National Park Service

Replace Wastewater Plant South Rim Village
GRCA-257282

100% Complete Construction Documents
Addendum 1

June 10, 2026

Prepared by:

Jacobs Government Services Company

Greenwood Village, CO

Contract No. 140P2023D0006

Task Order No. 140P2023F0235

Jacobs

1. Addendum Contents

This addendum address comments from NPS DCS review of 100% Final Construction Documents, dated June 2025, prepared for the Replace Wastewater Plant South Rim Village project. The comments resulted in minor updates to drawings, specifications and standard details. Revised documents are listed below and attached.

1.1 Revisions to Drawings

New or Updated	Sheet No.	DWG No.	Sheet Name	Description
Updated	1A	01G0001	WWTP Replacement	Revision Block
Updated	2A	01G0002	General Index of Drawings	Updated sheet numbers for drawing revisions
Updated	3A	01G0003	General Index of Drawings	Updated sheet numbers for drawing revisions
Updated	16A	01A0010	Architectural Code Data and Life Safety Plan Administration Building	Updated IBC reference from 2024 IBC to 2021 IBC.
Updated	17A	01A0012	Architectural Code Data and Life Safety Plan Maintenance Building	Updated IBC reference from 2024 IBC to 2021 IBC.
Updated	18A	01A0020	Architectural Code Data and Life Safety Plan Headworks	Updated IBC reference from 2024 IBC to 2021 IBC.
Updated	19A	01A0032	Architectural Code Data and Life Safety Plan Process Building	Updated IBC reference from 2024 IBC to 2021 IBC.
Updated	20A	01A0080	Architectural Code Data and Life Safety Plan Digester Facility	Updated IBC reference from 2024 IBC to 2021 IBC.
Updated	190A	10A6001	Administration Building Architectural Schedules	Updated Sherwin Williams “Dover Gray” to “Classic French Gray SW0077”
Updated	200A	10P9003	Administration Building Plumbing Isometric	Corrected RW and W1 callouts.
Updated	220A	12A6001	Maintenance Building Architectural Schedules	Updated Sherwin Williams “Dover Gray” to “Classic French Gray SW0077”
Updated	253A	20A6001	Headworks Architectural Schedules	Updated Sherwin Williams “Dover Gray” to “Classic French Gray SW0077”

Updated	311A	32A6001	Process Building Architectural Schedules	Updated Sherwin Williams "Dover Gray" to "Classic French Gray SW0077"
Updated	342A	70D3001	Reclaimed Water Tank Mechanical Sections	Addition of non-potable water signage
Updated	357A	80A6001	Digester Facility Architectural Schedules	Updated Sherwin Williams "Dover Gray" to "Classic French Gray SW0077"

1.2 Revisions to Standard Details

New of Updated	Standard Detail No.	Name	Description
Updated	Index	Index	Added detail 1014-002
Updated	1014-002 Detail 1 of 2	Caution Sign	Made Detail 1 of 2
New	1014-002 Detail 2 of 2	Caution Sign	Detail 2 of 2; New detail for non-potable water utilization
Updated	2240-100A	Hub Drain	Deleted reference to trap primers

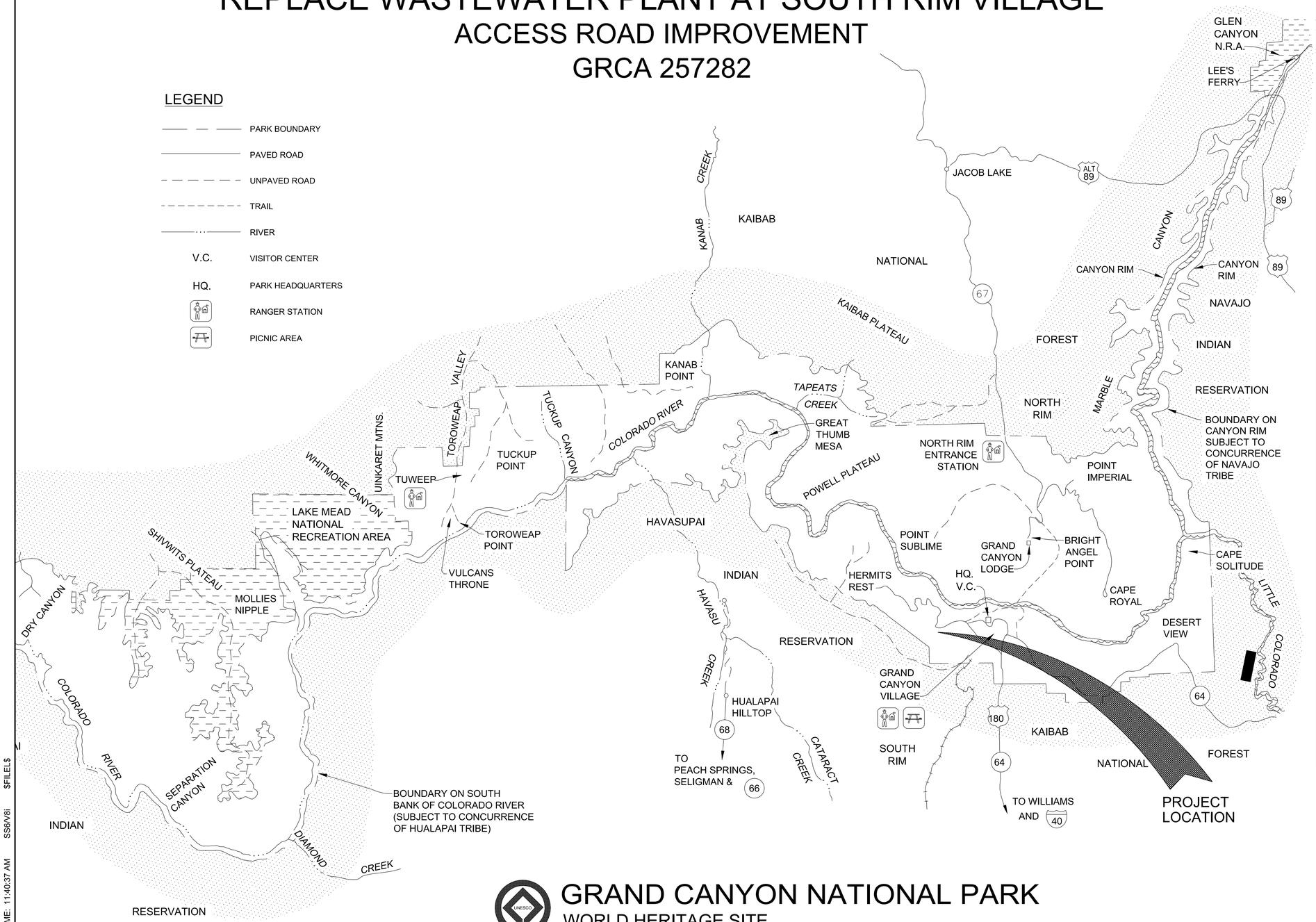
1.3 Revisions to Specifications

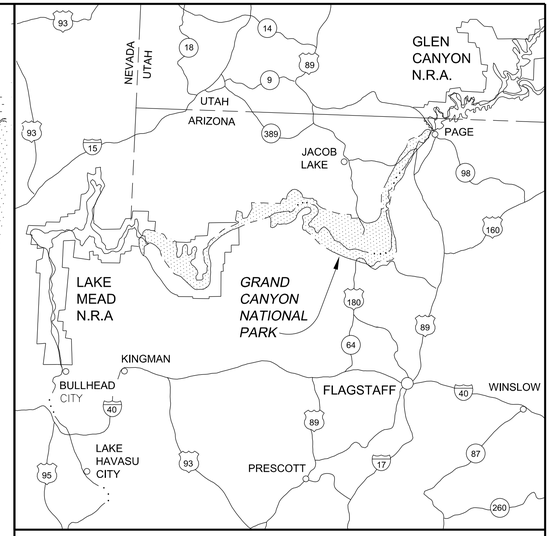
New of Updated	Specification No.	Name	Description
Updated	01 91 15	Total Building Commissioning	Added requirement for cross connection test
Updated	10 14 00	Signage	Added signage regarding non-potable water
Updated	28 31 00	Fire Alarm and Detection	Updated spec to include NICET Level 2 for fire alarm installer

REPLACE WASTEWATER PLANT AT SOUTH RIM VILLAGE
ACCESS ROAD IMPROVEMENT
GRCA 257282

LEGEND

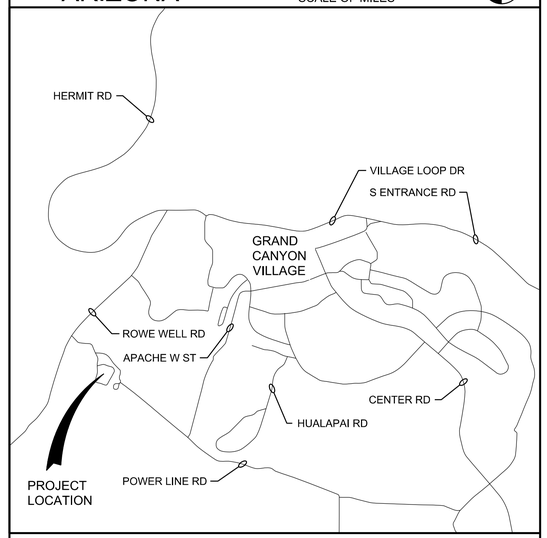
- PARK BOUNDARY
- PAVED ROAD
- UNPAVED ROAD
- TRAIL
- RIVER
- V.C. VISITOR CENTER
- HQ. PARK HEADQUARTERS
- RANGER STATION
- PICNIC AREA





NORTHERN ARIZONA

SCALE OF MILES 30 0 30



VICINITY MAP

SCALE OF MILES 0.25 0 0.25

GRAND CANYON NATIONAL PARK
WORLD HERITAGE SITE

SCALE OF MILES 5 0 5 10

SCALE OF KILOMETERS 5 0 5 10 15

BASIC DATA: LAND STATUS MAP 113/80,011 7/75; PARK MINI FOLDER 1989; REVISED & REDRAWN 2/91. UPDATED 11/98. SGS.

Registered Professional Engineer (Civil) CERTIFICATE NO. 77237 KATARZYNA ROSINSKI Date Signed 12-31-2025 ARIZONA U.S.A.
Expires 12-31-2028

A/E FIRM
JACOBS GOVERNMENT SERVICES COMPANY
GREENWOOD VILLAGE, CO

Mark	Sheet	REVISION	Date	Initial
1	MULT.	ADDENDUM NO. 1	6/1/26	KR

QUALITY DESIGN CERTIFICATION
- ☐ Prepared in Accordance with Design Development (Title I) Drawing No.
  OR
- ☐ Variance from Design Development (Title I) Approved by Superintendent on Date
  OR
- ☐ Construction Drawing Not Preceded by Design Development (Title I)

Project Manager Date

NATIONAL PARK SERVICE

100% DRAFT CONSTRUCTION DOCUMENTS

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
WWTP REPLACEMENT
LOCATION WITHIN PARK
SOUTH RIM VILLAGE
NAME OF PARK
GRAND CANYON NATIONAL PARK
REGION INTERMOUNTAIN | COUNTY COCONINO | STATE ARIZONA

DRAWING NO. 113 175376
PMIS/PKG NO. 257282
SHEET 1A OF 401

100% COMPLETE CONSTRUCTION DOCUMENTS

PLOT DATE: 06/02/2026 PLOT TIME: 11:40:37 AM SS6\V8i $FILEL$

SHEET	SUB SHEET	SHEET TITLE/DESCRIPTION
	01 - GENERAL	
1A	01G0001	COVER SHEET
2A	01G0002	INDEX OF DRAWINGS
3A	01G0003	INDEX OF DRAWINGS
4	01G0005	ABBREVIATIONS
5	01G0010	LEGEND
6	01C0001	CIVIL LEGEND
7	01N0001	INSTRUMENTATION AND CONTROL LEGEND
8	01N0002	INSTRUMENTATION AND CONTROL LEGEND
9	01S0001	STRUCTURAL GENERAL NOTES
10	01S0002	STRUCTURAL GENERAL NOTES
11	01S0003	STRUCTURAL GENERAL NOTES
12	01S5001	STRUCTURAL GENERAL BEAM REINFORCEMENT
13	01S5002	STRUCTURAL GENERAL COLUMN REINFORCEMENT
14	01S5003	STRUCTURAL GENERAL STEEL DETAILS
15	01A0001	ARCHITECTURAL NOTES, MATERIAL SYMBOLS, AND LEGEND
16A	01A0010	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLAN ADMINISTRATION BUILDING
17A	01A0012	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLAN MAINTENANCE BUILDING
18A	01A0020	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLAN HEADWORKS
19A	01A0032	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLANS PROCESS BUILDING
20A	01A0080	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLANS DIGESTER FACILITY
21	01D0001	PROCESS LEGEND
22	01M0001	HVAC LEGEND
23	01M6001	HVAC CONTROL DIAGRAM
24	01M6002	HVAC CONTROL DIAGRAM
25	01M6003	HVAC CONTROL DIAGRAM
26	01M6004	HVAC CONTROL DIAGRAM
27	01M6005	HVAC CONTROL DIAGRAM
28	01M6006	HVAC CONTROL DIAGRAM
29	01M6007	HVAC CONTROL DIAGRAM
30	01M6008	HVAC CONTROL DIAGRAM
31	01P0001	PLUMBING LEGEND
32	01P6001	PLUMBING CONTROL DIAGRAM
33	01P6002	PLUMBING CONTROL DIAGRAM
34	01E0001	ELECTRICAL LEGEND
35	01E0002	ELECTRICAL LEGEND
36	01G0100	LIQUID PROCESS FLOW DIAGRAM
37	01G0110	RESIDUALS PROCESS FLOW DIAGRAM
38	01G0200	HYDRAULIC PROFILE
39	01G0201	HYDRAULIC PROFILE
40	01G0250	AREA CLASSIFICATION AND MATERIALS SELECTION TABLE
41	01G0251	AREA CLASSIFICATION AND MATERIALS SELECTION TABLE
42	01G0260	POWER ACTUATED VALVE SCHEDULE
43	01G0261	SELF REGULATED VALVE SCHEDULE
44	01G0300	PIPING SCHEDULE
45	01G0301	PIPING SCHEDULE
46	01G0302	PIPING SCHEDULE
47	01G0400	DESIGN CRITERIA
48	01G0401	DESIGN CRITERIA
	06 - CIVIL	
49	06X1000	DEMOLITION PLAN - OVERALL
50	06X1001	DEMOLITION PLAN - PHASE 1
51	06X1002	DEMOLITION PLAN - PHASE 2
52	06X1003	DEMOLITION PLAN - EXISTING UTILITIES
53	06X1101	DEMOLITION 90 - CONTROL BUILDING LOWER FLOOR PLAN
54	06X1102	DEMOLITION 90 - CONTROL BUILDING GROUND FLOOR PLAN
55	06X1103	DEMOLITION 90 - CONTROL BUILDING SECTIONS AND DETAILS
56	06X1104	DEMOLITION 91 - PRETREATMENT BLDG LOWER LEVEL PLAN
57	06X1105	DEMOLITION 91 - PRETREATMENT BLDG SECTION E-W
58	06X1106	DEMOLITION 91 - PRETREATMENT BLDG SECTION N-S
59	06X1107	DEMOLITION 91 - PRETREATMENT BLDG TUNNEL PLANS
60	06X1108	DEMOLITION 92B - AERATION BASINS SECTIONS N-S
61	06X1109	DEMOLITION 92A - AERATION TANKS PLAN AND SECTION
62	06X1110	DEMOLITION 92A - AERATION TANKS SECTIONS AND DETAILS
63	06X1111	DEMOLITION 92B - AERATION BASIN PLAN
64	06X1112	DEMOLITION 92B - AERATION BASINS SECTIONS E-W
65	06X1113	DEMOLITION 93 - FINAL SED. TANK PLAN, SECTIONS & DETAILS
66	06X1114	DEMOLITION 94 - SECONDARY CLARIFIER PLAN AND DETAILS
67	06X1115	DEMOLITION 94 - SECONDARY CLARIFIER SECTIONS
68	06X1116	DEMOLITION 96 - AEROBIC DIG. TANKS PLAN
69	06X1117	DEMOLITION 96 - AEROBIC DIG. TANKS SECTIONS AND DETAILS
70	06X1118	DEMOLITION 97 - SLUDGE DRYING BEDS SITE AND GRADING PLAN
71	06X1119	DEMOLITION 97 - SLUDGE DRYING BEDS SECTIONS AND DETAILS
72	06X1120	DEMOLITION 98/99 - BACKWASH POND PIPING AND GRADING
73	06X1121	DEMOLITION 98 - RECLAMATION PLANT CLEARWELL PLAN
74	06X1122	DEMOLITION 98 - RECLAMATION PLANT GALLERY PLAN
75	06X1123	DEMOLITION 98 - RECLAMATION PLANT SECTION E-W
76	06X1124	DEMOLITION 98 - RECLAMATION PLANT SECTION N-S
77	06C1000	EXISTING SITE PLAN
78	06C2000	SITE PLAN - OVERALL
79	06C2001	SITE PLAN - AREA 1
80	06C2002	SITE PLAN - AREA 2
81	06C2003	SITE PLAN - AREA 3
82	06C2004	SITE PLAN - AREA 4
83	06C2020	COORDINATE TABLES
84	06C2100	TESC PLAN PRECONSTRUCTION
85	06C2101	TESC PLAN PHASE 1
86	06C2102	TESC PLAN PHASE 2
87	06C2103	TESC PLAN PERMANENT STABILIZATION
88	06C2400	GRADING PLAN - OVERALL
89	06C2401	GRADING PLAN - AREA 1
90	06C2402	GRADING PLAN - AREA 2
91	06C2403	GRADING PLAN - AREA 3
92	06C2404	GRADING PLAN - AREA 4
93	06C3001	CROSS SECTIONS
94	06C3002	CROSS SECTIONS
95	06L2000	LANDSCAPE PLAN - OVERALL
96	06L2001	LANDSCAPE PLAN - AREA 1
97	06L5001	LANDSCAPE SCHEDULE NOTES AND DETAILS
98	06I2001	IRRIGATION PLAN - AREA 1
99	06I5001	IRRIGATION DETAILS

SHEET	SUB SHEET	SHEET TITLE/DESCRIPTION
	07 - YARD PIPING	
100	07Y1000	EXISTING UTILITIES PLAN - OVERALL
101	07Y2000	PLAN - OVERALL
102	07Y2001	PLAN - AREA 1
103	07Y2002	PLAN - AREA 2
104	07Y2003	PLAN - AREA 3
105	07Y2004	PLAN - AREA 4
106	07Y3001	PIPE PROFILES
107	07Y3002	PIPE PROFILE
108	07Y3003	PIPE PROFILE
109	07Y3004	SECTIONS
110	07Y4001	ENLARGED PLAN
111	07Y5001	INFLUENT MANHOLE DETAIL
112	07Y5002	DETAILS
	08 - SITE ELECTRICAL	
113	08E2000	PLAN - OVERALL
114	08E2001	PLAN - AREA 1
115	08E2002	PLAN - AREA 2
116	08E2003	PLAN - AREA 3
117	08E2004	PLAN - AREA 4
118	08E6001	LUMINAIRE SCHEDULE
119	08E6002	LUMINAIRE SCHEDULE
120	08E7001	DUCTBANK SCHEDULE
121	08E7002	DUCTBANK SCHEDULE
122	08E7003	DUCTBANK SCHEDULE
123	08E7004	DUCTBANK SCHEDULE
124	08E7100	MOTOR CONTROL DIAGRAMS
125	08E7101	MOTOR CONTROL DIAGRAMS
126	08E7102	MOTOR CONTROL DIAGRAMS
127	08E7103	MOTOR CONTROL DIAGRAM
128	08E7104	MOTOR CONTROL DIAGRAMS
129	08E7105	MOTOR CONTROL DIAGRAM
130	08E7106	MOTOR CONTROL DIAGRAM
131	08E7110	EXTERIOR LIGHTING CONTROL DIAGRAM
	09 - INSTRUMENTATION AND CONTROL	
132	09N0001	COMMUNICATION FIBER BACKBONE
133	09N0002	COMMUNICATION NETWORK DIAGRAM
134	09N0003	COMMUNICATION NETWORK DIAGRAM
135	09N0004	COMMUNICATION NETWORK DIAGRAM
136	09N0005	COMMUNICATION NETWORK DIAGRAM
137	09N0006	COMMUNICATION NETWORK DIAGRAM
138	09N0007	COMMUNICATION NETWORK DIAGRAM
139	09N0040	NETWORK ARCHITECTURE DRAWING
140	09N0100	FACILITY 10 ADMIN BUILDING NETWORK INTERFACE PANELS
141	09N0101	FACILITY 20 HEADWORKS LCP-2001 CONTROL PANEL LAYOUT
142	09N0102	FACILITY 20 HEADWORKS LCP-2001 CONTROL PANEL LAYOUT
143	09N0103	FACILITY 80 DIGESTION LCP-8001 CONTROL PANEL LAYOUT
144	09N0104	FACILITY 12 MAINTENANCE BUILDING NIP-1201 NETWORK INTERFACE PANEL
145	09N0801	GENERATOR P&ID
146	09N1801	SEPTAGE RECEIVING P&ID
147	09N2001	INFLUENT SCREENING P&ID
148	09N2002	GRIT BASIN P&ID
149	09N2003	GRIT WASHING AND DEWATERING P&ID
150	09N2004	FINE SCREENING P&ID
151	09N2005	HEADWORKS UTILITIES P&ID
152	09N2201	ODOR CONTROL P&ID
153	09N2501	EQUALIZATION BASIN AND TANK DRAIN PUMP STATION P&ID
154	09N2502	BIOREACTORS P&ID
155	09N2503	MIXED LIQUOR SPLITTER WAS PUMPS P&ID
156	09N3201	MEMBRANE SYSTEM P&ID
157	09N3202	MBR PERMEATE PUMPS P&ID
158	09N3203	MEMBRANE AIR SCOUR BLOWERS P&ID
159	09N3204	DISINFECTION AND UV EFFLUENT BOOSTER PUMPS P&ID
160	09N3205	MEMBRANE CLEANING SODIUM HYPOCHLORITE PUMPS P&ID
161	09N3206	SODIUM HYPOCHLORITE PUMPS P&ID
162	09N3207	MEMBRANE CLEANING CITRIC ACID PUMPS P&ID
163	09N3208	SUPPLEMENTAL CARBON PUMPS P&ID
164	09N3209	MAGNESIUM HYDROXIDE PUMPS P&ID
165	09N3210	AERATION BLOWERS P&ID
166	09N3211	MEMBRANE AIR COMPRESSOR P&ID
167	09N3212	RECLAIMED WATER AND NONPOTABLE WATER PUMPS P&ID
168	09N3213	PROCESS UTILITIES P&ID
169	09N8001	AEROBIC DIGESTER BLOWERS P&ID
170	09N8002	DIGESTER SYSTEM P&ID
171	09N8003	DIGESTER UTILITIES P&ID
172	09N8501	DRYING BED P&ID
173	09N8601	PLANT DRAIN PUMP STATION P&ID
174	09N8701	AERATED COMPOST P&ID

SHEET	SUB SHEET	SHEET TITLE/DESCRIPTION
	10 - ADMINISTRATION BUILDING	
175	10S1030	STRUCTURAL FOUNDATION/FLOOR PLAN
176	10S1040	STRUCTURAL ROOF PLAN
177	10S3001	STRUCTURAL SECTION
178	10S3002	STRUCTURAL SECTIONS
179	10S3003	STRUCTURAL SECTIONS
180	10A1030	ARCHITECTURAL FLOOR PLAN
181	10A1039	ARCHITECTURAL REFLECTED CEILING PLAN
182	10A1040	ARCHITECTURAL ROOF PLAN
183	10A2001	ARCHITECTURAL ELEVATIONS
184	10A2002	ARCHITECTURAL ELEVATIONS
185	10A3001	ARCHITECTURAL SECTIONS
186	10A4001	ARCHITECTURAL ENLARGED PLANS
187	10A4002	ARCHITECTURAL INTERIOR ELEVATIONS
188	10A4003	ARCHITECTURAL ENLARGED PLANS
189	10A4004	ARCHITECTURAL INTERIOR ELEVATIONS
190A	10A6001	ARCHITECTURAL SCHEDULES
191	10A6002	ARCHITECTURAL SCHEDULES
192	10M1030	HVAC FLOOR PLAN
193	10P1020	PLUMBING UNDERFLOOR PLAN
194	10P1030	PLUMBING FLOOR PLAN
195	10P1040	PLUMBING ROOF PLAN
196	10P4001	PLUMBING ENLARGED PLANS
197	10P6001	PLUMBING RO WATER SYSTEM DIAGRAM
198	10P9001	PLUMBING ISOMETRIC
199	10P9002	PLUMBING ISOMETRIC
200A	10P9003	PLUMBING ISOMETRIC
201	10P9004	PLUMBING ISOMETRIC
202	10EP1030	ELECTRICAL POWER PLAN
203	10EL1030	ELECTRICAL LIGHTING PLAN
204	10E1040	ELECTRICAL ROOF PLAN
205	10E4001	ELECTRICAL POWER PLAN - ENLARGED
206	10E6001	ELECTRICAL PANELBOARD SCHEDULES
207	10E6002	ELECTRICAL PANELBOARD SCHEDULES
	12 - MAINTENANCE BUILDING	
208	12S1030	STRUCTURAL FOUNDATION/FLOOR PLAN
209	12S1040	STRUCTURAL ROOF PLAN
210	12S3001	STRUCTURAL SECTION
211	12S3002	STRUCTURAL SECTION
212	12S3003	STRUCTURAL SECTIONS
213	12A1030	ARCHITECTURAL FLOOR PLAN
214	12A1039	ARCHITECTURAL REFLECTED CEILING PLAN
215	12A1040	ARCHITECTURAL ROOF PLAN
216	12A2001	ARCHITECTURAL ELEVATIONS
217	12A2002	ARCHITECTURAL ELEVATIONS
218	12A3001	ARCHITECTURAL SECTIONS
219	12A4001	ARCHITECTURAL INTERIOR ELEVATIONS
220A	12A6001	ARCHITECTURAL SCHEDULES
221	12M1030	HVAC FLOOR PLAN
222	12M3001	HVAC SECTION
223	12P1020	PLUMBING BELOW GRADE PLAN
224	12P1030	PLUMBING FLOOR PLAN
225	12P1040	PLUMBING ROOF PLAN
226	12P9001	PLUMBING ISOMETRIC
227	12P9002	PLUMBING ISOMETRIC
228	12EP1030	ELECTRICAL POWER PLAN
229	12EL1030	ELECTRICAL LIGHTING PLAN
230	12E1040	ELECTRICAL ROOF PLAN
231	12E6001	ELECTRICAL PANELBOARD SCHEDULES
	18 - RECEIVING STATION	
232	18S1030	STRUCTURAL PLAN AND SECTION
233	18D1030	MECHANICAL PLAN, SECTION AND DETAIL
234	18E1030	ELECTRICAL PLAN

GRCA-257282

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

Registered Professional Engineer (Civil) CERTIFICATE NO. 77237 KATARZYNA ROSINSKI Date Signed 12-31-25 ARIZONA, U.S.A.

