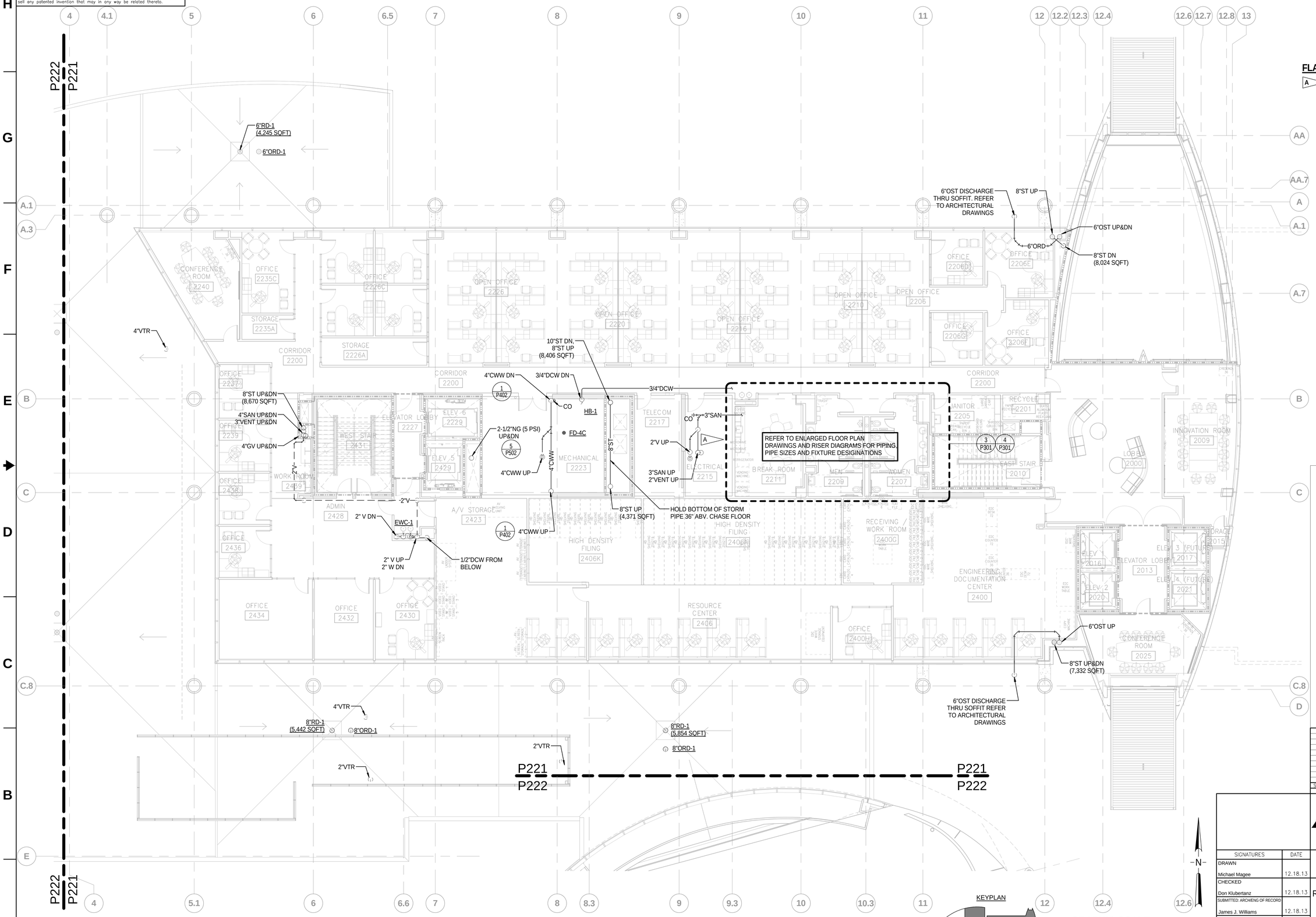
PLUMBING PLAN - 1ST LEVEL AREA 2 & 3

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 68

P212

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES:

A — DO NOT LOCATE PIPING OVER ELECTRICAL EQUIPMENT.

PLUMBING PLAN - 2ND LEVEL - AREA 1

1/8" = 1'-0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING PLAN - 2ND LEVEL AREA 1

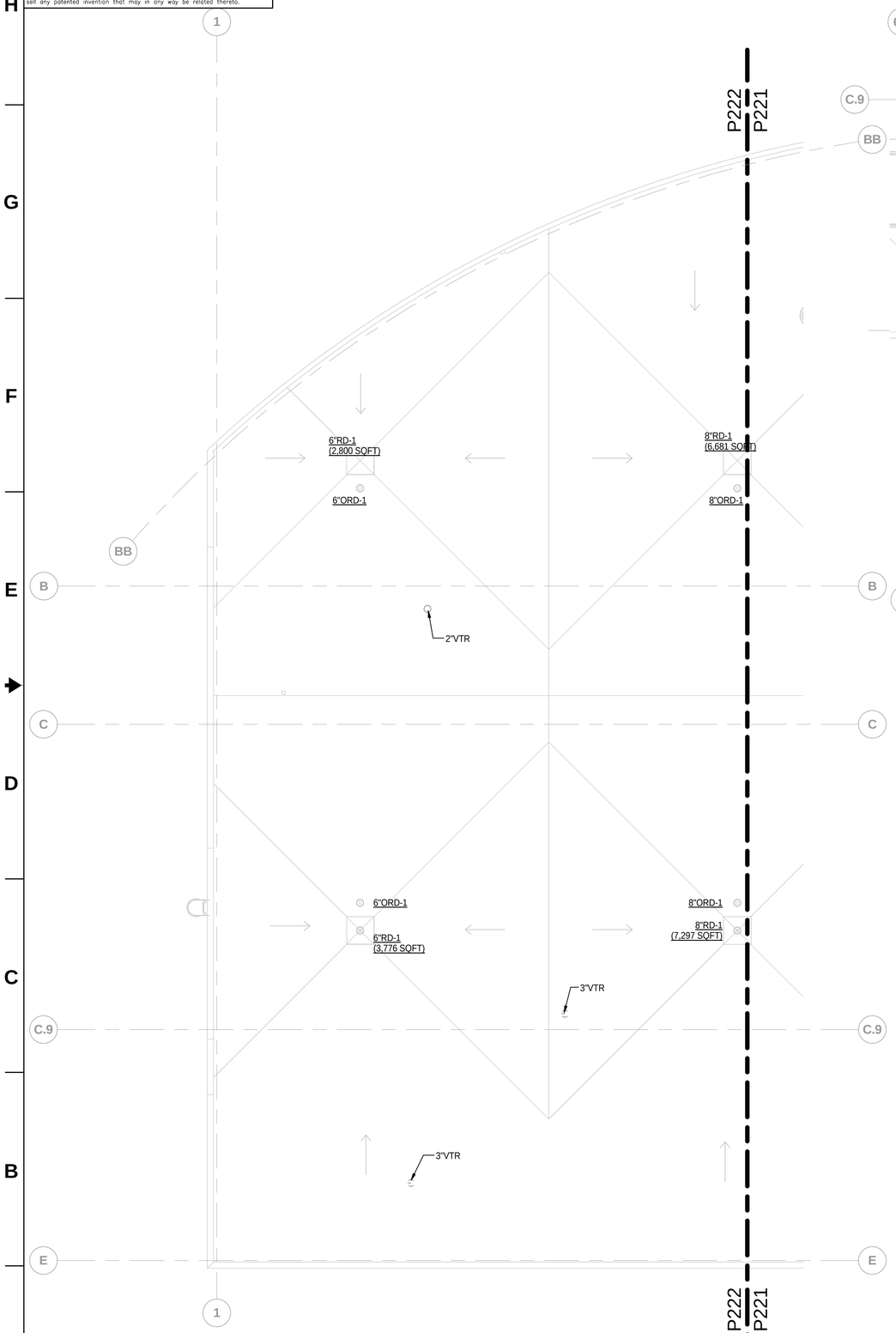
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 69

P221

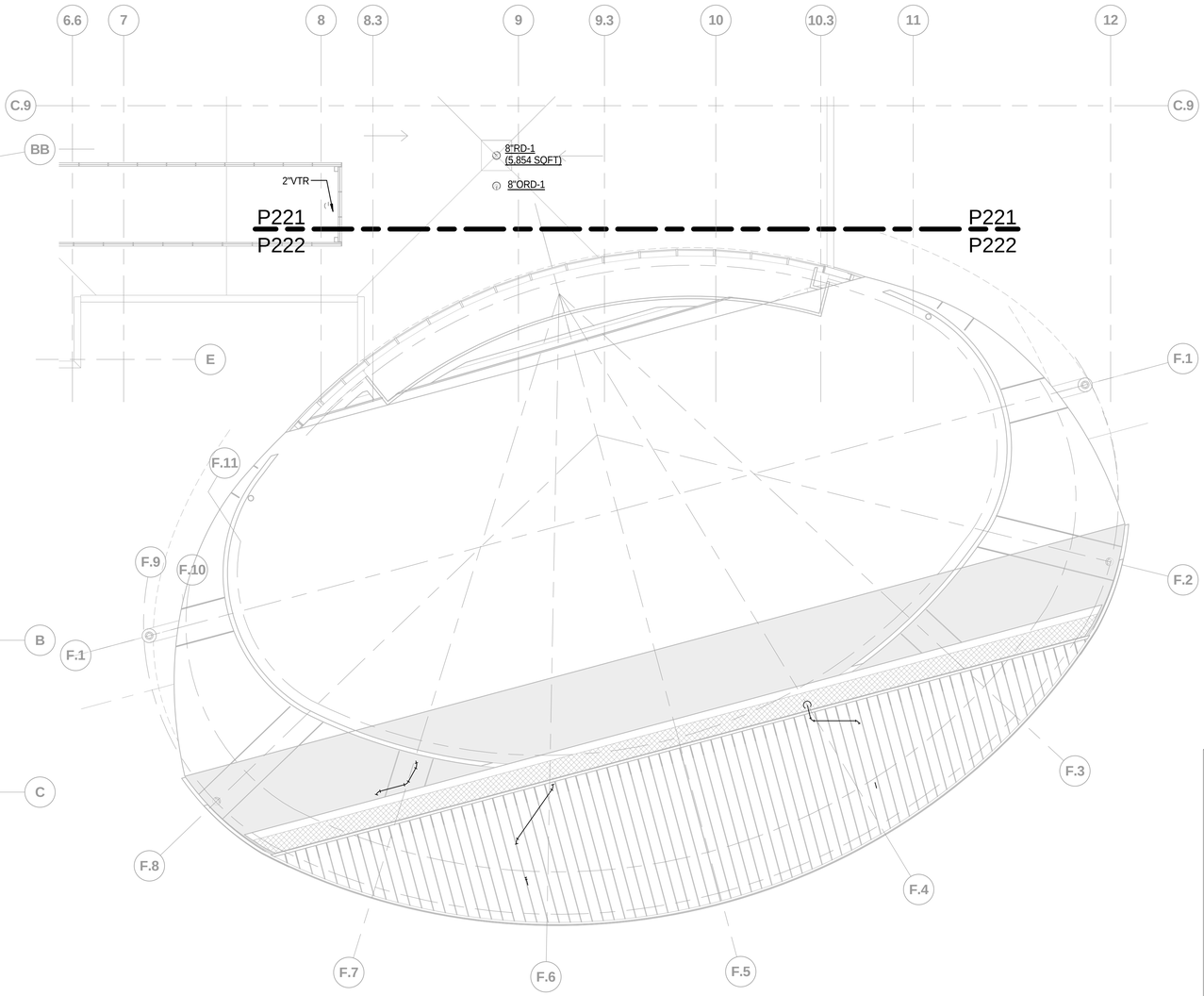
KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - 2ND LEVEL - AREA 2 (1)

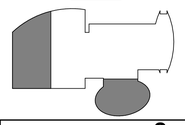
1/8" = 1'-0"



PLUMBING PLAN - 2ND LEVEL - AREA 3 (2)

1/8" = 1'-0"

KEYPLAN



GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

P222

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

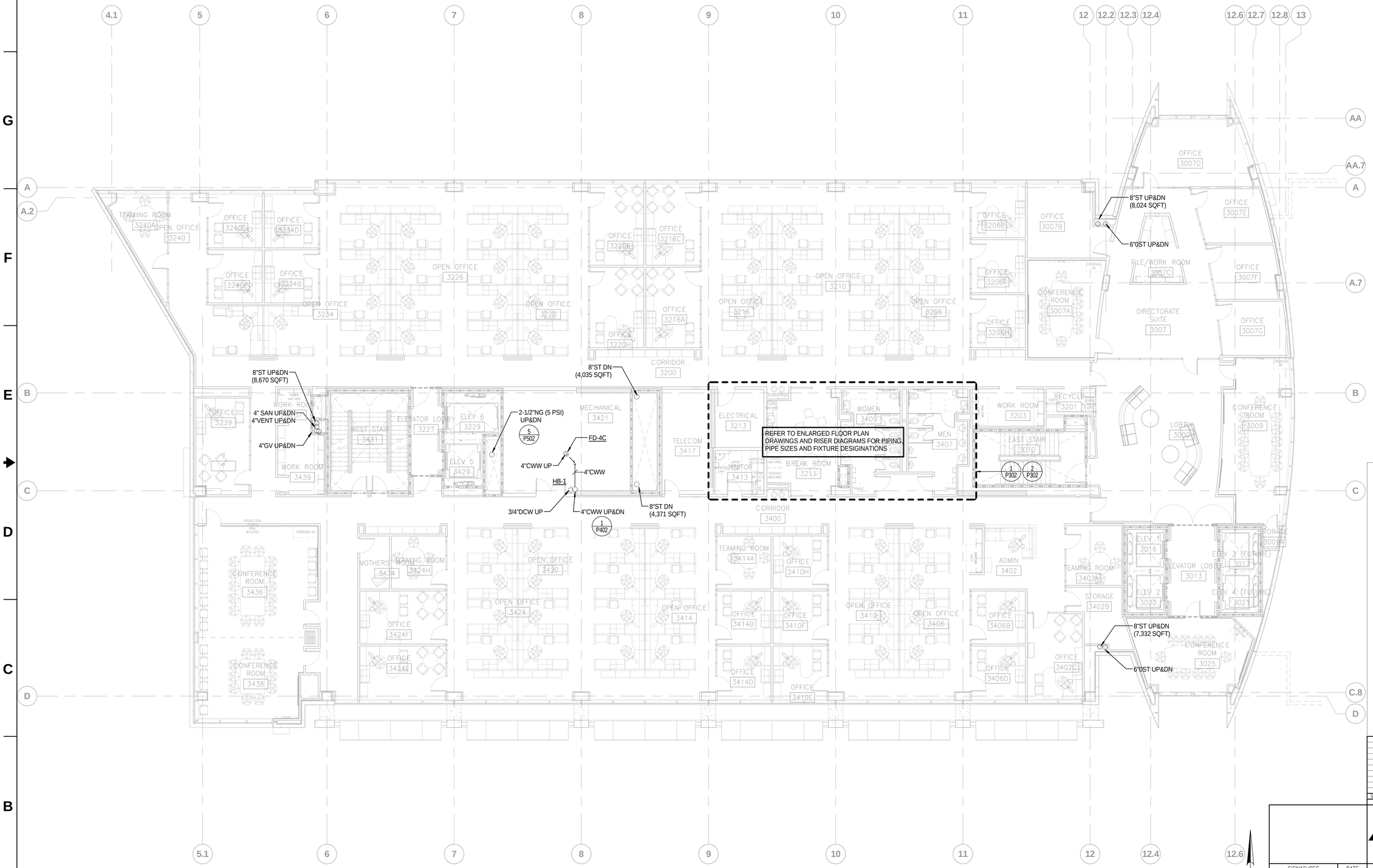
PLUMBING PLAN - 2ND LEVEL AREA 2 & 3

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 70

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - 3RD LEVEL

1/8" = 1'-0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING PLAN - 3RD LEVEL

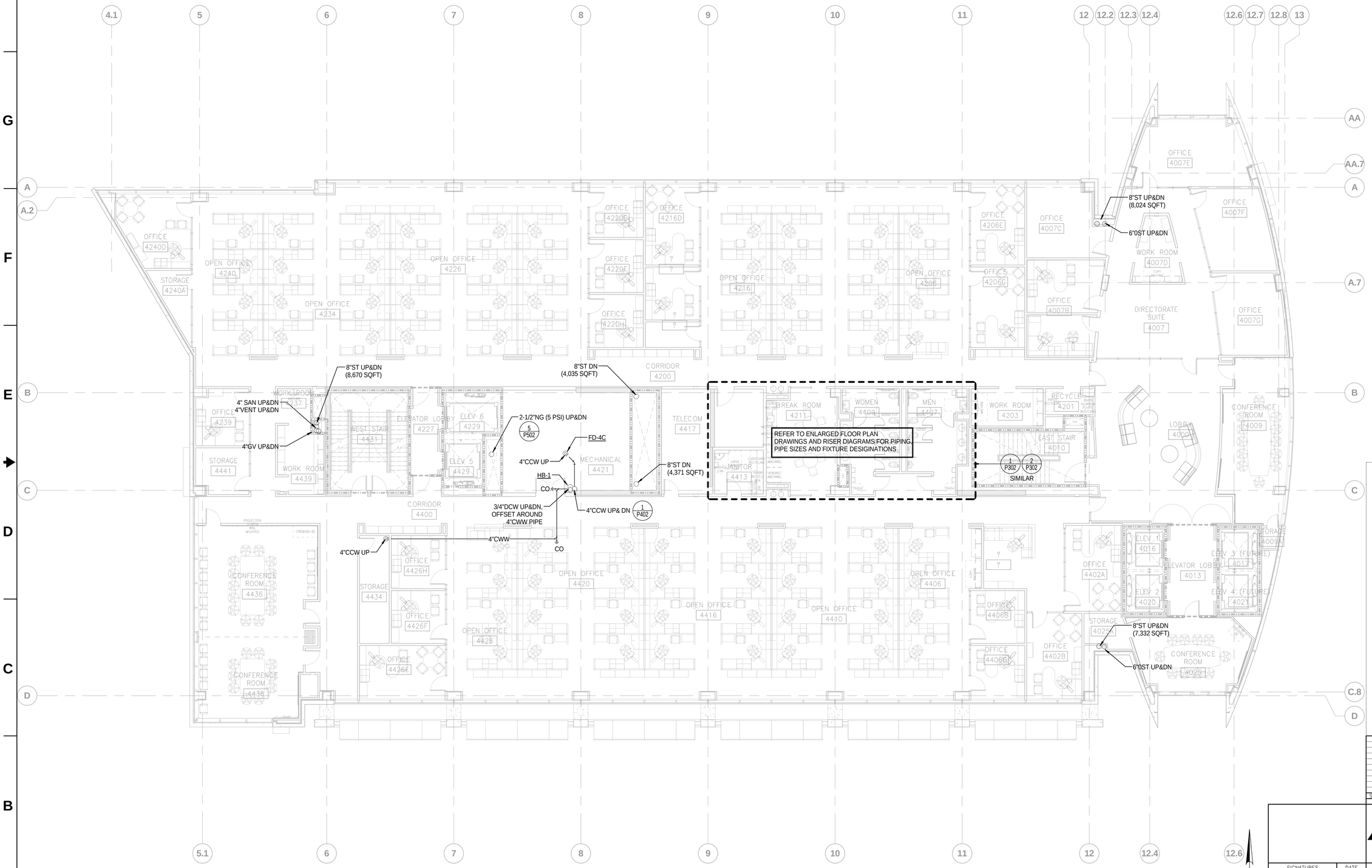
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 71

P231

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - 4TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

P241

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

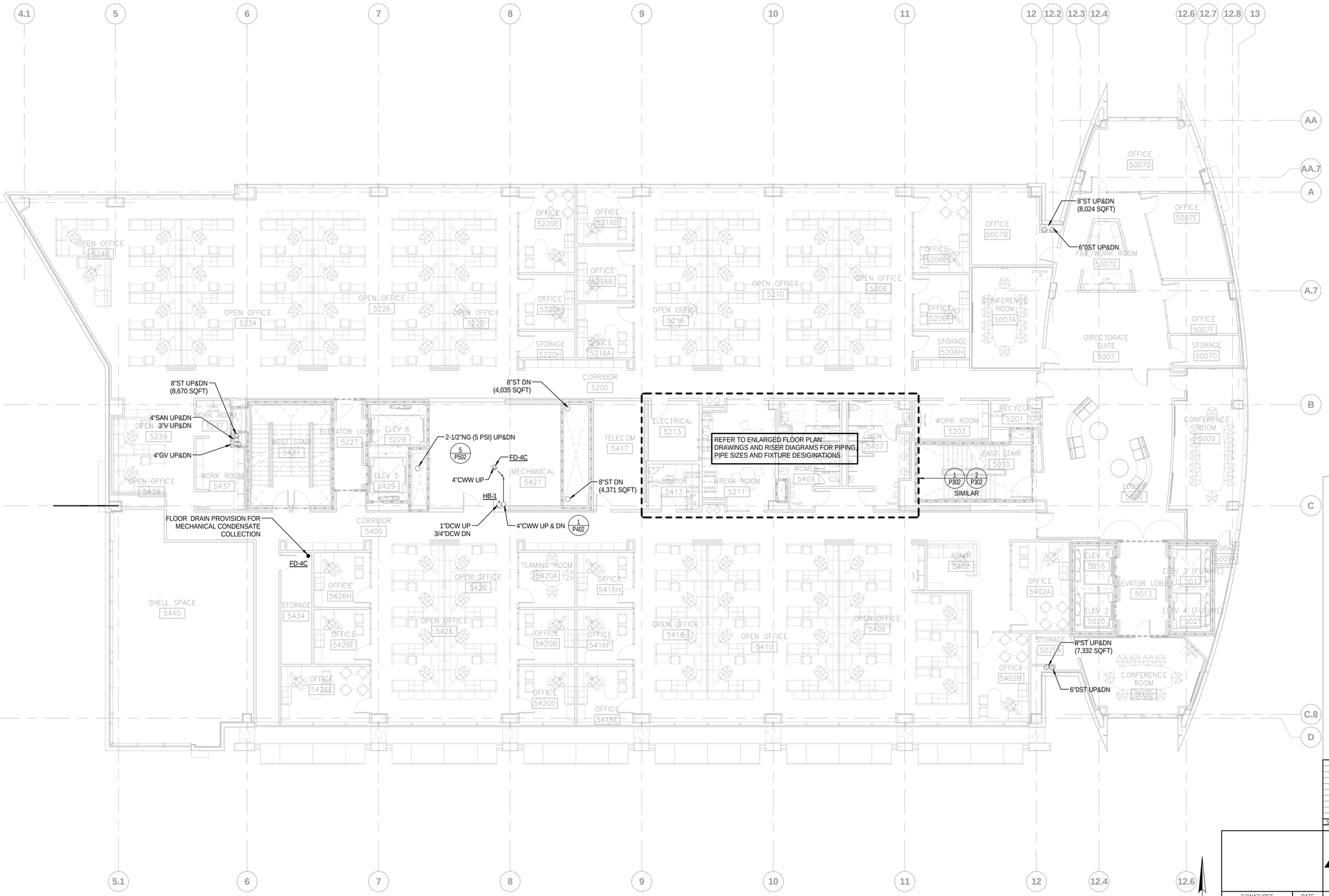
PLUMBING PLAN - 4TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 72

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - 5TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