Kathy Rosinski

Expires 12-31-2026

A/E FIRM	JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO
DESIGNED:	R COWAN
CADD:	R COWAN
TECH. REVIEW:	K WEBSTER
DATE:	08/2025
SUB SHEET NO.	01G0002
TITLE OF SHEET	GENERAL INDEX OF DRAWINGS
	GRAND CANYON, SOUTH RIM
DRAWING NO.	113 175376
PMIS/PKG NO.	257282
SHEET	2A OF 49

100% COMPLETE CONSTRUCTION DOCUMENTS

PLOT DATE: 06\02\2026 PLOT TIME: 11:42:09 AM SS6\V8i $FILEL$

SHEET	SUB SHEET	SHEET TITLE/DESCRIPTION
	20 - HEADWORKS	
235	20S1020	STRUCTURAL LOWER LEVEL PLAN
236	20S1030	STRUCTURAL FLOOR PLAN
237	20S1040	STRUCTURAL ROOF FRAMING PLAN
238	20S3001	STRUCTURAL SECTIONS
239	20S3002	STRUCTURAL SECTION
240	20S3003	STRUCTURAL SECTIONS
241	20S3004	STRUCTURAL SECTIONS
242	20S3005	STRUCTURAL SECTIONS
243	20S4001	STRUCTURAL ENLARGED PLAN
244	20S4002	STRUCTURAL ENLARGED PLANS
245	20S4003	STRUCTURAL ENLARGED PLANS AND SECTION
246	20S5001	STRUCTURAL DETAILS
247	20S5010	STRUCTURAL STEEL DETAILS
248	20A1030	ARCHITECTURAL FLOOR PLAN
249	20A1040	ARCHITECTURAL ROOF PLAN
250	20A2001	ARCHITECTURAL ELEVATIONS
251	20A2002	ARCHITECTURAL ELEVATIONS
252	20A3001	ARCHITECTURAL SECTIONS
1 253A	20A6001	ARCHITECTURAL SCHEDULES
254	20D1030	MECHANICAL PLAN
255	20D3001	MECHANICAL SECTION
256	20D3002	MECHANICAL SECTIONS
257	20D3003	MECHANICAL SECTION
258	20D4001	MECHANICAL ENLARGED PLAN
259	20D4002	MECHANICAL ENLARGED PLANS AND SECTIONS
260	20D5001	MECHANICAL ISOMETRIC
261	20D5002	MECHANICAL ISOMETRIC
262	20D5003	MECHANICAL ISOMETRIC
263	20M1030	HVAC PLAN
264	20M3001	HVAC SECTIONS
265	20P1020	PLUMBING LOWER LEVEL PLAN
266	20P1030	PLUMBING PLAN
267	20P9001	PLUMBING ISOMETRIC
268	20EP1030	ELECTRICAL PROCESS PLAN
269	20EF1030	ELECTRICAL FACILITY PLAN
270	20E1040	ELECTRICAL ROOF PLAN
271	20E5001	ELECTRICAL ONE-LINE DIAGRAM 20-MCC-01
272	20E6001	ELECTRICAL PANELBOARD SCHEDULES
	22 - ODOR CONTROL	
273	22S1030	STRUCTURAL PLAN AND SECTION
274	22D1030	MECHANICAL PLAN
275	22D3001	MECHANICAL SECTIONS
276	22E1030	ELECTRICAL PLAN
	25 - PROCESS TANKS	
277	25S1020	STRUCTURAL LOWER LEVEL PLAN
278	25S1030	STRUCTURAL UPPER LEVEL PLAN
279	25S1040	STRUCTURAL MONORAIL FRAME PLAN
280	25S3001	STRUCTURAL SECTIONS
281	25S3002	STRUCTURAL SECTIONS
282	25S3003	STRUCTURAL SECTIONS
283	25S3004	STRUCTURAL SECTION
284	25S4001	STRUCTURAL ENLARGED PLANS
285	25S5001	STRUCTURAL DETAILS
286	25D1020	MECHANICAL LOWER PLAN
287	25D1030	MECHANICAL UPPER PLAN
288	25D3001	MECHANICAL SECTION
289	25D3002	MECHANICAL SECTIONS
290	25D3003	MECHANICAL SECTIONS
291	25D3004	MECHANICAL SECTIONS
292	25P1030	PLUMBING UPPER PLAN
293	25EP1020	ELECTRICAL LOWER PROCESS PLAN
294	25EP1030	ELECTRICAL UPPER PROCESS PLAN
295	25EF1030	ELECTRICAL UPPER FACILITY PLAN
	32 - PROCESS BUILDING	
296	32S1020	STRUCTURAL LOWER LEVEL PLAN
297	32S1030	STRUCTURAL MAIN LEVEL PLAN
298	32S1040	STRUCTURAL ROOF FRAMING PLAN
299	32S3001	STRUCTURAL SECTION
300	32S3002	STRUCTURAL SECTION
301	32S3003	STRUCTURAL SECTIONS
302	32S5001	STRUCTURAL BEAM REINFORCEMENT
303	32S5010	STRUCTURAL STEEL DETAILS
304	32A1020	ARCHITECTURAL LOWER LEVEL PLAN
305	32A1030	ARCHITECTURAL MAIN LEVEL PLAN
306	32A1040	ARCHITECTURAL ROOF PLAN
307	32A2001	ARCHITECTURAL ELEVATIONS
308	32A2002	ARCHITECTURAL ELEVATIONS
309	32A3001	ARCHITECTURAL SECTIONS
310	32A3002	ARCHITECTURAL SECTION
1 311A	32A6001	ARCHITECTURAL SCHEDULES
312	32D1020	MECHANICAL LOWER PLAN
313	32D1030	MECHANICAL UPPER PLAN
314	32D3001	MECHANICAL SECTIONS
315	32D3002	MECHANICAL SECTIONS
316	32D3003	MECHANICAL SECTIONS
317	32D3004	MECHANICAL SECTIONS
318	32D5001	MECHANICAL DETAILS
319	32M1020	HVAC LOWER LEVEL PLAN
320	32M1030	HVAC MAIN LEVEL PLAN
321	32M3001	HVAC SECTION
322	32M3002	HVAC SECTION
323	32P1010	PLUMBING BELOW SLAB PLAN
324	32P1020	PLUMBING LOWER LEVEL PLAN
325	32P1030	PLUMBING MAIN LEVEL PLAN
326	32P1040	PLUMBING ROOF PLAN
327	32P9001	PLUMBING ISOMETRIC
328	32P9002	PLUMBING ISOMETRIC
329	32FP1020	FIRE PROTECTION LOWER LEVEL PLAN
330	32FP1030	FIRE PROTECTION MAIN LEVEL PLAN
331	32EP1020	ELECTRICAL LOWER LEVEL PROCESS PLAN
332	32EP1030	ELECTRICAL MAIN LEVEL PROCESS PLAN
333	32EF1020	ELECTRICAL LOWER LEVEL FACILITY PLAN
334	32EF1030	ELECTRICAL MAIN LEVEL FACILITY PLAN
335	32E1040	ELECTRICAL ROOF PLAN
336	32E5001	ELECTRICAL ONE-LINE DIAGRAM 32-SWBD-01
337	32E5002	ELECTRICAL ONE-LINE DIAGRAM 32-MCC-01
338	32E6001	ELECTRICAL PANELBOARD SCHEDULES
339	32E6002	ELECTRICAL PANELBOARD SCHEDULES

SHEET	SUB SHEET	SHEET TITLE/DESCRIPTION
	70 - RECLAIMED WATER TANK	
340	70S1030	STRUCTURAL PLAN AND SECTION
341	70D1030	MECHANICAL PLAN
1 342A	70D3001	MECHANICAL SECTIONS
343	70EP1030	ELECTRICAL PROCESS PLAN
	80 - DIGESTER FACILITY	
344	80S1030	STRUCTURAL LOWER LEVEL PLAN
345	80S1040	STRUCTURAL INTERMEDIATE LEVEL PLAN
346	80S1050	STRUCTURAL UPPER LEVEL PLAN
347	80S3001	STRUCTURAL SECTIONS
348	80S3002	STRUCTURAL SECTIONS
349	80S4001	STRUCTURAL ENLARGED PLAN AND SECTIONS
350	80S5001	STRUCTURAL BEAM REINFORCEMENT
351	80A1030	ARCHITECTURAL LOWER LEVEL PLAN
352	80A1040	ARCHITECTURAL UPPER LEVEL PLAN
353	80A1050	ARCHITECTURAL ROOF PLAN
354	80A2001	ARCHITECTURAL ELEVATIONS
355	80A2002	ARCHITECTURAL ELEVATIONS
356	80A3001	ARCHITECTURAL SECTIONS
1 357A	80A6001	ARCHITECTURAL SCHEDULES
358	80D1030	MECHANICAL LOWER LEVEL PLAN
359	80D1040	MECHANICAL UPPER LEVEL PLAN
360	80D3001	MECHANICAL SECTIONS
361	80D3002	MECHANICAL SECTIONS
362	80D3003	MECHANICAL SECTION
363	80M1030	HVAC LOWER LEVEL PLAN
364	80M1040	HVAC UPPER LEVEL PLAN
365	80M1050	HVAC ROOF PLAN
366	80M3001	HVAC SECTION
367	80P1020	PLUMBING UNDER FLOOR PLAN
368	80P1030	PLUMBING LOWER LEVEL PLAN
369	80P1040	PLUMBING UPPER LEVEL PLAN
370	80P1050	PLUMBING ROOF PLAN
371	80P9001	PLUMBING ISOMETRICS
372	80EP1030	ELECTRICAL LOWER LEVEL PROCESS PLAN
373	80EP1040	ELECTRICAL UPPER LEVEL PROCESS PLAN
374	80EP1050	ELECTRICAL ROOF LEVEL PROCESS PLAN
375	80EF1030	ELECTRICAL LOWER LEVEL FACILITY PLAN
376	80EF1040	ELECTRICAL UPPER LEVEL FACILITY PLAN
377	80EF1050	ELECTRICAL ROOF LEVEL FACILITY PLAN
378	80E5001	ELECTRICAL ONE-LINE DIAGRAM 80-MCC-01
379	80E6001	ELECTRICAL PANELBOARD SCHEDULES
	85 - DRYING BEDS	
380	85S1030	STRUCTURAL PLAN - OVERALL
381	85S1031	STRUCTURAL PLAN - AREA A
382	85S1032	STRUCTURAL PLAN - AREA B
383	85S3001	STRUCTURAL OVERALL SECTION
384	85S3002	STRUCTURAL SECTIONS
385	85S4001	STRUCTURAL ENGLARGED PLAN
386	85S5001	STRUCTURAL DETAILS
387	85D1030	MECHANICAL PLAN - OVERALL
388	85D4001	MECHANICAL ENLARGED PLAN AND SECTIONS
	86 - PLANT DRAIN PUMP STATION	
389	86D1030	MECHANICAL PLAN AND SECTION
390	86E1030	ELECTRICAL PLAN
	87 - COMPOST FACILITY	
391	87S1030	STRUCTURAL FOUNDATION PLAN AND DETAIL
392	87S1040	STRUCTURAL ROOF PLAN
393	87S3001	STRUCTURAL SECTION
394	87S3002	STRUCTURAL SECTION
395	87S5001	STRUCTURAL DETAILS
396	87A1040	ARCHITECTURAL ROOF PLAN AND SCHEDULES
397	87D1030	MECHANICAL PLAN, SECTIONS AND DETAIL
398	87E1030	ELECTRICAL POWER PLAN
	88 - COVERED STORAGE	
399	88S1030	STRUCTURAL PLAN AND SECTION
400	88S1040	STRUCTURAL ROOF PLAN
401	88A1040	ARCHITECTURAL ROOF PLAN AND SCHEDULES

GRCA-257282

PLOT DATE: 06/02/2026 PLOT TIME: 11:43:56 AM SS6IV8i $FILEL$

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

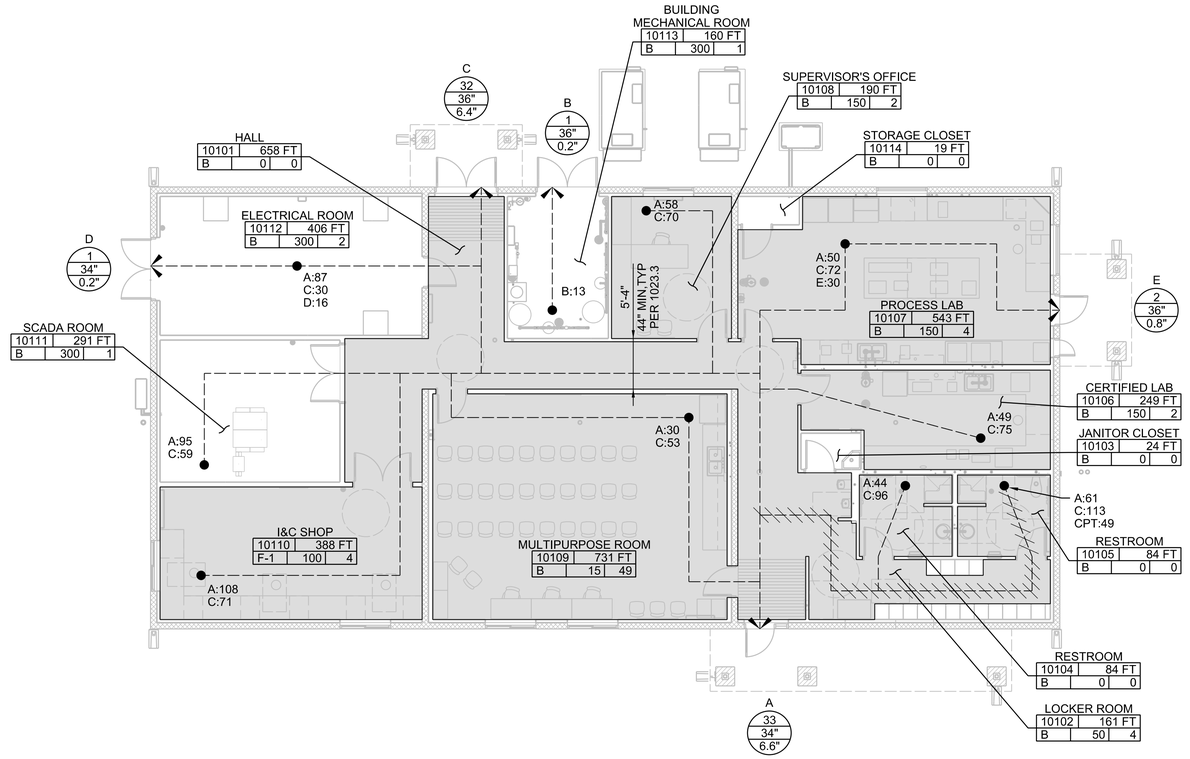
Registered Professional Engineer (Civil)
CERTIFICATE NO. 77237
KATARZYNA ROSINSKI
Date Signed 5-29-26
ARIZONA, U.S.A.
Expires 12-31-2026

A/E FIRM	JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO
DESIGNED:	R COWAN
CADD:	R COWAN
TECH. REVIEW:	K WEBSTER
DATE:	08/2025
SUB SHEET NO.	01G0003
TITLE OF SHEET	GENERAL INDEX OF DRAWINGS GRAND CANYON, SOUTH RIM
DRAWING NO.	113 175376
PMIS/PKG NO.	257282
SHEET	3A OF 49

100% COMPLETE CONSTRUCTION DOCUMENTS

CODE DATA TABLE

2021 INTERNATIONAL BUILDING CODE		
FACILITY NAME AND NUMBER: ADMINISTRATION BUILDING **(10)**		
PROJECT DESCRIPTION		
SINGLE-STORY BUILDING WITH CONCRETE FOUNDATION, CMU WALLS AND STANDING-SEAM METAL ROOFING SYSTEM, HOUSING OFFICES, LABORATORIES AND NON-PROCESS SPACES.		
OCCUPANCY GROUP [IBC, SEC. 304.1, 306.2]	**SPACE**	**OCCUPANCY GROUP**
	OFFICES, LABS, AND SUPPORT SPACES	B
	I&C SHOP, SCADA ROOM	F-1
HAZARDOUS MATERIALS		N/A
TYPE	**HAZARD**	**ALLOWABLE STORAGE / ACTUAL STORAGE**
INDOOR STORAGE		
N/A	N/A	CHEMICALS USED IN LAB ARE BELOW EXEMPT AMOUNTS
INCIDENTAL ACCESSORY USE SEPARATIONS		N/A
OCCUPANCY SEPARATION/FIRE RATING: DESIGNED AS NONSEPARATED OCCUPANCIES PER SECTION IBC 508.3		NO OCCUPANCY SEPARATION WALLS
CONSTRUCTION TYPE [IBC, SEC. 602.2]		TYPE II-B
GENERAL BUILDING LIMITATIONS		
MAXIMUM STORIES/HEIGHT ALLOWED [IBC TABLES 504.3 & 504.4]		
	B (NS DESIGNATION)	3 STORIES/ 55 FT
	F-1 (NS DESIGNATION)	2 STORIES/ 55 FT (MOST RESTRICTIVE GOVERNS)
ACTUAL NUMBER OF STORIES/HEIGHT ABOVE GROUND PLANE		
	B (NS DESIGNATION)	1 STORY/ 19 FT 0 IN (TOP OF RIDGE)
	F-1 (NS DESIGNATION)	1 STORY/ 19 FT 0 IN (TOP OF RIDGE)
MAXIMUM AREA ALLOWED PER FLOOR [IBC TABLE 506.2]		
	B (NS DESIGNATION)	23,000 SF
	F-1 (NS DESIGNATION)	15,500 SF (MOST RESTRICTIVE GOVERNS)
ACTUAL AREA PER FLOOR		
	B (NS DESIGNATION)	3,556 SF
	F-1 (NS DESIGNATION)	388 SF
	TOTAL FOR BULDING:	3,944 SF
FIRE RESISTANCE OF BUILDING ELEMENTS [IBC, TABLE 601]		
REQUIRED RATINGS	UNRATED FOR CONSTRUCTION TYPE II-B	
EXTERIOR OPENING PROTECTION [IBC, TABLE 705.5]		
ACTUAL FIRE SEPARATION DISTANCE	ALL SIDE: 10+FT	
REQUIRED WALL RATING	UNRATED WHEN OVER 10 FEET FIRE SEPARATION	
ACTUAL WALL RATING	UNRATED ALL WALLS	
FIRE PROTECTION SYSTEMS [IBC, CHAPTER 9 AND NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS]		
AUTOMATIC SPRINKLER SYSTEMS [IBC SEC 903]		NOT REQUIRED, NOT PROVIDED
ALTERNATIVE AUTOMATIC FIRE EXTINGUISHER SYSTEM [IBC, SEC. 904]		N/A
FIRE EXTINGUISHERS [IBC, SEC 906.1]	HAND HELD, MULTIPURPOSE FIRE EXTINGUISHERS THROUGHOUT BUILDING AT 75 FOOT MAX SPACING	
FIRE ALARM SYSTEM [IBC, CHAPTER 9]		PROVIDED, REFER TO ELECTRICAL DWG'S
MEANS OF EGRESS [IBC, CHAPTER 10]		
OCCUPANT LOAD FACTOR [IBC, TABLE 1004.5]		
	BUSINESS AREAS	FACTOR: 150 SF (GROSS)
	ASSEMBLY - UNCONCENTRATED	FACTOR: 15 SF (NET)
	LOCKER AREA	FACTOR: 50 SF (GROSS)
	ACCESSORY STORAGE/ MECHANICAL EQUIPMENT ROOM	FACTOR: 300 (GROSS)
	INDUSTRIAL AREA	FACTOR: 100 (GROSS)
	B OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
	F-1 OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
ALLOWABLE TRAVEL DISTANCE [IBC, TABLE 1017.2]		
	B	200 FEET (NON-SPRINKLERED)
	F-1	200 FEET (NON-SPRINKLERED)
ACTUAL TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
COMMON PATH OF TRAVEL DISTANCE [IBC 1006.2.1]		B = 100 FT (OCCUPANT LOAD OF 30 OR LESS), B = 75 FT (OCCUPANT LOAD OVER 30), F = 75 FT (NON-SPRINKLERED)
ACTUAL COMMON PATH OF TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
EXITS REQUIRED [IBC 1007]	TWO EXITS REQUIRED IF OCC LOAD EXCEEDS 49 OR CPT EXCEEDS 75 FT.	EXITS PROVIDED
GROUND LEVEL	TWO	TWO; SEE LIFE SAFETY PLAN
ACCESSIBILITY	**ARCHITECTURAL BARRIERS ACT ACCESSIBILITY STANDARDS (ABAAS)**	
THE HALL, MULTIPURPOSE ROOM, LOCKER AREA, RESTROOMS, LABS, SUPERVISOR'S OFFICE AND I&C SHOP WILL BE ACCESSIBLE, SEE LIFE SAFETY PLAN.		
ENERGY CODE	**2021 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C402.1.3**	
ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 5B (COCONINO COUNTY)		
ELEMENT	(PRESCRIPTIVE METHOD)	PROPOSED DESIGN
ROOF (INSULATION ENTIRELY ABOVE)	MIN R-VALUE OF 30 CONTINUOUS INSULATION	R-35 CONTINUOUS INSULATION
WALLS (MASS)	MIN R-VALUE OF 11.4 CONTINUOUS INSULATION (MIN U-0.090)	R-9 CONTINUOUS INSULATION AND R-13 BATT INSULATION (U-0.061 PER COMCHECK)
FLOOR (SLAB ON GRADE-UNHEATED)	MIN R-VALUE OF 15 FOR 24" BELOW GRADE	R-15 FOR 24" BELOW GRADE
EXTERIOR DOORS (SWINGING)	MAX U-FACTOR OF 0.37	R-2.7
VERICAL FENESTRATION (FIXED)	MAX U-FACTOR OF 0.34, MAX SHGC OF 0.61 AND MIN VT OF 0.42	U-0.24, SHGC 0.42, AND VT OF 0.40
VERTICAL FENESTRATION (OPERABLE)	MAX U-FACTOR OF 0.45, MAX SHGC OF 0.53 AND MIN VT OF 0.37	U-0.24, SHGC 0.42, AND VT OF 0.40
VERTICAL FENESTRATION (GLAZED DOORS)	MAX U-FACTOR OF 0.63, MAX SHGC OF 0.53 AND MIN VT OF 0.37	U-0.36, SHGC 0.23, AND VT OF 0.40
AIR BARRIER	REQUIRED	PROVIDED
PLUMBING FIXTURES	**2021 INTERNATIONAL BUILDING CODE CHAPTER 29**	
OCCUPANT LOAD PER LIFE SAFETY PLAN = 69 OCCUPANTS		
REQUIRED: ONE WATER CLOSET FOR MALE, ONE WATER CLOSET FOR FEMALE, ONE LAV, ONE DRINKING FOUNTAIN, ONE SERVICE SINK, ZERO SHOWERS.		
PROVIDED: 1 WATER CLOSET, 1 LAV, 1 SHOWER FOR FEMALE, 1 WATER CLOSETS, 1 LAV, 1 SHOWER FOR MALE, 1 SERVICE SINK, 1 DRINKING FOUNTAIN, ONE KITCHEN SINK, TWO LAB SINKS.		



LIFE SAFETY PLAN - FACILITY 10 ADMINISTRATION BUILDING

1/8"=1'-0"

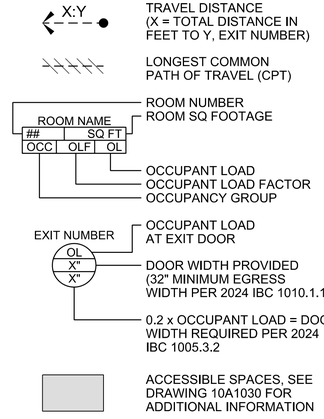
GENERAL SHEET NOTES

A. FOR GENERAL ARCHITECTURAL NOTES, MATERIAL SYMBOLS, LEGEND AND ABBREVIATIONS, SEE DRAWING 01A0001.

B. FOR ABBREVIATIONS, SEE DRAWING 01G0005.

C. FOR FIRE EXTINGUISHER LOCATIONS. SEE DRAWING 10A1030.

LIFE SAFETY PLAN LEGEND



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1/8"=1'-0"

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

REGISTERED ARCHITECT
CERTIFICATE
93685
MORGAN SHOEMAKER
Date Signed 06/05/2026
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM	JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO
DESIGNED:	M SHOEMAKER
CADD:	M COLLINS
TECH. REVIEW:	G KIRSTEN
DATE:	08/2025
SUB SHEET NO.	01A0010
TITLE OF SHEET	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLAN ADMINISTRATION BUILDING GRAND CANYON, SOUTH RIM
DRAWING NO.	113 175376
PMIS/PKG NO.	257282
SHEET	16A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

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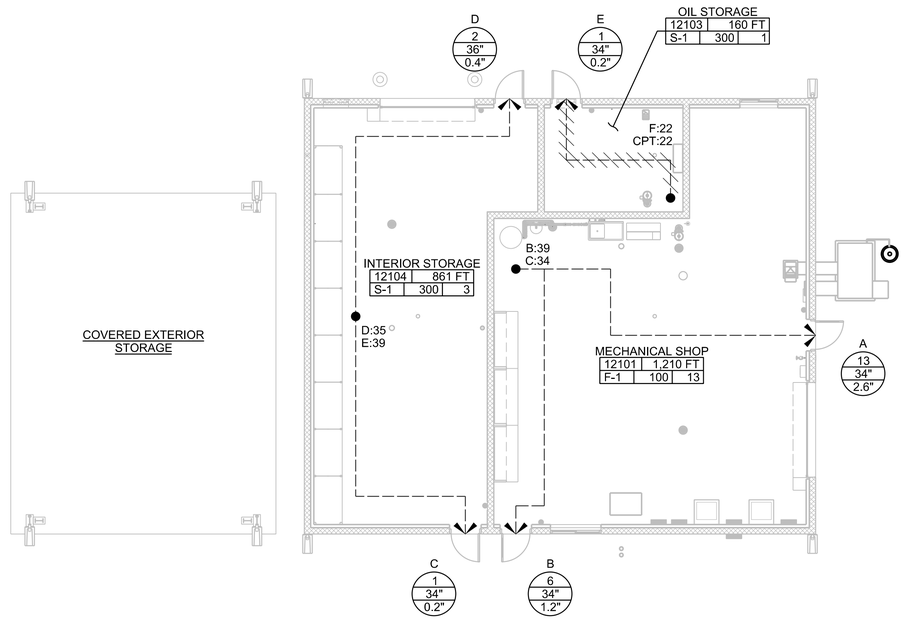
PLOT TIME: 12:18:01 PM
PLOT DATE: 06\05\2026

CODE DATA TABLE

2021 INTERNATIONAL BUILDING CODE		
FACILITY NAME AND NUMBER: MAINTENANCE BUILDING **(12)**		
PROJECT DESCRIPTION		
SINGLE-STORY BUILDING WITH CONCRETE FOUNDATION, CMU WALLS AND STANDING-SEAM METAL ROOFING SYSTEM, HOUSING A SHOP, AND STORAGE SPACES.		
OCCUPANCY GROUP [IBC, SEC. 306.2, 311.2]	**SPACE**	**OCCUPANCY GROUP**
	SHOP	F-1
	INTERIOR STORAGE	S-1
HAZARDOUS MATERIALS		
TYPE	**HAZARD**	**ALLOWABLE STORAGE / ACTUAL STORAGE**
INDOOR STORAGE		
OILS AND GREASES	FLAMMABLE LIQUID	120 GALLONS/QUANTITIES BELOW MAXIMUM ALLOWABLE WITHOUT TRIGGERING H OCCUPANCY
OUTDOOR STORAGE		
N/A	N/A	N/A
INCIDENTAL ACCESSORY USE SEPARATIONS		N/A
OCCUPANCY SEPARATION/FIRE RATING: DESIGNED AS NONSEPARATED OCCUPANCIES PER SECTION IBC 508.3		F-1 TO S-1 = 0 HR, NO OCCUPANCY SEPARATION WALLS
CONSTRUCTION TYPE [IBC, SEC. 602.2]		TYPE II-B
GENERAL BUILDING LIMITATIONS		
MAXIMUM STORIES/HEIGHT ALLOWED [IBC TABLES 504.3 & 504.4]		
	F-1 (NS DESIGNATION)	2 STORIES/ 55 FT
	S-1 (NS DESIGNATION)	2 STORIES/ 55 FT
ACTUAL NUMBER OF STORIES/HEIGHT ABOVE GROUND PLANE		
	F-1 (NS DESIGNATION)	1 STORY/ 17 FT 3 IN (TOP OF RIDGE)
	S-1 (NS DESIGNATION)	1 STORY/ 17 FT 3 IN (TOP OF RIDGE)
MAXIMUM AREA ALLOWED PER FLOOR [IBC TABLE 506.2]		
	F-1 (NS DESIGNATION)	15,500 SF (MOST RESTRICTIVE GOVERNS)
	S-1 (NS DESIGNATION)	17,500 SF
ACTUAL AREA PER FLOOR		
	F-1 (NS DESIGNATION)	1,178 SF
	S-1 (NS DESIGNATION)	2,029 SF
	TOTAL FOR BUILDING:	3,029 SF (DOES NOT INCLUDE WEATHER PROTECTED EXTERIOR STORAGE)
FIRE RESISTANCE OF BUILDING ELEMENTS [IBC, TABLE 601]		
REQUIRED RATINGS	UNRATED FOR CONSTRUCTION TYPE II-B	
EXTERIOR OPENING PROTECTION [IBC, TABLE 705.5]		
ACTUAL FIRE SEPARATION DISTANCE	ALL SIDES: 30+FT	
REQUIRED WALL RATING	UNRATED WHEN OVER 10 FEET FIRE SEPARATION	
ACTUAL WALL RATING	ALL WALLS: UNRATED	
FIRE PROTECTION SYSTEMS [IBC, CHAPTER 9 AND NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS]		
AUTOMATIC SPRINKLER SYSTEMS [IBC SEC 903]		NOT REQUIRED, NOT PROVIDED
ALTERNATIVE AUTOMATIC FIRE EXTINGUISHER SYSTEM [IBC, SEC. 904]		N/A
FIRE EXTINGUISHERS [IBC, SEC 906.1]	HAND HELD, MULTIPURPOSE FIRE EXTINGUISHERS THROUGHOUT BUILDING AT 75 FOOT MAX SPACING	
FIRE ALARM SYSTEM [IBC, CHAPTER 9]		PROVIDED, REFER TO ELECTRICAL DWG'S
MEANS OF EGRESS [IBC, CHAPTER 10]		
OCCUPANT LOAD FACTOR [IBC, TABLE 1004.5]		
	ACCESSORY STORAGE/ MECHANICAL EQUIPMENT ROOM	FACTOR: 300 (GROSS)
	INDUSTRIAL AREA	FACTOR: 100 (GROSS)
	F-1 OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
	S-1 OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
ALLOWABLE TRAVEL DISTANCE [IBC, TABLE 1017.2]		
	F-1	200 FEET (NON-SPRINKLERED)
	S-1	200 FEET (NON-SPRINKLERED)
ACTUAL TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
COMMON PATH OF TRAVEL DISTANCE [IBC 1006.2.1]		F-1 = 75 FT, S-1 = 75 FT (NON-SPRINKLERED)
ACTUAL COMMON PATH OF TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
EXITS REQUIRED [IBC 1015.1]	TWO EXITS REQUIRED IF OCC LOAD EXCEEDS 49 OR CPT EXCEEDS 75 FT.	EXITS PROVIDED
GROUND LEVEL	FOUR	FIVE; SEE LIFE SAFETY PLAN
ACCESSIBILITY	**ARCHITECTURAL BARRIERS ACT (ABA)**	
SHOP SPACES IS FOR SERVICE PERSONNEL FOR EQUIPMENT REPAIR AND, STORAGE SPACES ARE FOR MACHINERY AND PART STORAGE AND EXEMPT PER ABA F203.5.		
ENERGY CODE	**2021 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C402.1.3**	
ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 5B (COCONINO COUNTY)		
ELEMENT	(PRESCRIPTIVE METHOD)	PROPOSED DESIGN
ROOF (INSULATION ENTIRELY ABOVE)	MIN R-30 CI	R-36 CONTINUOUS INSULATION
WALLS (MASS)	MIN R-11.4 CI(MIN U-0.090)	R-9 CONTINUOUS INSULATION AND R-13 BATT INSULATION (U-0.090 PER COMCHECK)
FLOOR (SLAB ON GRADE- UNHEATED)	MIN R-15 FOR 24" BELOW GRADE	R-15 FOR 24" BELOW GRADE
EXTERIOR DOORS (SWINGING)	MAX U-FACTOR OF 0.37	R-2.7
EXTERIOR DOORS (NON-SWINGING)	MAX U-FACTOR OF 0.31	R-2.7
AIR BARRIER	REQUIRED	PROVIDED
PLUMBING FIXTURES	**2021 INTERNATIONAL BUILDING CODE CHAPTER 29**	
OCCUPANT LOAD PER LIFE SAFETY PLAN = 15 OCCUPANTS		
REQUIRED: FOR MALE ONE WATER CLOSET AND ONE LAV, FOR FEMALE ONE WATER CLOSET AND ONE LAV, ONE SERVICE SINK (COUNT IS FACILITY AVERAGE).		
PROVIDED: ONE UTILITY SINK, PROVIDED AT THE ADMINISTRATION BUILDING: WATER CLOSETS, LAVS, AND DRINKING FOUNTAIN , A WAIVER IS REQUIRED FOR THE REDUCTION IN TOTAL PROJECT PLUMBING COUNT.		

1 2021 INTERNATIONAL BUILDING CODE CHAPTER 29



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LIFE SAFETY PLAN - FACILITY 12 MAINTENANCE BUILDING

1/8"=1'-0"

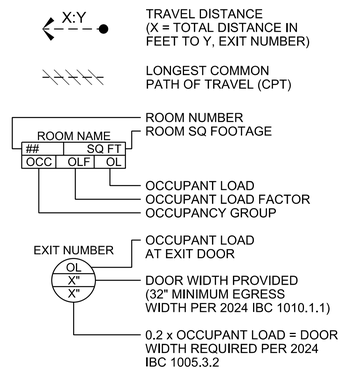
GENERAL SHEET NOTES

A. FOR GENERAL ARCHITECTURAL NOTES, MATERIAL SYMBOLS, LEGEND, ABBREVIATIONS AND WALL TYPES, SEE DRAWING 01A0001.

B. FOR ABBREVIATIONS, SEE DRAWING 01G0005.

C. FOR FIRE EXTINGUISHER LOCATIONS, SEE DRAWING 12A1030.

LIFE SAFETY PLAN LEGEND



0 8 16 24

1/8"=1'-0"

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

REGISTERED ARCHITECT
CERTIFICATE
86680
MORGAN SHOEMAKER
Date Signed
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM: JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO	DESIGNED: M SHOEMAKER CADD: M COLLINS TECH. REVIEW: G KIRSTEN DATE: 08/2025	SUB SHEET NO. 01A0012	TITLE OF SHEET: ARCHITECTURAL CODE DATA AND LIFE SAFETY PLAN MAINTENANCE BUILDING GRAND CANYON, SOUTH RIM	DRAWING NO. 113 175376 PMIS/PKG NO. 257282 SHEET 17A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

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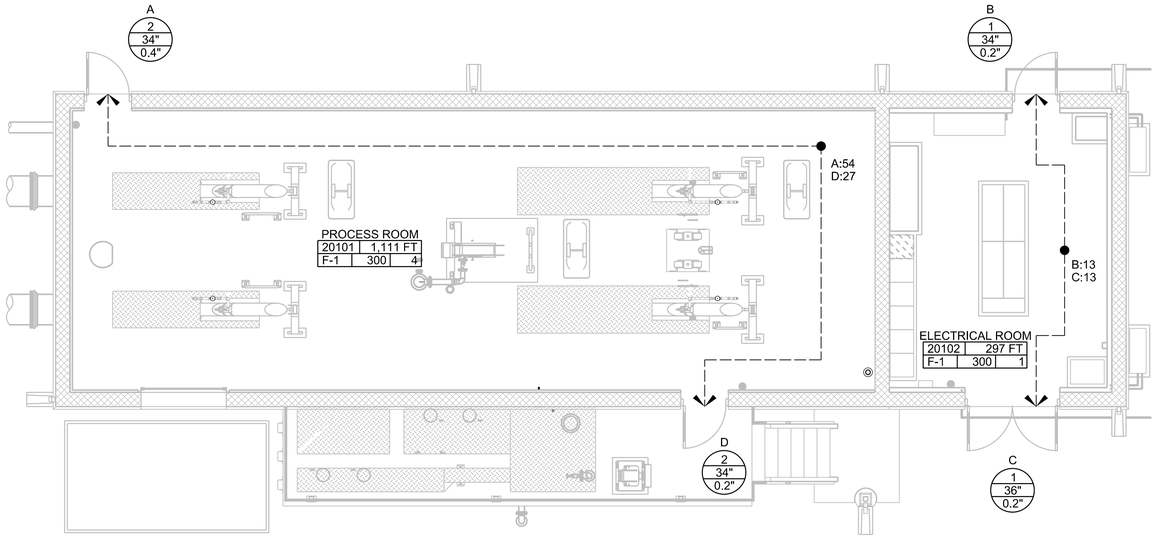
PLOT TIME: 12:20:52 PM
PLOT DATE: 06\05\2026

CODE DATA TABLE

2021 INTERNATIONAL BUILDING CODE		
FACILITY NAME AND NUMBER: HEADWORKS **(20)**		
PROJECT DESCRIPTION		
SINGLE-STORY BUILDING WITH CONCRETE FOUNDATION, CMU WALLS AND STANDING-SEAM METAL ROOFING SYSTEM, HOUSING HEADWORKS AND ELECTRICAL SPACES.		
OCCUPANCY GROUP [IBC, SEC. 306.2]	**SPACE** HEADWORKS, ELECTRICAL	**OCCUPANCY GROUP** F-1
HAZARDOUS MATERIALS		
TYPE	**HAZARD**	**ALLOWABLE STORAGE / ACTUAL STORAGE**
INDOOR STORAGE		
N/A	N/A	NO CHEMICALS USED IN HEADWORKS
INCIDENTAL ACCESSORY USE SEPARATIONS		N/A
OCCUPANCY SEPARATION/FIRE RATING:		N/A
CONSTRUCTION TYPE [IBC, SEC. 602.2]		TYPE II-B
GENERAL BUILDING LIMITATIONS		
MAXIMUM STORIES/HEIGHT ALLOWED [IBC TABLES 504.3 & 504.4]		
	F-1 (NS DESIGNATION)	2 STORIES/ 55 FT
ACTUAL NUMBER OF STORIES/HEIGHT ABOVE GROUND PLANE		
	F-1 (NS DESIGNATION)	1 STORY/ 29 FT 1 IN (TOP OF RIDGE)
MAXIMUM AREA ALLOWED PER FLOOR [IBC TABLE 506.2]		
	F-1 (NS DESIGNATION)	15,500 SF
ACTUAL AREA PER FLOOR		
	F-1 (NS DESIGNATION)	1,408 SF
	TOTAL FOR BUILDING:	1,408 SF
FIRE RESISTANCE OF BUILDING ELEMENTS [IBC, TABLE 601]		
REQUIRED RATINGS	UNRATED FOR CONSTRUCTION TYPE II-B	
EXTERIOR OPENING PROTECTION [IBC, TABLE 705.5]		
ACTUAL FIRE SEPARATION DISTANCE	ALL SIDES: 10+FT	
REQUIRED WALL RATING	UNRATED WHEN OVER 10 FEET FIRE SEPARATION	
ACTUAL WALL RATING	ALL WALLS UNRATED	
FIRE PROTECTION SYSTEMS [IBC, CHAPTER 9 AND NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS]		
AUTOMATIC SPRINKLER SYSTEMS [IBC SEC 903]		NOT REQUIRED, NOT PROVIDED
ALTERNATIVE AUTOMATIC FIRE EXTINGUISHER SYSTEM [IBC, SEC. 904]		N/A
FIRE EXTINGUISHERS [IBC, SEC 906.1]	HAND HELD, MULTIPURPOSE FIRE EXTINGUISHERS THROUGHOUT BUILDING AT 75 FOOT MAX SPACING	
FIRE ALARM SYSTEM [IBC, CHAPTER 9]		PROVIDED, REFER TO ELECTRICAL DWG'S
MEANS OF EGRESS [IBC, CHAPTER 10]		
OCCUPANT LOAD FACTOR [IBC, TABLE 1004.5]		
	MECHANICAL EQUIPMENT ROOM	FACTOR: 300 (GROSS)
	F-1 OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
ALLOWABLE TRAVEL DISTANCE [IBC, TABLE 1017.2]		
	F-1	200 FEET (NON-SPRINKLERED)
ACTUAL TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
COMMON PATH OF TRAVEL DISTANCE [IBC 1006.2.1]		F-1 = 75 FT (NON-SPRINKLERED)
ACTUAL COMMON PATH OF TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
EXITS REQUIRED [IBC 1015.1]	TWO EXITS REQUIRED IF OCC LOAD EXCEEDS 49 OR CPT EXCEEDS 75 FT.	EXITS PROVIDED
GROUND LEVEL	THREE	FOUR; SEE LIFE SAFETY PLAN
ACCESSIBILITY	**ARCHITECTURAL BARRIERS ACT (ABA)**	
NOT REQUIRED TO BE ACCESSIBLE PER ABA F203.5 MACHINERY SPACES		
ENERGY CODE	**2021 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C402.1.3**	
ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 5B (COCONINO COUNTY)		
ELEMENT	(PRESCRIPTIVE METHOD)	PROPOSED DESIGN
ROOF (INSULATION ENTIRELY	MIN R-30 CI	R-35 CONTINUOUS INSULATION
WALLS (MASS)	MIN R-11.4 CI (MIN U-0.090)	R-11.4 CONTINUOUS INSULATION; R-9 CONTINUOUS INSULATION AND R-13 BATT INSULATION (U-0.060 PER COMCHECK)
FLOOR (SLAB ON GRADE-UNHEATED)	MIN R-15 FOR 24" BELOW GRADE	R-15 FOR 24" BELOW GRADE
EXTERIOR DOORS (SWINGING)	MAX U-FACTOR OF 0.37	R-2.7
AIR BARRIER	REQUIRED	PROVIDED
PLUMBING FIXTURES	**2021 INTERNATIONAL BUILDING CODE CHAPTER 29**	
OCCUPANT LOAD FACTOR FOR F-1 IS 1:300 (MECHANICAL EQUIPMENT ROOM). PLUMBING OCCUPANT LOAD = 5		
REQUIRED: FOR MALE ONE WATER CLOSET AND ONE LAV, FOR FEMALE ONE WATER CLOSET AND ONE LAV, ONE DRINKING FOUNTAIN, ONE SERVICE SINK.		
PROVIDED: WATER CLOSETS, LAVS, AND DRINKING FOUNTAIN ARE PROVIDED AT THE ADMINISTRATION BUILDING, A WAIVER IS REQUIRED FOR THE REDUCTION IN TOTAL PROJECT PLUMBING COUNT.		