P251

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

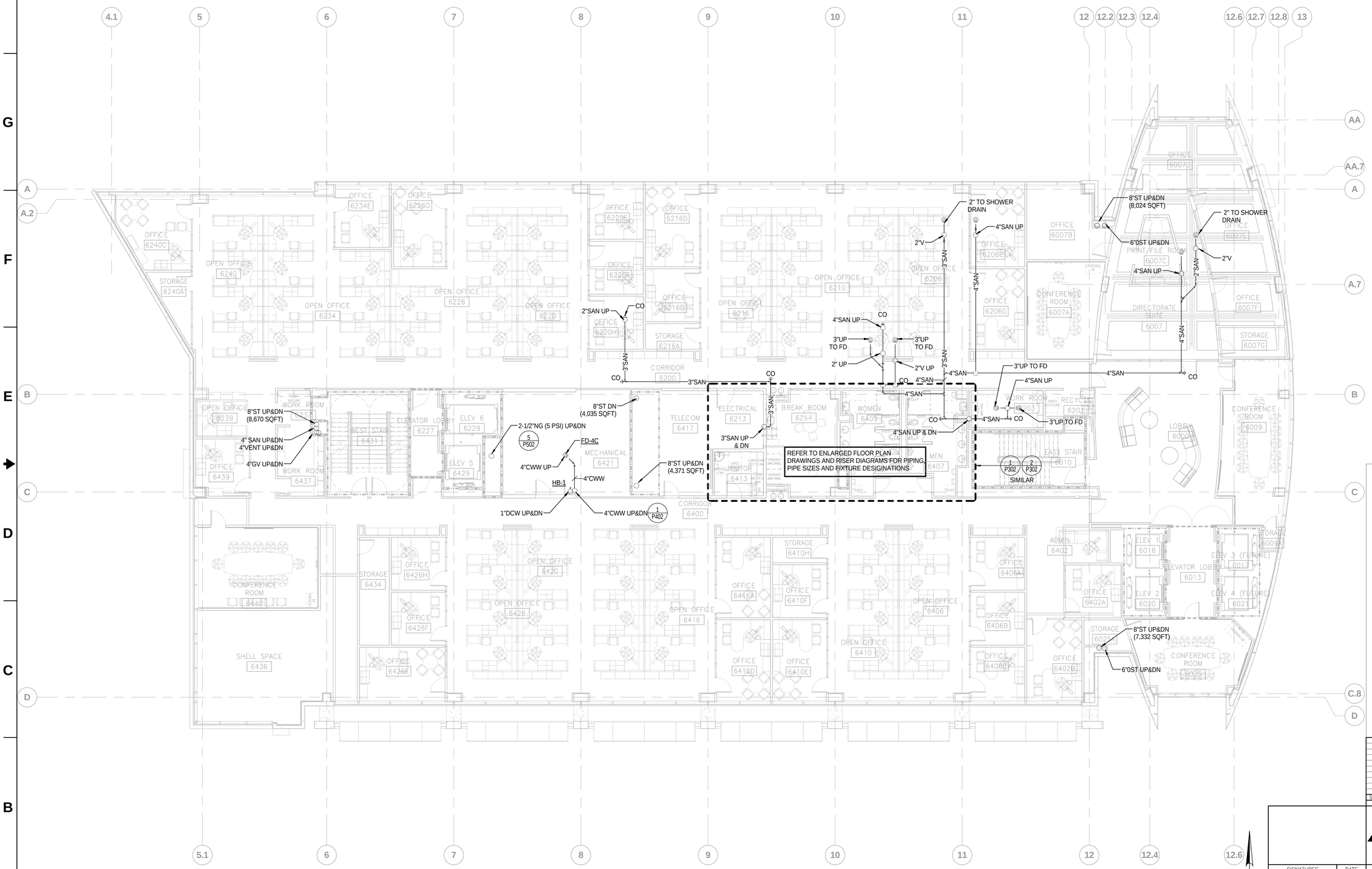
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING PLAN - 5TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 73

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - 6TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

P261

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

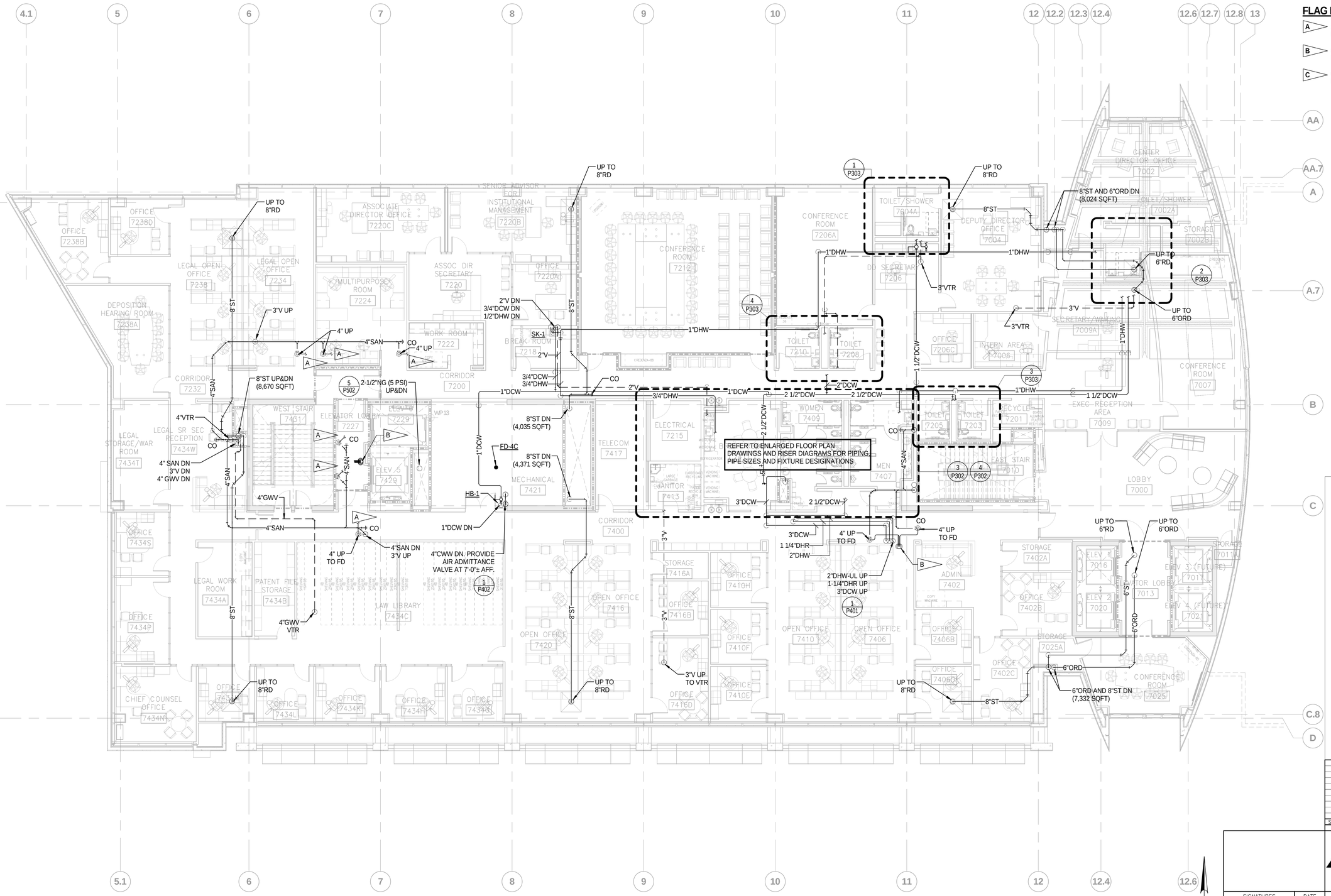
PLUMBING PLAN - 6TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 74

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES:

A — 1/2" TRAP PRIMER DISCHARGE PIPING TO FLOOR DRAIN FROM ETP-1.

B — (6) 1/2" TRAP PRIMER LINES UP TO ETP-1 LOCATED IN MECHANICAL PENTHOUSE.

C — (2) 1/2" TRAP PRIMER LINES UP TO ETP-1 LOCATED IN MECHANICAL PENTHOUSE.

PLUMBING PLAN - 7TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

P271

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

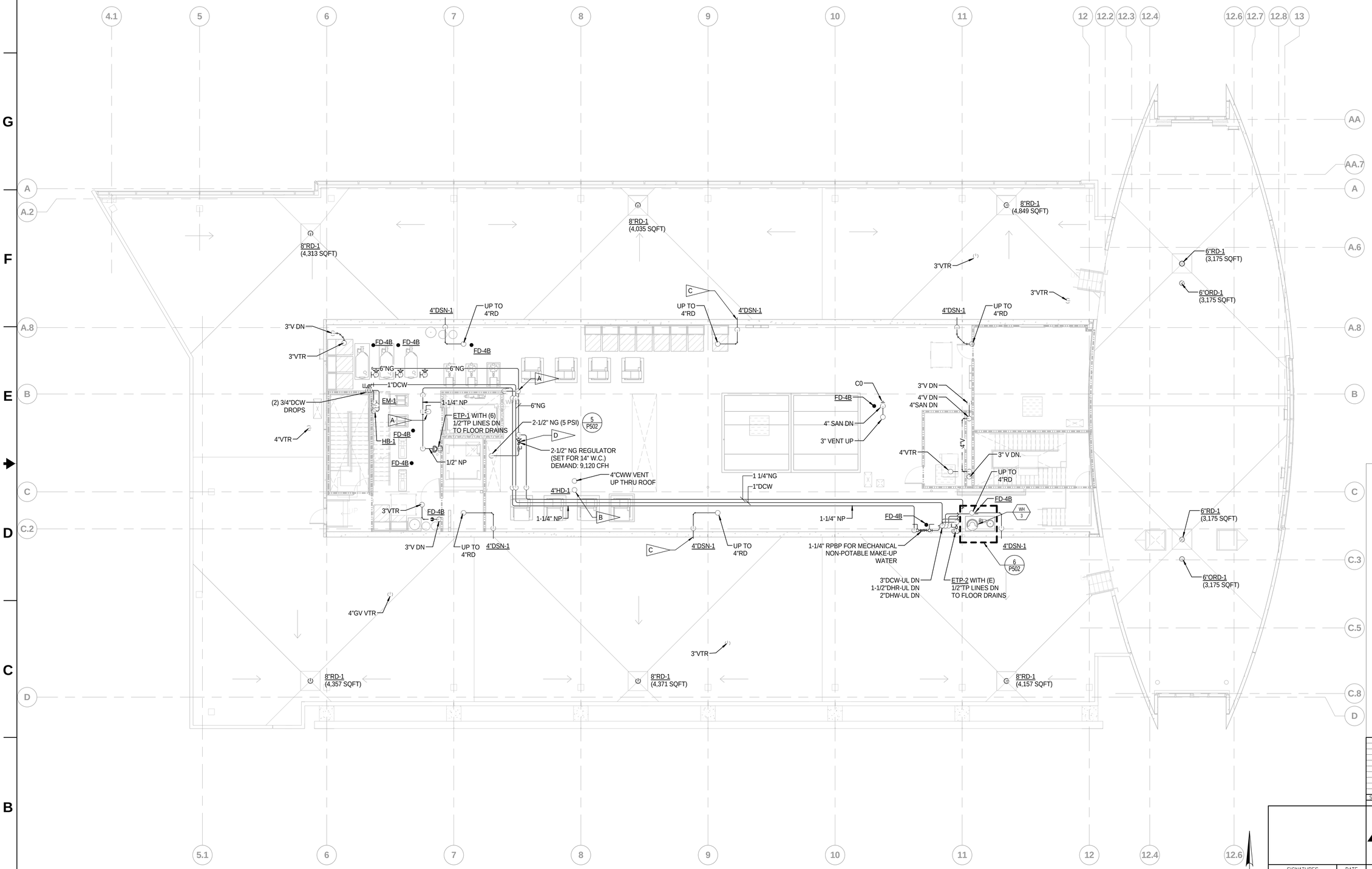
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING PLAN - 7TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 75

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES:

- **A** REFER TO MECHANICAL DRAWINGS FOR FINAL CONNECTION TO EQUIPMENT.
- **B** 4" HUB DRAIN. OPEN DRAIN WITH LIP 2" ABOVE FINISHED FLOOR. PROVISION FOR CONDENSATE FROM HVAC FAN COIL UNITS.
- **C** TERMINATE STORM LEADER WALL PENETRATION NO HIGHER THAN 24" ABOVE ROOF DECK AND NO LOWER THAN 12" ABOVE ROOF DECK. DETERMINE HEIGHT IN FIELD AND ALIGN ALL STORM WALL PENETRATIONS. (TYPICAL OF 6).
- **D** PROVIDE PIETRO FIORENTINI 2 PSI GOVENOR TYPE GAS REGULATOR THAT DOES NOT REQUIRE A VENT PIPE TO THE OUTSIDE.

PLUMBING PLAN - ROOF

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

P281

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

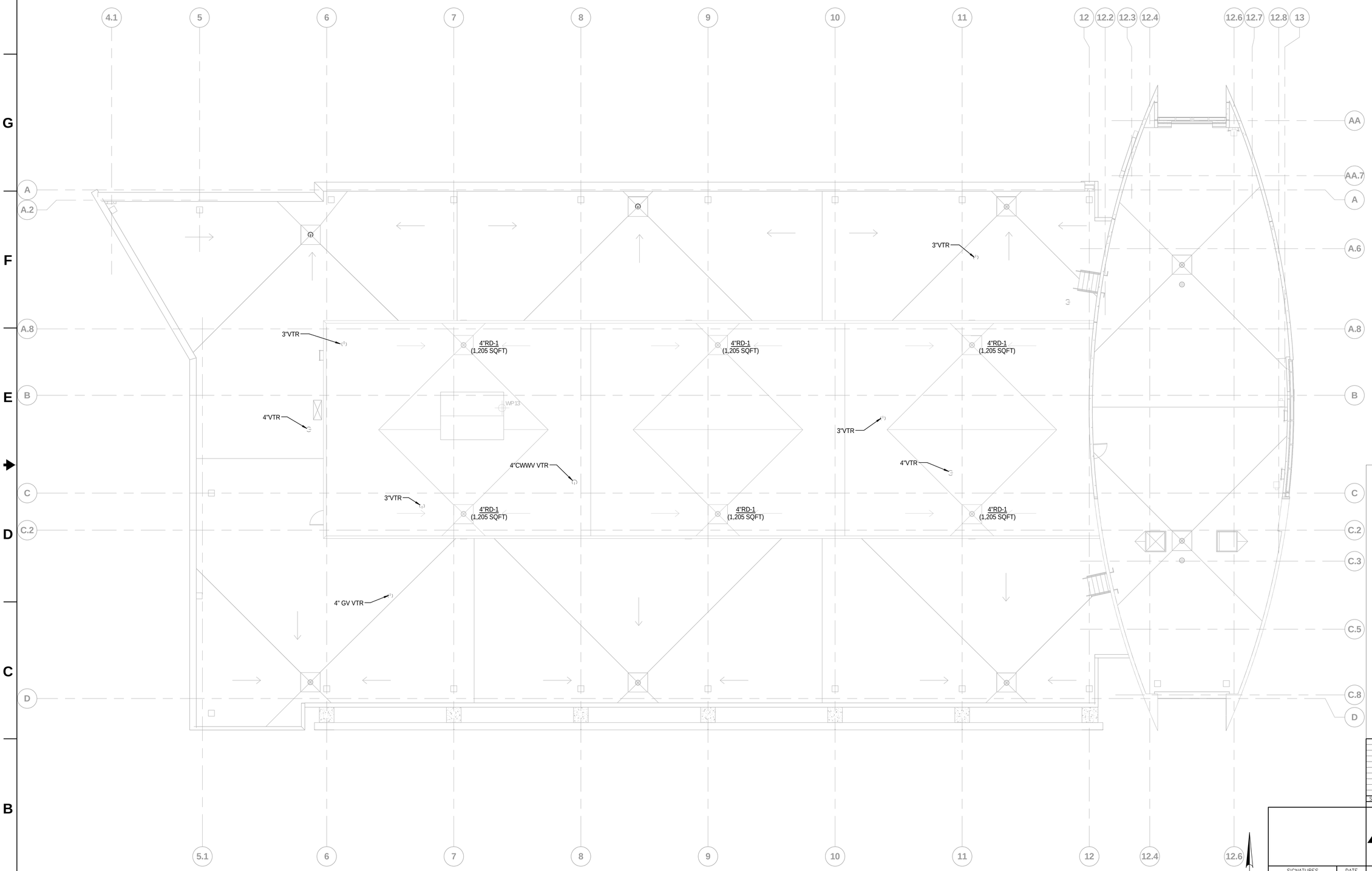
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING PLAN - ROOF

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 76

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



PLUMBING PLAN - HIGH ROOF

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

P291

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

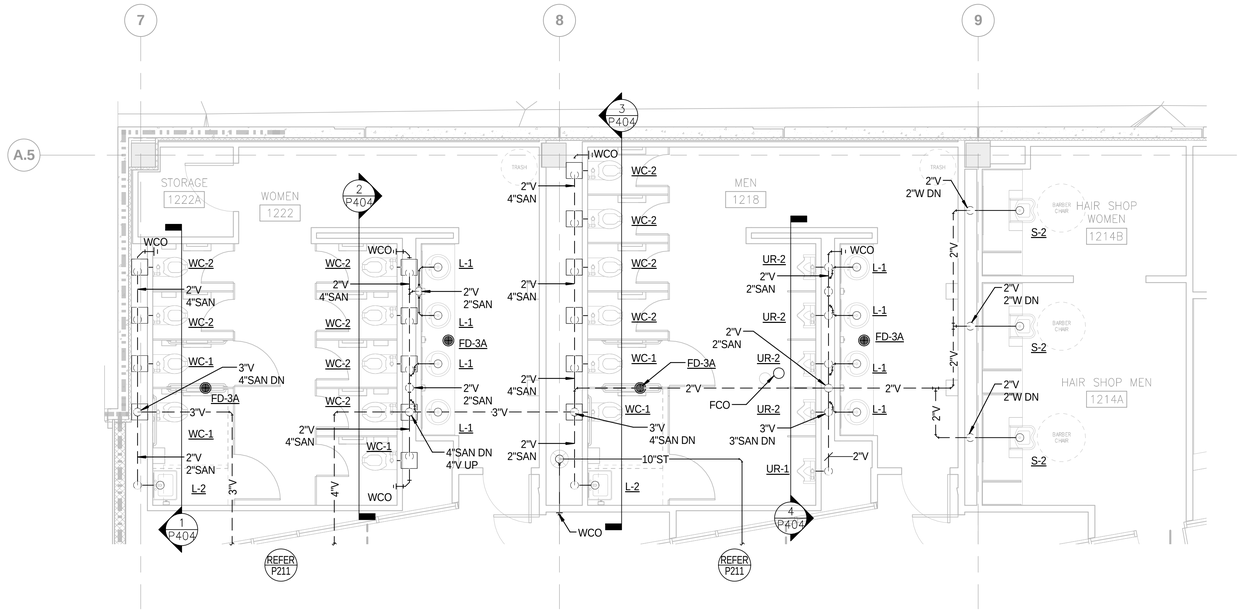
PLUMBING PLAN - HIGH ROOF

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 77

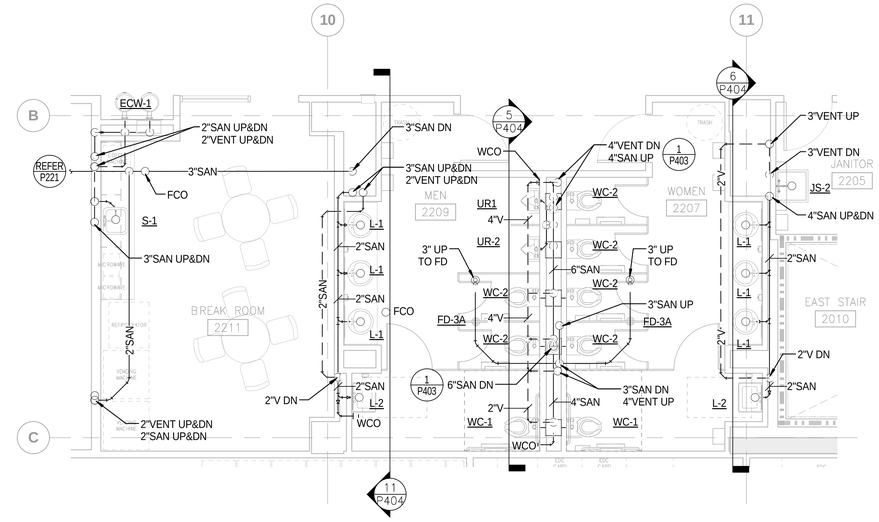
KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



ENLARGED TOILET ROOMS - 1ST LEVEL - SANITARY & VENT (1)

1/4" = 1'-0"

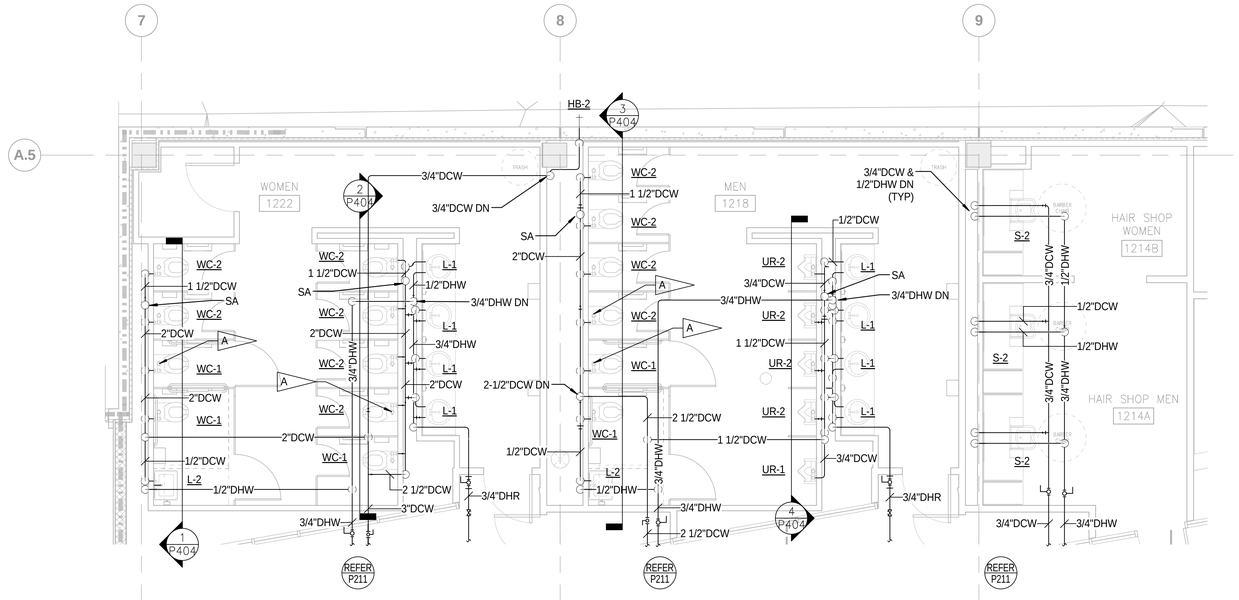


ENLARGED TOILET ROOM - 2ND LEVEL - SANITARY & VENT (3)

1/4" = 1'-0"

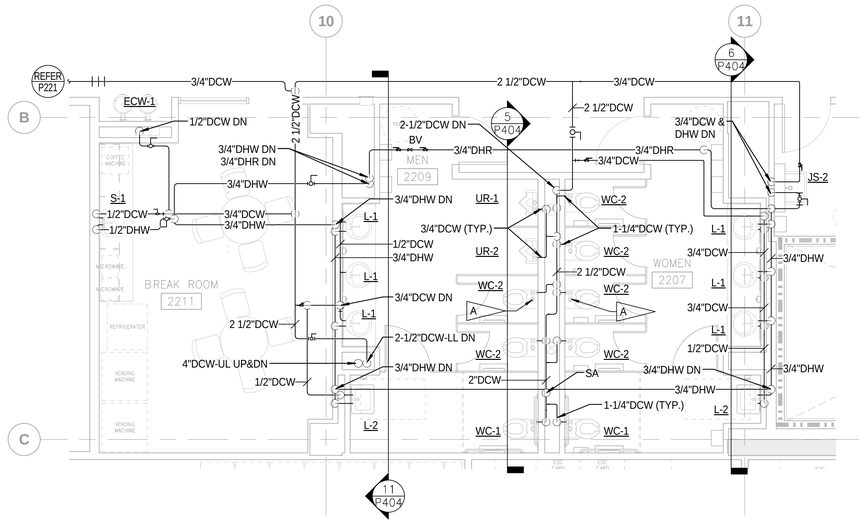
FLAG NOTES:

A — PROVIDE FLUSH VALVE TYPE TRAP PRIMER CONNECTION ON FLUSH VALVE TAILPIECE WITH 1/2" DISCHARGE PIPING DOWN TO BELOW FLOOR AND ROUTE TO FLOOR DRAIN TRAP PRIMER FITTING.



ENLARGED TOILET ROOMS - 1ST LEVEL - DOMESTIC WATER (2)

1/4" = 1'-0"



ENLARGED TOILET ROOM - 2ND LEVEL - DOMESTIC WATER (4)

1/4" = 1'-0"

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

P301

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

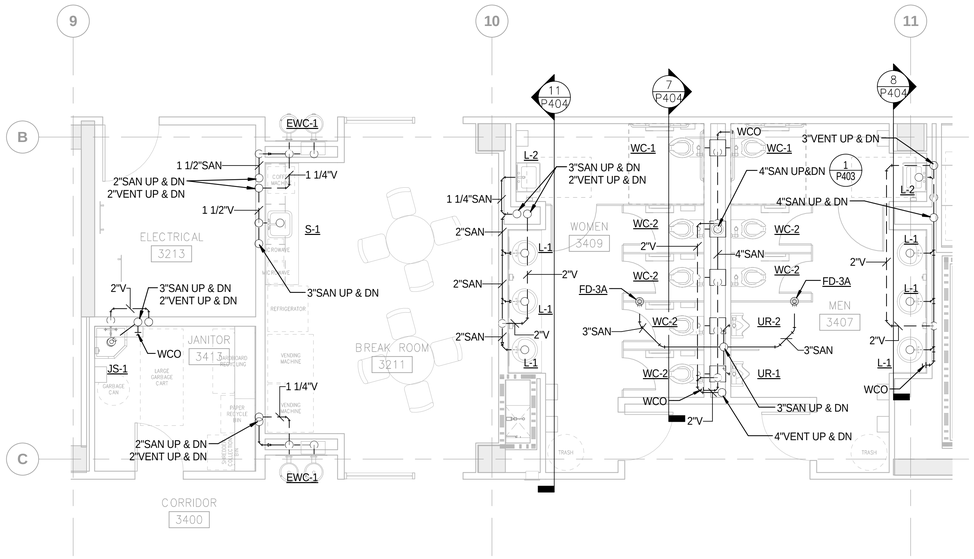
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING ENLARGED TOILET ROOM PLANS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a — SHEET 78

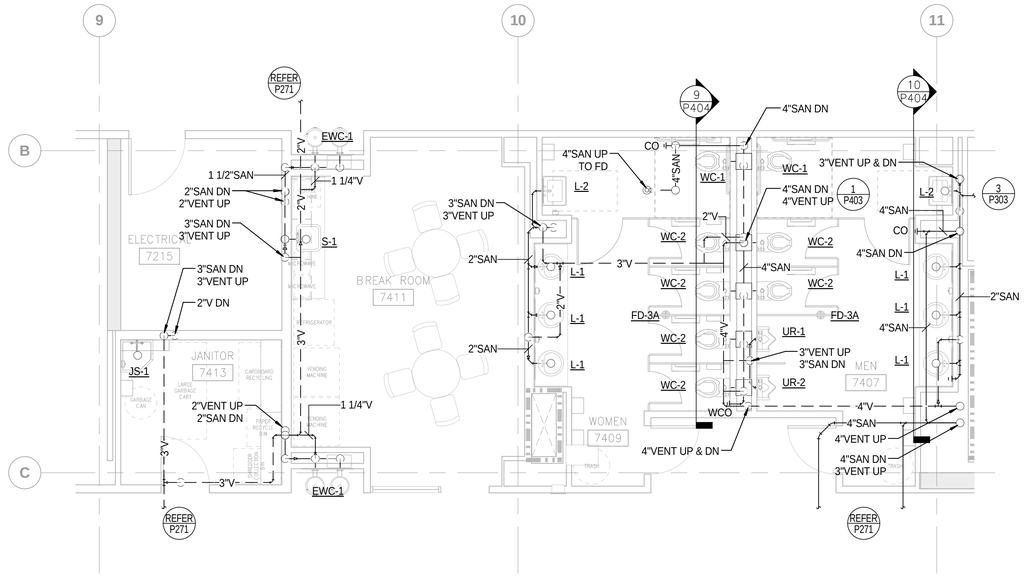
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



ENLARGED TOILET PLAN - 3RD LEVEL - SANITARY & VENT (1)

TYPICAL OF LEVELS 3 THROUGH 6

1/4" = 1'-0"

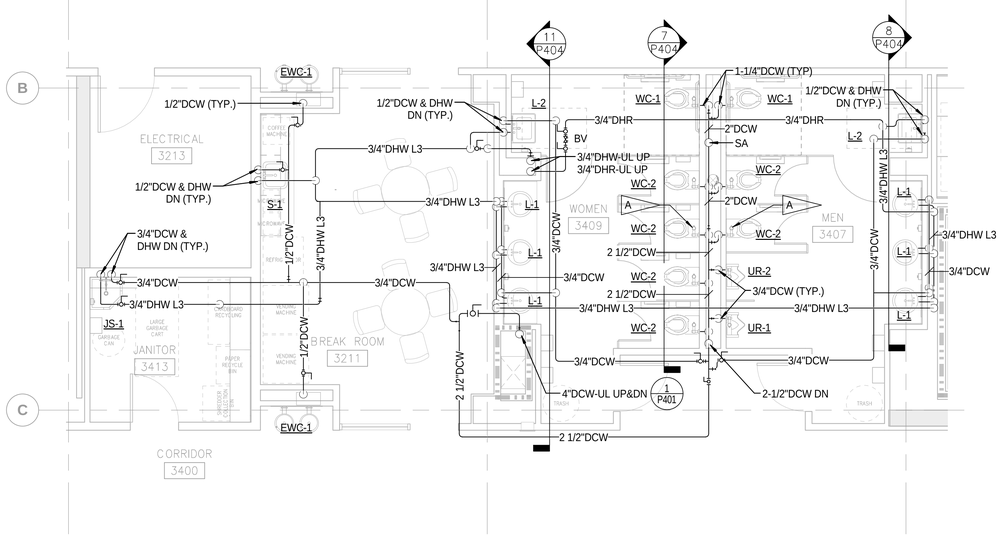


ENLARGED TOILET ROOM - 7TH LEVEL - SANITARY & VENT (3)

1/4" = 1'-0"

FLAG NOTES:

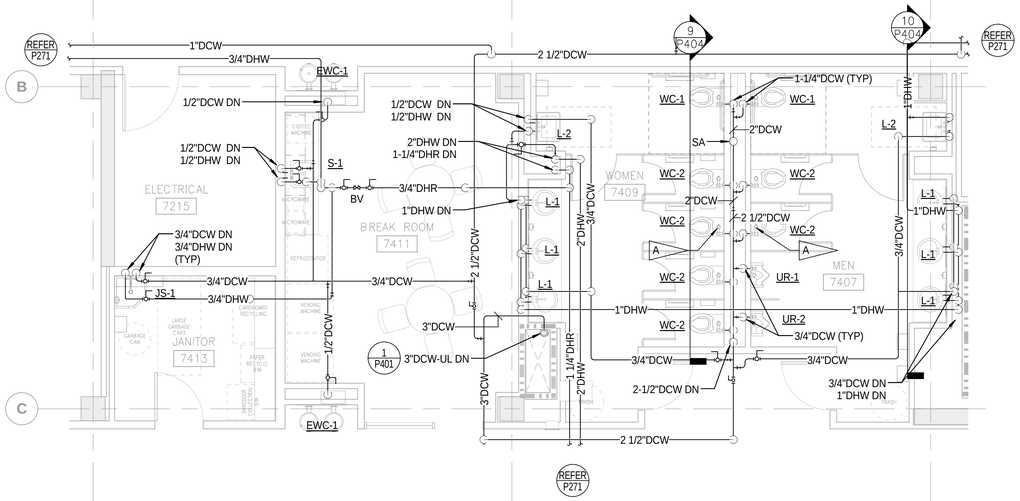
A — PROVIDE FLUSH VALVE TYPE TRAP PRIMER CONNECTION ON FLUSH VALVE TAILPIECE WITH 1/2" DISCHARGE PIPING DOWN TO BELOW FLOOR AND ROUTE TO FLOOR DRAIN TRAP PRIMER FITTING.



ENLARGED TOILET PLAN - 3RD LEVEL - DOMESTIC WATER (2)

TYPICAL OF LEVELS 3 THROUGH 6

1/4" = 1'-0"



ENLARGED TOILET ROOM - 7TH LEVEL - DOMESTIC WATER (4)

1/4" = 1'-0"

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN — NO CHANGES	05.14.14	

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

P302

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

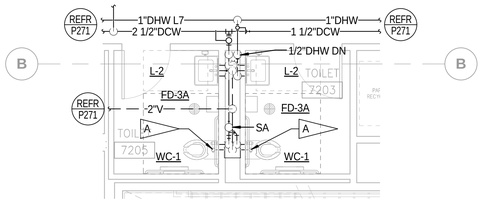
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING ENLARGED TOILET ROOM PLANS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

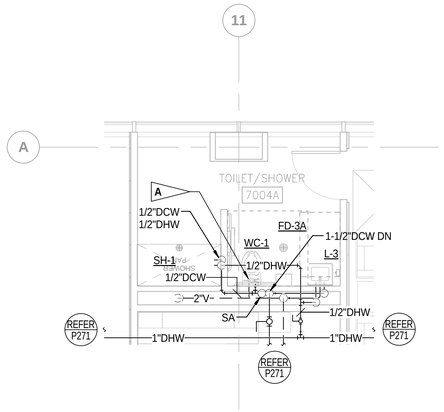
PCN. NO. 98745.1a SHEET 79

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



ENLARGED TOILET ROOMS 7203 & 7205 (3)

1/4" = 1'-0"

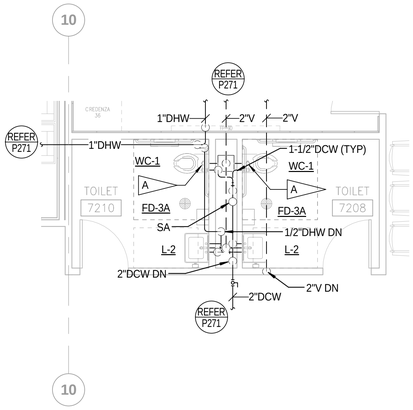


ENLARGED TOILET ROOM 7004A (1)

1/4" = 1'-0"

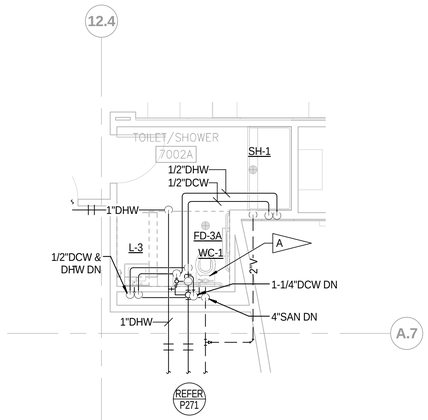
FLAG NOTES:

A — PROVIDE FLUSH VALVE TYPE TRAP PRIMER CONNECTION ON FLUSH VALVE TAILPIECE WITH 1/2" DISCHARGE PIPING DOWN TO BELOW FLOOR AND ROUTE TO FLOOR DRAIN TRAP PRIMER FITTING.



ENLARGED TOILET ROOMS 7208 & 7210 (4)

1/4" = 1'-0"



ENLARGED TOILET ROOM 7002A (2)

1/4" = 1'-0"

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING ENLARGED TOILET ROOM PLANS

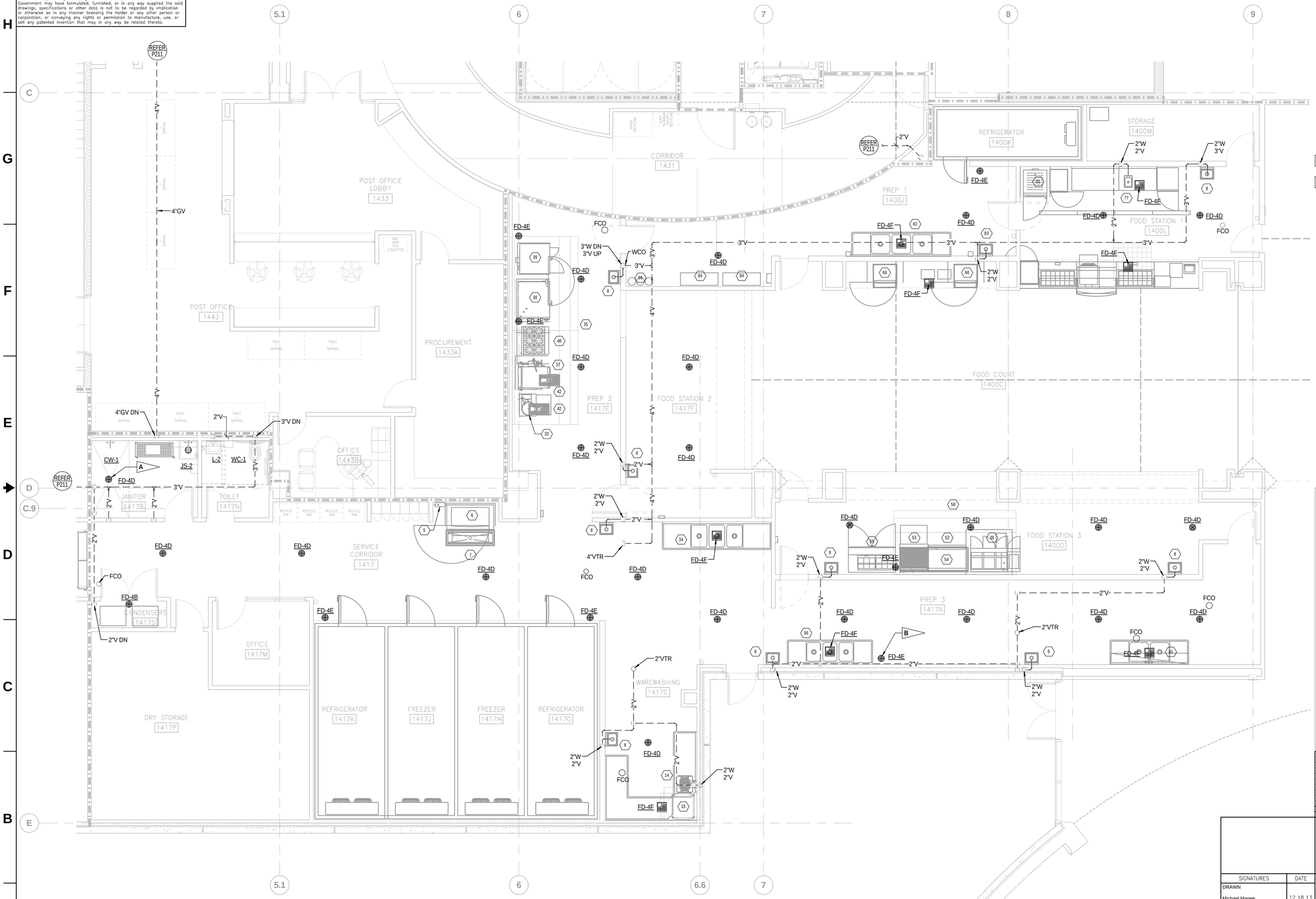
FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 80

GRAPHIC SCALE
0 4 8 12
SCALE IN FEET
1/4" = 1' - 0"

P303

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



GENERAL NOTES:

1. REFER TO FOOD SERVICE DRAWINGS FOR KITCHEN EQUIPMENT, KITCHEN FIXTURES, CONNECTION SIZES AND LOCATIONS.
2. REFER TO PLUMBING DRAWING P305 FOR TRAP PRIMER VALVE EPT-5 AND EPT-6 LOCATIONS AND THE NUMBER OF FLOOR DRAINS THEY SERVE.

FLAG NOTES:

A — TRAP PRIMER NOT REQUIRED FOR THE CANWASH DRAIN.

B — FLOOR DRAIN TO RECIEVE WASTE CONNECTION FROM THE PCU UNIT. PROVIDE 2-1/2" DRAIN LINE UP TO (3) DRAIN CONNECTIONS AT UNIT. REFER TO FOOD SERVICE DRAWINGS FS108 FOR DETAIL.

ENLARGED KITCHEN PLAN - WASTE & VENT (1)

1/4" = 1'-0"

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

P304

SYM	ZONE		DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

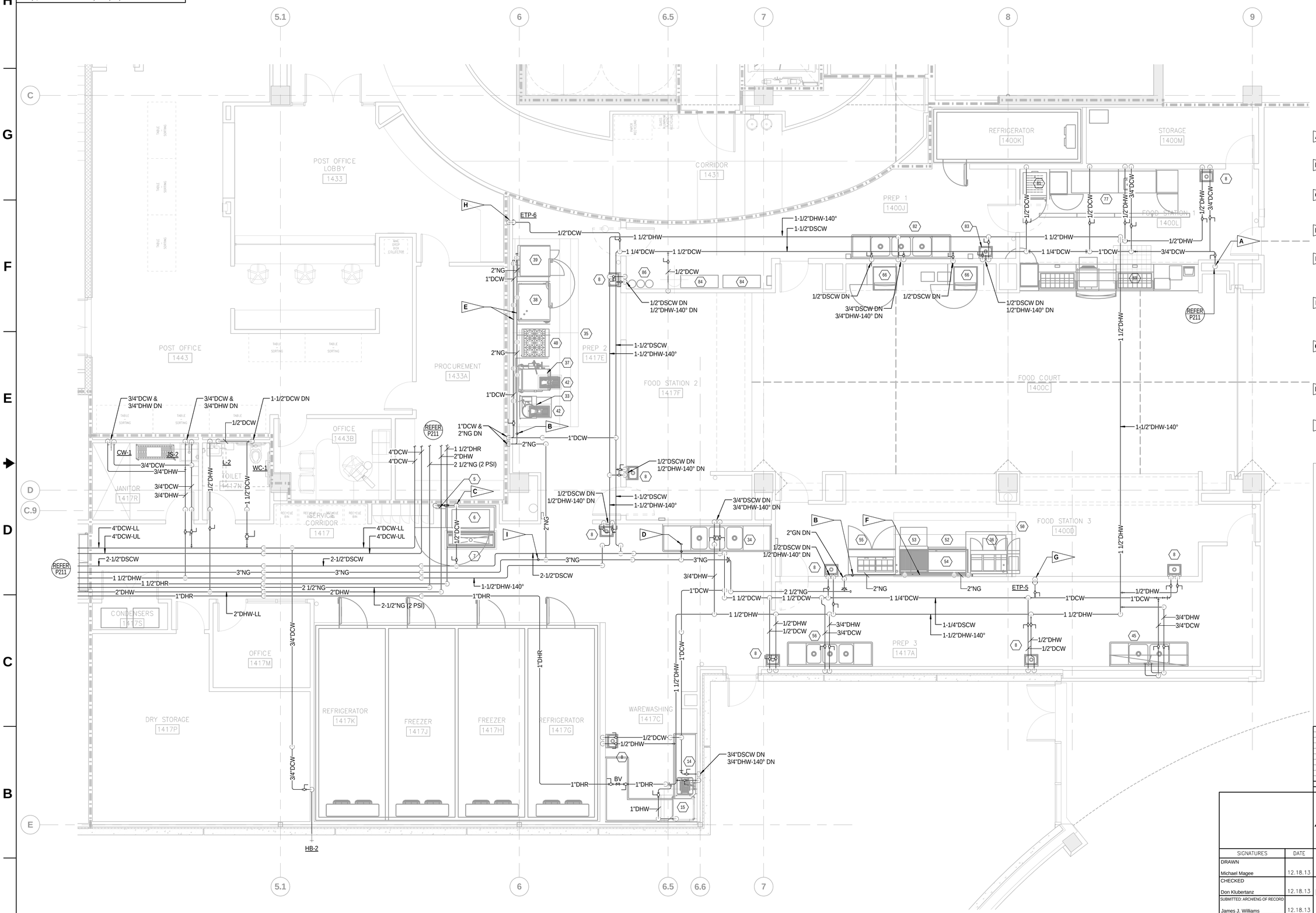
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING ENLARGED KITCHEN PLAN - WASTE & VENT

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 81

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



GENERAL NOTES:

1. REFER TO FOOD SERVICE DRAWINGS FOR KITCHEN EQUIPMENT, KITCHEN FIXTURES, AND ALL FINAL WATER AND GAS CONNECTION SIZES AND LOCATIONS.

FLAG NOTES:

- **A** 3/4" DCW DROP TO BELOW FLOOR. PROVIDE TYPE L SOFT COPPER BELOW FLOOR AND ROUTE OVER TO CYBER CAFE.
- **B** EMERGENCY NATURAL GAS SHUT-OFF VALVE ACTIVATED BY THE HOOD FIRE SUPPRESSION SYSTEM.
- **C** 1/2" REDUCED PRESSURE BACKFLOW PREVENTER. MOUNT ON WALL ABOVE ICE MACHINE. ROUTE DRAIN TO TRENCH DRAIN.
- **D** 2" NG STUB WITH GAS SHUT-OFF VALVE AND CAPPED NIPPLE. PROVISION FOR FUTURE KITCHEN EQUIPMENT.
- **E** DCW AND NG PIPING MOUNTED EXPOSED ON WALL BEHIND COOKING EQUIPMENT. REFER TO FOOD SERVICE DRAWINGS FOR MOUNTING HEIGHTS AND CONNECTION SIZES TO EQUIPMENT.
- **F** NG PIPING MOUNTED EXPOSED ON WALL BEHIND COOKING EQUIPMENT. REFER TO FOOD SERVICE DRAWINGS FOR MOUNTING HEIGHT AND CONNECTION SIZES TO EQUIPMENT.
- **G** ELECTRONIC TRAP PRIMER, 1/2" DCW SUPPLY TO ETP-5. TRAP PRIMER SERVES 18 FLOOR DRAINS IN PREP AREA 3, FOOD STATION 3, WAREWASHING AND SERVICE CORRIDOR.
- **H** ELECTRONIC TRAP PRIMER, 1/2" DCW SUPPLY TO ETP-6. TRAP PRIMER SERVES 12 FLOOR DRAINS IN PREP AREA 1 & 2 AND FOOD STATIONS 1 & 2.
- **I** SOLENOID NATURAL GAS MAIN SHUT-OFF VALVE ABOVE CEILING. ACTIVATED BY THE PCU UNIT FIRE SUPPRESSION SYSTEM.