LIFE SAFETY PLAN - FACILITY 20 HEADWORKS

3/16"=1'-0"

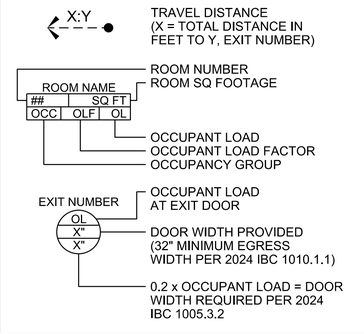
GENERAL SHEET NOTES

A. FOR GENERAL ARCHITECTURAL NOTES, MATERIAL SYMBOLS, LEGEND, ABBREVIATIONS AND WALL TYPES, SEE DRAWING 01A0001.

B. FOR ABBREVIATIONS, SEE DRAWING 01G0005.

C. FOR FIRE EXTINGUISHER LOCATIONS, SEE DRAWING 20A1030.

LIFE SAFETY PLAN LEGEND



GRCA-257282

1 REVISED BY ADDENDUM NO. 1

0 4 8 16
3/16"=1'-0"

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

REGISTERED ARCHITECT
80680
MORGAN SHOEMAKER
Date Signed 06/05/2026
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM
JACOBS GOVERNMENT SERVICES COMPANY
GREENWOOD VILLAGE, CO

DESIGNED: M SHOEMAKER
CADD: M COLLINS
TECH. REVIEW: G KIRSTEN
DATE: 08/2025

SUB SHEET NO. 01A0020

TITLE OF SHEET
ARCHITECTURAL CODE DATA AND LIFE SAFETY PLAN HEADWORKS
GRAND CANYON, SOUTH RIM

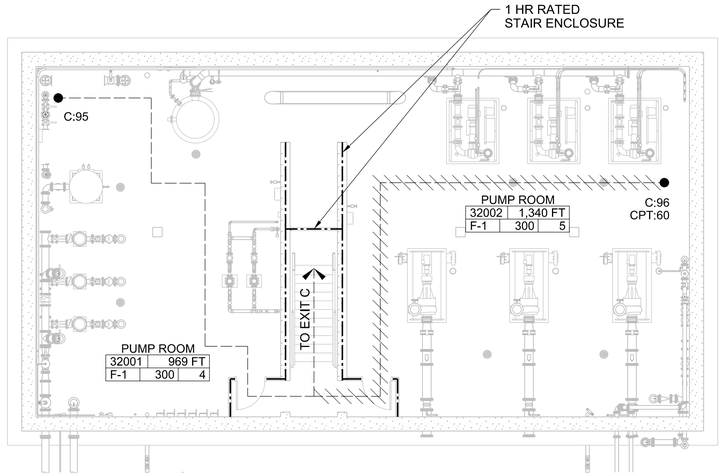
DRAWING NO. 113 175376
PMIS/PKG NO. 257282
SHEET 18A OF 49

100% COMPLETE CONSTRUCTION DOCUMENTS

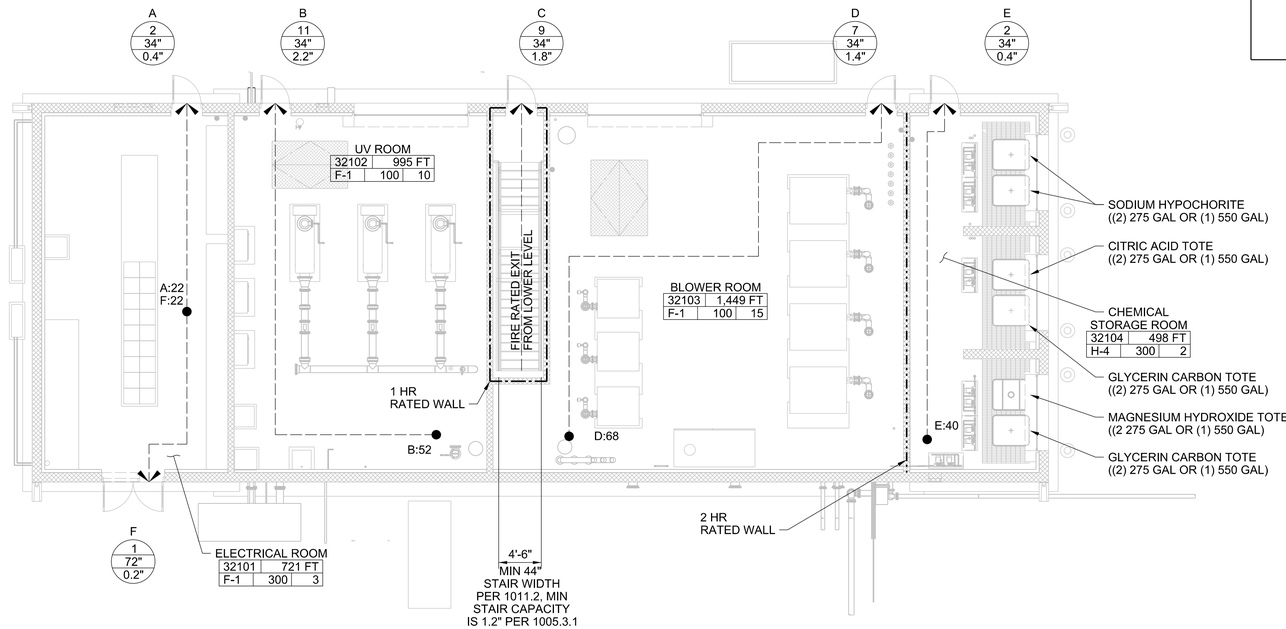
PLOT DATE: 06/05/2026 PLOT TIME: 12:18:56 PM SS6iV8i $FILEL$

CODE DATA TABLE

2021 INTERNATIONAL BUILDING CODE		
FACILITY NAME AND NUMBER: PROCESS BUILDING **(32)**		
PROJECT DESCRIPTION		
SINGLE-STORY BUILDING WITH A BASEMENT, CONCRETE FOUNDATION, CMU WALLS AND STANDING SEAM METAL ROOFING SYSTEM, HOUSING PROCESS SPACES.		
OCCUPANCY GROUP [IBC, SEC. 306.2, 307.6]	**SPACE**	**OCCUPANCY GROUP**
	HAZARDOUS STORAGE	H-4
	UV, MEMBRANE, AND ELECTRICAL ROOM	F-1
HAZARDOUS MATERIALS		
TYPE	**HAZARD**	**ALLOWABLE STORAGE / ACTUAL STORAGE**
INDOOR STORAGE		
CITRIC ACID (50%)	IRRITANT	NOT LIMITED/ 550 GAL
GLYCERIN CARBON (70%)	IRRITANT	NOT LIMITED/ 1,100 GAL
MAGNESIUM HYDROXIDE (53%)	IRRITANT	NOT LIMITED/ 550 GAL
SODIUM HYPOCHLORITE (12%)	CORROSIVE	500/ 1,100 GAL
OUTDOOR STORAGE		
NONE	N/A	N/A
INCIDENTAL ACCESSORY USE SEPARATIONS		N/A
OCCUPANCY SEPARATION/FIRE RATING: DESIGNED AS SEPARATED OCCUPANCIES PER SECTION IBC 508.3		2 HOUR SEPARATION WALLS BETWEEN H-4 AND F-1 OCCUPANCIES
CONSTRUCTION TYPE [IBC, SEC. 602.2]		TYPE II-B
GENERAL BUILDING LIMITATIONS		
MAXIMUM STORIES/HEIGHT ALLOWED [IBC TABLES 504.3 & 504.4]		
	H-4 (S DESIGNATION)	4 STORIES/ 75 FT
	F-1 (NS DESIGNATION)	2 STORIES/ 55 FT (MOST RESTRICTIVE)
ACTUAL NUMBER OF STORIES/HEIGHT ABOVE GROUND PLANE		
	H-4 (NS DESIGNATION)	1 STORY/ 26 FT 2 IN (TOP OF RIDGE)
	F-1 (NS DESIGNATION)	1 STORY/ 26 FT 2 IN (TOP OF RIDGE)
MAXIMUM AREA ALLOWED PER FLOOR [IBC TABLE 506.2]		
	H-4 (S1 DESIGNATION)	70,000 SF
	F-1 (NS DESIGNATION)	15,500 SF (MOST RESTRICTIVE)
ACTUAL AREA PER FLOOR		
	H-4 (S DESIGNATION)	498 SF
	F-1 (NS DESIGNATION)	5,474 SF
	TOTAL FOR BUILDING:	5,972 SF
FIRE RESISTANCE OF BUILDING ELEMENTS [IBC, TABLE 601]		
REQUIRED RATINGS	UNRATED FOR CONSTRUCTION TYPE II-B	
EXTERIOR OPENING PROTECTION [IBC, TABLE 705.5]		
ACTUAL FIRE SEPARATION DISTANCE	ALL SIDES: 15+FT	
REQUIRED WALL RATING	UNRATED WHEN OVER 10 FEET FIRE SEPARATION	
ACTUAL WALL RATING	UNRATED FOR ALL WALLS	
FIRE PROTECTION SYSTEMS [IBC, CHAPTER 9 AND NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS]		
AUTOMATIC SPRINKLER SYSTEMS [IBC SEC 903]		REQUIRED AT BASEMENT AND H-4 OCCUPANCY, ALTERNATIVE PROVIDED
ALTERNATIVE AUTOMATIC FIRE EXTINGUISHER SYSTEM [IBC, SEC. 904]		DRY CHEMICAL SUPPRESSION
FIRE EXTINGUISHERS [IBC, SEC 906.1]	HAND HELD, MULTIPURPOSE FIRE EXTINGUISHERS THROUGHOUT BUILDING AT 75 FOOT MAX SPACING	
FIRE ALARM SYSTEM [IBC, CHAPTER 9]		PROVIDED, REFER TO ELECTRICAL DWG'S
MEANS OF EGRESS [IBC, CHAPTER 10]		
OCCUPANT LOAD FACTOR [IBC, TABLE 1004.5]		
	ACCESSORY STORAGE/ MECHANICAL EQUIPMENT ROOM	FACTOR: 300 (GROSS)
	INDUSTRIAL AREA:	FACTOR: 100 (GROSS)
	H-4 OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
	F-1 OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
ALLOWABLE TRAVEL DISTANCE [IBC, TABLE 1017.2]		
	H-4	175 FEET (SPRINKLERED)
	F-1	200 FEET (NON-SPRINKLERED)
ACTUAL TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
COMMON PATH OF TRAVEL DISTANCE [IBC 1006.2.1]		H-4 = 75 FT (SPRINKLERED), F-1 = 75 FT (NON-SPRINKLERED)
ACTUAL COMMON PATH OF TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
INTERIOR EXIT STAIRWAY [IBC 1023.7	WHERE FIRE RATED INTERIOR EXIT STAIRWAY IS PROVIDED, THAT PATH OF TRAVEL ENDS AT THE FIRE RATED DOOR AND RESTARTS IN THE STAIRWAY	
EXITS REQUIRED [IBC 1015.1]	TWO EXITS REQUIRED IF OCC LOAD EXCEEDS 49 OR CPT EXCEEDS 75 FT.	EXITS PROVIDED
GROUND LEVEL	SIX	SEVEN; SEE LIFE SAFETY PLAN
ACCESSIBILITY	**ARCHITECTURAL BARRIERS ACT (ABA)**	
NOT REQUIRED AT EQUIPMENT SPACE PER ABA F203.5 MACHINERY SPACES		
ENERGY CODE	**2021 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C402.1.3**	
ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 5B (COCONINO COUNTY)		
ELEMENT	(PRESCRIPTIVE METHOD)	PROPOSED DESIGN
ROOF (INSULATION ENTIRELY ABOVE)	MIN R-30 CI	R-36 CONTINUOUS INSULATION
WALLS (MASS)	MIN R-11.4 CI (MIN U-0.090)	R-9 CONTINUOUS INSULATION AND R-13 BATT INSULATION (U-0.060 PER COMCHECK)
FLOOR (SLAB ON GRADE- UNHEATED)	MIN R-15 FOR 24" BELOW GRADE	R-15 FOR 24" BELOW GRADE
EXTERIOR DOORS (SWINGING)	MAX U-FACTOR OF 0.37	R-2.7
EXTERIOR DOORS (NON-SWINGING)	MAX U-FACTOR OF 0.31	R-2.7
AIR BARRIER	REQUIRED	PROVIDED
PLUMBING FIXTURES	**2021 INTERNATIONAL BUILDING CODE CHAPTER 29**	
OCCUPANT LOAD FACTOR FOR H-4	IS 1:100. PLUMBING OCCUPANT LOAD = 588/100 = 5.88 (6)	
OCCUPANT LOAD FACTOR FOR F-1	IS 1:300 (MECHANICAL EQUIPMENT ROOM). PLUMBING OCCUPANT LOAD = 4,136/300 = 13.79 (14)	
OCCUPANT LOAD FACTOR FOR F-1	IS 1:100. PLUMBING OCCUPANT LOAD = 726/100 = 7.26 (8)	
REQUIRED: FOR MALE ONE WATER CLOSET AND ONE LAV, FOR FEMALE ONE WATER CLOSET AND ONE LAV, ONE DRINKING FOUNTAIN, ONE SERVICE SINK (COUNT IS FACILITY AVERAGE).		
PROVIDED: ONE SERVICE SINK. WATER CLOSETS, LAVS, AND DRINKING FOUNTAIN ARE PROVIDED AT THE ADMINISTRATION BUILDING, A WAIVER IS REQUIRED FOR THE REDUCTION IN TOTAL PROJECT PLUMBING COUNT.		



LIFE SAFETY PLAN - LOWER LEVEL
FACILITY 32 - PROCESS BUILDING
1/8"=1'-0"



LIFE SAFETY PLAN - MAIN LEVEL
FACILITY 32 - PROCESS BUILDING
1/8"=1'-0"

0 8 16 24
1/8"=1'-0"

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

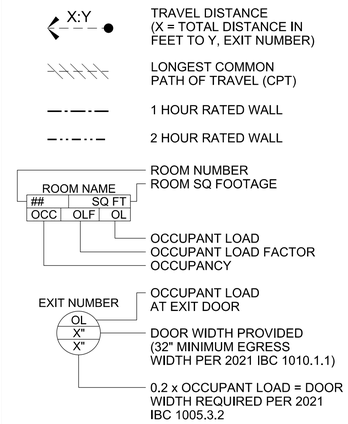
GENERAL SHEET NOTES

A. FOR GENERAL ARCHITECTURAL NOTES, MATERIAL SYMBOLS, LEGEND, ABBREVIATIONS AND WALL TYPES, SEE DRAWING 01A0001.

B. FOR ABBREVIATIONS, SEE DRAWING 01G0005.

C. FOR FIRE EXTINGUISHER LOCATIONS, SEE DRAWING 32A1030.

LIFE SAFETY PLAN LEGEND



REGISTERED ARCHITECT
CERTIFICATE
90685
MORGAN SHOEMAKER
Date Signed 06/05/26
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM	JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO
DESIGNED:	M SHOEMAKER
CADD:	M COLLINS
TECH. REVIEW:	G KIRSTEN
DATE:	08/2025
SUB SHEET NO.	01A0032
TITLE OF SHEET	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLANS PROCESS BUILDING GRAND CANYON, SOUTH RIM
DRAWING NO.	113 175376
PMIS/PKG NO.	257282
SHEET	19A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

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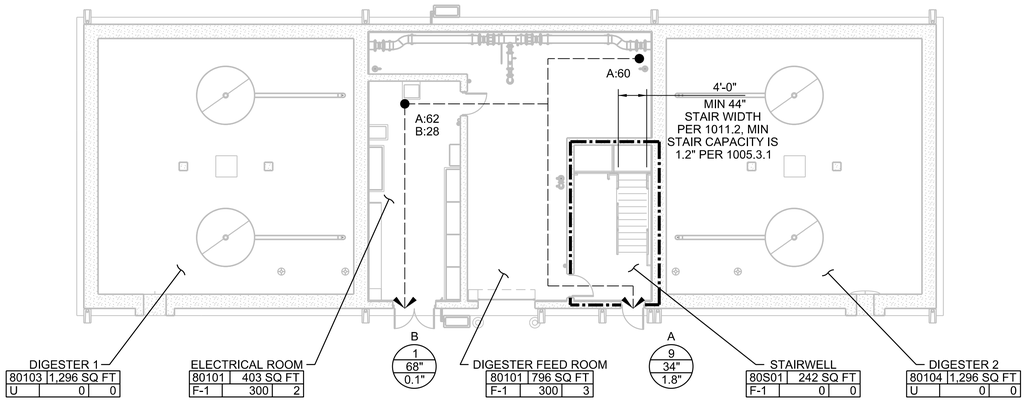
PLOT TIME: 12:19:39 PM
PLOT DATE: 06\05\2026

BUILDING CODE DATA TABLE

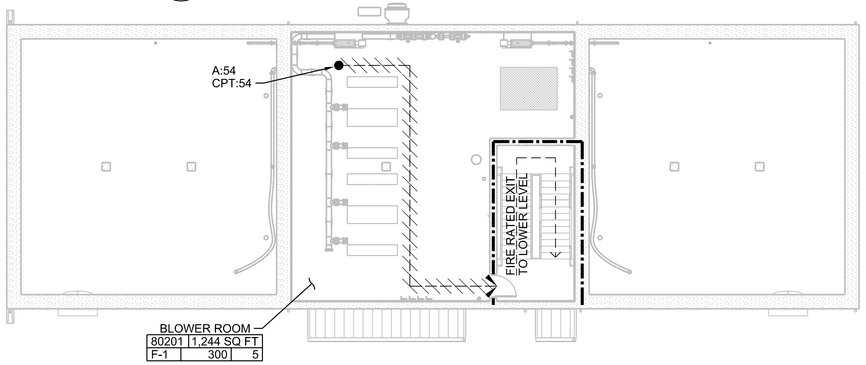
2021 INTERNATIONAL BUILDING CODE		
FACILITY NAME AND NUMBER: DIGESTER FACILITY **(80)**		
PROJECT DESCRIPTION		
TWO-STORY BUILDING WITH CONCRETE FOUNDATION, CONCRETE WALLS AND SINGLE-PLY MEMBRANE ROOFING SYSTEM, HOUSING DIGESTER FEED ROOM AND BLOWER ROOM SPACES.		
OCCUPANCY GROUP [IBC, SEC. 306.1, 312.1]	**SPACE**	**OCCUPANCY GROUP**
	PROCESS/ INDUSTRIAL	F-1
	DIGESTER	U
HAZARDOUS MATERIALS		
TYPE	**HAZARD**	**ALLOWABLE STORAGE / ACTUAL STORAGE**
INDOOR STORAGE		
N/A	N/A	N/A
INCIDENTAL ACCESSORY USE SEPARATIONS		N/A
OCCUPANCY SEPARATION/FIRE RATING (TABLE 508.4):		REQUIRED: 2 HR/ PROVIDED: 4+ HR
CONSTRUCTION TYPE [IBC, SEC. 602.2]		TYPE II-B
GENERAL BUILDING LIMITATIONS		
MAXIMUM STORIES/HEIGHT ALLOWED [IBC TABLES 504.3 & 504.4]		
	F-1 (NS DESIGNATION)	2 STORIES/ 55 FT
	U (NS DESIGNATION)	2 STORIES/ 55 FT
ACTUAL NUMBER OF STORIES/HEIGHT ABOVE GROUND PLANE		
	F-1 (NS DESIGNATION)	2 STORIES/ 27'-8" (TOP OF ROOF)
	U (NS DESIGNATION)	2 STORIES/ 26'-7"
MAXIMUM AREA ALLOWED PER FLOOR [IBC TABLE 506.2]		
	F-1 (NS DESIGNATION)	15,500 SF
	U (NS DESIGNATION)	8,500 SF
ACTUAL AREA PER FLOOR		
	F-1 (NS DESIGNATION)	2,443 SF
	U (NS DESIGNATION)	2,592 SF
	TOTAL FOR BUILDING:	2,443 SF
FIRE RESISTANCE OF BUILDING ELEMENTS [IBC, TABLE 601]		
REQUIRED RATINGS	UNRATED FOR CONSTRUCTION TYPE II-B	
EXTERIOR OPENING PROTECTION [IBC, TABLE 705.5]		
ACTUAL FIRE SEPARATION DISTANCE	ALL SIDES: 10+FT	
REQUIRED WALL RATING	UNRATED WHEN OVER 10 FEET FIRE SEPARATION	
ACTUAL WALL RATING	ALL WALLS UNRATED	
FIRE PROTECTION SYSTEMS [IBC, CHAPTER 9 AND NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS]		
AUTOMATIC SPRINKLER SYSTEMS [IBC SEC 903]		NOT REQUIRED, NOT PROVIDED
ALTERNATIVE AUTOMATIC FIRE EXTINGUISHER SYSTEM [IBC, SEC. 904]		N/A
FIRE EXTINGUISHERS [IBC, SEC 906.1]	HAND HELD, MULTIPURPOSE FIRE EXTINGUISHERS THROUGHOUT BUILDING AT 75 FOOT MAX SPACING	
FIRE ALARM SYSTEM [IBC, CHAPTER 9]		PROVIDED, REFER TO ELECTRICAL DWG'S
MEANS OF EGRESS [IBC, CHAPTER 10]		
OCCUPANT LOAD FACTOR [IBC, TABLE 1004.5]		
	MECHANICAL EQUIPMENT ROOM	FACTOR: 300 (GROSS)
	F-1 OCCUPANT LOAD:	SEE LIFE SAFETY PLAN
	U OCCUPANT LOAD: NON-OCCUPIED LIQUID HOLDING TANK	
ALLOWABLE TRAVEL DISTANCE [IBC, TABLE 1017.2]		
	F-1	200 FEET (NON-SPRINKLERED)
	U	N/A
ACTUAL TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
COMMON PATH OF TRAVEL DISTANCE [IBC 1006.2.1]		F-1 = 75 FT (NON-SPRINKLERED); U = N/A
ACTUAL COMMON PATH OF TRAVEL DISTANCE		SEE LIFE SAFETY PLAN
INTERIOR EXIT STAIRWAY [IBC 1023.7]	WHERE FIRE RATED INTERIOR EXIT STAIRWAY IS PROVIDED, THE PATH OF TRAVEL ENDS AT THE FIRE RATED DOOR AND RESTARTS IN THE STAIRWAY	
EXITS REQUIRED [IBC 1015.1]	TWO EXITS REQUIRED IF OCC LOAD EXCEEDS 49 OR CPT EXCEEDS 75 FT.	EXITS PROVIDED
GROUND LEVEL	ONE	TWO; SEE LIFE SAFETY PLAN
ACCESSIBILITY	**ARCHITECTURAL BARRIERS ACT (ABA)**	
NOT REQUIRED TO BE ACCESSIBLE PER IBC 1103.2.9 EQUIPMENT SPACES		
ENERGY CODE	**2021 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C402.1.3**	
ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 5B (COCONINO COUNTY)		
ELEMENT	(PRESCRIPTIVE METHOD)	PROPOSED DESIGN
ROOF (INSULATION ENTIRELY ABOVE)	MIN R-30 CI	R-36 CONTINUOUS INSULATION
WALLS (MASS)	MIN R-11.4 CI	R-11.4 CONTINUOUS INSULATION
FLOOR (SLAB ON GRADE- UNHEATED)	MIN R-15 FOR 24" BELOW GRADE	R-10 FOR 24" BELOW GRADE
EXTERIOR DOORS (SWINGING)	MAX U-FACTOR OF 0.37	R-2.7
EXTERIOR DOORS (NON-SWINGING)	MAX U-FACTOT OF 0.31	R-2.7
AIR BARRIER	REQUIRED	PROVIDED
PLUMBING FIXTURES	**2021 INTERNATIONAL BUILDING CODE CHAPTER 29**	
OCCUPANT LOAD FACTOR FOR F-1 IS 1-300 (MECHANICAL EQUIPMENT ROOM). PLUMBING OCCUPANT LOAD = 10		
REQUIRED: ONE UNISEX WATER CLOSET AND ONE UNISEX LAV (PER 2902.2 EXCEPTION 2), ONE SERVICE SINK (COUNT IS FACILITY AVERAGE).		
PROVIDED: WATER CLOSETS, LAVS, AND DRINKING FOUNTAIN ARE PROVIDED AT THE ADMINISTRATION BUILDING, A WAIVER IS REQUIRED FOR THE REDUCTION IN TOTAL PROJECT PLUMBING COUNT.		

1 REVISED BY ADDENDUM NO. 1



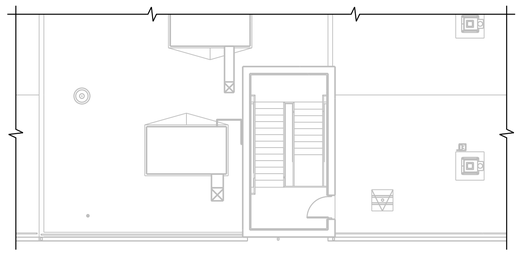
LIFE SAFETY PLAN - LOWER LEVEL
FACILITY 80 - DIGESTER FACILITY

3/32"=1'-0"



LIFE SAFETY PLAN - UPPER LEVEL
FACILITY 80 - DIGESTER FACILITY

3/32"=1'-0"



LIFE SAFETY PLAN - ROOF ACCESS LEVEL
FACILITY 80 - DIGESTER FACILITY

3/32"=1'-0"

0 8 16 24
3/32"=1'-0"

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

GENERAL SHEET NOTES

A. FOR GENERAL ARCHITECTURAL NOTES, MATERIAL SYMBOLS, LEGEND, ABBREVIATIONS AND WALL TYPES, SEE DRAWING 01A0001.

B. FOR ABBREVIATIONS, SEE DRAWING 01G0005.

C. FOR FIRE EXTINGUISHER LOCATIONS, SEE DRAWINGS 80A1030 AND 80A1040.

LIFE SAFETY PLAN LEGEND

X:Y — TRAVEL DISTANCE (X = TOTAL DISTANCE IN FEET TO Y, EXIT NUMBER)

LONGEST COMMON PATH OF TRAVEL (CPT)

1 HOUR RATED WALL (PER IBC 1023 INTERIOR EXIT STAIRWAY)

ROOM NUMBER
ROOM SQ FOOTAGE

ROOM NAME
| SQ FT
OCC | OLF | OL

OCCUPANT LOAD
OCCUPANT LOAD FACTOR
OCCUPANCY GROUP

EXIT NUMBER
OL
X"
X"

OCCUPANT LOAD AT EXIT DOOR

DOOR WIDTH PROVIDED (32" MINIMUM EGRESS WIDTH PER 2024 IBC 1010.1.1)

0.2 x OCCUPANT LOAD = DOOR WIDTH REQUIRED PER 2024 IBC 1005.3.2

REGISTERED ARCHITECT
CERTIFICATE
86680
MORGAN SHOEMAKER
Date Signed
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM	JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO
DESIGNED:	M SHOEMAKER
CADD:	M COLLINS
TECH. REVIEW:	G KIRSTEN
DATE:	08/2025
SUB SHEET NO.	01A0080
TITLE OF SHEET	ARCHITECTURAL CODE DATA AND LIFE SAFETY PLANS DIGESTER FACILITY GRAND CANYON, SOUTH RIM
DRAWING NO.	113 175376
PMIS/PKG NO.	257282
SHEET	20A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

PLOT DATE: 06\05\2026 PLOT TIME: 12:22:03 PM SS6/V8i $FILE\$

INTERIOR FINISH SCHEDULE

ABBREVIATIONS:

ACT	ACOUSTICAL TILE	CT	CERAMIC TILE	MTL	METAL
CLR	CLEAR	FCTY	FACTORY	PT	PORCELAIN TILE
CMU	CONCRETE MASONRY UNIT	GWB	GYPSUM WALL BOARD	SRUB	SHEET RUBBER
COL	COLOR	HDPE	HIGH DENSITY POLYETHYLENE	RUB	RUBBER BASE
CONC	CONCRETE	HGT	HEIGHT	SLR	CLEAR SEALER
CPT	CARPET	MATL	MATERIAL	WRB	WATER RESISTANT GWB

NOTES:

NO. 1 NUMBERS IN THE FINISH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
NO. 2 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
NO. 3 WALL SURFACES BEHIND CASEWORK AND OTHER BUILT-IN ITEMS NEED NOT BE PAINTED.
NO. 4 FOR EXTERIOR FINISHES AND COLORS, SEE EXTERIOR FINISH SCHEDULE ON THIS DRAWING.
NO. 5 FOR DOOR AND FRAME FINISHES, SEE DOOR AND HARDWARE SCHEDULE ON DRAWING 10A6002.
NO. 6 FOR WINDOW AND TRIM FINISHES, SEE WINDOW SCHEDULE ON DRAWING 10A6002.

SPACE		FLOOR			BASE AND WAINSCOT					TYPICAL WALL			OTHER WALL			CEILING				MISCELLANEOUS				OTHER REQUIREMENTS
NO.	NAME	SUB FL	FINISH	COL	HGT	MATL	FINISH	COL	WALLS	MATL	FINISH	COL	MATL	FINISH	COL	HGT	MATL	FINISH	COL	ITEM	MATL	FINISH	COL	
10101	HALL	CONC	SRUB	F-1	4"/4'-0"	RUB/ FRP	FCTY/ FCTY	W-3/ W-8	ALL/ E, S, W*	GWB	115	P-1	CMU	109	P-1	9'-0"	ACT	FCTY	WHITE	CARPET WALK-OFF MAT AND FRAME	CPT	FCTY	F-3	WALK OFF MATS TO BE LOCATED AT THE TWO EXTERIOR DOORS; *FRP TO BE LOCATED ON WALL BEHIND AND TO THE SIDES OF THE DRINKING FOUNTAIN
10102	LOCKER ROOM	CONC	SRUB	F-1	4"	RUB	FCTY	W-3	ALL	GWB	115	P-1	---	---	---	9'-0"	ACT	FCTY	WHITE	LOCKER/ ACCESSIBLE LOCKER BENCH	MTL/ HDPE	FCTY	N-5/ N-6	
10103	JANITOR CLOSET	CONC	PT	F-2 & F-4	4"/4'-0"	RUB/ FRP	FCTY/ FCTY	W-3/ W-8	ALL/ S, W	WRB	116	P-1	---	---	---	9'-0"	WRB	116	P-2					
10104	RESTROOM	CONC	PT	F-2 & F-4	3'-6"	CT	FCTY	W-4	ALL	WRB	116	P-1	CT	FCTY	W-5 & W-6	9'-0"	WRB	116	P-2					
10105	RESTROOM	CONC	PT	F-2 & F-4	3'-6"	CT	FCTY	W-4	ALL	WRB	116	P-1	CT	FCTY	W-5 & W-6	9'-0"	WRB	116	P-2					
10106	CERTIFIED LAB	CONC	SRUB	F-1	4"	RUB	FCTY	W-3	ALL	WRB	116	P-1	---	---	---	9'-0"	ACT	FCTY	WHITE	COUNTER/CASEWORK	EPOXY RESIN/ PLAM	FCTY	N-3/ N-4	
10107	PROCESS LAB	CONC	SRUB	F-1	4"	RUB	FCTY	W-3	ALL	WRB	116	P-1	CMU	109	P-1	9'-0"	ACT	FCTY	WHITE	COUNTER/CASEWORK	EPOXY RESIN/ PLAM	FCTY	N-3/ N-4	
10108	SUPERVISOR'S OFFICE	CONC	SRUB	F-1	4"	RUB	FCTY	W-3	ALL	GWB	115	P-1	CMU	109	P-1	9'-0"	ACT	FCTY	WHITE					
10109	MULTIPURPOSE ROOM	CONC	SRUB	F-1	4"	RUB	FCTY	W-3	ALL	GWB	115	P-1	---	---	---	9'-0"	ACT	FCTY	WHITE	COUNTER/CASEWORK	SS/ PLAM	FCTY	N-1/ N-2	
10110	I&C SHOP	CONC	SRUB	F-1	4"	RUB	FCTY	W-3	ALL	GWB	115	P-1	CMU	109	P-1	9'-0"	ACT	FCTY	WHITE					
10111	SCADA ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	GWB	115	P-1	---	---	---	9'-0"	GWB	115	P-2					
10112	ELECTRICAL ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	GWB	115	P-1	CMU	109	P-1	9'-0"	GWB	115	P-2					
10113	MECHANICAL ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	WRB	116	P-1	---	---	---	9'-0"	WRB	116	P-2					
10114	STORAGE CLOSET	CONC	SRUB	F-1	4"	RUB	FCTY	W-3	ALL	GWB	115	P-1	CMU	109	P-1	9'-0"	GWB	115	P-2					

COLOR LIST

NOTES:

NO. 1 COLOR SELECTIONS FOR THIS PROJECT MAY BE NOTED IN DOOR AND HARDWARE SCHEDULE, WINDOW SCHEDULE, INTERIOR FINISH SCHEDULE, EXTERIOR FINISH SCHEDULE, PIPING SCHEDULE AND ON THE DRAWINGS BY THE LETTER-NUMBER COMBINATION IN THE MARK COLUMN OF THIS LIST.
NO. 2 SOME COLOR SELECTIONS MAY BE MADE IN VARIOUS SPECIFICATION SECTIONS.
NO. 3 USE ONLY THE COLORS NOTED OR SCHEDULED. IF A COLOR SELECTION IS NOT MADE, REQUEST ONE FROM THE CONTRACTING OFFICER.
NO. 4 THE LISTED MANUFACTURERS AND COLORS ARE ONLY INCLUDED FOR THE PURPOSES OF ESTABLISHING A COLOR SCHEME GUIDE AND ARE NOT INTENDED TO LIMIT CONTRACTED FROM PORPOSING ALTERNATE MANUFACTURERS AND COLORS FOR REVIEW AND APPROVAL BY CONTRACTING OFFICER. SPECIFICATION SECTIONS ARE LISTED IN PARENTHESIS AFTER MANUFACTURERS.

MARK	MATERIAL	MANUFACTURER	COLOR
FLOORS			
F-1	SHEET RUBBER	NORA FLOORING (SPEC 09 65 00)	PUSH-N-PULL - 7105
F-2	PORCELAIN TILE	DALTILE (SPEC 09 30 00)	PROXY - AS10
F-3	CARPET WALK OFF MAT AND FRAME	AMERICAN FLOOR MATS (SPEC 10 80 00)	BLACK WITH ALUMINUM MILL
F-4	TILE GROUT	AS SPECIFIED (SPEC 09 30 00)	DARK GREY
FURNISHINGS			
N-1	SOLID SURFACE	WILSONART (SPEC 06 41 00)	GREY
N-2	PLASTIC LAMINATE	WILSONART (SPEC 06 41 00)	WALNUT
N-3	EPOXY RESIN	DURCON (SPEC 12 35 53)	BLACK
N-4	PLASTIC LAMINATE	WILSONART (CHEMSURF) (SPEC 13 35 53)	WALNUT
N-5	LOCKERS	ASI STORAGE SOLUTIONS (SPEC 10 51 00)	FOREST GREEN
N-6	ACCESSIBLE LOCK BENCH	ASI STORAGE SOLUTIONS (SPEC 10 51 00)	WALNUT
OPENINGS			
O-1	ALUMINUM WINDOWS	KAWNEER (SPEC 08 51 13)	FOREST GREEN
O-2	SOLID SURFACING SILL	WILSONART (SPEC 06 41 00)	SOOTHING GREY
O-3	WINDOW ROLLER SHADE CLOTH	MECHOSYSTEM (SPEC 12 24 13)	GREY - 1363
PAINT			
P-1	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	DOVER WHITE - SW6385
P-2	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	~~HIGH REFLECTIVE WHITE - SW7757~~
P-3	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	1 CLASSIC FRENCH GRAY - SW0077
MISCELLANEOUS			
M-1	SHEET METAL ROOF AND SOFFIT PANELS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-2	SHEET METAL GUTTERS AND DOWNSPOUTS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-3	PERIMETER SHEET METAL COVER	AS SPECIFIED (SPEC 09 30 00)	GREY
WALLS			
W-1	CMU - SMOOTH-FACE	ECHELON (SPEC 04 22 00)	WALNUT CREEK - NW BONE
W-2	CMU - SPLIT-FACE	ECHELON (SPEC 04 22 00)	AUTUMN
W-3	RUBBER BASE	JOHNSONITE/TARKETT (SPEC 09 29 00)	PEPPERCORN
W-4	CERAMIC TILE - FIELD	DALTILE (SPEC 09 30 00)	ARCTIC WHITE - 0190
W-5	CERAMIC TILE - ACCENT	DALTILE (SPEC 09 30 00)	GARDEN SPOT - 0141
W-6	TILE GROUT	AS SPECIFIED (SPEC 09 30 00)	DARK GREY
W-7	CMU MORTAR	AMERIMIX (SPEC 04 22 00)	SOFT IVORY
W-8	FIBERGLASS-REINFORCED PLASTIC (FRP) PANEL WALLS	CRANE COMPOSITES (SPEC 09 77 01)	WHITE

EXTERIOR FINISH SCHEDULE

ITEM / MATERIAL	FINISH	COLOR
SMOOTH-FACE CMU	FACTORY/WATER REPELLENT	W-1 / CLEAR
SPLIT-FACE CMU	FACTORY/WATER REPELLENT	W-2 / CLEAR
SHEET METAL ROOF AND SOFFIT	FACTORY	M-1
SHEET METAL GUTTERS AND DOWNSPOUTS	FACTORY	M-2
LUMINAIRES	FACTORY	DARL BRONZE
PERIMETER SHEET METAL COVER	FACTORY	M-3

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

NO SCALE

REGISTERED ARCHITECT CERTIFICATE 80680 MORGAN SHOEMAKER Date Signed 6/27/25 ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM: JACOBS GOVERNMENT SERVICES COMPANY
GREENWOOD VILLAGE, CO

DESIGNED: M SHOEMAKER
CADD: M COLLINS
TECH. REVIEW: G KIRSTEN
DATE: 08/2025

SUB SHEET NO.: 10A6001

TITLE OF SHEET: ADMINISTRATION BUILDING ARCHITECTURAL SCHEDULES

GRAND CANYON, SOUTH RIM

DRAWING NO. 113 175376
PMIS/PKG NO. 257282
SHEET 190A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

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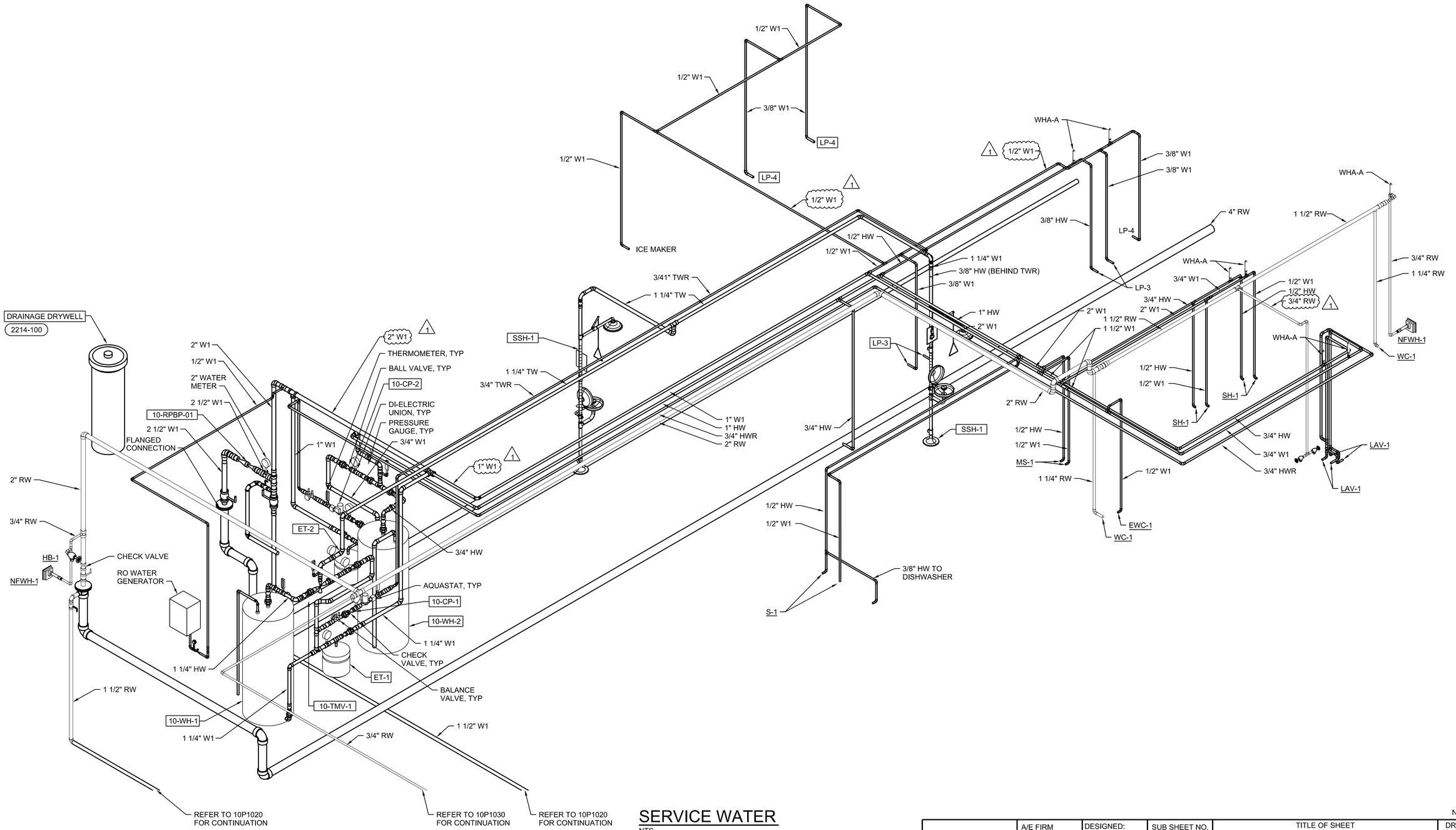


SERVICE WATER

NTS

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

Registered Professional Engineer (Mechanical) CERTIFICATE NO. 45267 SCOTT HINTE DATE Signed 6-30-25 ARIZONA, U.S.A.
Scott Hinte
Expires 06-30-2028

A/E FIRM: JACOBS GOVERNMENT SERVICES COMPANY; GREENWOOD VILLAGE, CO	DESIGNED: S HINTE	SUB SHEET NO.	TITLE OF SHEET: ADMINISTRATION BUILDING PLUMBING ISOMETRIC	NO SCALE
	CADD: S HOSTETLER	10P9003		DRAWING NO. 113 175376
	TECH. REVIEW: J SACKINGER			PMIS/PKG NO. 257282
	DATE: 08/2025		GRAND CANYON, SOUTH RIM	SHEET 1 200A OF 49

PLOT DATE: 06/03/2026 PLOT TIME: 6:37:23 AM SS6IV8i $FILEL$

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

INTERIOR FINISH SCHEDULE

ABBREVIATIONS:

ARWB	ABUSE-RESISTANT GWB	FNSH	FINISH	SLR	CLEAR SEALER
CLR	CLEAR	GWB	GYPSUM WALL BOARD		
CMU	CONCRETE MASONRY UNIT	HGT	HEIGHT		
COL	COLOR	MATL	MATERIAL		
CONC	CONCRETE	RUB	RUBBER BASE		

NOTES:

NO. 1 NUMBERS IN THE FINISH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
NO. 2 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
NO. 3 FOR EXTERIOR FINISHES AND COLORS, SEE EXTERIOR FINISH SCHEDULE ON THIS DRAWING.
NO. 4 FOR DOOR AND FRAME FINISHES, SEE DOOR AND HARDWARE SCHEDULE ON THIS DRAWING.
NO. 5 FOR WINDOW AND TRIM FINISHES, SEE WINDOW SCHEDULE ON THIS DRAWING.

SPACE		FLOOR			BASE AND WAINSCOT					TYPICAL WALL			OTHER WALL			CEILING				MISCELLANEOUS				OTHER REQUIREMENTS
NO.	NAME	SUB FL	FINISH	COL	HGT	MATL	FINISH	COL	WALLS	MATL	FINISH	COL	MATL	FINISH	COL	HGT	MATL	FINISH	COL	ITEM	MATL	FINISH	COL	
12101	SHOP	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	ARWB	116	P-1	---	---	---	14'-0"	GWB	115	P-2	---				
12102	OIL STORAGE	CONC	SLR	CLR	4"	RUB	FCTY	W-3	NORTH	CMU	117	P-1	ARWB	116	P-1	14'-0"	GWB	116	P-2	---				
12103	INTERIOR STORAGE	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	ARWB	115	P-1	CMU	109	P-1	14'-0"	GWB	115	P-2	---				

WINDOW SCHEDULE

WINDOW TYPE ABBREVIATIONS:

SL SLIDER

OTHER ABBREVIATIONS:

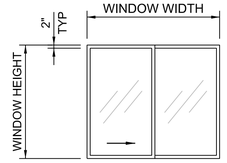
AFF ABOVE FINISH FLOOR (AT GROUND LEVEL)
AL ALUMINUM
IG-B INSULATING GLASS - BIRD
SG SAFETY GLASS
SS SOLID SURFACING

NOTES:

NO. 1 FOR FRAME TYPES, SEE BUILDING ELEVATIONS.
NO. 2 FOR FRAME DETAILS, SEE DESIGN DETAILS.
NO. 3 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.

NO.	OPENING												BLINDS		SILLS			OTHER REQUIREMENTS
	SIZE		WINDOW		FRAME				DETAILS									
	WIDTH	HEIGHT	TYPE	GLASS	MATL	TYPE	FINISH	COL	HEAD	JAMB	SILL		Y / N	COLOR	MATL	COLOR	HEIGHT	
12W-01	4'-0"	3'-4"	SL	IG-B	AL	W-1	FCTY	O-3	0851-004	0851-004 SIM	0851-004		N	---	SS	O-4	4'-0" AFF	
12W-02	5'-4"	3'-4"	SL	IG-B	AL	W-1	FCTY	O-3	0851-004	0851-004 SIM	0851-004		N	---	SS	O-4	4'-0" AFF	

WINDOW TYPES



W-1

LOUVER SCHEDULE

LOUVER TYPE ABBREVIATIONS:

DB DRAINABLE BLADE

OTHER ABBREVIATIONS:

AFF ABOVE FINISH FLOOR (AT GROUND LEVEL)
AL ALUMINUM
FCTY FACTORY

NOTES:

NO. 1 FOR LOUVER DETAILS, SEE DESIGN DETAILS.
NO. 2 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.

NO.	OPENING									SILLS			OTHER REQUIREMENTS
	SIZE		LOUVER				DETAILS						
	WIDTH	HEIGHT	MATL	TYPE	FINISH	COL	HEAD	JAMB	SILL	MATL	COL	HEIGHT	
12L-01	1'-4"	2'-0"	AL	DB	FCTY	O-2	0890-002	0890-002 SIM	0890-002	ARWB	P-1	10'-0" AFF	
12L-02	2'-0"	2'-8"	AL	DB	FCTY	O-2	0890-003	0890-002 SIM	0890-002	ARWB	P-1	2'-0" AFF	

DOOR AND HARDWARE SCHEDULE

ABBREVIATIONS:

COL COLOR
EXT EXTERIOR
FCTY FACTORY
IG-C INSULATING GLASS - CLEAR
HM HOLLOW METAL
MATL MATERIAL

NOTES:

NO. 1 SEE THIS SHEET FOR DOOR AND FRAME TYPES.
NO. 2 FOR DOOR DETAILS, SEE DESIGN DETAILS.
NO. 3 NUMBER CODE IN HARDWARE SET COLUMN REFERS TO HARDWARE SETS IN SPECIFICATION SECTION 08 71 00.
NO. 4 NUMBERS IN FNSH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
NO. 5 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
NO. 6 FOR GLASS TYPES, SEE SPECIFICATION SECTION 08 80 00.

NO.	OPENING														HARDWARE		FIRE PROTECTION RATING	OTHER REQUIREMENTS
	SIZE		DOOR					FRAME				DETAILS						
	WIDTH	HEIGHT	CONSTR	TYPE	GLASS	FINISH	COL	MATL	TYPE	FINISH	COL	HEAD	JAMB	SILL	SET NO.	KEY SIDE		
12101A	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	7	EXT	---	M1: SHOP
12101B	10'-0"	10'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	
12101C	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	7	EXT	---	M1: SHOP
12102A	3'-0"	7'-2"	HM	F	---	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	11	EXT	---	M1: OIL STORAGE
12103A	3'-0"	7'-2"	HM	F	---	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	11	EXT	---	M1: STORAGE
12103B	10'-0"	10'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	
12103C	3'-0"	7'-2"	HM	F	---	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	11	EXT	---	M1: STORAGE

EXTERIOR FINISH SCHEDULE

ITEM / MATERIAL	FINISH	COLOR
SMOOTH-FACE CMU	FACTORY / WATER REPELLENT	W-1 / CLEAR
SPLIT-FACE CMU	FACTORY / WATER REPELLENT	W-2 / CLEAR
SHEET METAL ROOF AND SOFFIT PANELS	FACTORY	M-1
SHEET METAL GUTTERS AND DOWNSPOUTS	FACTORY	M-2
LUMINAIRES	FACTORY	DARK BRONZE
PEMB SHEET METAL ROOF	FACTORY	M-3
PEMB SHEET METAL GUTTER AND DOWNSPOUT	FACTORY	M-4
PEMB STRUCTURAL FRAME AND COLUMNS	FACTORY	M-5
PERIMETER SHEET METAL COVER	FACTORY	M-6

COLOR LIST

NOTES:

NO. 1 COLOR SELECTIONS FOR THIS PROJECT MAY BE NOTED IN DOOR AND HARDWARE SCHEDULE, WINDOW SCHEDULE, INTERIOR FINISH SCHEDULE, EXTERIOR FINISH SCHEDULE, LOUVER SCHEDULE, PIPING SCHEDULE AND ON THE DRAWINGS BY THE LETTER-NUMBER COMBINATION IN THE MARK COLUMN OF THIS LIST.
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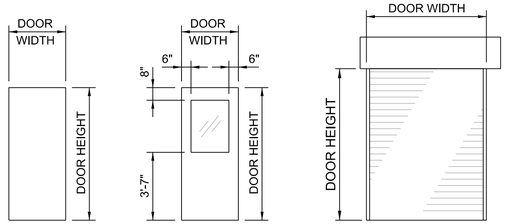
NO. 3 USE ONLY THE COLORS NOTED OR SCHEDULED. IF A COLOR SELECTION IS NOT MADE, REQUEST ONE FROM THE CONTRACTING OFFICER.
NO. 4 THE LISTED MANUFACTURERS AND COLORS ARE ONLY INCLUDED FOR THE PURPOSES OF ESTABLISHING A COLOR SCHEME GUIDE AND ARE NOT INTENDED TO LIMIT THE CONTRACTOR FROM PURPOSING ATLERNATE MANUFACTURERS AND COLORS FOR REVIEW AND APPROVAL BY THE CONTRACTING OFFICER. SPECIFICATION SECTIONS ARE LISTED IN PARENTHESIS AFTER MANUFACTURERS.