ENLARGED KITCHEN PLAN - DOMESTIC WATER & GAS (1)

1/4" = 1'-0"

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

P305

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

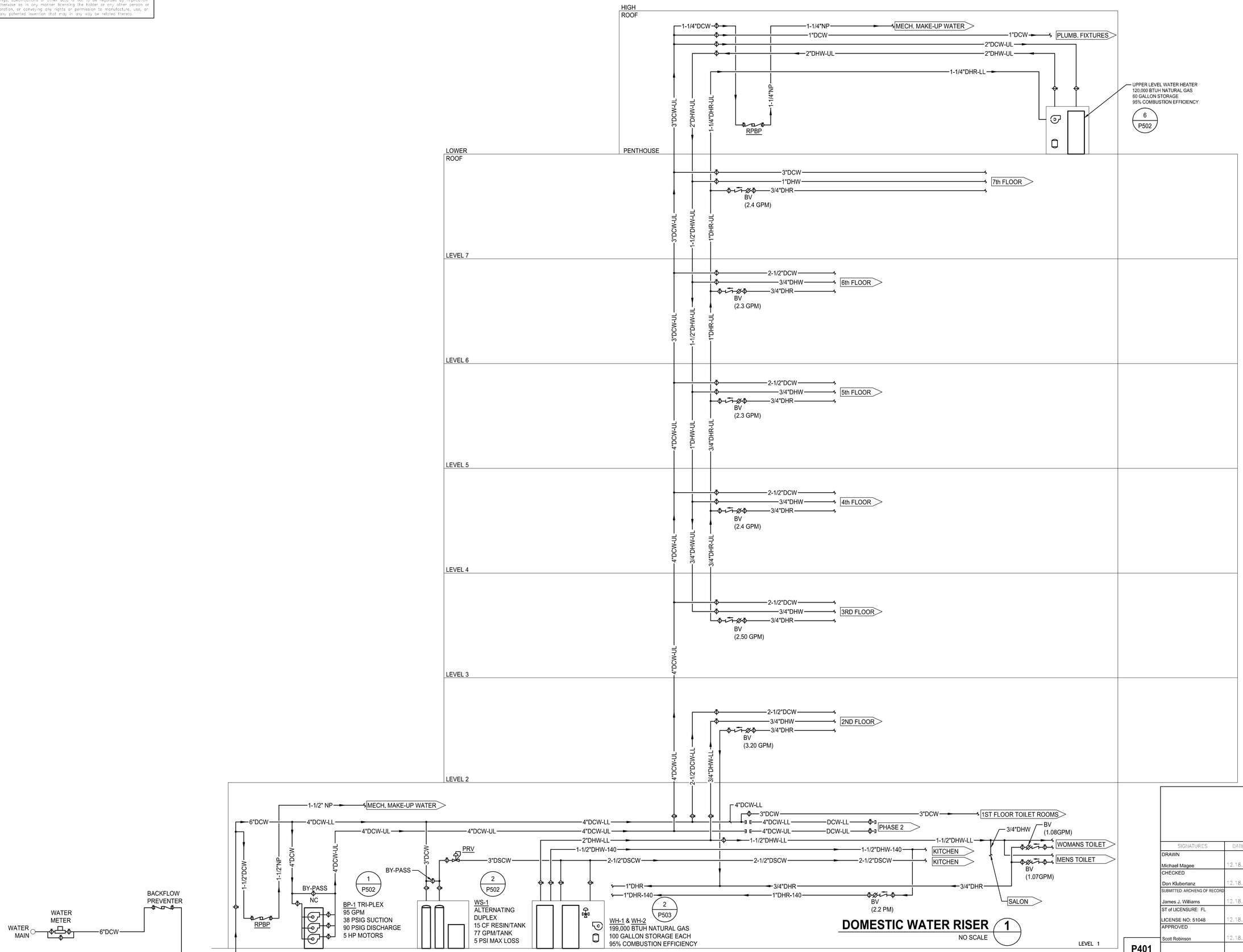
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING ENLARGED KITCHEN PLAN - DOMESTIC WATER & GAS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 82

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



DOMESTIC WATER RISER 1

NO SCALE

P401

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

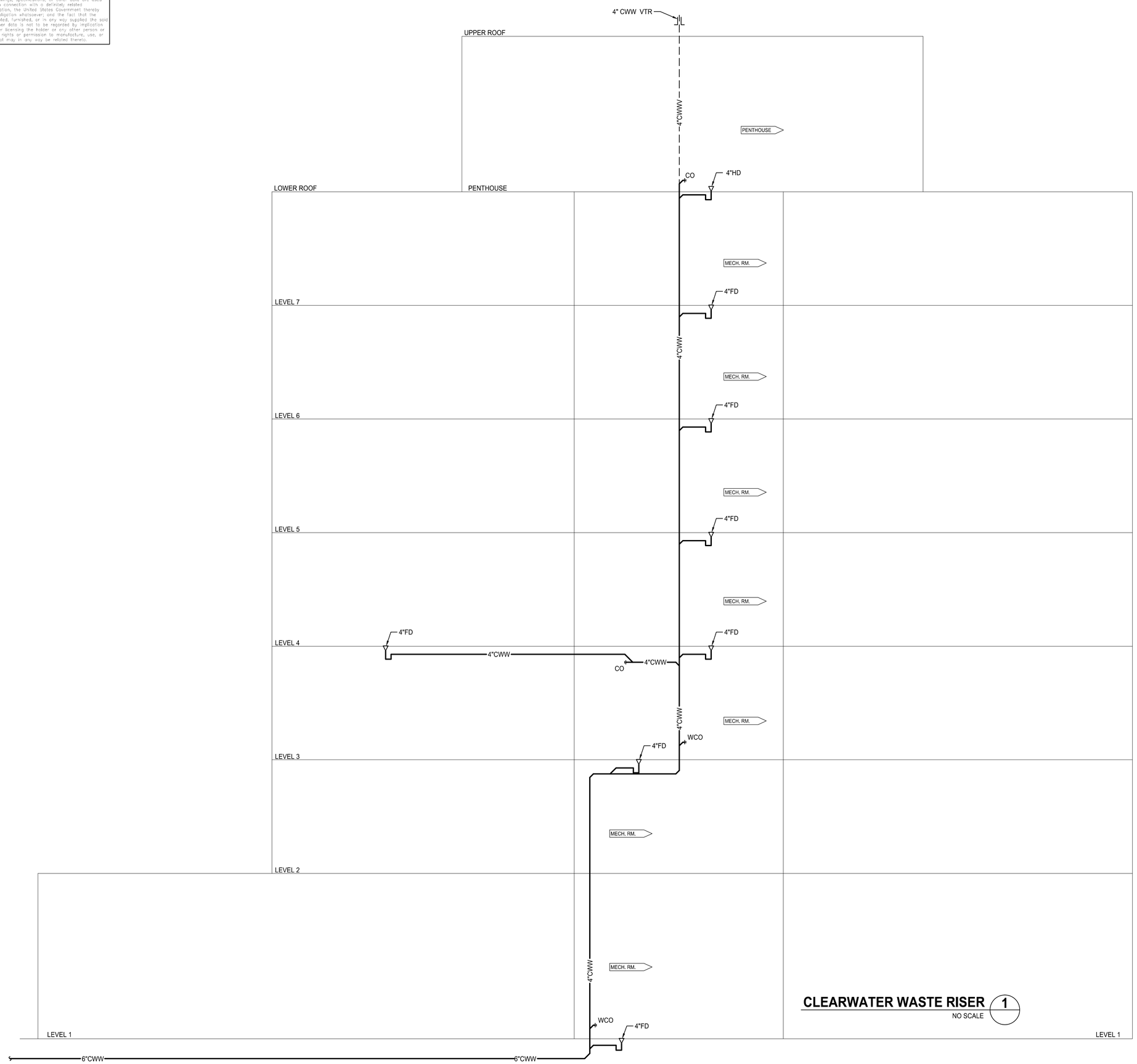
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING DOMESTIC WATER RISER DIAGRAM

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 83

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



CLEARWATER WASTE RISER (1)

NO SCALE

SYM	ZONE		DATE	APPD
A		REDRAWN - NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

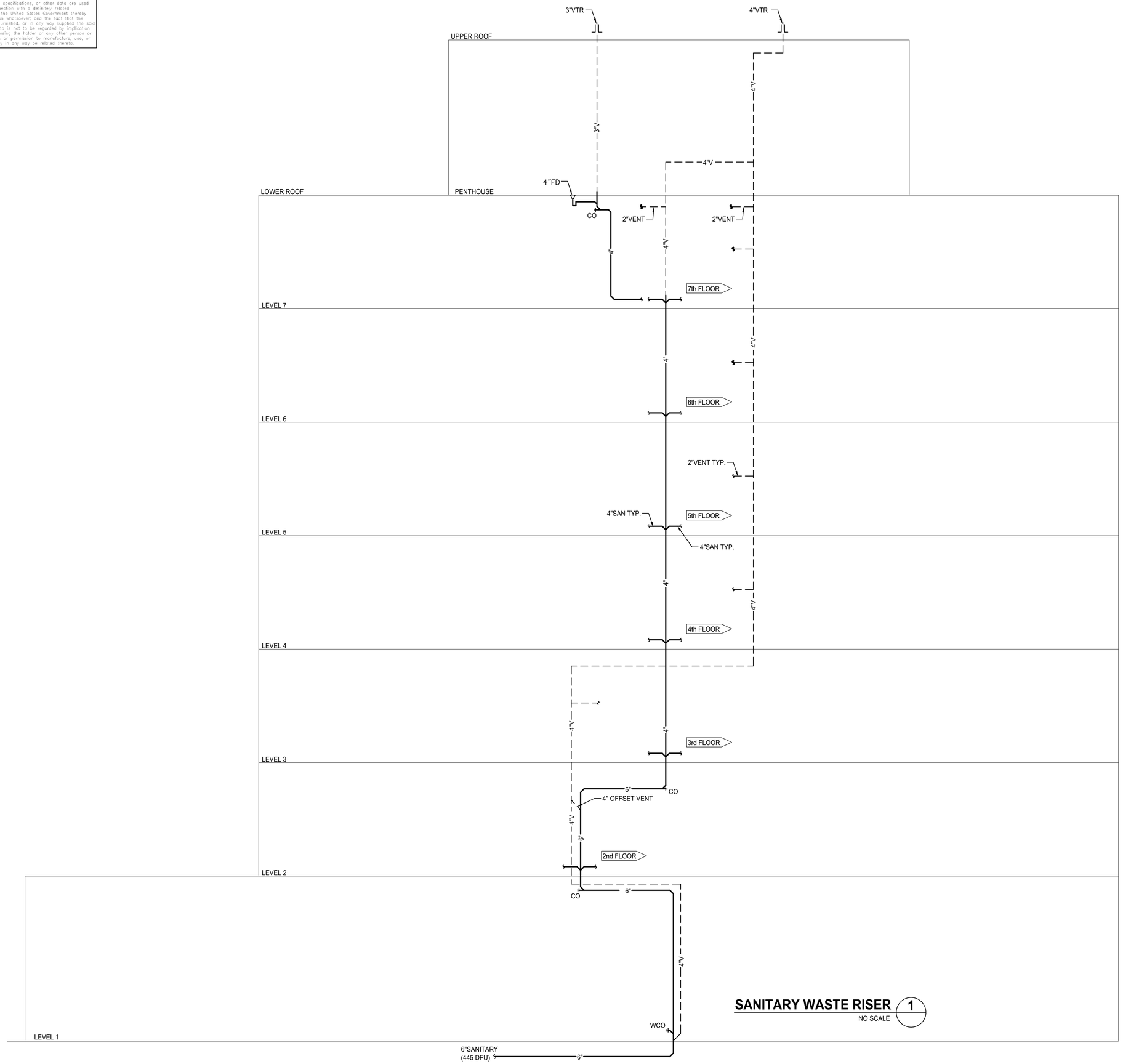
PLUMBING CLEARWATER WASTE RISER DIAGRAM

P402

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 84

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



SANITARY WASTE RISER (1)

NO SCALE

SIGNATURES	DATE
DRAWN	
Michael Magee	12.18.13
CHECKED	
Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD	
James J. Williams	12.18.13
ST of LICENSURE: FL	
LICENSE NO: 51048	12.18.13
APPROVED	
Scott Robinson	12.18.13
David Sumner	12.19.13

P403

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

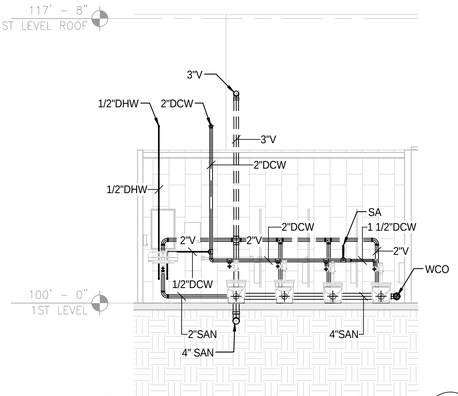
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING SANITARY WASTE RISER DIAGRAM

FILE NO	SIZE	DWG. NO	
C-12070.00	F	79K39622 VOL 3	A

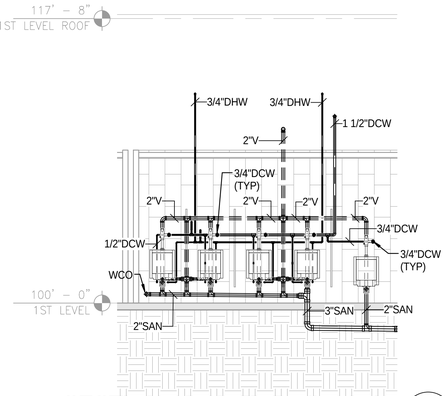
PCN. NO. 98745.1a SHEET 85

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



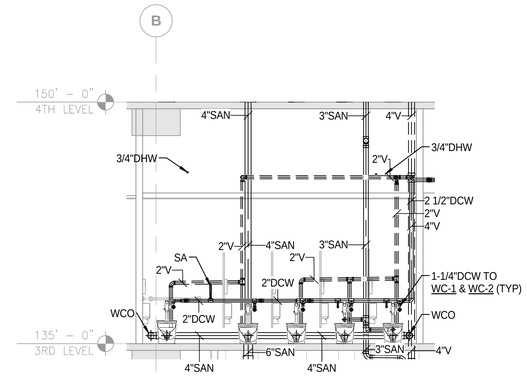
SECTION 1 TOILET ROOM 1222 (1)

1/4" = 1'-0"



SECTION 4 TOILET ROOM 1218 (4)

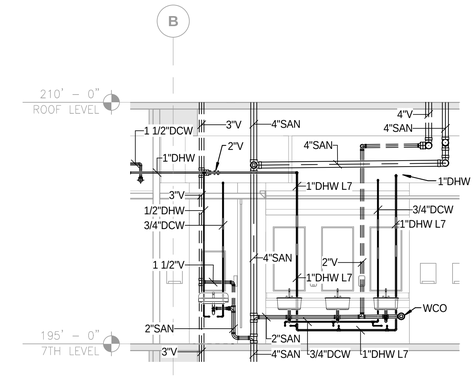
1/4" = 1'-0"



SECTION 7 TOILET ROOMS 3407/3409 (7)

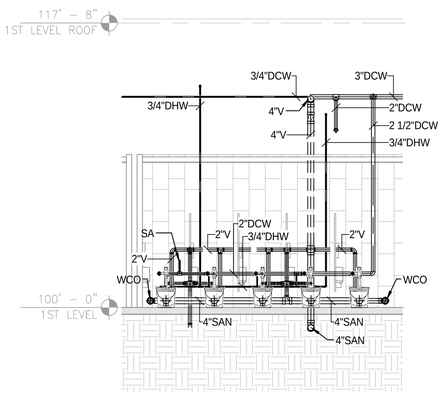
TYPICAL FOR TOILET ROOMS ON LEVELS 4, 5, & 6.

1/4" = 1'-0"



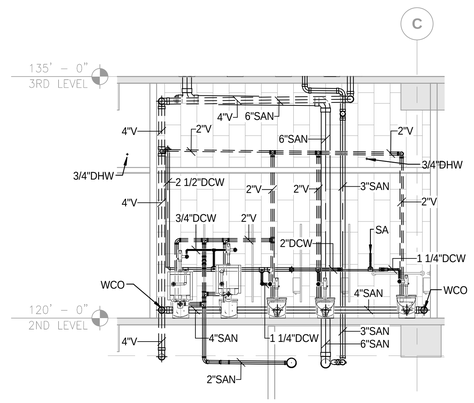
SECTION 10 TOILET ROOM 7407 (10)

1/4" = 1'-0"



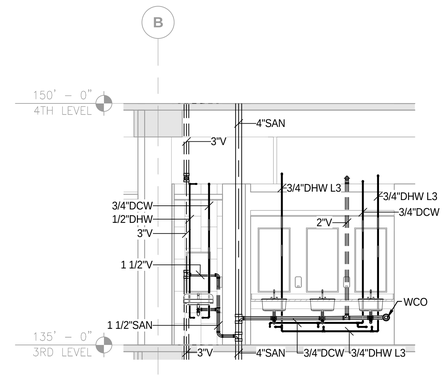
SECTION 2 TOILET ROOM 1222 (2)

1/4" = 1'-0"



SECTION 5 TOILET ROOMS 2207/2209 (5)

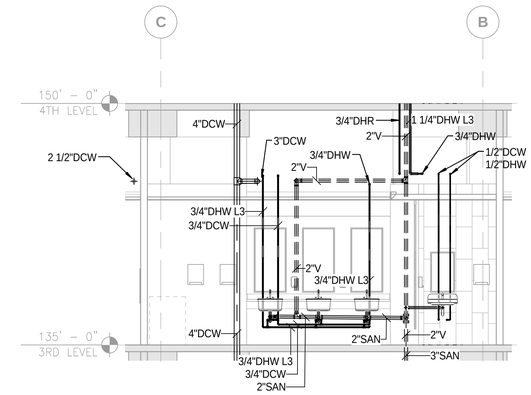
1/4" = 1'-0"



SECTION 8 TOILET ROOM 3407 (8)

TYPICAL FOR TOILET ROOMS ON LEVELS 4, 5 & 6.

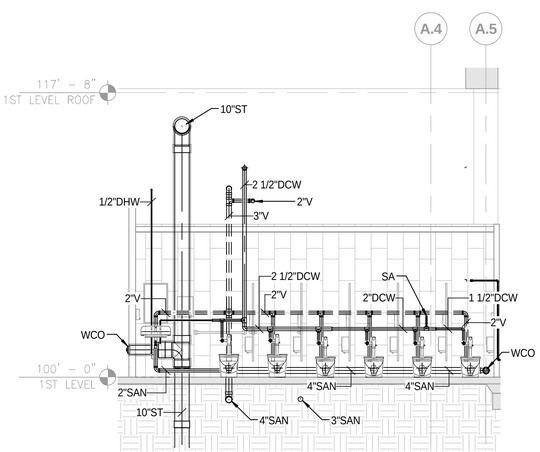
1/4" = 1'-0"



SECTION 11 TOILET ROOMS 3409 (11)

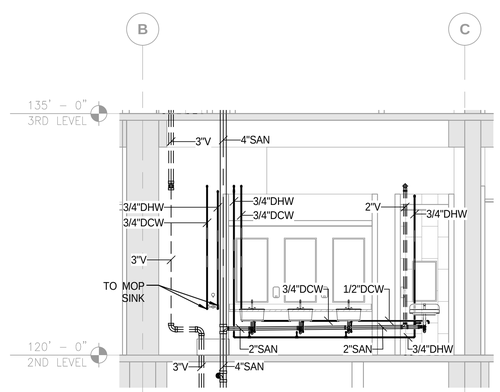
TYPICAL FOR TOILET ROOMS ON LEVELS 4, 5, 6 & 7.

1/4" = 1'-0"



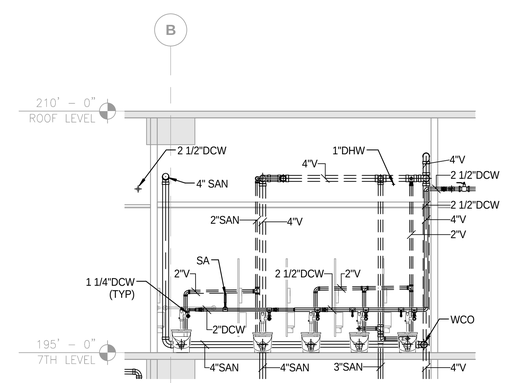
SECTION 3 TOILET ROOM 1218 (3)

1/4" = 1'-0"



SECTION 6 TOILET ROOM 2207 (6)

1/4" = 1'-0"



SECTION 9 TOILET ROOMS 7407/7409 (9)

1/4" = 1'-0"

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

P404

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

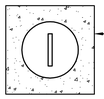
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

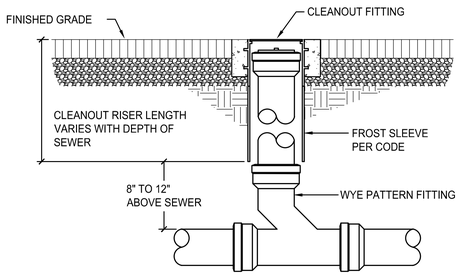
PLUMBING SECTION RISERS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

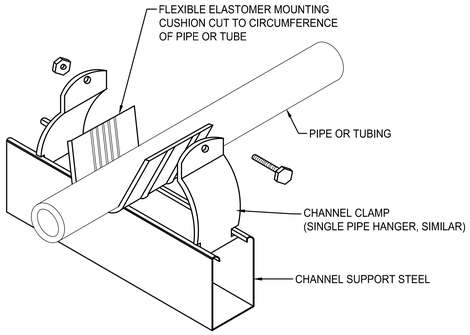
PCN. NO. 98745.1a SHEET 86

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

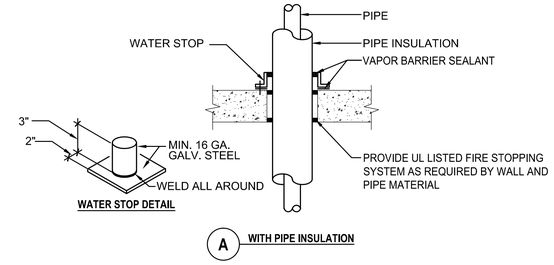




YARD CLEANOUT - UNPAVED AREAS (1)
NO SCALE

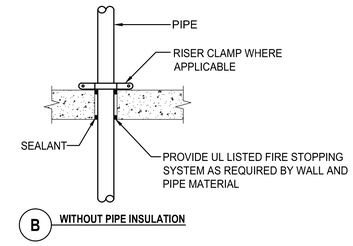


PIPE OR TUBE ISOLATION SUPPORT (4)
NO SCALE

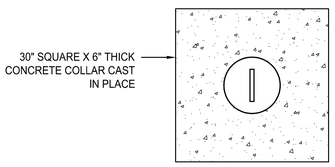


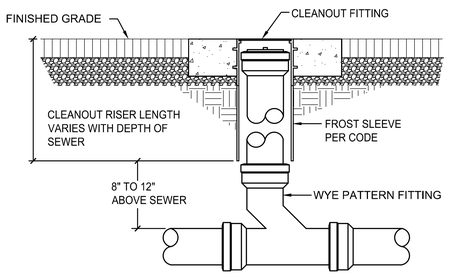
NOTES:

1. WATER STOP DETAIL APPLIES TO MECH. ROOM FLOOR WHERE WET EQUIPMENT SUCH AS CONVERTORS, COILS AND PUMPS ARE LOCATED (WITH OR WITHOUT INSULATION).

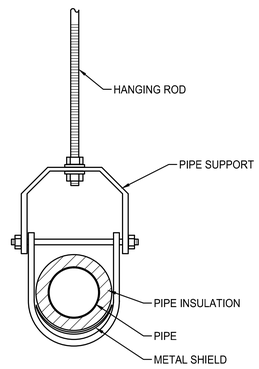


PIPE THROUGH MECHANICAL ROOM FLOOR (7)
NO SCALE



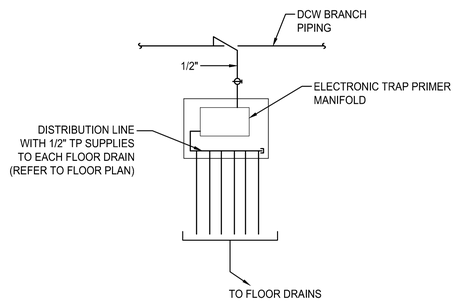


YARD CLEANOUT - PAVED AREAS (2)
NO SCALE

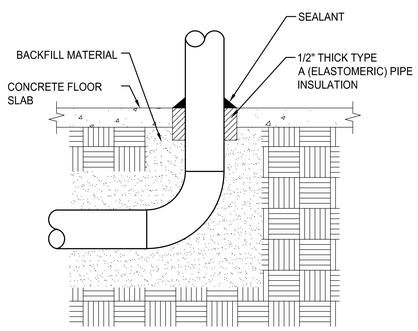


NOTE:
(1) REFER TO SPECIFICATION SECTION 20 0529 FOR INSULATED PIPE SUPPORTS, INSULATION PROTECTION SHIELDS AND SADDLES.