MARK	MATERIAL	MANUFACTURER	COLOR
OPENINGS			
O-1	OVERHEAD COILING DOOR	COOKSON (SPEC 08 30 00)	GRAY
O-2	LOUVERS	RUSKIN (SPEC 08 90 00)	LIGHT STONE
O-3	ALUMINUM WINDOWS	KAWNEER (SPEC 08 51 13)	FOREST GREEN
O-4	SOLID SURFACING SILL	WILSONART (SPEC 06 41 00)	SOOTHING GREY
PAINT			
P-1	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	DOVER WHITE - SW6385
P-2	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	~~HIGH REFLECTIVE WHITE - SW7757~~
P-3	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	1 CLASSIC FRENCH GRAY - SW0077
MISCELLANEOUS			
M-1	SHEET METAL ROOF AND SOFFIT PANELS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-2	SHEET METAL GUTTERS AND DOWNSPOUTS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-3	PEMB SHEET METAL ROOF	AS SPECIFIED IN 13 34 19	GREEN
M-4	PEMB SHEET METAL GUTTER AND DOWNSPOUT	AS SPECIFIED IN 13 34 19	GREEN
M-5	PEMB STRUCTURAL FRAME AND COLUMNS	AS SPECIFIED IN 13 34 19	GREY
M-6	PERIMETER SHEET METAL COVER	AS SPECIFIED (SPEC 07 62 00)	GREY
WALLS			
W-1	CMU - SMOOTH-FACE	ECHELON (SPEC 04 22 00)	WALNUT CREEK - NW BONE
W-2	CMU - SPLIT-FACE	ECHELON (SPEC 04 22 00)	AUTUMN
W-3	RUBBER BASE	JOHNSONITE/TARKETT (SPEC -9 29 00)	PEPPERCORN
W-4	CMU MORTAR	AMERIMIX (SPEC 04 22 00)	SOFT IVORY

DOOR TYPES



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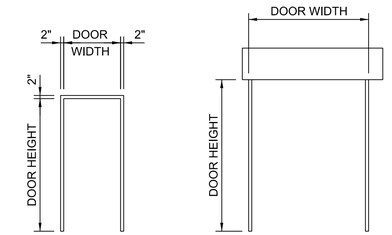
DOOR FRAME TYPES



SD OHC

NO SCALE

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

REGISTERED ARCHITECT
CERTIFICATE
80680
MORGAN SHOEMAKER
Date Signed
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM	JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO
DESIGNED:	M SHOEMAKER
CADD:	M COLLINS
TECH. REVIEW:	G KIRSTEN
DATE:	08/2025
SUB SHEET NO.	12A6001
TITLE OF SHEET	MAINTENANCE BUILDING ARCHITECTURAL SCHEDULES GRAND CANYON, SOUTH RIM
DRAWING NO.	113 175376
PMIS/PKG NO.	257282
SHEET	220A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

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PLOT DATE: 06\05\2026

INTERIOR FINISH SCHEDULE

ABBREVIATIONS:

ARWB	ABUSE-RESISTANT GWB	CONC	CONCRETE	FNSH	FINISH	RUB	RUBBER BASE
CLR	CLEAR	EMB	EMBOSSED ALUMINUM	GALV	GALVANIZED	SLR	CLEAR SEALER
CMU	CONCRETE MASONRY UNIT	EXP	EXPOSED STRUCTURE	HGT	HEIGHT		
COL	COLOR	FCTY	FACTORY	MATL	MATERIAL		

NOTES:

NO. 1 NUMBERS IN THE FINISH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
NO. 2 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
NO. 3 FOR EXTERIOR FINISHES AND COLORS, SEE EXTERIOR FINISH SCHEDULE ON THIS DRAWING.
NO. 4 FOR DOOR AND FRAME FINISHES, SEE DOOR AND HARDWARE SCHEDULE ON THIS DRAWING.

SPACE		FLOOR			BASE AND WAINSCOT					TYPICAL WALL			OTHER WALL			CEILING				MISCELLANEOUS				OTHER REQUIREMENTS
NO.	NAME	SUB FL	FINISH	COL	HGT	MATL	FINISH	COL	WALLS	MATL	FINISH	COL	MATL	FINISH	COL	HGT	MATL	FINISH	COL	ITEM	MATL	FINISH	COL	
20101	PROCESS ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	N, E, W	EMB	FCTY	W-4	CMU	117	P-2	VARIES	EXP	10/5	P-2	CLOSURE PLATES	STEEL	GALV	NAT	---
20102	ELECTRICAL ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	ARWB	116	P-1	CMU	117	P-1	VARIES	EXP	GALV	NAT	---	---	---	---	---

EXTERIOR FINISH SCHEDULE

ITEM / MATERIAL	FINISH	COLOR
SMOOTH-FACE CMU	FACTORY / WATER REPELLENT	W-1 / CLEAR
SPLIT-FACE CMU	FACTORY / WATER REPELLENT	W-2 / CLEAR
SHEET METAL ROOF AND SOFFIT PANELS	FACTORY	M-1
SHEET METAL GUTTER AND DOWNSPOUTS	FACTORY	M-2
LUMINAIRES	FACTORY	DARK BRONZE
STEEL CANOPY COLUMNS AND DUCT/ PIPE SUPPORT	PS-5	P-4

COLOR LIST

NOTES:

NO. 1 COLOR SELECTIONS FOR THIS PROJECT MAY BE NOTED IN DOOR AND HARDWARE SCHEDULE, INTERIOR FINISH SCHEDULE, EXTERIOR FINISH SCHEDULE, PIPING SCHEDULE AND ON THE DRAWINGS BY THE LETTER-NUMBER COMBINATION IN THE MARK COLUMN OF THIS LIST.
NO. 2 SOME COLOR SELECTIONS MAY BE MADE IN VARIOUS SPECIFICATION SECTIONS.
NO. 3 USE ONLY THE COLORS NOTED OR SCHEDULED. IF A COLOR SELECTION IS NOT MADE, REQUEST ONE FROM THE CONTRACTING OFFICER.
NO. 4 THE LISTED MANUFACTURERS AND COLORS ARE ONLY INCLUDED FOR THE PURPOSES OF ESTABLISING A COLOR SCHEME GUIDE AND ARE NOT INTENDED TO LIMIT THE CONTRACTOR FROM PURPOSING ALTERNATE MANUFACTURERS AND COLORS FOR REVIEW AND APPROVAL BY THE CONTRACTING OFFICER. SPECIFICATION SECTIONS ARE LISTED IN PARENTHESIS AFTER MANUFACTURERS.

MARK	MATERIAL	MANUFACTURER	COLOR
OPENINGS			
O-1	OVERHEAD COILING DOOR	COOKSON (SPEC 08 30 00)	GRAY
PAINTS			
P-1	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	DOVER WHITE - SW 6385
P-2	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	~~HIGH REFLECTIVE WHITE - SW7757~~
P-3	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	1 CLASSIC FRENCH GRAY - SW0077
P-4	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	~~SHAMROCK - SW6453~~
MISCELLANEOUS			
M-1	SHEET METAL ROOF AND SOFFIT PANELS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-2	SHEET METAL GUTTERS AND DOWNSPOUTS	IMETCO (SPEC 07 41 13)	DENALI GREEN
WALLS			
W-1	CMU - SMOOTH-FACE	ECHELON (SPEC 04 22 00)	WALNUT CREEK - NW BONE
W-2	CMU - SPLIT-FACE	ECHELON (SPEC 04 22 00)	AUTUMN
W-3	RUBBER BASE	JOHNSONITE (SPEC 09 29 00)	PEPPERCORN
W-4	EMBOSSED ALUMINUM	DUPONT (SPEC 07 21 00)	WHITE
W-5	CMU MORTAR	AMERIMIX (SPEC 04 22 00)	SOFT IVORY

DOOR AND HARDWARE SCHEDULE

ABBREVIATIONS:

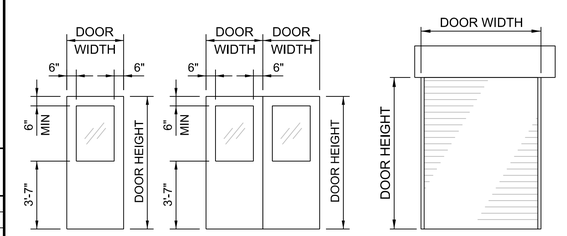
COL	COLOR
EXT	EXTERIOR
FCTY	FACTORY
IG-C	INSULATING GLASS-CLEAR
HM	HOLLOW METAL
MATL	MATERIAL
MET	METAL

NOTES:

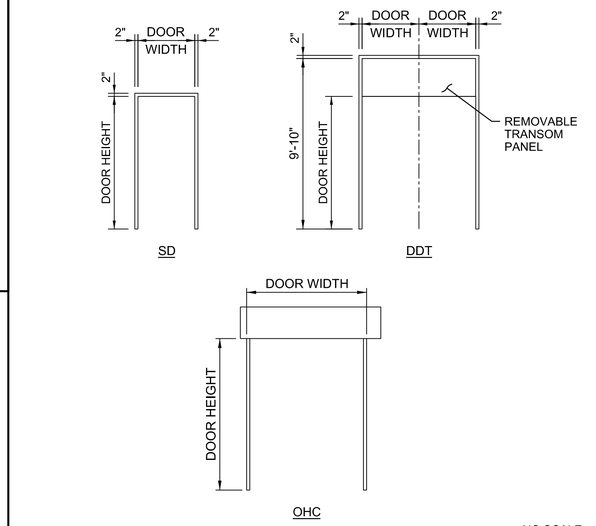
NO. 1 SEE THIS SHEET FOR DOOR AND FRAME TYPES.
NO. 2 FOR DOOR DETAILS, SEE DESIGN DETAILS.
NO. 3 NUMBER CODE IN HARDWARE SET COLUMN REFERS TO HARDWARE SETS IN SPECIFICATION SECTION 08 71 00.
NO. 4 NUMBERS IN FNSH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
NO. 5 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
NO. 6 FOR GLASS TYPES, SEE SPECIFICATION SECTION 08 80 00.

OPENING															HARDWARE		FIRE PROTECTION RATING	OTHER REQUIREMENTS
NO.	SIZE		DOOR					FRAME				DETAILS						
	WIDTH	HEIGHT	CONSTR	TYPE	GLASS	FINISH	COL	MATL	TYPE	FINISH	COL	HEAD	JAMB	SILL	SET NO.	KEY SIDE		
20101A	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-014 SIM	0811-014	0871-001	13	EXT	---	
20101B	6'-0"	8'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	
20101C	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-014 SIM	0811-014	0871-001	7	EXT	---	
20102A	(2) 3'-2"	7'-2"	HM	G / G	IG-C	5	P-3	HM	DDT	5	P-3	0811-013	0811-015	0871-001	2	EXT	---	
20102B	3'-0"	7'-6"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-015	0871-001	7	EXT	---	

DOOR TYPES



DOOR FRAME TYPES



NO SCALE

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

REGISTERED ARCHITECT
CERTIFICATE
93685
MORGAN SHOEMAKER
Date Signed 6/05/26
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
JACOBS GOVERNMENT SERVICES COMPANY	M SHOEMAKER		HEADWORKS ARCHITECTURAL SCHEDULES	113 175376
GREENWOOD VILLAGE, CO	CADD: M COLLINS	20A6001	GRAND CANYON, SOUTH RIM	PMIS/PKG NO. 257282
	TECH. REVIEW: G KIRSTEN			SHEET 253A OF 49
	DATE: 08/2025			

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

$FILEL$ SS6/V8i PLOT TIME: 11:58:56 AM PLOT DATE: 06\05\2026

INTERIOR FINISH SCHEDULE

ABBREVIATIONS:

ARWB	ABUSE-RESISTANT GWB	CONC	CONCRETE	FNSH	FINISH	MET	METAL	TCTG	TRAFFIC COATING
AS	AS SELECTED	CRC	CHEMICAL-RESISTANT COATINGS	GALV	GALVANIZED	NAT	NATURAL	WRB	WATER RESISTANT GWB
CLR	CLEAR	EXP	EXPOSED STRUCTURE	HGT	HEIGHT	RUB	RUBBER BASE		
CMU	CONCRETE MASONRY UNIT	FCTY	FACTORY	HDNR	CLEAR FLOOR HARDENER	SLR	CLEAR SEALER		
COL	COLOR	FRP	FIBERGLASS REINFORCED PLASTIC	MATL	MATERIAL	SS	SOLID SURFACING		

NOTES:
- NO. 1 NUMBERS IN THE FINISH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
- NO. 2 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
- NO. 3 FOR EXTERIOR FINISHES AND COLORS, SEE EXTERIOR FINISH SCHEDULE ON THIS DRAWING.
- NO. 4 FOR DOOR AND FRAME FINISHES, SEE DOOR AND HARDWARE SCHEDULE ON THIS DRAWING.
- NO. 5 APPLY CHEMICAL RESISTANT COATING TO FLOOR AND 6" UP WALLS AS PER 09 96 35.

SPACE		FLOOR			BASE AND WAINSCOT					TYPICAL WALL			OTHER WALL			CEILING				MISCELLANEOUS				OTHER REQUIREMENTS
NO.	NAME	SUB FL	FINISH	COL	HGT	MATL	FINISH	COL	WALLS	MATL	FINISH	COL	MATL	FINISH	COL	HGT	MATL	FINISH	COL	ITEM	MATL	FINISH	COL	
32S01	STAIRWELL	CONC	SLR	CLR	4"	RUB	FCTY	W-3	*N, E, S	CONC/ CMU	113/ 109	P-1	ARWB	115	P-1	VARIES	CONC/ EXP	113/10/5	P-2	CLOSURE PLATES	STEEL	GALV	NAT	* AT METAL STUD WALLS
32001	PUMP ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	*S, W	CONC	113	P-1	ARWB	116	P-1	13'-4 3/4"	CONC	113	P-2	---	---	---	---	* AT METAL STUD WALLS
32002	PUMP ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	*S, W	CONC	113	P-1	CMU	109	P-1	VARIES	EXP	10/5	P-2	---	STEEL	GALV	NAT	* AT METAL STUD WALLS
32101	ELECTRICAL ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	ARWB	116	P-1	CMU	109	P-1	VARIES	EXP	10/5	P-2	CLOSURE PLATES	STEEL	GALV	NAT	
32102	UV ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	ARWB	116	P-1	CMU	117	P-1	VARIES	EXP	10/5	P-2	CLOSURE PLATES	STEEL	GALV	NAT	
32103	BLOWER ROOM	CONC	SLR	CLR	4"	RUB	FCTY	W-3	ALL	ARWB	116	P-1	CMU	117	P-1	VARIES	EXP	10/5	P-2	CLOSURE PLATES	STEEL	GALV	NAT	
32104	CHEMICAL STORAGE ROOM	CONC	SEE NOTE 5	CLR	4"/ 4'-0"	RUB/ FRP	FCTY/ FCTY	W-3/ W-5	ALL	CMU	117	P-1	ARWB	116	P-1	VARIES	EXP	10/5	P-2	CLOSURE PLATES	STEEL	GALV	NAT	

LOUVER SCHEDULE

LOUVER TYPE ABBREVIATIONS:
- DB DRAINABLE BLADE

OTHER ABBREVIATIONS:
- AFF ABOVE FINISH FLOOR (AT GROUND LEVEL)
- AL ALUMINUM
- ARWB ABUSE-RESISTANT WALLBOARD
- FCTY FACTORY

NOTES:
- NO. 1 FOR LOUVER DETAILS, SEE DESIGN DETAILS.
- NO. 2 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.

NO.	OPENING SIZE		LOUVER				DETAILS			SILLS			OTHER REQUIREMENTS
	WIDTH	HEIGHT	MATL	TYPE	FINISH	COL	HEAD	JAMB	SILL	MATL	COL	HEIGHT	
32L-01	4'-0"	1'-4"	AL	DB	FCTY	O-2	0890-002	0890-002 SIM	0890-002	ARWB	P-1	14'-0" AFF	
32L-02	1'-4"	1'-4"	AL	DB	FCTY	O-2	0890-002	0890-002 SIM	0890-002	ARWB	P-1	10'-0" AFF	
32L-03	2'-0"	2'-0"	AL	DB	FCTY	O-2	0890-002	0890-002 SIM	0890-002	ARWB	P-1	12'-8" AFF	
32L-04	4'-0"	1'-4"	AL	DB	FCTY	O-2	0890-002	0890-002 SIM	0890-002	ARWB	P-1	14'-0" AFF	

DOOR AND HARDWARE SCHEDULE

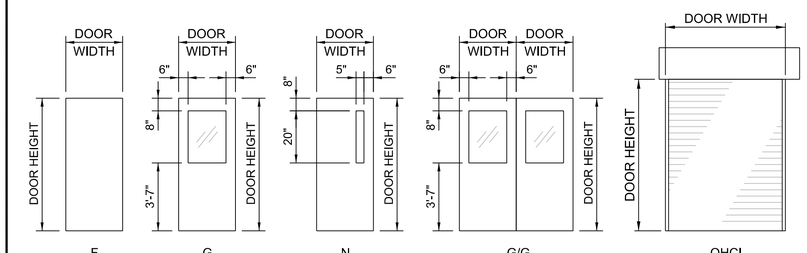
ABBREVIATIONS:

COL	COLOR	MET	METAL
EXT	EXTERIOR		
FCTY	FACTORY		
FRG	FIRE RESISTIVE GLASS		
FNSH	FINISH		
IG	INSULATING GLASS		
HM	HOLLOW METAL		
MATL	MATERIAL		

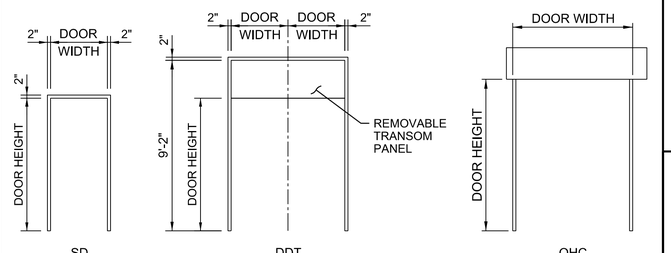
NOTES:
- NO. 1 SEE THIS SHEET FOR DOOR AND FRAME TYPES.
- NO. 2 FOR DOOR DETAILS, SEE DESIGN DETAILS.
- NO. 3 NUMBER CODE IN HARDWARE SET COLUMN REFERS TO HARDWARE SETS IN SPECIFICATION SECTION 08 71 00.
- NO. 4 NUMBERS IN FNSH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
- NO. 5 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
- NO. 6 FOR GLASS TYPES, SEE SPECIFICATION SECTION 08 80 00.

NO.	OPENING SIZE		DOOR					FRAME				DETAILS			HARDWARE		FIRE PROTECTION RATING	OTHER REQUIREMENTS
	WIDTH	HEIGHT	CONSTR	TYPE	GLASS	FINISH	COL	MATL	TYPE	FINISH	COL	HEAD	JAMB	SILL	SET NO.	KEY SIDE		
32S01A	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	7	EXT	---	
32001A	3'-0"	7'-2"	HM	N	FRG	5	P-3	HM	SD	5	P-3	0811-032	0811-032	0871-002	12	32S01	60 MIN	S-16, M1: EXIT
32001B	3'-0"	7'-2"	HM	N	FRG	5	P-3	HM	SD	5	P-3	0811-032	0811-032	0871-002	12	32S01	60 MIN	S-16, M1: EXIT
32101A	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	7	EXT	---	
32101B	(2) 3'-2"	7'-2"	HM	G	IG-C	5	P-3	HM	DDT	5	P-3	0811-013	0811-013 SIM	0871-001	2	EXT	---	
32102A	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	7	EXT	---	
32102B	12'-0"	12'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	
32103A	12'-0"	12'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	
32103B	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	7	EXT	---	
32104A	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-013	0811-013 SIM	0871-001	7	EXT	---	
32104B	8'-0"	10'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	
32104C	8'-0"	10'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	
32104D	8-0"	10'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-007	0833-008	0833-008	20	---	---	

DOOR TYPES



DOOR FRAME TYPES



1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG 0" 1"

EXTERIOR FINISH SCHEDULE

ITEM / MATERIAL	FINISH	COLOR
SMOOTH FACE CMU	FACTORY / WATER REPELLENT	W-1 / CLEAR
SPLIT FACE CMU	FACTORY / WATER REPELLENT	W-2 / CLEAR
SHEET METAL ROOF AND SOFFIT PANELS	FACTORY	M-1
SHEET METAL GUTTERS AND DOWNSPOUTS	FACTORY	M-2
LUMINAIRES	FACTORY	DARK BRONZE
PERIMETER SHEET METAL COVER	FACTORY	M-3

COLOR LIST

NOTES:
- NO. 1 COLOR SELECTIONS FOR THIS PROJECT MAY BE NOTED IN DOOR AND HARDWARE SCHEDULE, INTERIOR FINISH SCHEDULE, EXTERIOR FINISH SCHEDULE, LOUVER SCHEDULE, PIPING SCHEDULE AND ON THE DRAWINGS BY THE LETTER-NUMBER COMBINATION IN THE MARK COLUMN OF THIS LIST.
- NO. 2 SOME COLOR SELECTIONS MAY BE MADE IN VARIOUS SPECIFICATION SECTIONS.
- NO. 3 USE ONLY THE COLORS NOTED OR SCHEDULED. IF A COLOR SELECTION IS NOT MADE, REQUEST ONE FROM THE ARCHITECT.
- NO. 4 THE LISTED MANUFACTURERS AND COLORS ARE ONLY INCLUDED FOR THE PURPOSES OF ESTABLISING A COLOR SCHEME GUIDE AND ARE NOT INTENDED TO LIMIT THE CONTRACTOR FROM PURPOSING ALTERNATE MANUFACTURERS AND COLORS FOR REVIEW AND APPROVAL BY THE CONTRACTING OFFICER. SPECIFICATION SECTIONS ARE LISTED IN PARENTHESIS AFTER MANUFACTURERS.

MARK	MATERIAL	MANUFACTURER	COLOR
WALLS			
W-1	CMU - SMOOTH FACE	ECHELON (SPEC 04 22 00)	WALNUT CREEK - NW BONE
W-2	CMU - SPLIT FACE	ECHELON (SPEC 04 22 00)	AUTUMN
W-3	RUBBER BASE	JOHNSONITE/TARKETT (SPEC 09 29 00)	PEPPERCORN
W-4	CMU MORTAR	AMERIMIX (SPEC 04 22 00)	SOFT IVORY
W-5	FIBERGLASS-REINFORCED PLASTIC (FRP) PANEL WALLS	CRANE COMPOSITES (SPEC 0 77 01)	WHITE
OPENINGS			
O-1	OVERHEAD COILING DOOR	COOKSON (SPEC 08 30 00)	DOVER GRAY
O-2	LOUVERS	RUSKIN (SPEC 08 90 00)	LIGHT STONE
PAINT			
P-1	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	DOVER WHITE - SW6385
P-2	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	HIGH REFLECTIVE WHITE
P-3	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	1 CLASSIC FRENCH GRAY - SW0077
MISCELLANOUS			
M-1	SHEET METAL ROOF AND SOFFIT PANELS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-2	SHEET METAL GUTTERS AND DOWNSPOUTS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-3	PERIMETER SHEET METAL COVER	AS SPECIFIED (SPEC 07 62 00)	GREY

REGISTERED ARCHITECT CERTIFICATE 80680 MORGAN SHOEMAKER Date Signed/Revised ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM: JACOBS GOVERNMENT SERVICES COMPANY
GREENWOOD VILLAGE, CO

DESIGNED: M SHOEMAKER
CADD: M COLLINS
TECH. REVIEW: G KIRSTEN
DATE: 08/2025

SUB SHEET NO. 32A6001

TITLE OF SHEET
PROCESS BUILDING ARCHITECTURAL SCHEDULES
GRAND CANYON, SOUTH RIM

NO SCALE

DRAWING NO. 113 175376
PMIS/PKG NO. 257282
SHEET 311A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

PLOT DATE: 06\05\2026 PLOT TIME: 12:00:27 PM SS6\V8i $FILE\$

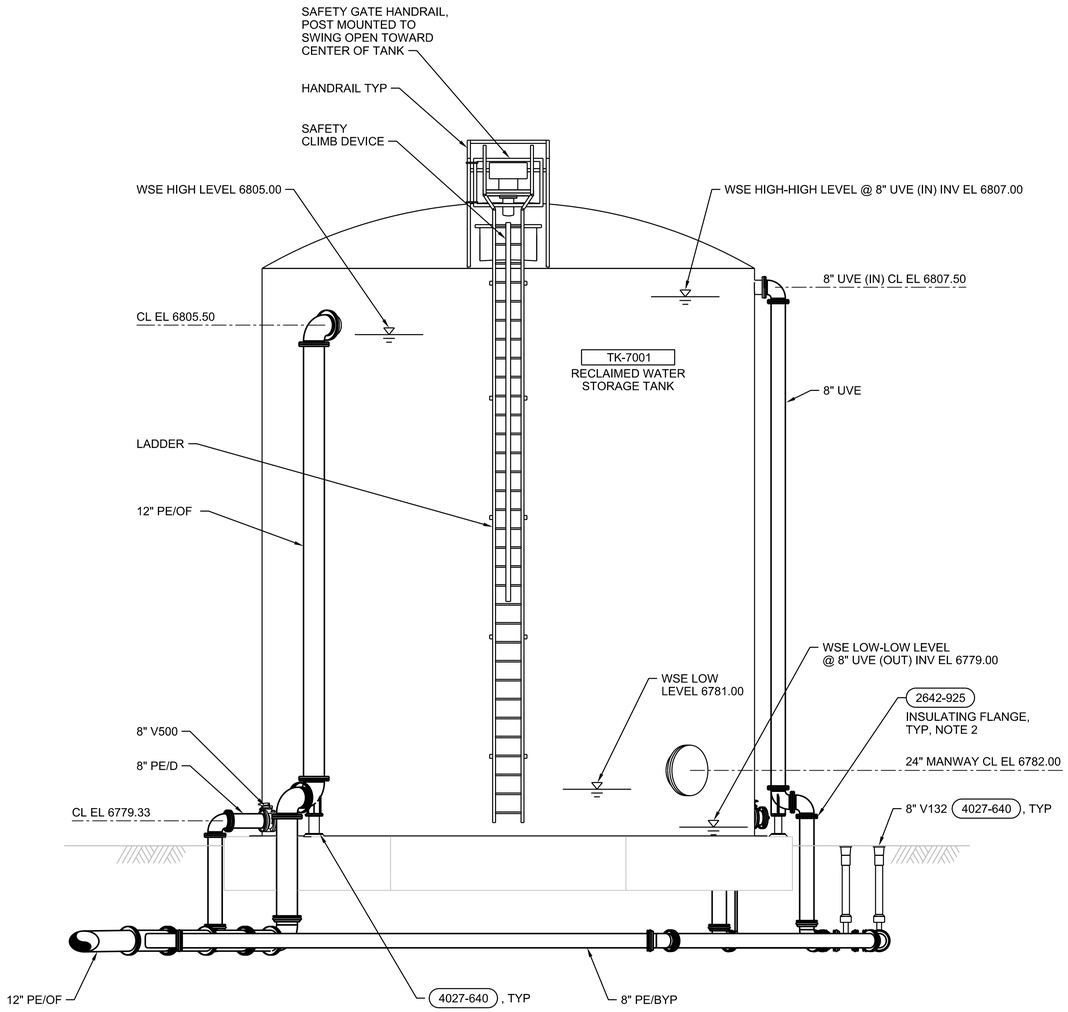
SHEET NOTES

1. HEAT TRACE AND INSULATE ALL OUTDOOR EXPOSED PIPING UP TO THE TANK WALL, INCLUDING OVERFLOW AND ROOF VENT.
2. ALL BURIED PIPING SHALL BE FITTED WITH INSULATING FLANGE AT FIRST FLANGE ABOVE GRADE OR FOR ISOLATION BETWEEN DISSIMILAR METALS.
3. START AT MINIMUM COVER AND MAINTAIN UNIFORM SLOPE AS REQUIRED FOR CONNECTION TO FACILITY 32 PIT-7051A / PI-7051B.

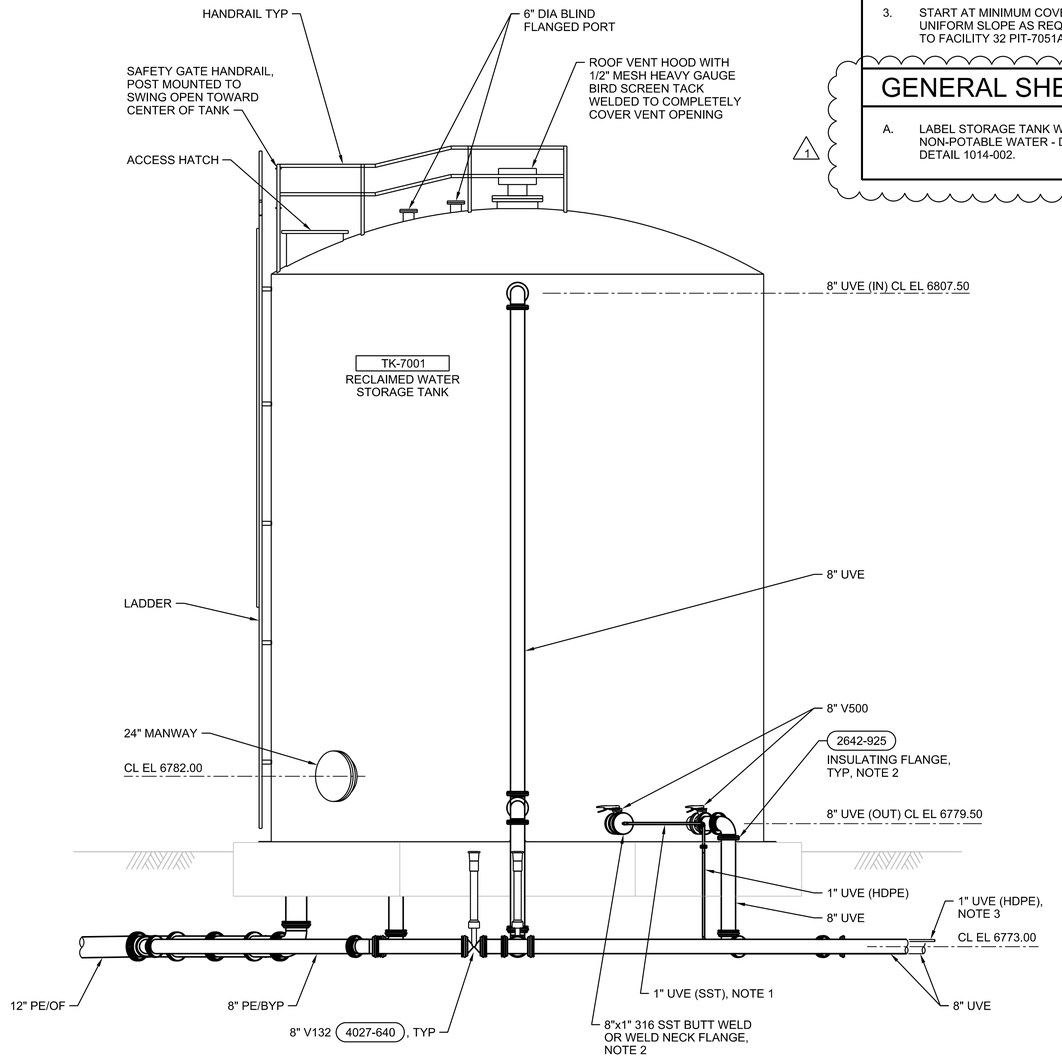
GENERAL SHEET NOTES

A. LABEL STORAGE TANK WATER "CAUTION! NON-POTABLE WATER - DO NOT DRINK" REFER TO DETAIL 1014-002.

1



A SECTION
1/4"=1'-0"
70D1030



B SECTION
1/4"=1'-0"
70D1030

0 4 8 12
1/4"=1'-0"

1 REVISED BY ADDENDUM NO. 1

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG

0" 1"

Registered Professional Engineer (Civil) CERTIFICATE NO. 52392 KRISTEN GRIEBEL Date Signed 6/1/26 ARIZONA, U.S.A. Expires 06-30-2026

A/E FIRM	DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
JACOBS GOVERNMENT SERVICES COMPANY GREENWOOD VILLAGE, CO	M CONLAY CADD: G BROWN TECH. REVIEW: D EDWARDS DATE: 08/2025	70D3001	RECLAIMED WATER TANK MECHANICAL SECTIONS GRAND CANYON, SOUTH RIM	113 175376 PMIS/PKG NO. 257282 SHEET 342A OF 49

1

100% COMPLETE CONSTRUCTION DOCUMENTS

GRCA-257282

PLOT DATE: 06\03\2026 PLOT TIME: 6:28:07 AM SS6/V8i $FILEL$

INTERIOR FINISH SCHEDULE

ABBREVIATIONS:

ARWB	ABUSE-RESISTANT GWB	COL	COLOR	FIB	FACED INSUALTION BOARD	HGT	HEIGHT
AS	AS SELECTED	CONC	CONCRETE	FRP	FIBERGLASS REINFORCED PLASTIC	MATL	MATERIAL
CLR	CLEAR	EXP	EXPOSED STRUCTURE	FNSH	FINISH	MET	METAL
CMU	CONCRETE MASONRY UNIT	FCTY	FACTORY	GWB	GYPSUM WALL BOARD	SLR	CLEAR SEALER

NOTES:
NO. 1 NUMBERS IN THE FINISH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
NO. 2 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
NO. 3 FOR EXTERIOR FINISHES AND COLORS, SEE EXTERIOR FINISH SCHEDULE ON THIS DRAWING.
NO. 4 FOR DOOR AND FRAME FINISHES, SEE DOOR AND HARDWARE SCHEDULE ON THIS DRAWING.

SPACE		FLOOR			BASE AND WAINSCOT					TYPICAL WALL			OTHER WALL			CEILING				MISCELLANEOUS				OTHER REQUIREMENTS
NO.	NAME	SUB FL	FINISH	COL	HGT	MATL	FINISH	COL	WALLS	MATL	FINISH	COL	MATL	FINISH	COL	HGT	MATL	FINISH	COL	ITEM	MATL	FINISH	COL	
80S01	STAIRWELL	CONC	SLR	CLR	---	---	---	---	---	CONC	113	P-1	FIB	FCTY	W-1	35'-2"	CONC	113	P-2					
80101	DIGESTER FEED ROOM	CONC	SLR	CLR	---	---	---	---	---	CONC	117	P-1	FIB	FCTY	W-1	12'-2"	CONC	117	P-2					
80102	ELECTRICAL ROOM	CONC	SLR	CLR	---	---	---	---	---	CONC	113	P-1	FIB	FCTY	W-1	12'-2"	CONC	113	P-2					
80201	BLOWER ROOM	CONC	SLR	CLR	---	---	---	---	---	CONC	113	P-1	FIB	FCTY	W-1	12'-4"	CONC	113	P-2					

EXTERIOR FINISH SCHEDULE

ITEM / MATERIAL	FINISH	COLOR
CONCRETE ROOF DECK	PEDESTRIAN TRAFFIC COATING	GREY
CONCRETE WALLS	SEALER	CLEAR
SHEET METAL SCUPPERS, CONDUCTOR HEADS, GUTTERS AND DOWNSPOUTS	FACTORY	M-1
LUMINAIRES	FACTORY	DARK BRONZE
PREFABRICATED METAL COPING	FACTORY	M-2
SHEET METAL ROOF	FACTORY	M-3
CANOPY FRAME	PS-5	P-4

COLOR LIST

NOTES:
NO. 1 COLOR SELECTIONS FOR THIS PROJECT MAY BE NOTED IN DOOR AND HARDWARE SCHEDULE, INTERIOR FINISH SCHEDULE, EXTERIOR FINISH SCHEDULE, PIPING SCHEDULE AND ON THE DRAWINGS BY THE LETTER-NUMBER COMBINATION IN THE MARK COLUMN OF THIS LIST.
NO. 2 SOME COLOR SELECTIONS MAY BE MADE IN VARIOUS SPECIFICATION SECTIONS.
NO. 3 USE ONLY THE COLORS NOTED OR SCHEDULED. IF A COLOR SELECTION IS NOT MADE, REQUEST ONE FROM THE ARCHITECT.
NO. 4 THE LISTED MANUFACTURERS AND COLORS ARE ONLY INCLUDED FOR THE PURPOSES OF ESTABLISING A COLOR SCHEME GUIDE AND ARE NOT INTENDED TO LIMIT THE CONTRACTOR FROM PORPOSING ALTERNATE MANUFACTURERS AND COLORS FOR REVIEW AND APPROVAL BY THE CONTRACTING OFFICER. . SPECIFICATION SECTIONS ARE LISTED IN PARENTHESIS AFTER MANUFACTURERS.

MARK	MATERIAL	MANUFACTURER	COLOR
PAINT			
P-1	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	DOVER WHITE - SW6385
P-2	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	HIGH REFLECTIVE WHITE
P-3	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	CLASSIC FRENCH GRAY - SW0077
P-4	PAINT	SHERWIN-WILLIAMS (SPEC 09 90 00)	SHAMROCK - SW6434
MISCELLANEOUS			
M-1	SHEET METAL SUPPER, CONDUCTOR HEADS, GUTTERS AND DOWNSPOUTS	IMETCO (SPEC 07 41 13)	DENALI GREEN
M-2	PREFABRICATED METAL COPING	JOHNS MANVILLE (SPEC 07 62 00)	FOREST GREEN
M-3	SHEET METAL ROOF	IMETCO (SPEC 07 41 13)	DENALI GREEN
OPENINGS			
O-1	OVERHEAD COILING DOOR	COOKSON (SPEC 08 30 00)	GRAY
WALLS			
W-1	FACED INSULATION BOARD	DUPONT (SPEC 07 21 00)	WHITE

1 REVISED BY ADDENDUM NO. 1

DOOR AND HARDWARE SCHEDULE

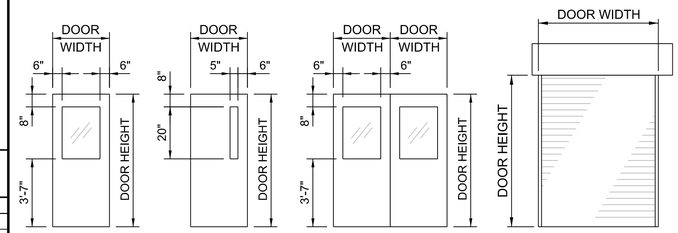
ABBREVIATIONS:

COL	COLOR	TG	TEMPERED GLASS
EXT	EXTERIOR		
FCTY	FACTORY		
FRG	FIRE RATED GLASS		
IG-C	INSULATING GLASS-CLEAR		
HM	HOLLOW METAL		
MATL	MATERIAL		
MET	METAL		

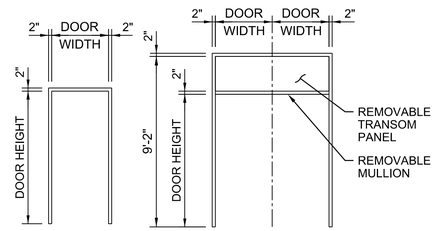
NOTES:
NO. 1 SEE THIS SHEET FOR DOOR AND FRAME TYPES.
NO. 2 FOR DOOR DETAILS, SEE DESIGN DETAILS.
NO. 3 NUMBER CODE IN HARDWARE SET COLUMN REFERS TO HARDWARE SETS IN SPECIFICATION SECTION 08 71 00.
NO. 4 NUMBERS IN FNSH COLUMN REFER TO PAINT SYSTEMS IN SPECIFICATION SECTION 09 90 00.
NO. 5 CODES IN COL COLUMN REFER TO COLOR LIST ON THIS DRAWING.
NO. 6 FOR GLASS TYPES, SEE SPECIFICATION SECTION 08 80 00.

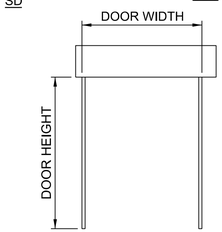
OPENING																HARDWARE		FIRE PROTECTION RATING	OTHER REQUIREMENTS
NO.	SIZE		DOOR					FRAME				DETAILS							
	WIDTH	HEIGHT	CONSTR	TYPE	GLASS	FINISH	COL	MATL	TYPE	FINISH	COL	HEAD	JAMB	SILL		SET NO.	KEY SIDE		
80S01A	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-001	0811-002	0871-001		7	EXT	---	
80S01B	3'-0"	7'-2"	HM	N	FRG	5	P-3	HM	SD	5	P-3	0811-001	0811-002	0871-002		12	---	45 MIN	S-16, M-1: STAIRWELL
80S01C	3'-0"	7'-2"	HM	N	FRG	5	P-3	HM	SD	5	P-3	0811-001	0811-002	0871-001		12	EXT	45 MIN	S-16, M-1: STAIRWELL
80S01D	3'-0"	7'-2"	HM	G	IG-C	5	P-3	HM	SD	5	P-3	0811-001	0811-002	0871-010		14	EXT	45 MIN	S-20
80101A	8'-0"	10'-0"	MET	OHCI	---	FCTY	O-1	MET	OHC	FCTY	O-1	0833-003	0833-004	0833-004		20	---	---	
80102A	(2) 2'-10"	7'-2"	HM	G/G	IG-C	5	P-3	HM	DDT	5	P-3	0811-001	0811-002	0871-001		5	EXT	---	
80102B	3'-0"	7'-2"	HM	G	TG	5	P-3	HM	SD	5	P-3	0811-001	0811-002	0871-002		15	---	---	M1: ELECTRICAL ROOM

DOOR TYPES



DOOR FRAME TYPES





NO SCALE

FULL SIZE DRAWINGS = 22"x34"
BAR MEASURES 1" LONG
0" 1"

REGISTERED ARCHITECT
CERTIFICATE
80685
MORGAN SHOEMAKER
Date Signed
ARIZONA, U.S.A.
Expires 06-30-2027

A/E FIRM
JACOBS GOVERNMENT SERVICES COMPANY
GREENWOOD VILLAGE, CO

DESIGNED: M SHOEMAKER
CADD: M COLLINS
TECH. REVIEW: G KIRSTEN
DATE: 08/2025

SUB SHEET NO. 80A6001

TITLE OF SHEET
DIGESTER FACILITY ARCHITECTURAL SCHEDULES
GRAND CANYON, SOUTH RIM

DRAWING NO. 113 175376
PMIS/PKG NO. 257282
SHEET 357A OF 49

GRCA-257282

100% COMPLETE CONSTRUCTION DOCUMENTS

PLOT DATE: 06\05\2026 PLOT TIME: 12:01:16 PM $FILE\$ SS6\V8i

DETAIL	SHEET TITLE/DESCRIPTION
0811-032	DOOR HEAD AND JAMB
0811-033	DOOR HEAD AND JAMB
0833-003	OVERHEAD DOOR HEAD (INSULATED)
0833-004	OVERHEAD DOOR JAMB AND SILL (INSULATED)
0833-007	OVERHEAD DOOR HEAD (INSULATED)
0833-008	OVERHEAD DOOR JAMB AND SILL (INSULATED)
0851-002	WINDOW HEAD AND SILL
0851-004	WINDOW HEAD AND SILL
0851-005	SIDELIGHT JAMB AND SILL
0871-001	DOOR SILL
0871-002	DOOR SILL
0871-003	DOOR SILL
0871-004	DOOR SILL
0871-010	DOOR SILL
0890-002	LOUVER HEAD AND SILL

0900 SERIES

0929-104	WALL DETAIL
0929-105	WALL DETAIL
0929-106	WALL DETAIL
0929-107	WALL DETAIL
0929-108	PARTITION DETAILS
0929-109	WALL DETAIL
0929-110	WALL DETAIL
0929-111	WALL DETAIL
0929-112	WALL DETAIL
0929-201	WALL AT CEILING
0929-401	SOFFIT
0929-403	CEILING TO METAL STUD WALL
0930-004	SHOWER STALL

1000 SERIES

1014-001	~~DANGER SIGN~~
1014-002	CAUTION SIGN, 1 OF 2
1014-002	CAUTION SIGN, 2 OF 2
1014-004	~~HANDICAPPED PARKING SIGN~~
1014-006	HAZARDOUS MATERIAL SIGNAL
1014-009	FIRE DOOR SIGN
1014-010	ACCESSIBLE SIGNAGE
1014-011	EXIT WARNING SIGN
1080-003	DOCK BUMPER
1235-051	LAB CABINET SECTION
1235-052	LAB CABINET SECTION (ISLAND)
1235-100	DRAIN RACK
1334-100	EAVE
1334-101	RAKE
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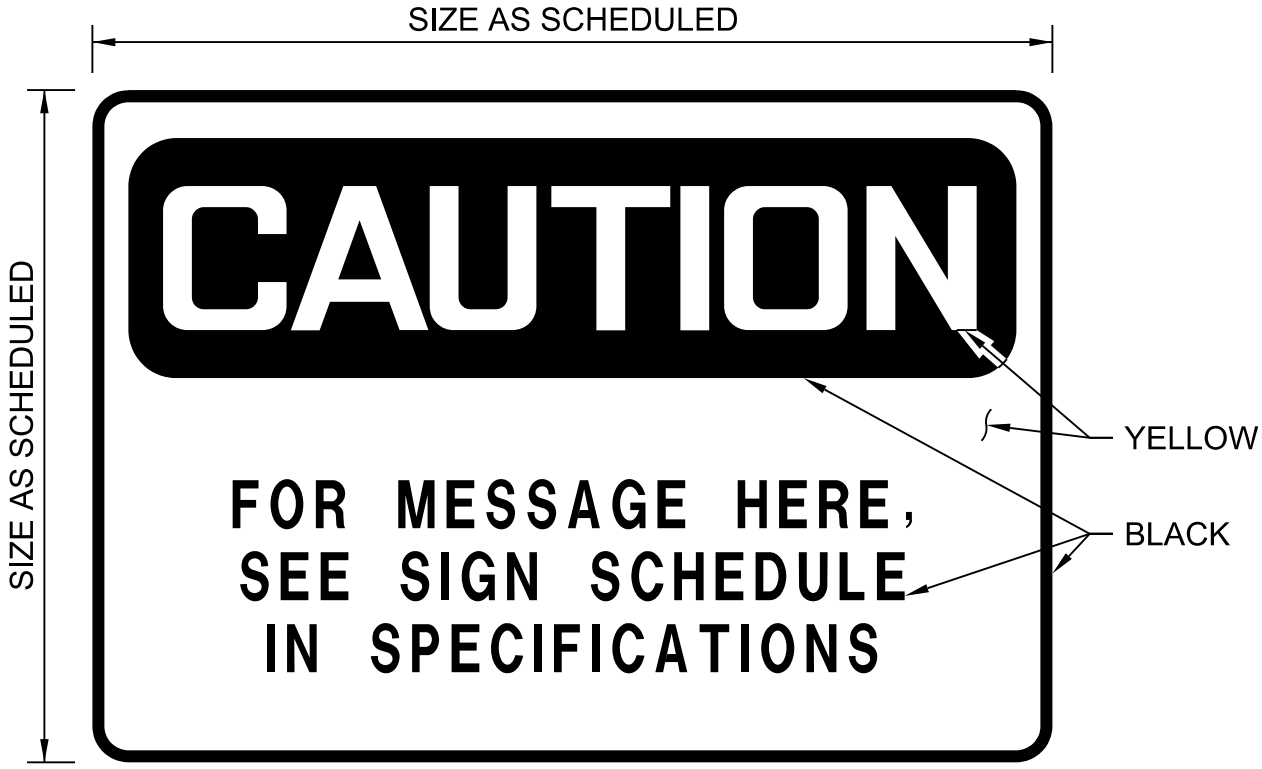

CAUTION SIGN

NTS

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1 DETAIL 1 OF 2

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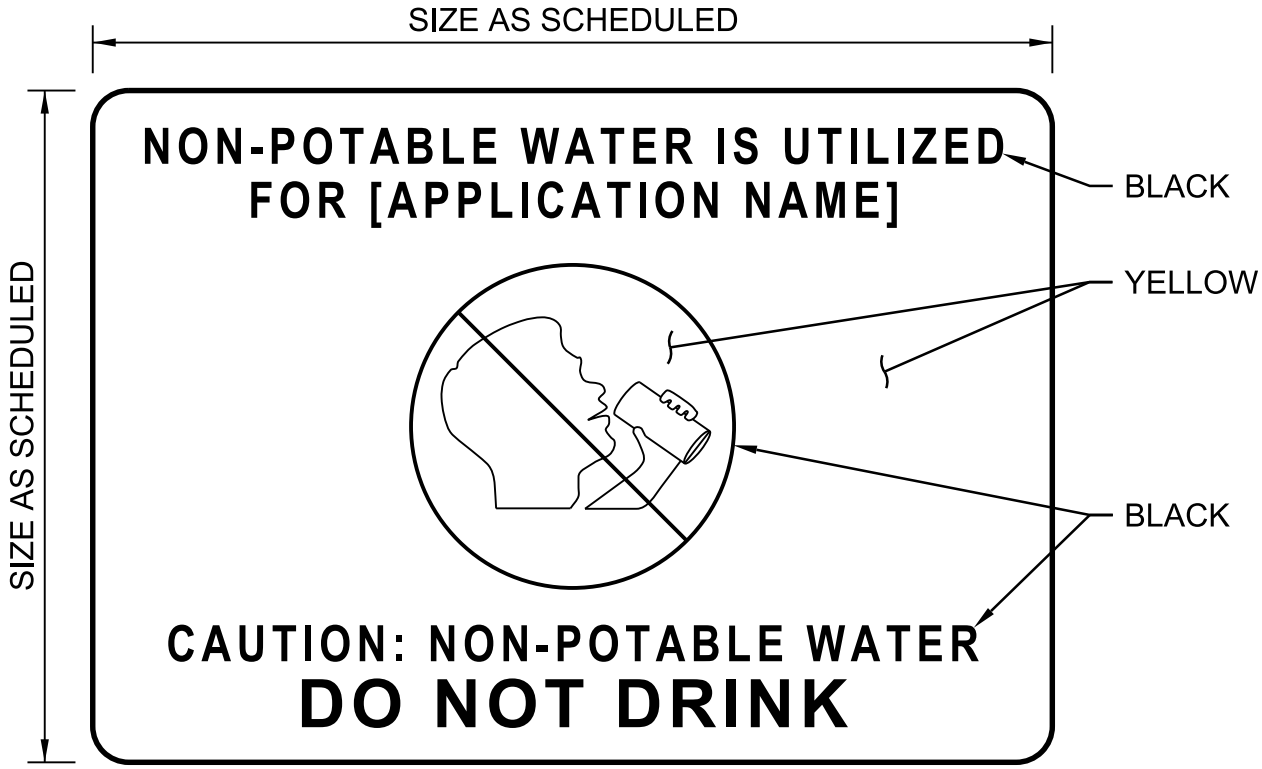

NOTES:

1. USE FOR SIGNS S-8 AND S-9 IN SIGN SCHEDULE OF SPECIFICATION SECTION 10 14 00 SIGNAGE.
2. TEXT TO BE 1/2" MINIMUM IN HEIGHT.