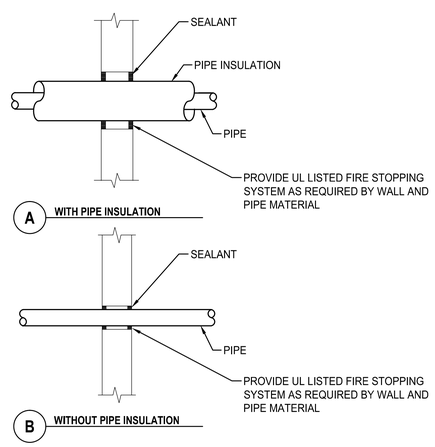
PIPE HANGER (5)
NO SCALE



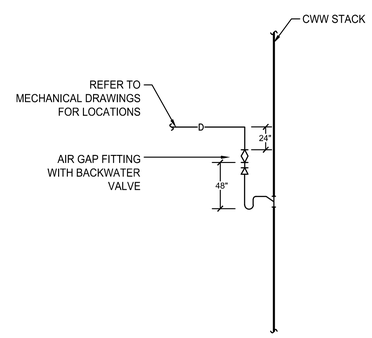
TRAP PRIMER MANIFOLD (8)
NO SCALE



PIPE THROUGH SLAB ON GRADE (3)
NO SCALE



PIPE THROUGH INTERIOR WALL (6)
NO SCALE



CONDENSATE WASTE CONNECTION TO CWW (9)
NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
		REDRAWN - NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

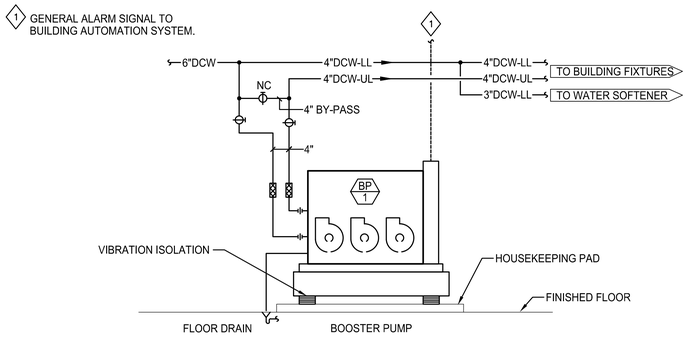
PLUMBING DETAILS

P501

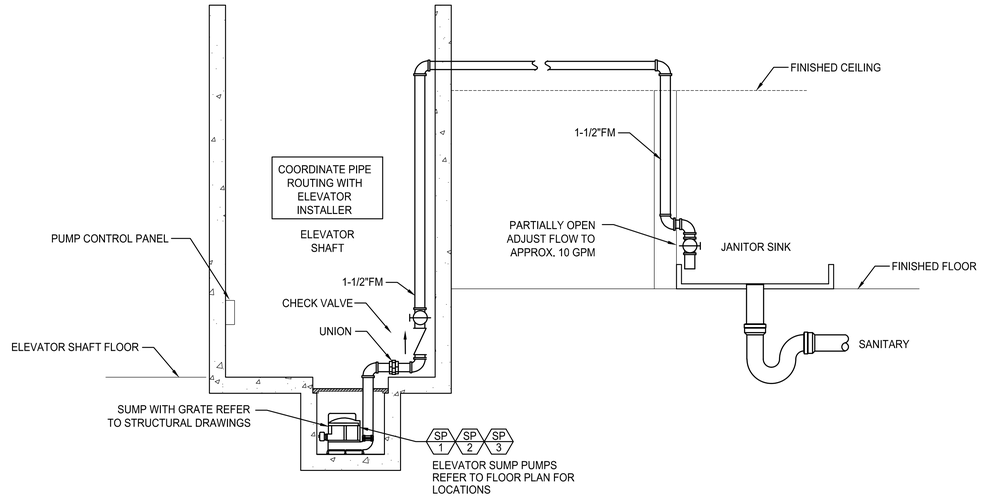
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 87

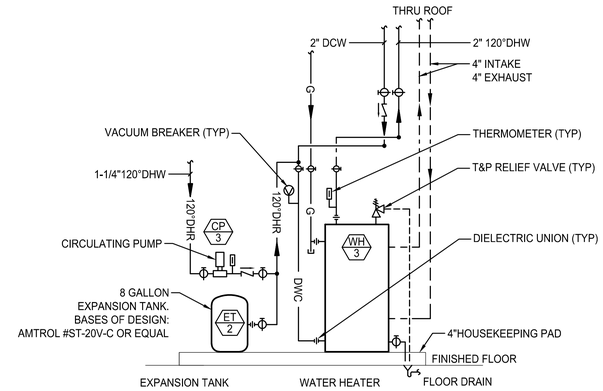
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



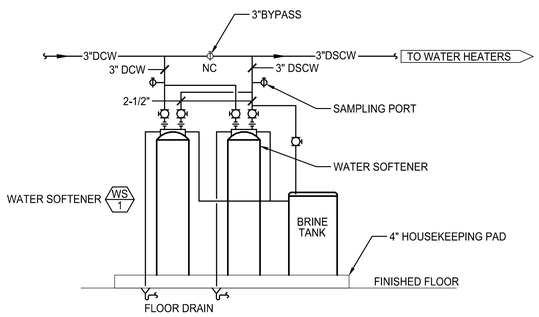
DOMESTIC WATER BOOSTER PUMP 1
NO SCALE P212



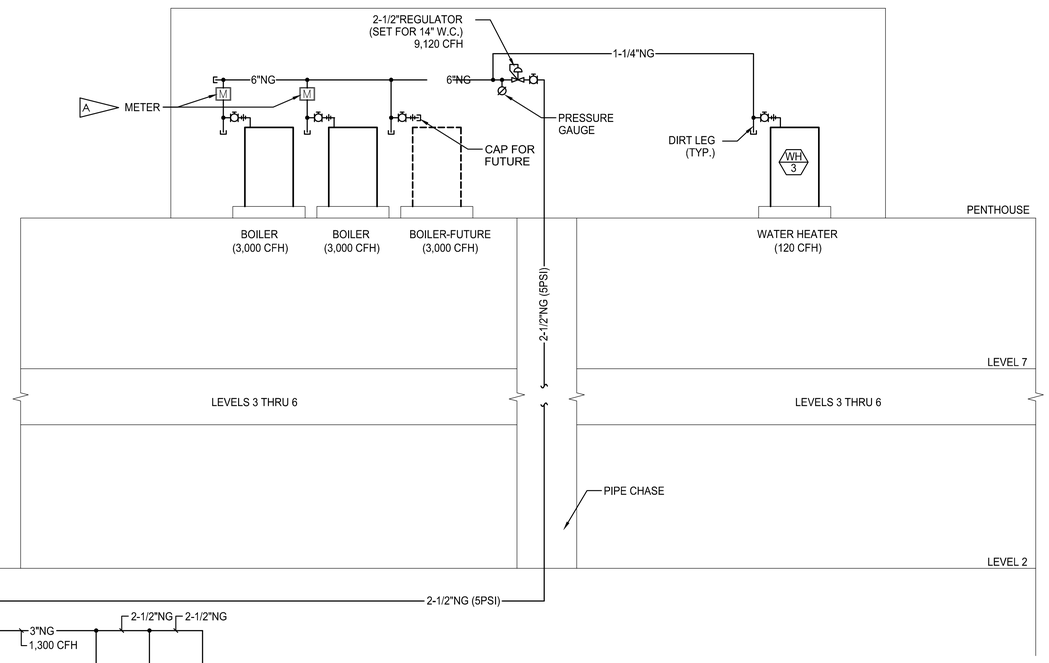
ELEVATOR SUMP PUMP 4
NO SCALE



WATER HEATER DETAIL 6
NO SCALE P281

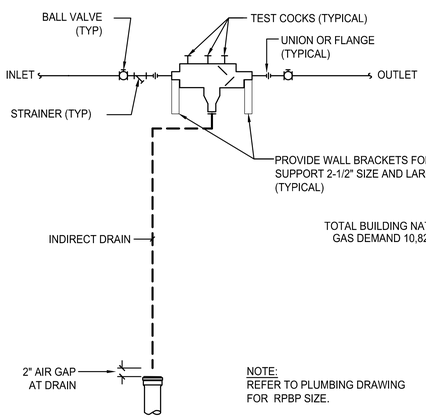


WATER SOFTENER DETAIL 2
NO SCALE P212



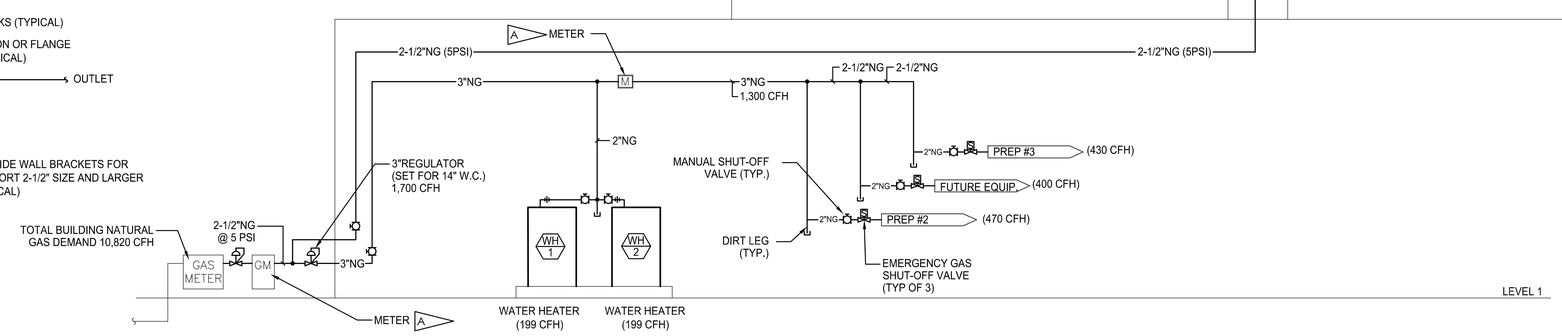
FLAG NOTE:

A SECONDARY GAS METERS ARE INSTALLED FOR MEASUREMENT AND VERIFICATION PURPOSES. REFER TO MECHANICAL DRAWINGS FOR METER REQUIREMENTS



NOTE:
REFER TO PLUMBING DRAWING FOR RPBP SIZE.

REDUCED PRESSURE BACKFLOW PREVENTER 3
NO SCALE



NATURAL GAS DIAGRAM 5
NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
		REDRAWN – NO CHANGES	08.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCH/ENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

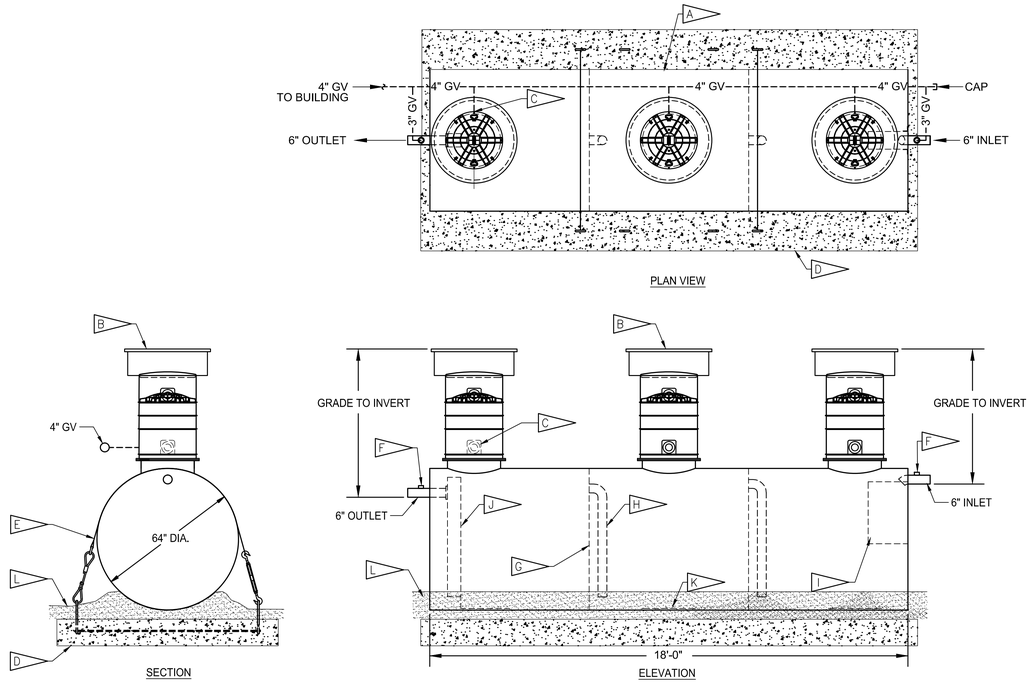
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING DETAILS

P502

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 88	

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

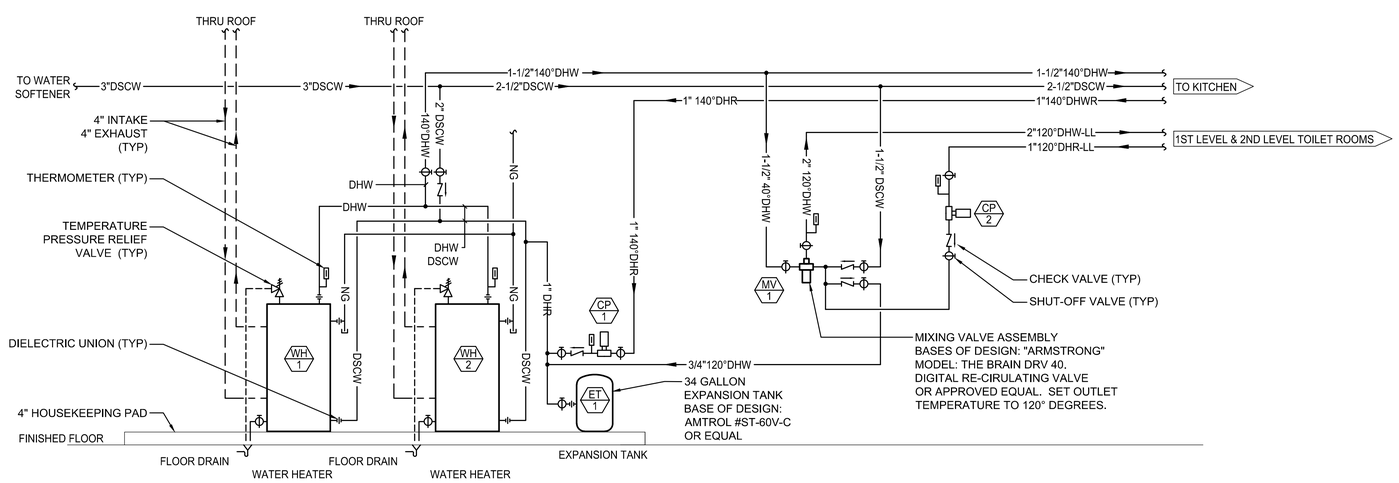


GREASE INTERCEPTOR DETAIL (1)

NO SCALE

FLAG NOTES

- A — TRIPLE BASIN 3,000 GALLON GREASE INTERCEPTOR. BASES OF DESIGN: HIGHLAND TANK MODEL PGI-3000-3 FL, SINGLE WALL, UNDERGROUND TANK.
- B — 36" DIAMETER MANWAY WITH 24" DIAMETER STACKABLE RISER.
- C — 4" VENT KNOCK OUT TYPICAL.
- D — CONCRETE BALLAST SLAB. 19'-0"x7'-6"x1'-0" REINFORCED WITH #4@12" EACH WAY, TOP AND BOTTOM.
- E — HOLD DOWN STRAPS PER MANUFACTURES RECOMMENDATIONS. TO BE INSTALLED AT TIME OF INSTALLATION.
- F — 3" VENT TYPICAL.
- G — BULK HEAD TYPICAL.
- H — TRANSFER PIPE TYPICAL.
- I — DIFFUSION BAFFLE.
- J — VELOCITY DIFFUSION BREAKER.
- K — STRIKER PLATE TYPICAL AT EACH MANWAY.
- L — 6" MINIMUM APPROVED BEDDING MATERIAL.



WATER HEATER DETAIL (2)

NO SCALE P212

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	08.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING DETAILS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 89	

P503

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FIXTURE PIPING

NUMBER	FIXTURE	WASTE (SAN)	VENT (V)	WASTE (GW)	TRAP	COLD WATER (DCW)	HOT WATER (DHW)	MAX WATER FLOW	REMARKS
WC-1	WATER CLOSET (ADA)	4"	2"	-	-	1-1/2"	-	1.28 GPF	WALL HUNG, ELONGATED BOWL, MANUAL FLUSH VALVE, OPEN-FRONT SEAT WITHOUT COVER, TRAP PRIMER WHERE INDICATED BARRIER-FREE. B.O.D.: WATERCLOSET - ZURN #Z5615.258.00.00.00 OR EQUAL
WC-2	WATER CLOSET	4"	2"	-	-	1-1/2"	-	1.28 GPF	WALL HUNG, ELONGATED BOWL, MANUAL FLUSH VALVE, OPEN-FRONT SEAT WITHOUT COVER, TRAP PRIMER WHERE INDICATED **B.O.D.: WATERCLOSET - ZURN #Z5615.258.00.00.00 OR EQUAL**
UR-1	URINAL (ADA)	2"	1-1/2"	-	-	1"	-	0.125 GPF	WALL HUNG, FLUSH VALVE, BATTERY OPERATED SENSOR, BARRIER-FREE **B.O.D.: URINAL KOHLER #K-4904-ET, FLUSH VALVE ZURN #ZER6003AV-ULF-CP OR EQUAL**
UR-2	URINAL	2"	1-1/2"	-	-	1"	-	0.125 GPF	WALL HUNG, FLUSH VALVE, BATTERY OPERATED SENSOR **B.O.D.: URINAL KOHLER #K-4904-ET, FLUSH VALVE ZURN #ZER6003AV-ULF-CP OR EQUAL**
L-1	LAVATORY	1-1/2"	1-1/2"	-	1-1/4"	3/8"	3/8"	0.5 GPM	UNDER COUNTER MOUNTED, VITREOUS CHINA, 0.5 GPM FAUCET HOT AND COLD MIXING WITH TEMPERATURE CONTROL, BATTERY OPERATED SENSOR, STANDARD SPOUT, FIXED GRATE. B.O.D. BOWL - KOHLER #K-2211, FAUCET - KOHLER #K-7515-CP OR EQUAL
L-2	LAVATORY (ADA)	1-1/2"	1-1/2"	-	1-1/4"	3/8"	3/8"	0.5 GPM	WALL HUNG WITH WALL CARRIER, VITREOUS CHINA, 0.5 GPM FAUCET HOT AND COLD MIXING WITH TEMPERATURE CONTROL, BATTERY OPERATED SENSOR, FIXED GRATE, BARRIER FREE **B.O.D.: BOWL - KOHLER # K-2006, FAUCET - SLOAN # EBF-750-8-ADM OR EQUAL**
L-3	LAVATORY (ADA)	1-1/2"	1-1/2"	-	1-1/4"	3/8"	3/8"	0.5 GPM	WALL HUNG WITH WALL CARRIER , VITEROUS CHINA, 0.5 GPM FAUCET HOT AND COLD MIXING WITH TEMPERATURE CONTROL, BATTERY OPERATED SENSOR, STANDARD SPOUT, FIXED GRATE, BARRIER-FREE. **B.O.D.: BOWL - KOHLER # K-2007, FAUCET - KOHLER #K-7515-CP OR EQUAL**
S-1	SINK (ADA)	1-1/2"	1-1/2"	-	1-1/2"	1/2"	1/2"	1 GPM	COUNTER MOUNTED, STAINLESS STEEL, 6-1/2" DEPTH, SINGLE COMPARTMENT WITH CENTERED DRAIN, MIXING FAUCET, GOOSENECK SWING SPOUT WITH 4" BLADE HANDLES, BASKET STRAINER, BARRIER-FREE **B.O.D.: BOWL - ELKAY # LRAD1918, FAUCET - ELKAY LKDA2439BH, STRAINER - LK-35 OR EQUAL**
S-2	SHAMPOO SINK	1-1/2"	1-1/2"	-	1-1/2"	1/2"	1/2"	1 GPM	WALL MOUNTED, WHITE, CAST POLYMER SOLID SURFACE SINGLE COMPARTMENT WITH DROPPED FRONT, MIXING FAUCET, VACUUM BREAKER, HAND HELD SPRAY HEAD AND HAIR TRAP. **B.O.D.: BOWL - WILLOUGHBY MODEL# WSB-1911-SHF OR EQUAL**
SH-1	SHOWER	2"	1-1/2"	-	2"	1/2"	1/2"	1.5 GPM	CERAMIC TILE STALL WITH WHITE PRE-FABRICATED BASE FLOOR WITH INTEGRAL TRENCH DRAIN, SINGLE HANDLE, PRESSURE BALANCE, FIXED SHOWER HEAD WITH DIVERTER, HAND HELD HOSE SPRAY HEAD WITH 30" SLIDE BAR. **B.O.D.: BASE - COMFORTDESIGNS #SSB6232TR.75, SHOWER TRIM - SYMMONS #1-117-FS-X-B30-1.5 OR EQUAL**
EWC-1	ELECTRIC WATER COOLER	1-1/2"	1-1/2"	-	1-1/4"	1/2"	-	0.25 GPM	WALL MOUNTED, RECESSED, SEMI-RECESSED, DUAL LEVEL, STAINLESS STEEL CABINET, PUSH BUTTON OPERTATOR, WATER FILTER BARRIER-FREE. B.O.D.: ELKAY #ERPBM28K OR EQUAL
ETP-1	ELECTRONIC TRAP PRIMER	-	-	-	-	1/2"	-	-	SURFACE MOUNTED, SOLINOID OPERATED VALVE WITH MANIFOLD DISRIBUTION FOR MULITPLE 1/2" TRAP PRIMER LINES. **B.O.D.: PPP SERIES PTS OR EQUAL**
ETP-2	ELECTRONIC TRAP PRIMER	-	-	-	-	1/2"	-	-	SURFACE MOUNTED, SOLINOID OPERATED VALVE WITH MANIFOLD DISRIBUTION FOR MULITPLE 1/2" TRAP PRIMER LINES. **B.O.D.: PPP SERIES PTS OR EQUAL**
ETP-3	ELECTRONIC TRAP PRIMER	-	-	-	-	1/2"	-	-	SURFACE MOUNTED, SOLINOID OPERATED VALVE WITH MANIFOLD DISRIBUTION FOR MULITPLE 1/2" TRAP PRIMER LINES. **B.O.D.: PPP SERIES PTS OR EQUAL**
ETP-4	ELECTRONIC TRAP PRIMER	-	-	-	-	1/2"	-	-	SURFACE MOUNTED, SOLINOID OPERATED VALVE WITH MANIFOLD DISRIBUTION FOR MULITPLE 1/2" TRAP PRIMER LINES. **B.O.D.: PPP SERIES PTS OR EQUAL**
ETP-5	ELECTRONIC TRAP PRIMER	-	-	-	-	1/2"	-	-	SURFACE MOUNTED, SOLINOID OPERATED VALVE WITH MANIFOLD DISRIBUTION FOR MULITPLE 1/2" TRAP PRIMER LINES. **B.O.D.: PPP SERIES PTS OR EQUAL**
ETP-6	ELECTRONIC TRAP PRIMER	-	-	-	-	1/2"	-	-	SURFACE MOUNTED, SOLINOID OPERATED VALVE WITH MANIFOLD DISRIBUTION FOR MULITPLE 1/2" TRAP PRIMER LINES. **B.O.D.: PPP SERIES PTS OR EQUAL**
EM-1	EMERGENCY EYEWASH	-	-	-	-	3/4"	-	- -	PEDESTAL MOUNTED, HAND AND FOOT CONTROL, STAINLESS STEEL BOWL WITH SPRAY HEADS AND DUST COVERS **B.O.D.: GUARDIAN # G1825HFC OR EQUAL**
JS-1	JANITOR SINK	3"	1-1/2"	-	3"	3/4"	3/4"	2 GPM	FLOOR MOUNTED, 24"x24"x12", CORNER TERRAZZO, STAINLESS STEEL, SPLASH PANELS, VACUUM BREAKER, HOSE THREAD SPOUT **B.O.D: STERN WILLIAMS RECEPTOR #SSBC-1702-BP, FAUCET #T-10-VB, HOSE #T-35, MOP HANGER #T-40 OR EQUAL**
JS-2	JANITOR SINK	-	1-1/2"	3"	3"	3/4"	-	2 GPM	FLOOR MOUNTED, 24"x24"x12" SQUARE, TERRAZZO, STAINLESS STEEL, SPLASH PANELS, VACUUM BREAKER, HOSE THREAD SPOUT **B.O.D: STERN WILLIAMS RECEPTOR #HL-1810-BP, FAUCET #T-10-VB, HOSE #T-35, MOP HANGER #T-40 OR EQUAL**
CW-1	CANWASH	-	2"	4"FD	4"	3/4"	-	2 GPM	REFER TO ARCHITECTURAL FOR QUARRY TILE BASIN, PROVIDE STAINLESS STEEL SPLASH PANELS, CHROME PLATED BRASS WALL MOUNTED SERVICE FAUCET WITH VACUUM BREAKER, HOSE THREAD SPOUT, FLOOR DRAIN WITH BASKET STRAINER. **B.O.D.: FAUCET CHICAGO FAUCET #897-CP (REFER TO FLOOR DRAIN SCHEDULE FOR B.O.D.)**
HB-1	HOSE BIBB	-	-	-	-	3/4"	-	-	INTERIOR, CHROME, WALL MOUNTED WITH VACUUM BREAKER, MECHANICAL AREAS **B.O.D.: WOODFORD MODEL 24 OR EQUAL**
HB-2	HOSE BIBB	-	-	-	-	3/4"	-	-	EXTERIOR, WALL BOX, DOOR, CYLINDER LOCK, FREEZE RESISTANT, LOOSE KEY, VACUUM BREAKER. **B.O.D.: WOODFORD MODEL MB654 OR EQUAL**

NOTE:

1. PLUMBING CONTRACTOR SHALL PROVIDE WASTE, VENT, TRAPS, COLD AND HOT WATER TO ALL FIXTURES AND MAKE FINAL CONNECTIONS.
2. PROVIDE SHOCK ARRESTORS AS REQUIRED PER SPECIFICATIONS.

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	08.14.13	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCH/ENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING FIXTURE SCHEDULE

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 90

P601

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

NATURAL GAS STORAGE WATER HEATERS

NUMBER	LOCATION	SERVICE	BASIS OF DESIGN (MANUFACTURER) (MODEL NUMBER)	RECOVERY (GPH)	STORAGE TANK MAX. FLOW (GPM)	EWT (°F)	LWT (°F)	VOLUME (GAL)	MAX. DIA. (IN)	MAX. LENGTH (IN)	ORIENTATION	MATURAL GAS AMSE RATED	PRESSURE MAX. (IN WC)	DEMAND (BTUH)	REMARKS
WH-1	RM 1451	DHW	A.O. SMITH BTH-199	285	4.8	72	140	100	27-3/4"	55-1/2"	VERTICAL	YES	14	199,000	CONDENSING TYPE, NATURAL GAS, LP GAS, 96% EFFICIENT, SEALED COMBUSTION
WH-2	RM 1451	DHW	A.O. SMITH BTH-199	285	4.8	72	140	100	27-3/4"	55-1/2"	VERTICAL	YES	14	199,000	CONDENSING TYPE, NATURAL GAS, LP GAS, 96% EFFICIENT, SEALED COMBUSTION
WH-3	RM PENTHOUSE	DHW	A.O. SMITH BTH-120	190	3.2	72	120	60	27-3/4"	42"	VERTICAL	YES	14	120,000	CONDENSING TYPE, NATURAL GAS, LP GAS, 96% EFFICIENT, SEALED COMBUSTION

PUMPS

NUMBER	LOCATION	SERVICE	BASIS OF DESIGN (MANUFACTURER) (MODEL NUMBER)	CAP. (GPM)	BOOST (FT HD)	SIZE SUCT (IN.)	SIZE DISCH (IN.)	MOTOR HP	MOTOR VOLT	MOTOR PH	REMARKS
CP-1	RM 1451	140° DSHR	BELL & GOSSETT PL-30	2.2	14	1"	1"	0.8	115	1	HOT WATR CIRCULATING PUMP, CONTROLLED BY TIME CLOCK
CP-2	RM 1451	120° DSHR	BELL & GOSSETT PL-55	6.7	39	1"	1"	0.04	115	1	HOT WATR CIRCULATING PUMP, CONTROLLED BY TIME CLOCK
CP-3	PENTHOUSE	120° DHR	BELL & GOSSETT PL-55	11.9	37	1-1/4"	1-1/4"	0.04	115	1	HOT WATR CIRCULATING PUMP, CONTROLLED BY TIME CLOCK

DOMESTIC BOOSTER PUMP

NUMBER	LOCATION	SERVICE	BASIS OF DESIGN (MANUFACTURER) (MODEL NUMBER)	CAP. (GPM)	BOOST (FT HD)	SIZE SUCT (IN.)	SIZE DISCH (IN.)	MOTOR HP	MOTOR VOLT	MOTOR PH	REMARKS
BP-1	RM 1451	DCW	BELL & GOSSETT SERIES e-SV SIZE 155V	95	120	4"	4"	7.5	460	3	DOMESTIC WATER BOOSTER PUMP SKID MOUNTED PACKAGE, TRIPLEX

PUMPS

NUMBER	SERVICE	CAPACITY (GPM)	PRESSURE DELTA (FT)	SIZE SUCTION (IN.)	SIZE DISCHARGE (IN)	MOTOR HP	MOTOR RPM	MOTOR VOLT	MOTOR PH	BASIS OF DESIGN	REMARKS
SP-1	ELEVATOR SUMP PUMP	20	30	-	1-1/2"	1/2	3450	120	1	LIBERTY	AUTOMATIC START AND STOP
SP-2	ELEVATOR SUMP PUMP	20	30	-	1-1/2"	1/2	3450	120	1	LIBERTY	AUTOMATIC START AND STOP
SP-3	ELEVATOR SUMP PUMP	20	30	-	1-1/2"	1/2	3450	120	1	LIBERTY	AUTOMATIC START AND STOP

WATER SOFTENER

NUMBER	LOCATION	SERVICE	BASIS OF DESIGN (MANUFACTURER) (MODEL NUMBER)	FLOW (GPM)	MAX LOSS (PSI)	PIPE SIZE (IN.)	RESIN (CF)	PRESS RATING (PSIG)	TEMP RATING (DEG F)	ASME RATED (Y/N)	REMARKS
WS-1	RM 1452	DSCW	CULLIGAN HCE-450-3	77	5	3"	15	120	100	N	ION-EXCHANGE SOFTENER, ALTERNATING DUPLEX, WATER METER CONTROLLED

NOTE: SPECIFIED MAXIMUM PRESSURE LOSS SHALL BE CALCULATED AT SPECIFIED FLOW RATE.

DRAINS

NUMBER SIZE	BASIS OF DESIGN (MANUFACTURER) (MODEL NUMBER)	REMARKS
FD-A	JAY R SMITH 2005Y-06B-P050	FLOOR DRAIN, CAST IRON BODY, FLANGE, WEEP HOLES, ADJUSTABLE NICKEL BRONZE HEAD, SQAURE GRATE, TRAP PRIMER CONNECTION - TOILET ROOMS
FD-B	JAY R SMITH 2110-G-P050	FLOOR DRAIN, MEDIUM DUTY, CAST IRON BODY, FLANGE, WEEPHOLES, 8" ROUND CAST IRON GRATE, TRAP PRIMER CONNECTION - MECHANICAL ROOM PRIMARY FLOOR DRAINAGE
FD-C	JAY R SMITH 3020-CI-FBS-10	FLOOR DRAIN, MEDIUM DUTY, CAST IRON BODY, FLANGE, 8" ROUND TOP, 3" SUMP, LESS ACID-RESISTANT ENAMEL INTERIOR, LESS RIM AND GRATE, ALUMINUM DOME SECONDARY STRAINER - EQUIPMENT DRAINAGE
FD-D	JAY R SMITH 3151Y-CI	FLOOR DRAIN, MEDIUM DUTY, ACID RESISTANT CAST IRON BODY, FLANGE, 12" x12" SQUARE, NICKEL BRONZE GRATE 8" DEEP WITH SLOTTED SEDIMENT BUCKET, TRAP PRIMER CONNECTION
FD-E	JAY R SMITH 3510Y-L-NB-F10	FLOOR DRAIN, CAST IRON BODY, FLANGE, 8" ROUND NICKEL BRONZE STRAINER WITH FUNNEL TRAP PRIMER CONNECTION
FD-F	JAY R SMITH 3151Y-CI-12	FLOOR DRAIN, MEDIUM DUTY, ACID RESISTANT CAST IRON BODY, FLANGE, 12" x12" SQUARE, NICKEL BRONZE RIM AND 1/2 GRATE, 8" DEEP WITH SLOTTED SEDIMENT BUCKET
HD-1	JAY R SMITH 3960-UDC	HUB DRAIN, CAST IRON BODY, FLASHING FLANGE AND CLAMP, 7" ROUND TOP, 2" HIGH WATER DAM, CAST IRON DOME STRAINER
RD-1	JAY R SMITH 1015-C-CID	ROOF DRAIN, CAST IRON BODY, ADJUSTABLE CAST IRON TOP, 15" CAST IRON DOME, FLASHING FLANGE AND CLAMP, GRAVEL STOP, UNDERDECK CLAMP
ORD-1	JAY R SMITH 1015-C-CID	ROOF DRAIN, CAST IRON BODY, ADJUSTABLE CAST IRON TOP, 15" CAST IRON DOME, FLASHING FLANGE AND CLAMP, GRAVEL STOP, UNDERDECK CLAMP
DSN-1	JAY R SMITH 1770-NB-BS	DOWNSPOUT NOZZEL, NICKEL BRONZE AND FLANGE WITH BIRD SCREEN

SYM	ZONE	REVISIONS	DATE	APPD
A		THIS SHEET REVISED IN ITS ENTIRETY	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
David Sumner	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

PLUMBING SCHEDULES

P602

FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A
PCN. NO. 98745.1a | SHEET 91

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FIRE PROTECTION SYMBOLS AND ABBREVIATIONS

GENERAL SYMBOLS

- F — FIRE SUPPLY
- SPR — SPRINKLER PIPE
- DSPR — DRY SPRINKLER PIPE
- W — WATER SERVICE
- ELBOW DOWN
- ELBOW UP
- TEE DOWN
- TEE UP
- PIPE CAP OR FLUSHING CONNECTION
- PIPE SLEEVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- SUPERVISED BUTTERFLY VALVE
- SUPERVISED OS&Y VALVE
- VALVE IN VERTICAL
- CHECK VALVE
- FLOW SWITCH
- PRESSURE GAUGE (WITH VALVE)
- DOUBLE CHECK BACKFLOW PREVENTER (DCBP)
- REDUCED PRESSURE ZONE BACKFLOW PREVENTER (RPBP)
- # — SPRINKLER HEAD REFER TO DRAWING SPRINKLER HEAD LEGEND FOR TYPE
- # — SIDEWALL SPRINKLER HEAD
- FDC — FIRE DEPARTMENT CONNECTION
- FDV — FIRE DEPARTMENT VALVE
- INSPECTOR'S TEST ASSEMBLY
- THREE POSITION INSPECTOR'S TEST AND DRAIN ASSEMBLY
- PUMP (FLOOR PLAN)
- PIPE HANGER
- SPRINKLER ZONE BOUNDARY
- HYDRAULIC CALCULATION DESIGN AREA
- HATCHING INDICATES AREA TO BE SPRINKLERED

REFERENCE SYMBOLS

- REFER / SHT # — GENERAL REFERENCE DESIGNATES SHEET NUMBER
- # / SHT # — SECTION REFERENCE TOP DESIGNATES SECTION NUMBER BOTTOM DESIGNATES SHEET NUMBER
- ELEVATION SYMBOL
- NEW CONNECTION TO EXISTING
- NAME / # — EQUIPMENT NAME AND NUMBER
- # — HYDRAULIC REFERENCE POINT
- A — FLAG NOTE
- # — REVISION NUMBER

DETAIL -
NO SCALE

ABBREVIATIONS

AC	-	AIR COMPRESSOR
ACC	-	ACCESS
ACV	-	ALARM CHECK VALVE
ADJ	-	ADJUSTABLE
AFF	-	ABOVE FINISHED FLOOR
ALT	-	ALTERNATE
AP	-	ACCESS PANEL
APPROX	-	APPROXIMATE
ARCH	-	ARCHITECTURAL
ASSY	-	ASSEMBLY
ATS	-	AUTOMATIC TRANSFER SWITCH
BLDG	-	BUILDING
BOP	-	BOTTOM OF PIPE
BOT	-	BOTTOM
BTWN	-	BETWEEN
CFCI	-	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CL	-	CENTERLINE
CLG	-	CEILING
CONN	-	CONNECTION/CONNECT
CONTR	-	CONTRACTOR
CORR	-	CORRIDOR
CU	-	COPPER
D	-	DEPTH/DRAIN LINE
DCBP	-	DOUBLE CHECK BACKFLOW PREVENTER
DDBP	-	DOUBLE DETECTOR BACKFLOW PREVENTER
DET	-	DETAIL
DIA	-	DIAMETER
DIM	-	DIMENSION
DN	-	DOWN
DSPR	-	DRY SPRINKLER PIPE
DWG	-	DRAWING
EA	-	EACH
ELEV	-	ELEVATION
EQUIP	-	EQUIPMENT
ETR	-	EXISTING TO REMAIN
EXT	-	EXTERIOR
F	-	FIRE SUPPLY
FACP	-	FIRE ALARM CONTROL PANEL
FDC	-	FIRE DEPARTMENT CONNECTION
FDV	-	FIRE DEPARTMENT VALVE
FLR	-	FLOOR
FMG	-	FACTORY MUTUAL GLOBAL
FPC	-	FIRE PUMP CONTROLLER
FPTH	-	FIRE PUMP TEST HEADER
FS	-	FLOW SWITCH
FT	-	FEET
FTG	-	FOOTING
GA	-	GAUGE
GAL	-	GALLON
GALV	-	GALVANIZED
GPM	-	GALLONS PER MINUTE
HD	-	HUB DRAIN
ID	-	INSIDE DIAMETER
IE	-	INVERT ELEVATION
IFC	-	INTERNATIONAL FIRE CODE
IN	-	INCHES
JP	-	JOCKEY PUMP
JPC	-	JOCKEY PUMP CONTROLLER
L	-	LENGTH
LBS	-	POUNDS
MAX	-	MAXIMUM
MEZZ	-	MEZZANINE
MFR	-	MANUFACTURER
MIN	-	MINIMUM/MINUTE
MISC	-	MISCELLANEOUS
MTD	-	MOUNTED
MTG	-	MOUNTING
NFPA	-	NATIONAL FIRE PROTECTION ASSOCIATION
NO	-	NUMBER
NOM	-	NOMINAL
NPT	-	NATIONAL PIPE THREAD
NTS	-	NOT TO SCALE
OC	-	ON CENTER
OD	-	OUTSIDE DIAMETER
OFCI	-	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	-	OWNER FURNISHED OWNER INSTALLED
PIV	-	POST INDICATOR VALVE
PLBG	-	PLUMBING
PRESS	-	PRESSURE
PRV	-	PRESSURE REDUCING VALVE
PSF	-	POUNDS PER SQUARE FOOT
PSI	-	POUNDS PER SQUARE INCH
PSIG	-	POUNDS PER SQUARE INCH GAUGE
RAD	-	RADIUS
REC	-	RECESSED
REQD	-	REQUIRED
RI	-	ROUGH-IN
RPM	-	REVOLUTIONS PER MINUTE
RPBP	-	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
RV	-	RELIEF VALVE
SCH	-	SCHEDULE
SHT	-	SHEET
SPEC	-	SPECIFICATION
SPR	-	SPRINKLER
SQ	-	SQUARE
S/S	-	STAINLESS STEEL
STRU	-	STRUCTURAL/STRUCTURE
TEMP	-	TEMPERATURE
TC	-	TEST CELL
TOB	-	TOP OF BEAM
TOD	-	TOP OF DECK
TOJ	-	TOP OF JOIST
TOS	-	TOP OF SLAB/TOP OF STEEL
TYP	-	TYPICAL
UBC	-	UNIFORM BUILDING CODE
UFC	-	UNIFORM FIRE CODE
UNO	-	UNLESS NOTED OTHERWISE
V	-	VALVE
VEL	-	VELOCITY
VOL	-	VOLUME
W	-	WIDTH
W/	-	WITH
W/O	-	WITHOUT
X	-	EXISTING

GENERAL NOTES:

1. THE BUILDING WILL BE FULLY SPRINKLERED. ONE WET SPRINKLER ZONE WILL BE UTILIZED FOR EACH FLOOR. THE SYSTEMS SHALL BE DESIGNED TO PROVIDE A DENSITY OF 0.2 GPM / SQUARE FOOT OVER THE MOST REMOTE 1500 SQUARE FEET.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO EXAMINE "REFLECTED CEILING" DRAWINGS AS WELL AS MECHANICAL, ELECTRICAL, PLUMBING AND STRUCTURAL PLANS PRIOR TO SYSTEM LAYOUT.
3. THE CONTRACTOR SHALL COORDINATE SPRINKLER PIPE ROUTING WITH ALL TRADES.
4. SPRINKLERS SHALL BE INSTALLED IN THE CENTER OF THE CEILING TILES.
5. SPRINKLER PIPING SHALL NOT BE ROUTED DIRECTLY ABOVE ELECTRICAL EQUIPMENT.
6. SPRINKLER PIPING SHOWN IS CONCEPTUAL BASED ONLY. THE CONTRACTOR SHALL PRODUCE COMPLETE DESIGN DRAWINGS AND CALCULATIONS.

HYDRANT FLOW TEST INFORMATION

TEST HYDRANT	FLOW HYDRANT	STATIC PRESSURE	RESIDUAL PRESSURE	TEST DATE
LOFH 1180	LOFH 1125	72 PSI	48 PSI WITH 1708 GPM	04/20/2012

NOTE:
1. A NEW FLOW TEST SHALL BE OBTAINED PRIOR TO THE DESIGN OF THE FIRE PROTECTION SYSTEMS.

EQUIPMENT SCHEDULE

	MANUFACTURER & MODEL NO. OR EQUAL	CAPACITY	POWER	REMARKS
FIRE PUMP	AURORA 5-481-17	1000 GPM @ 90 PSI	75 HP 480/3/60	NOTE 1 -
JOCKEY PUMP	AURORA PVM(1/X)2	5 GPM @ 90 PSI	1-1/2 HP 480/3/60	5 STAGE -

NOTE:
1. PERFORM HYDRAULIC CALCULATIONS OF THE STANDPIPE AND SPRINKLER SYSTEMS USING NEW FLOW TEST (PROVIDED BY THE GOVERNMENT). INCLUDE AN ALLOWANCE TO EXTEND THE SYSTEMS TO THE PROPOSED BUILDING ADDITION (PHASE 2).
2.PROVIDE A FIRE PUMP WITH A FLAT CURVE SUCH THAT STATIC (CHURN) PRESSURE AT FIRE PUMP DOES NOT EXCEED 175 PSIG AND RESIDUAL PRESSURE AT REMOTE HOSE VALVE IS AT LEAST 70 PSIG.

SYM	ZONE	REVISIONS	DATE	APPD
A		THIS SHEET REVISED IN ITS ENTIRETY	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

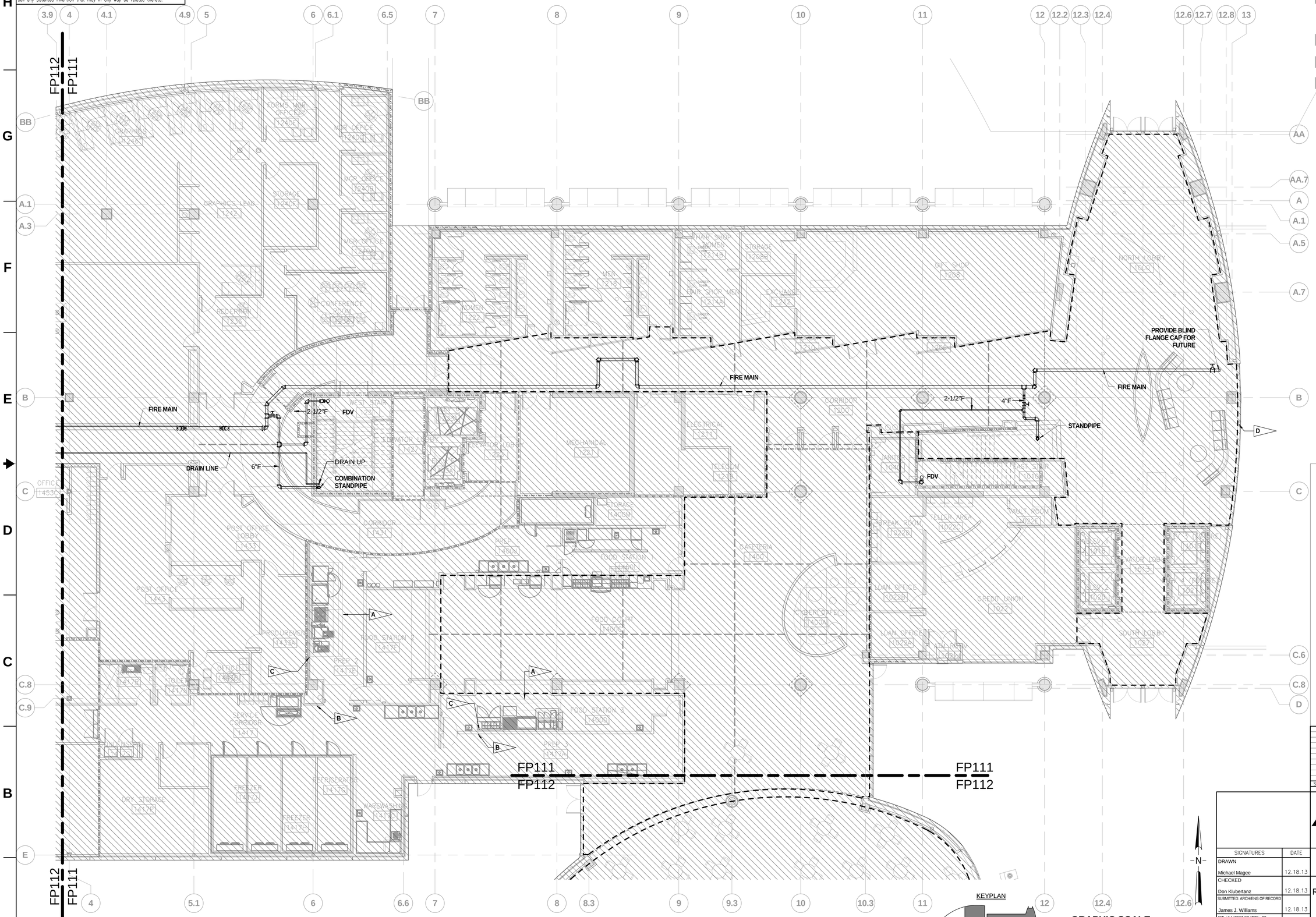
FIRE PROTECTION SYMBOLS AND ABBREVIATIONS

FP001

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 92

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FLAG NOTES:

A. COOKING HOOD TO BE PROTECTED BY WET CHEMICAL FIRE SUPPRESSION SYSTEM. REFER TO FOOD SERVICE DRAWINGS FOR HOOD AND EQUIPMENT INFORMATION.

B. WET CHEMICAL FIRE SUPPRESSION SYSTEM CONTROL PANEL.

C. GAS EMERGENCY SHUTOFF VALVE LOCATION.

D. DASHED LINE INDICATES AREA REQUIRING CONCEALED TYPE SPRINKLER HEADS WITH A FACTORY APPLIED FINISH TO MATCH ADJACENT CEILING FINISH AS CLOSELY AS POSSIBLE.

FIRE PROTECTION PLAN - 1ST LEVEL - AREA 1

1/8" = 1'-0"

SYM	ZONE		DATE	APPD
A		THIS SHEET REVISED IN ITS ENTIRETY	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - 1ST LEVEL AREA 1

FP111

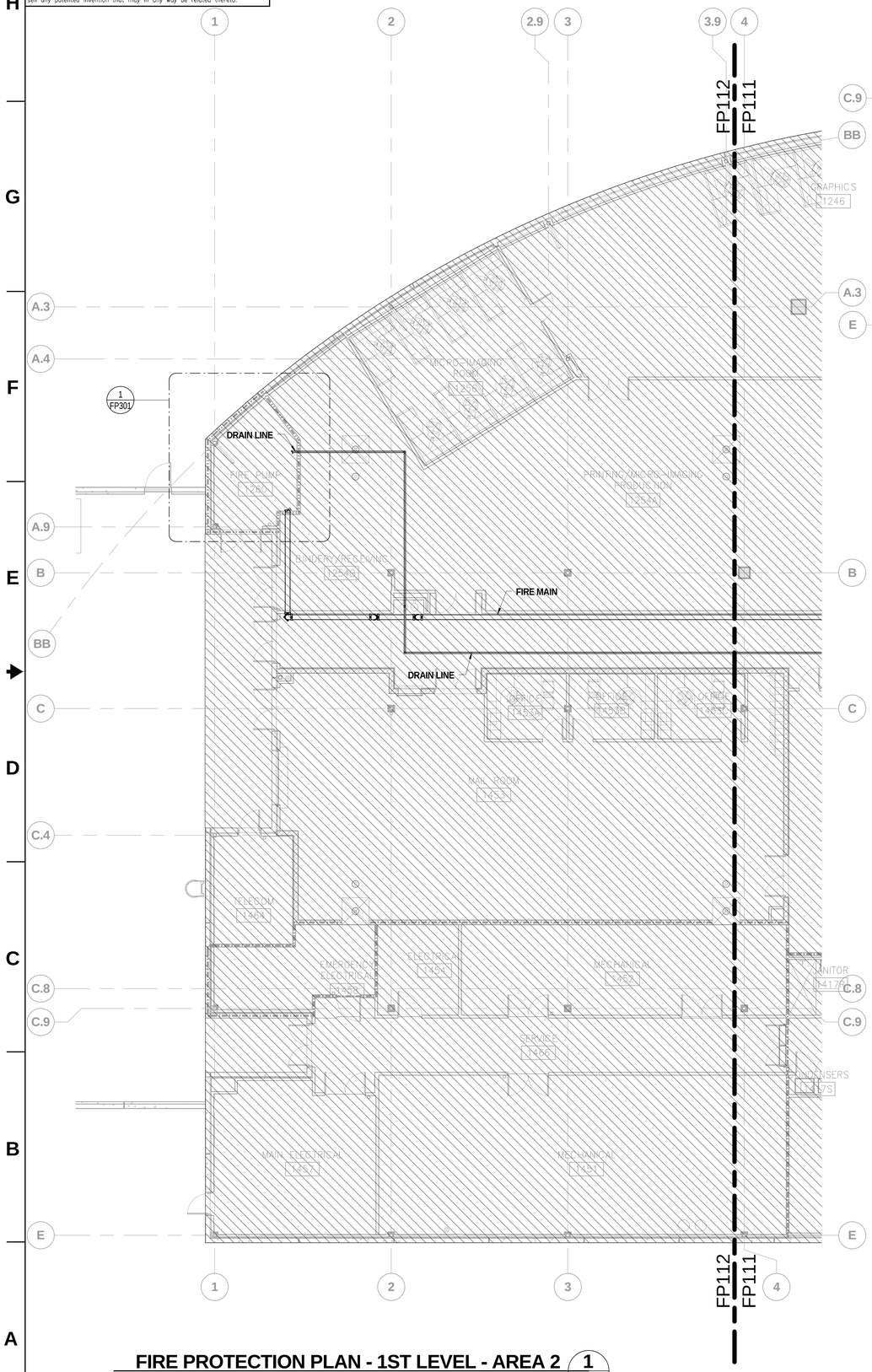
FILE NO. C-12070.00 | SIZE F | DWG. NO. 79K39622 VOL 3 | A

PCN. NO. 98745.1a | SHEET 93

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

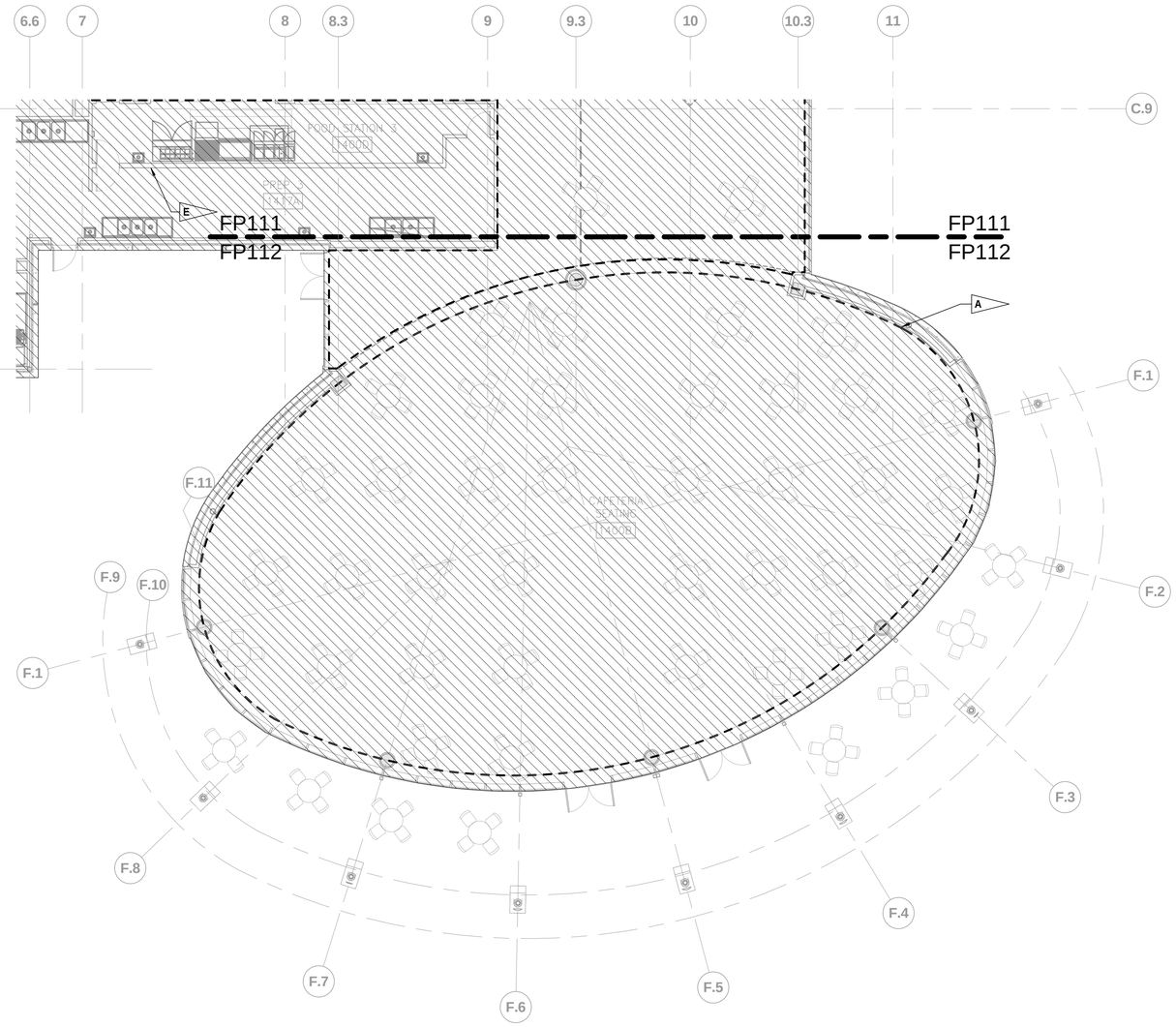
FLAG NOTES:

A — UPPER CEILING IN THIS AREA TO HAVE BLACK COVER PLATES FOR SPRINKLERS. LOWER CLOUDS TO HAVE WHITE COVER PLATES FOR SPRINKLERS.



FIRE PROTECTION PLAN - 1ST LEVEL - AREA 2 (1)

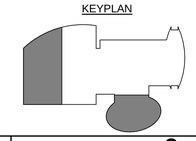
1/8" = 1'-0"



FIRE PROTECTION PLAN - 1ST LEVEL - AREA 3 (2)

1/8" = 1'-0"

KEYPLAN



GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

FP112

SYM	ZONE	REVISIONS	DATE	APPD
4		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - 1ST LEVEL AREA 2 & 3

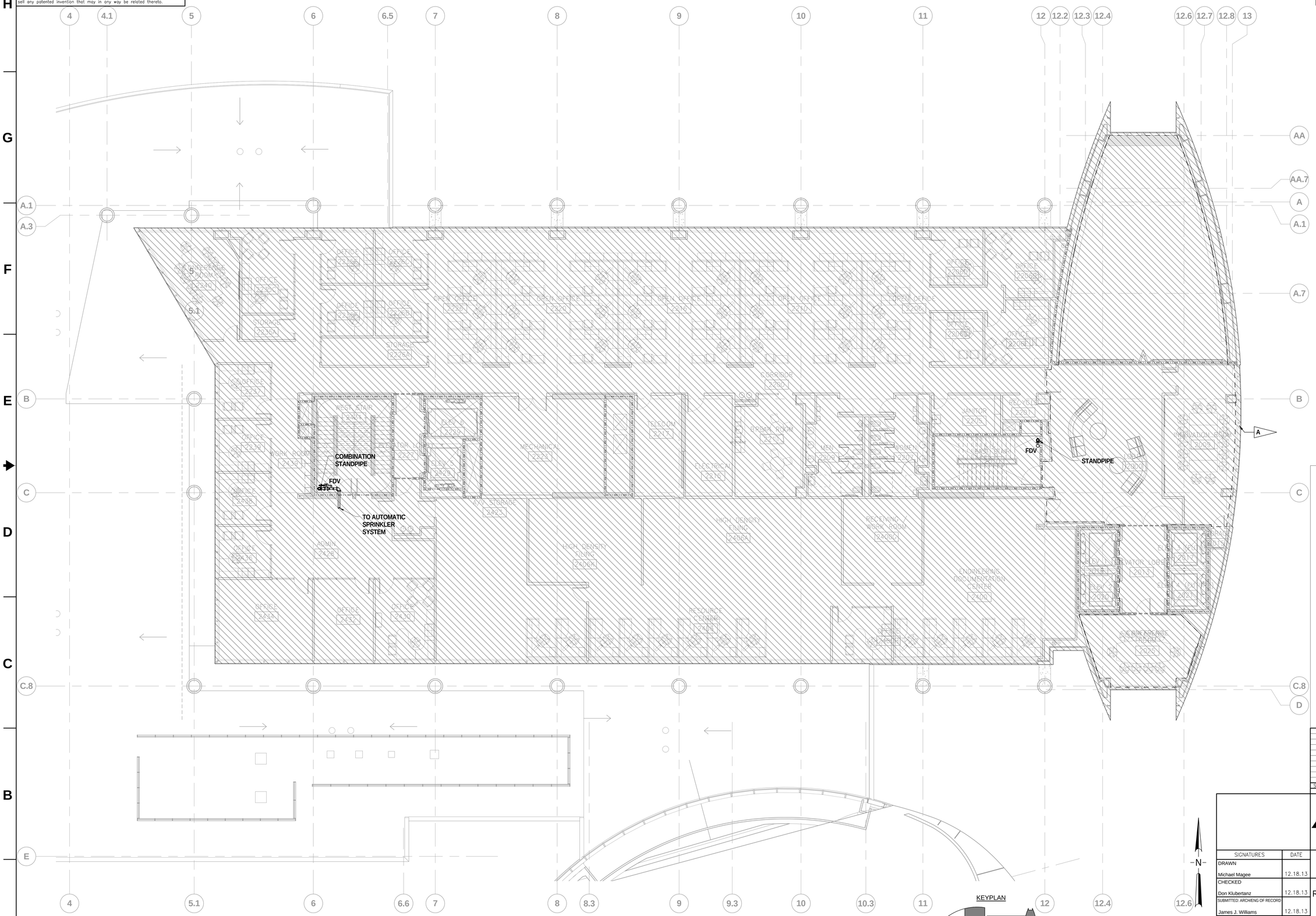
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 94

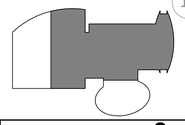
NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES:

A — DASHED LINE INDICATES AREAS REQUIRING CONCEALED TYPE SPRINKLER HEADS WITH A FACTORY APPLIED FINISH TO MATCH ADJACENT CEILING FINISH AS CLOSELY AS POSSIBLE.



KEYPLAN



GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

FIRE PROTECTION PLAN - 2ND LEVEL - AREA 1

1/8" = 1'-0"

FP121

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - 2ND LEVEL AREA 1

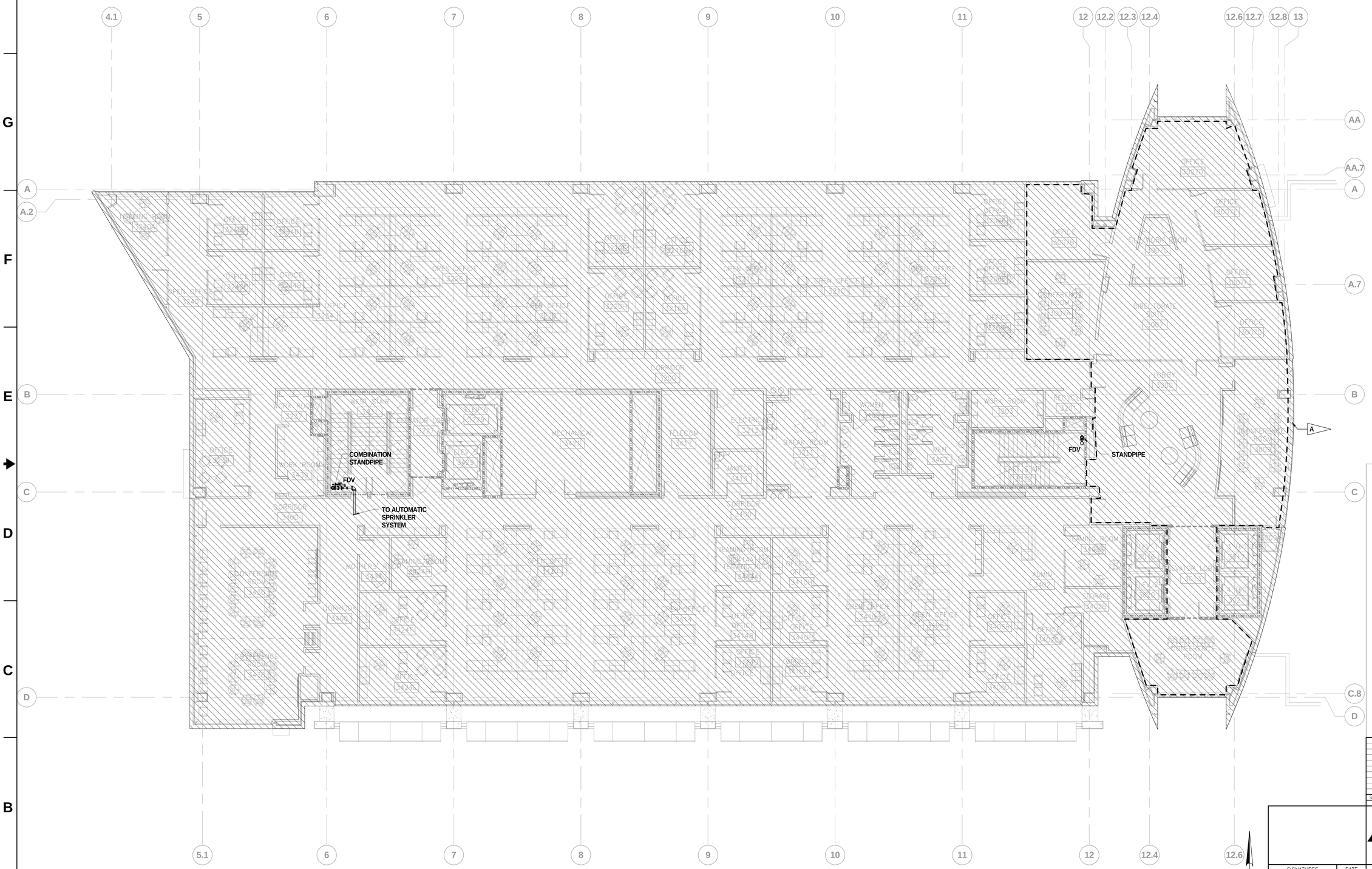
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 95

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES:

A — DASHED LINE INDICATES AREAS REQUIRING CONCEALED TYPE SPRINKLER HEADS WITH A FACTORY APPLIED FINISH TO MATCH ADJACENT CEILING FINISH AS CLOSELY AS POSSIBLE.



FIRE PROTECTION PLAN - 3RD LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - 3RD LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 96

FP131

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES:

A — DASHED LINE INDICATES AREAS REQUIRING CONCEALED TYPE SPRINKLER HEADS WITH A FACTORY APPLIED FINISH TO MATCH ADJACENT CEILING FINISH AS CLOSELY AS POSSIBLE.

FIRE PROTECTION PLAN - 4TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

FP141

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - 4TH LEVEL

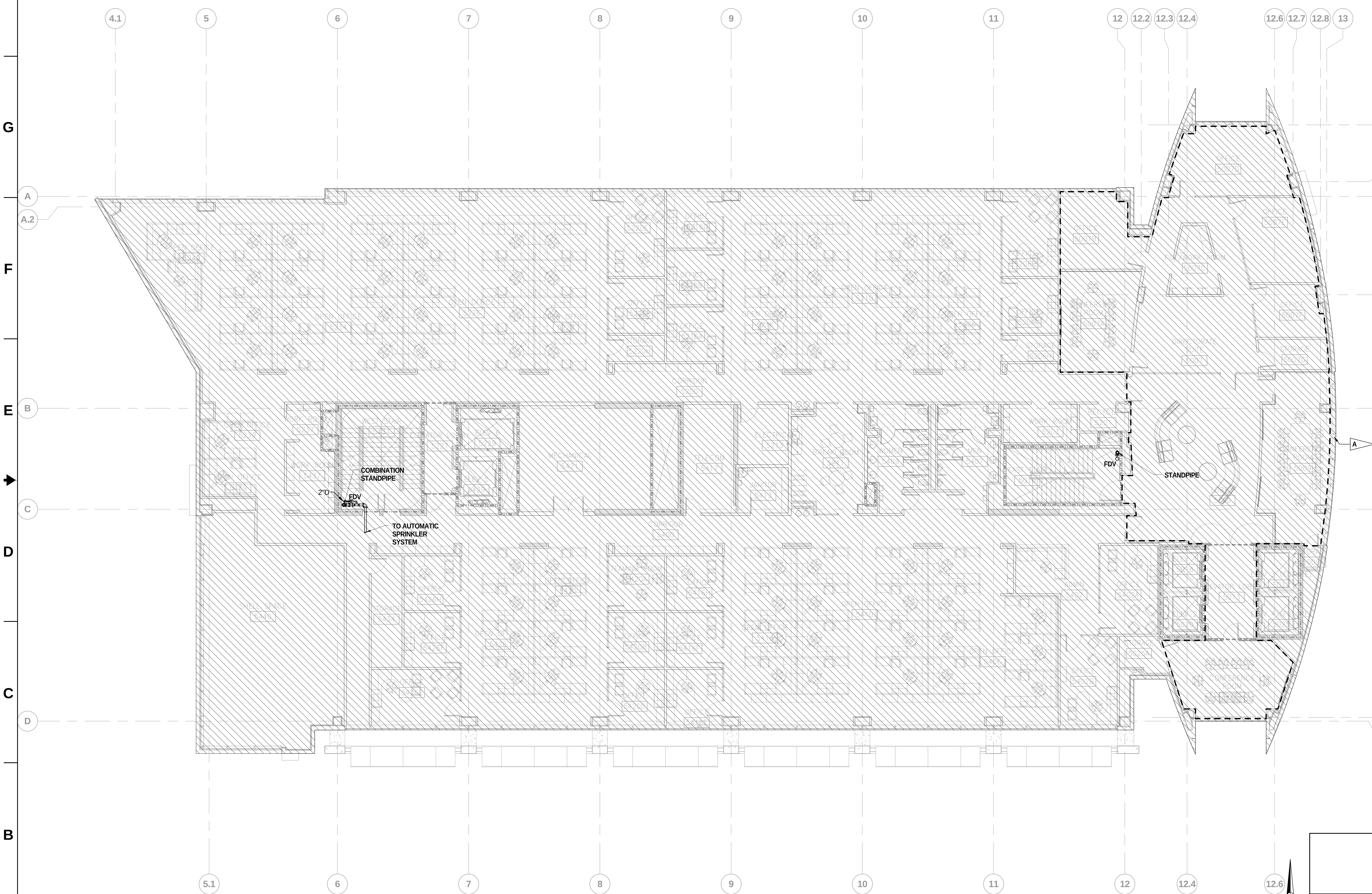
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 97

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES:

A — DASHED LINE INDICATES AREAS REQUIRING CONCEALED TYPE SPRINKLER HEADS WITH A FACTORY APPLIED FINISH TO MATCH ADJACENT CEILING FINISH AS CLOSELY AS POSSIBLE.



FIRE PROTECTION PLAN - 5TH LEVEL

1/8" = 1'-0"

N

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

FP151

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCH/ENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

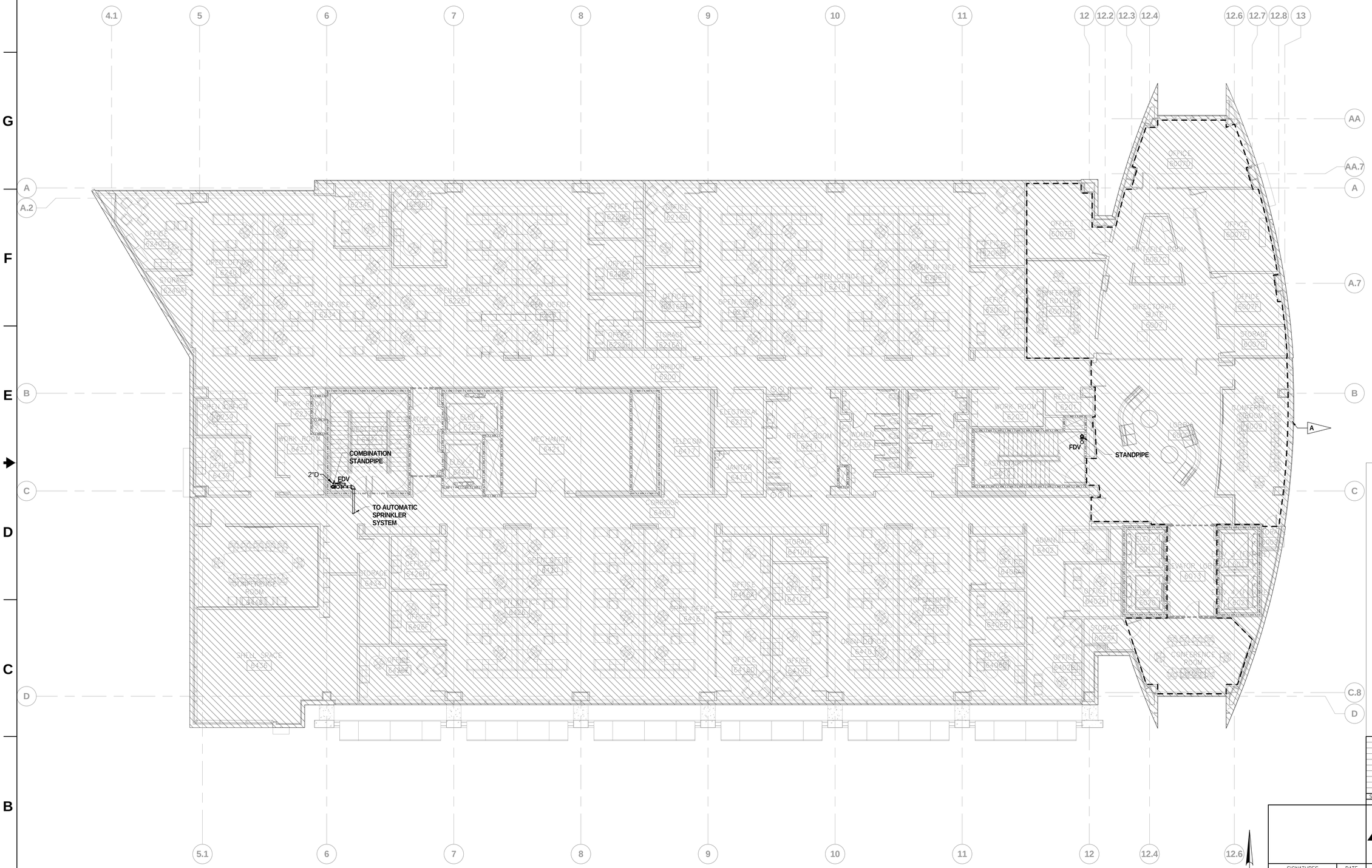
FIRE PROTECTION PLAN - 5TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 98	

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES:

A — DASHED LINE INDICATES AREAS REQUIRING CONCEALED TYPE SPRINKLER HEADS WITH A FACTORY APPLIED FINISH TO MATCH ADJACENT CEILING FINISH AS CLOSELY AS POSSIBLE.



FIRE PROTECTION PLAN - 6TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

FP161

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - 6TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

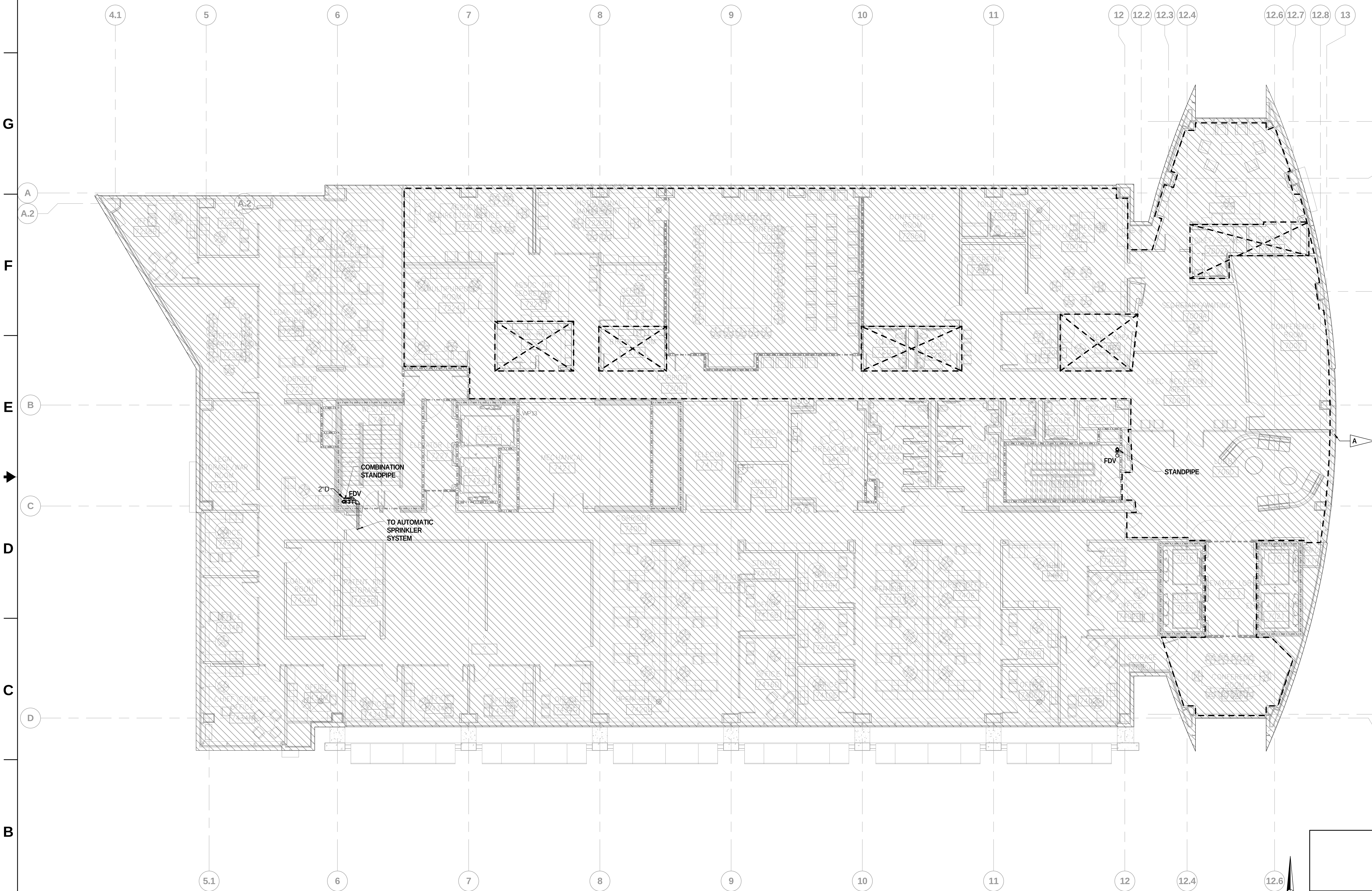
PCN. NO. 98745.1a SHEET 99

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES:

A — DASHED LINE INDICATES AREAS REQUIRING CONCEALED TYPE SPRINKLER HEADS WITH A FACTORY APPLIED FINISH TO MATCH ADJACENT CEILING FINISH AS CLOSELY AS POSSIBLE.



FIRE PROTECTION PLAN - 7TH LEVEL

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

FP171

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCH/ENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

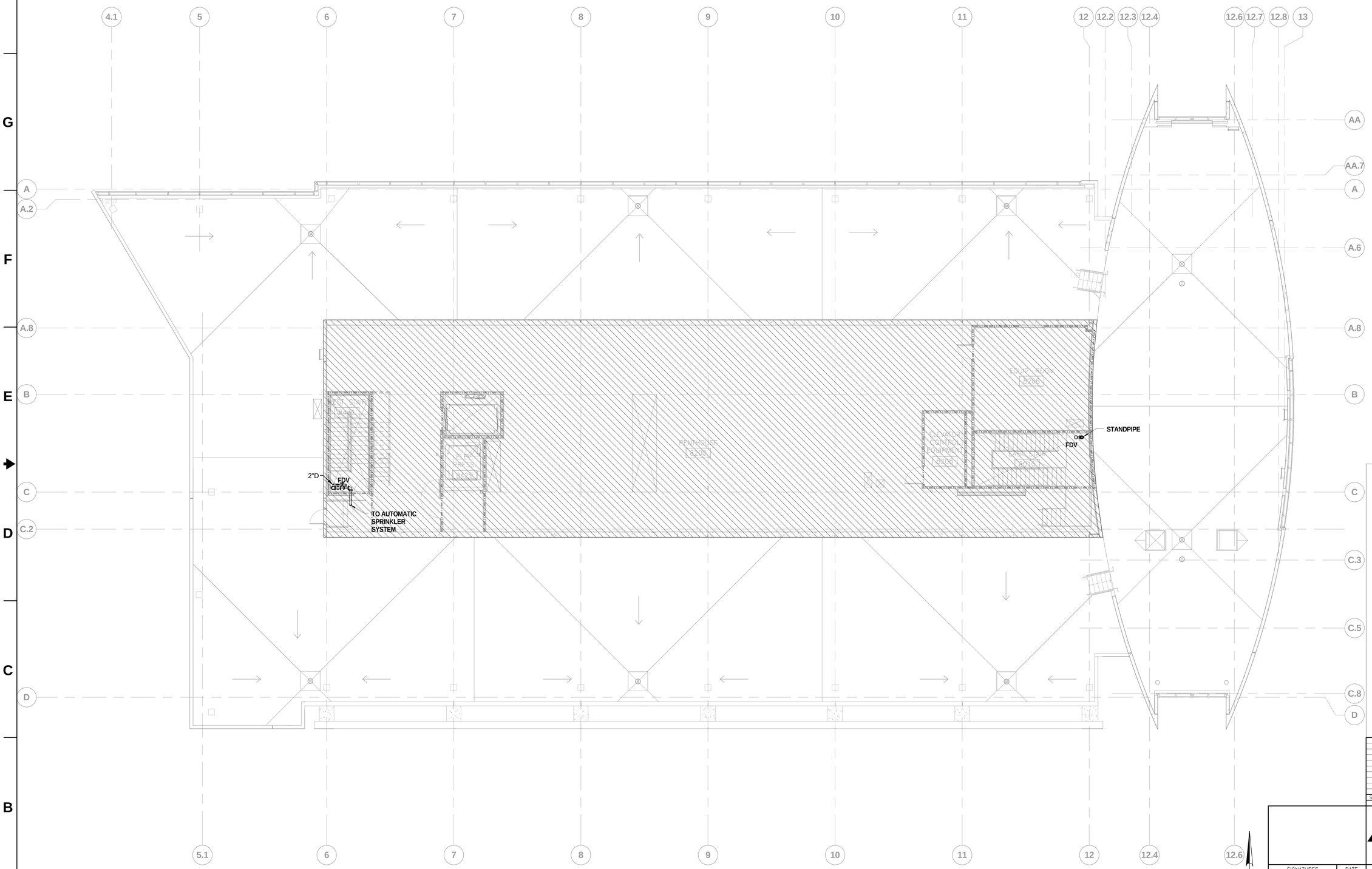
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - 7TH LEVEL

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a — SHEET 100

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



FIRE PROTECTION PLAN - ROOF

1/8" = 1'-0"

GRAPHIC SCALE

0 8 16 24

SCALE IN FEET
1/8" = 1' - 0"

N

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

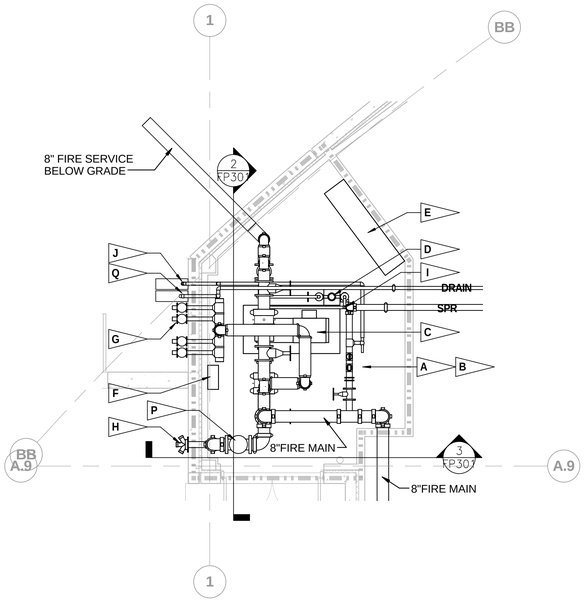
KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION PLAN - ROOF

FP181

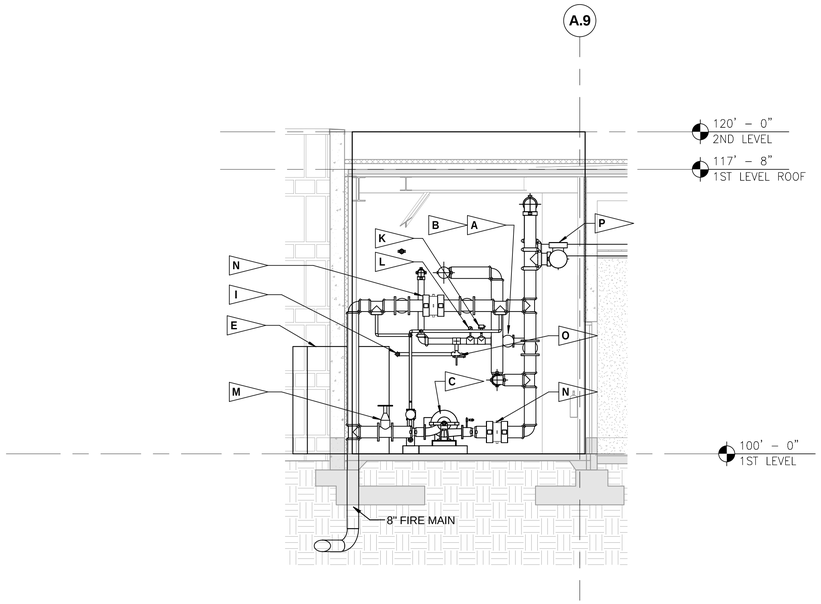
FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 101	

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



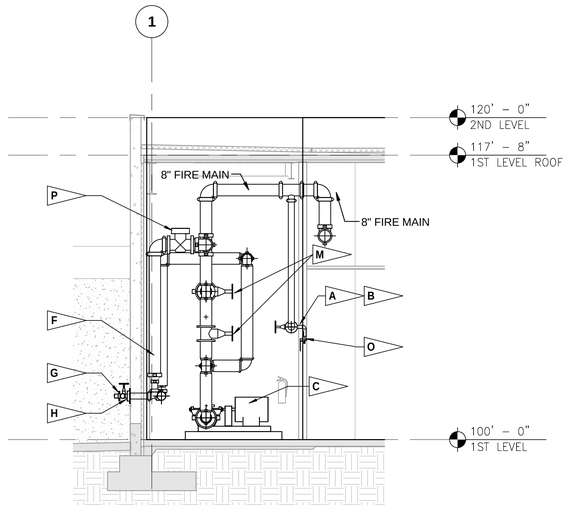
FIRE PUMP ROOM ENLARGED PLAN 1

1/4" = 1'-0"



FIRE PUMP ROOM LONGITUDINAL SECTION 2

1/4" = 1'-0"



FIRE PUMP ROOM CROSS SECTION 3

1/4" = 1'-0"

FLAG NOTES:

- A — REFER TO FIRE PROTECTION DETAIL 3/FP401 FOR FLOOR CONTROL DETAIL.
- B — AUTOMATIC SPRINKLER CONTROL VALVE ASSEMBLY FOR 1ST LEVEL
- C — FIRE PUMP
- D — JOCKEY PUMP
- E — FIRE PUMP CONTOL PANEL
- F — JOCKEY PUMP CONTROL PANEL
- G — TEST HEADER
- H — FIRE DEPARTMENT CONNECTION (FDC)
- I — SPRINKLER DRAIN
- J — SPRINKLER DRAIN OVER SPLASH BLOCK
- K — FLOW SWITCH (TYPICAL)
- L — PRESSURE GAUGE (TYPICAL)
- M — O.S.& Y. GATE VALVE (TYPICAL)
- N — CHECK VALVE (TYPICAL)
- O — PRESSURE RELIEF VALVE
- P — CHECK VALVE
- Q — FIRE SPRINKLER DRAIN TO TERMINATE AT OUTSIDE WALL WITH A 45° ELBOW, 18" ABOVE GRADE OER SPLASH BLOCK.

GRAPHIC SCALE

0 4 8 12

SCALE IN FEET
1/4" = 1' - 0"

FP301

SYM	ZONE		DATE	APPD
A		REDRAWN – NO CHANGES	05.14.14	

REVISIONS

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO. 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION ENLARGED PLAN AND SECTIONS

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 102

KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

FLAG NOTES

- A — FIRE PUMP
- B — JOCKEY PUMP
- C — TO LEVEL 1 SPRINKLERS
- D — TO FLOOR SPRINKLERS TYPICAL
- E — TEST HEADER, NUMBER OF OUTLETS WILL MATCH THE NUMBER REQUIRED FOR THE SIZE FIRE PUMP PROVIDED.
- F — EXTEND DRAIN ABOVE CEILING TO OUTSIDE. REFER TO FLOOR PLAN FOR PROPOSED ROUTING.
- G — REFER TO CIVIL SITE PLAN FOR BACKFLOW PREVENTER AND FIRE SERVICE PIPING.
- H — RISER VENT ASSEMBLY. REFER TO DETAIL 8/FP501

FIRE PROTECTION RISER SCHEMATIC

N.T.S.

SYM	ZONE	REVISIONS	DATE	APPD
2		REDRAWN – NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

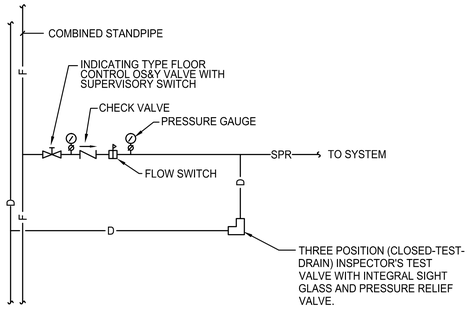
FIRE PROTECTION RISER SCHEMATIC

FP401

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A
PCN. NO. 98745.1a		SHEET 103	

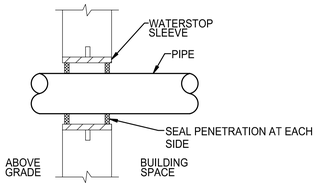
KSC FORM 1-11 (3/76)(C/G 3/94)

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.



SPRINKLER ZONE CONTROL ASSEMBLY (1)

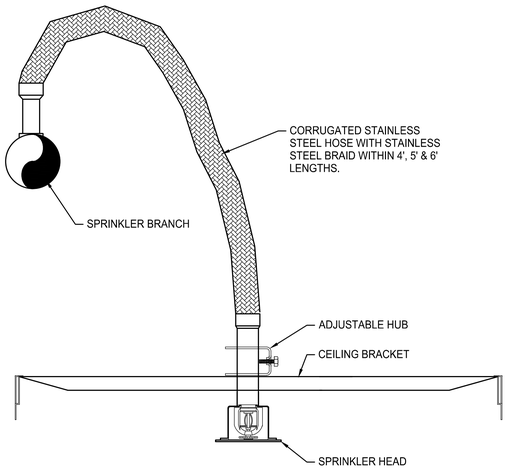
NO SCALE



NOTES:
(1) PROVIDE A UL LISTED FIRE STOPPING SYSTEM FOR THE TYPE OF PIPE MATERIAL AND WALL CONSTRUCTION.

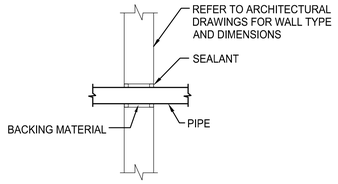
PIPE THROUGH EXTERIOR WALL (4)

NO SCALE



FLEXIBLE CONNECTION FOR SPRINKLER HEADS (2)

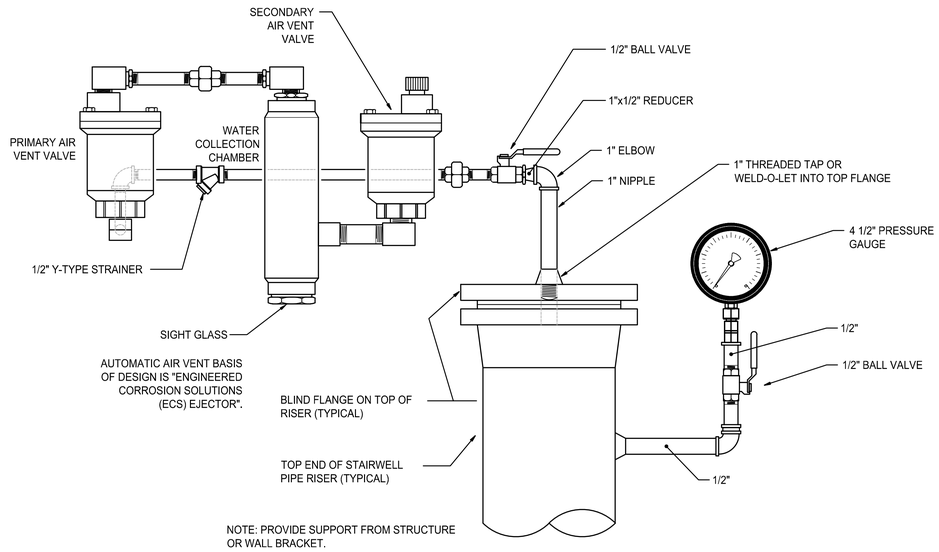
NO SCALE



NOTES:
(1) PROVIDE A UL LISTED FIRE STOPPING SYSTEM FOR THE TYPE OF PIPE MATERIAL AND WALL CONSTRUCTION.

PIPE THROUGH INTERIOR WALL (5)

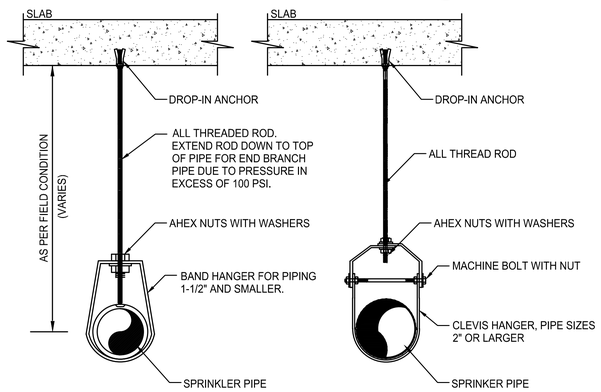
NO SCALE



TOP OF RISER VENT DETAIL (8)

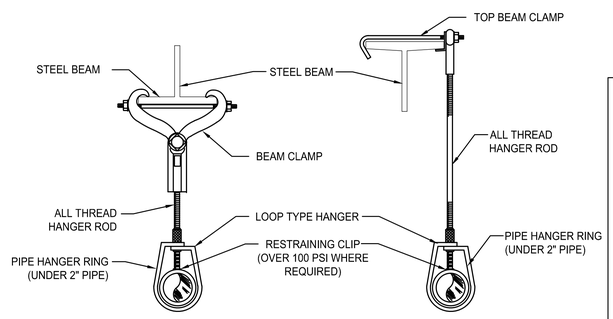
NO SCALE

(TYPICAL STANDPIPES)



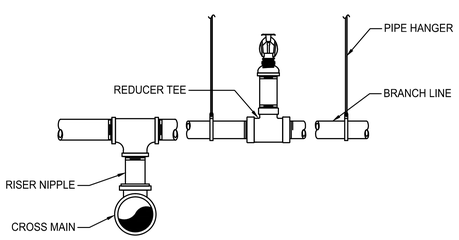
PIPE HANGER (6)

NO SCALE



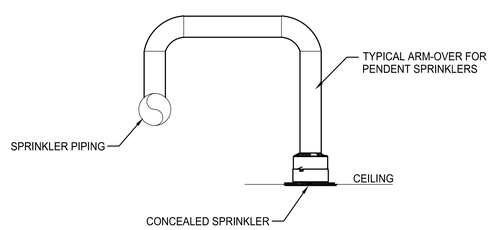
BEAM CLAMP DETAIL (9)

NO SCALE



UPRIGHT SPRINKLER HEAD (3)

NO SCALE



CONCEALED SPRINKLER (7)

NO SCALE

SYM	ZONE	REVISIONS	DATE	APPD
A		REDRAWN - NO CHANGES	05.14.14	

Affiliated Engineers, Inc.
Tioga Town Center
12921 SW 1st Road, Suite 205
Gainesville, Florida 32669
Tel 352.376.5500 Fax 352.375.3479
CA-5140

SIGNATURES	DATE
DRAWN Michael Magee	12.18.13
CHECKED Don Klubertanz	12.18.13
SUBMITTED: ARCHENG OF RECORD James J. Williams	12.18.13
ST of LICENSURE: FL LICENSE NO: 51048	12.18.13
APPROVED Scott Robinson	12.18.13
Neal Colvin	12.19.13

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER, NASA
KENNEDY SPACE CENTER, FLORIDA

KSC CENTRAL CAMPUS
REPLACEMENT HEADQUARTERS BUILDING
PHASE 1
VOL. 3 OF 4

FIRE PROTECTION DETAILS

FP501

FILE NO.	SIZE	DWG. NO.	
C-12070.00	F	79K39622 VOL 3	A

PCN. NO. 98745.1a SHEET 104 of 104