CAUTION SIGN

NTS

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DETAIL 2 OF 2

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SOUTH RIM

1014-002

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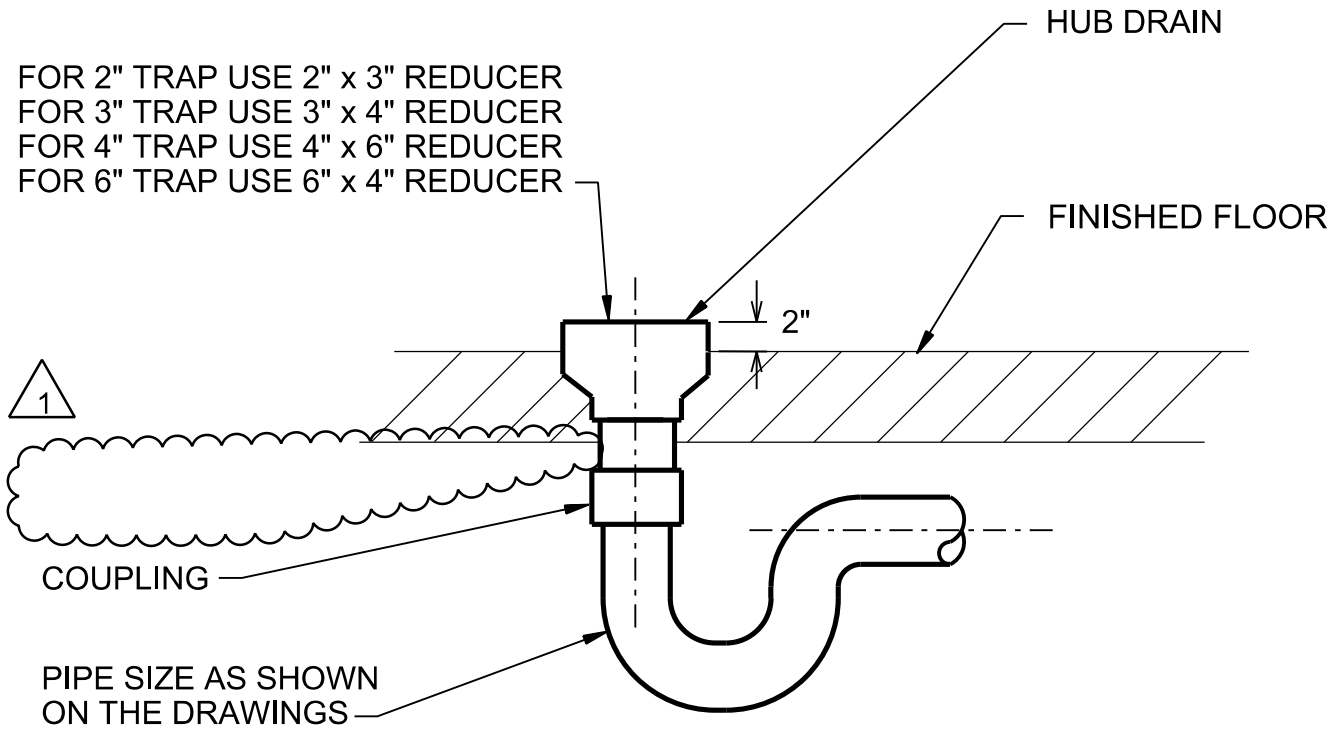

HUB DRAIN

NTS

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SOUTH RIM

2240-100

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NATIONAL PARKS SERVICE

GRAND CANYON NATIONAL PARK

GRAND CANYON, ARIZONA

CONTRACT DOCUMENTS

for the construction of the

REPLACE WASTEWATER PLANT SOUTH RIM VILLAGE

GRCA 257282

ADDENDUM NO. 1

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JACOBS

Grand Canyon, Arizona

June 10, 2026

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SECTION 00 01 07
SEALS PAGES
FOR
REPLACE WASTEWATER PLANT SOUTH RIM VILLAGE
GRCA 257282
ADDENDUM NO. 1

See Table of Contents for author of each specification section, identified by author's initials as follows:

AUTHOR'S NAME = INITIALS

SCOTT HINTE = SH
CHRISTOPHER KYLE SMITH = CKS
MORGAN SHOEMAKER = MS

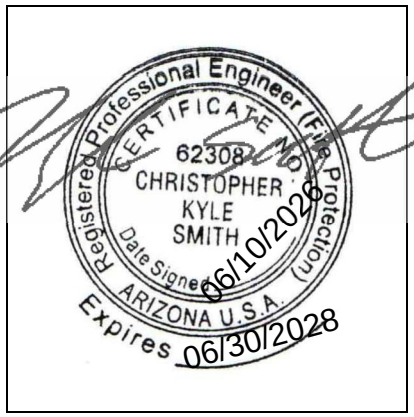
SPECIFICATIONS

Digitally Signed

Scott Hinte

Digitally Signed

Morgan Shoemaker



Digitally Signed

Christopher Kyle Smith

END OF SECTION

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32 11 23	KDA	Aggregate Base and Subbase Course(s)	1- 7
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40 27 00.03	DE	Carbon Steel Pipe and Fittings—General Service Data Sheet	1- 5
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40 27 00.10	DE	Polyvinyl Chloride (PVC) Pipe and Fittings Data Sheet	1- 3
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40 27 00.13	DE	Copper and Copper Alloy Pipe, Tubing, and Fittings Data Sheet	1- 2
40 27 00.14	DE	Perforated Polyvinyl Chloride (PVC) Pipe and Fittings Data Sheet	1- 1
40 27 00.19	DE	Chemical Piping, Tubing, and Fittings Data Sheet	1- 3
40 27 00.21	DE	High Density Polyethylene (HDPE) Pressure Pipe and Fittings Data Sheet	1- 4
40 27 00.23	DE	Polyvinyl Chloride (PVC – AWWA C900) Pipe and and Fittings Data Sheet	1- 3
40 27 01	DE	Process Piping Specialties	1- 18
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40 90 00	AW	Instrumentation and Control for Process Systems	1- 39
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40 91 00	AW	Instrumentation and Control Components	1- 52
40 92 01	AW	Control Panels	1- 10
		Supplement:	
	AW	Control Panel Schedule	1- 1
40 96 00	AW	Applications Software	1- 22
40 99 90	AW	Package Control Systems	1- 36

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	DE	Digester Facility Monorail Hoist Data Sheet	1- 1
	DE	Digester Facility Monorail Hoist Dimension Sheet	1- 1
	DE	Reclaimed Water Pump Monorail Hoist Data Sheet	1 1
	DE	Reclaimed Water Pump Monorail Hoist Dimension Sheet	1- 1

DIVISION 42 (NOT USED)

Section	Person Responsible	Title	Pages
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43 22 56.01	CL	Submersible Mixers	1- 6
43 22 56.02	CL	Vertical Mixers	1- 10
		Supplements:	
	CL	Digester Mixers 1, 2, 3, and 4 Data Sheet	1- 1
	CL	Digester Mixers 1, 2, 3, and 4 Induction Motor Data Sheet	1- 1
43 32 56	RT	Membrane Equipment System (Membrane Bioreactor)	1- 41
43 40 01	RT	Polyethylene Storage Tank	1- 10
DIVISION 44—POLLUTION AND WASTE CONTROL EQUIPMENT			
44 42 19.04	RT	Rotary Positive Displacement Blower	1- 16
44 42 28	RT	Weir and Baffle Plates	1- 6
44 42 30	DE	Inclined Rotating Drum Screens	1- 21
44 42 31	DE	Septage Receiving System	1- 14
44 42 35	CL	Floating Decanters	1- 5
44 42 40	DE	Grit Concentrator	1- 6
44 42 41	DE	Grit Washing and Dewatering Unit	1- 7
44 42 48.04	DE	Automatic Composite Sampler (Refrigerated, Peristaltic Type)	1- 10
44 42 56.04	DE	Submersible Pumps	1- 9
		Supplements:	
	DE	WAS Pump 1 and WAS Pump 2 Data Sheet	1- 2
	DE	Tank Drain Pump 1 and Tank Drain Pump 2 Data Sheet	1- 2
	DE	Plant Drain Pump 1 and Plant Drain Pump 2 Data Sheet	1- 2
44 42 56.09	DE	Non-Clog Dry-Pit Centrifugal Pumps	1- 10
		Supplement:	
	DE	RAS Pumps 1, 2, 3, and a Spare Data Sheet	1- 3
44 42 56.11	DE	Vertical Inline Multistage Centrifugal Pumps	1- 7
		Supplements:	
	DE	RW Pumps Data Sheet	1- 3
	DE	RW Pumps Motor Data Sheet	1- 1
44 42 56.13	DE	Progressing Cavity Pumps	1- 6
		Supplement:	
	DE	Digester 1 Sample Pump and Digester 2 Sample Pump Data Sheet	1- 2
44 42 56.14	RT	Lobe Pumps	1- 10
		Supplements:	
	RT	Permeate Pump Data Sheet	1- 2
	RT	Pump Drive Induction Motor Data Sheet	1- 1

Section	Person Responsible	Title	Pages
44 42 56.18	DE	Horizontal Self-Priming Centrifugal Pumps	1- 8
		Supplement:	
	DE	Grit Pump and Grit Pump Spare Data Sheet	1- 2
44 44 13.01	RT	Chemical Metering Pumps	1- 10
		Supplements:	
	RT	Magnesium Hydroxide Pumps 1 and 2 Data Sheet	1- 2
	RT	Supplemental Carbon Pumps 1, 2, 3, and 4 Data Sheet	1- 2
	RT	Citric Acid Pumps 1 and 2 Data Sheet	1- 2
	RT	Sodium Hypochlorite Pumps 1 and 2 Data Sheet	1- 2
	RT	Sodium Hypochlorite Pumps 3 and 4 Data Sheet	1- 2
44 44 73	RT	Ultraviolet Disinfection Equipment for Wastewater	1- 35
44 45 13.11	KG	Package Biofilter System	1- 15
44 45 16.02	CL	Fine Bubble Air Diffuser System	1- 17
44 46 30	DE	Miscellaneous Mechanical Equipment	1- 12

DIVISION 45 THROUGH DIVISION 49 (NOT USED)

VOLUME 2

DRAWINGS

VOLUME 3

STANDARD DETAILS

END OF SECTION

SECTION 01 91 15
TOTAL BUILDING COMMISSIONING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning.
2. Commissioning meetings.
3. Commissioning reports.
4. Use of test equipment, instrumentation, and tools for commissioning.
5. Construction checklists, including, but not limited to, installation checks, startup, and performance tests.
6. Commissioning tests.
7. Adjusting, verifying, and documenting identified systems and assemblies.

B. Work included under this section includes a complete and thorough investigation of equipment and systems indicated in Part 3 of section. In order to ensure proper installation and operation of components and systems. Contractor shall perform commissioning as described herein to accomplish the tasks, and goals of commissioning. Systems to be evaluated include but are not limited to:

1. HVAC (Heating, Ventilation, and Air Conditioning) components and equipment.
2. HVAC system: Interaction of cooling, heating, and comfort delivery systems.
3. Lighting Control System and interface with daylighting.
4. Building Envelope (walls, roof, windows, infiltration, etc.).
5. Life Safety Systems (Fire Alarm and Suppression).
6. Electrical and Alternative Energy Systems (propane generator, photovoltaic panels, etc.).
7. Access Control/ Security Systems.
8. Lightning Protection.
9. Plumbing lift station.
10. Plumbing Domestic Water/Reclaimed Water Cross-Connection Test: Perform a cross-connection test by isolating the reclaimed water system and verifying that no pressure or flow is introduced into potable water system, and vice versa. Verify no cross-connections or backflow was observed.[REV. 1][ADD1]

C. Building commissioning activities and documentation are described in the following reference material: United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED™) rating program, American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

Guideline 0-2005, The Commissioning Process, and National Institute of Building Sciences (NIBS) Guidelines.

D. Work under this section does not include wastewater treatment process equipment or unit processes. See Section 01 91 14, Equipment Testing and Facility Startup, for testing and certification requirements related to the wastewater treatment process.

E. National Park Service (NPS) personnel, Green Consultant, and Architect/Engineer, are not responsible for construction means, methods, job safety, or management function related to commissioning on Job Site.

F. Related Sections:

1. Section 01 31 00, Project Management and Coordination.
2. Section 01 33 23, Submittal Procedures.
3. Section 01 40 00, Quality Requirements.
4. Section 01 57 19.11, Indoor Air Quality Management.
5. Section 01 57 19.12, Noise and Acoustics Management.
6. Section 01 77 00, Closeout Procedures.
7. Section 01 78 23, Operation and Maintenance Data.
8. Section 01 79 00, Demonstration and Training.
9. Section 01 81 13, Sustainable Design Requirements for Non-LEED™ Projects.

1.2 DEFINITIONS

A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity.

B. Construction Checklist: Form used by Contractor to verify appropriate components are onsite, ready for installation, correctly installed and functional.

C. Contractor's Commissioning Representative: (CCxR) Contractor's designated individual to coordinate, manage, and execute commissioning processes of the contracting organizations.

D. Commissioning Plan (CCxP): Plan that provides structure, schedule and coordination planning for commissioning process proposed specifically for this Project. CCxP includes Personnel, activities, and a description of Infrastructure, and list of instruments and logging devices that will be used during Commissioning.

E. Deficiency: Condition in the installation or function of a component, piece of equipment or system not in compliance with Contract Documents, does not perform properly or is not complying with Basis of Design.

F. Functional Performance Test (FPT): Test of dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods.

Functional testing is the dynamic testing of systems (rather than just components) under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to be responding as the sequences state. Traditional air or water test and balancing (TAB) is not functional performance testing, in the commissioning sense of the word. TAB's primary work is setting up the system flows and pressures as specified, while functional testing is verifying that which has already been set up. The CCxR develops the sequentially written functional test procedure forms, and oversees and documents the actual testing, which is performed by the installing contractor or vendor. The CCxR creates worksheets from these forms which include procedures required to accommodate actual equipment, means and methods used in the Project. Functional Performance Tests are performed after pre-functional checklists and startup is complete.

G. Manual Test: Using hand-held instruments, control system readouts or direct observation to verify performance (contrasted to analyzing electronically monitored data taken over time to make the "observation").

H. Monitoring: Recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or the trending capabilities of control systems.

I. Government's Project Requirements: Document originated by Designer that details functional requirements of Project and expectations of use and operation, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. Document is updated, with input from Contracting Officer (CO) as required as Project is finished.

J. Pre-functional Checklist: List of items to inspect and elementary component tests to conduct to verify proper installation of equipment. Pre-functional checklists are primarily static inspections and procedures to prepare equipment or system for initial operation (e.g., belt tension, oil levels ok, labels affixed, gages in place, sensors calibrated, etc.). However, some pre-functional checklist items entail simple testing of the function of a component, a piece of equipment or system (such as measuring voltage imbalance on a three-phase pump motor of a chiller system). Pre-functional" refers to "before" functional testing. Pre-functional checklists augment and are combined with the equipment manufacturer's start-up checklist.

K. Seasonal Performance Tests: Functional Performance Tests deferred until system(s) will experience seasonal conditions closer to their design conditions.

L. Systems Manual: System focused composite document that includes operational manual, maintenance manual, and additional information of use to Government during Occupancy and Operation Phase.

M. Total Building Commissioning (TBC): Quality-focused process for verifying and documenting that facility, systems and assemblies are planned, designed, installed, and tested to comply with Government's Project Requirements. Requirements specified here are limited to construction phase commissioning activities.

1.3 COMMISSIONING TEAM

A. Members Appointed by Contractor(s): Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action.

1. CCxR (Contractor's Commissioning Representative):

a. CCxR shall be approved by Contracting Officer and satisfy as many of the following requirements as possible:

1) Certified in Commissioning by nationally accredited organization (i.e., Associated Air Balance Council (AABC), Association of Energy Engineers (AEE), Building Commissioning Association (BCA), and National Environmental Balancing Bureau (NEBB))
2) Acted as principal Commissioning Authority where total building commissioning approach (including building envelope) was used for at least three projects of comparable size, type, and scope.
3) Technical training in Mechanical, Electrical, and/or fire protection engineering.
4) Past commissioning experience.
5) Knowledge of national codes.
6) Experience in energy-efficient design and control strategy optimization.
7) Specific experience with specialty systems relative to particular facility type (i.e., Federal blast and progressive collapse requirements, security systems, etc.).

2. Contractor Quality Control (CQC) Supervisor.
3. Other Representatives may include Project superintendents, installers, suppliers, and specialists.

B. Members Appointed by Contracting Officer:

1. Representatives of facility user and operation and maintenance personnel.
2. Architect and engineering design professionals.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. Contractor shall assign representatives with expertise and authority to act on its behalf to participate in and perform commissioning process activities including:

1. Perform commissioning tests, as required by technical specifications. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
2. Record and resolve commissioning issues.
3. Attend commissioning team meetings held on variable basis.
4. Integrate and coordinate commissioning process activities with overall Project schedule.
5. Review Construction Checklist attached at end of specification section.
6. Complete construction checklists as Contract Work is completed and provide to Contracting Officer on a basis as determined by the Contracting Officer.
7. Complete commissioning process test procedures.
8. Provide maintenance orientation and inspection for systems, assemblies, equipment, and components based on contract requirements.
9. Provide Commissioning Plan and documentation for final commissioning documentation.
10. Provide measuring instruments and logging devices to record test data and provide data acquisition equipment to record data for complete range of testing for required test period.

1.5 COMMISSIONING DOCUMENTATION

A. Provide the following information:

1. Review of systems manual, submittals, documents, and other commissioning reports.
2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
3. Commissioning Plan including Process activities and schedule for completing construction checklists and manufacturer's pre-start and startup checklists for systems, assemblies, equipment, and components to be verified and tested.
4. Certificate of readiness certifying systems, subsystems, equipment, and associated controls are ready for testing.
5. Test and inspection reports and certificates.
6. Corrective action documents.
7. Testing, adjusting, and balancing reports.

1.6 SUBMITTALS

A. Two-week Look-ahead Schedules: Schedule showing the next two weeks of commissioning related construction activity to include completion dates for each

element of commissioning documentation for each major system or subsystem as identified in Paragraph 1.1.B.

B. Certificates of readiness.

C. Contractor's Commissioning Representative Qualifications.

D. Commissioning Plan: Submit within 30 calendar days of authorization to proceed.

1. Update as necessary during the work to reflect progress on components and systems.

E. Pre functional checklists.

F. Contracting Officer's project requirements.

G. Functional Performance Test Forms: Submit minimum 30 calendar days prior to testing.

H. List of test instrumentation, equipment, and monitoring devices. Include:

1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
2. Brief description of intended use.
3. Calibration Record Showing:

a. Calibration agency, including name and contact information.
b. Last date of calibration.
c. Range of values for which calibration is valid.
d. Certification of accuracy.
e. National Institute of Standards and Technology (NIST) traceability certification for calibration equipment.
f. Due date of the next calibration.

I. Deficiency Report and Resolution Record: Document items of non-compliance in materials, installation or operation. Document results from start-up/pre-functional checklists, functional performance testing, and short-term diagnostic monitoring. Include details of components or systems found to be non-compliant with The Drawings and Specifications. Identify adjustments and alterations required to correct system operation and identify who is responsible for making corrective changes.

1. Update as necessary during work to reflect progress on components and systems. Submit updated versions monthly.

J. Closeout Documentation:

1. Closeout documents for commissioned equipment and systems shall be submitted prior to functional performance testing. These include:

a. Record Documents and the Drawings.
b. Start-up certificates for commissioned equipment with start-up requirements.
c. Systems Manual.
d. Include TAB, startup, and Control System check-out reports.

2. Operation and Maintenance (O&M) Submittals (refer to requirements of technical specifications):

a. Training Plan:

1) Include for each training session:

a) Dates, start and finish times, and locations.
b) Outline of the information to be presented.
c) Names and qualifications of presenters.
d) List of texts and materials required to support training.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

A. Instrumentation shall:

1. Be of sufficient quality and accuracy to test and measure system performance within tolerances required to determine adequate performance.
2. Be calibrated on manufacturer's recommended intervals calibration tags permanently affixed to instrument being used.
3. Be maintained in good repair and operation condition throughout duration of use on this Project.

B. Standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by Contractor for equipment being tested.

C. Required commissioning equipment (sensors, transducers, data loggers, etc.) not integral to the systems or equipment installed shall be provided by Contractors Commissioning Representative and shall not become property of the Government.

2.2 PRE-FUNCTIONAL CHECKLIST

A. Prepare pre functional checklists for equipment and systems to be commissioned.

B. Pre-functional checklists shall be complementary to Commissioning Plan and Commissioning Schedule.

2.3 FUNCTIONAL TEST PROCEDURE FORMS

A. Prepare functional test procedure forms for each piece of equipment and each system to be commissioned.

2.4 FUNCTIONAL PERFORMANCE WORKSHEETS

A. Prepare Functional Performance worksheets, consisting of test procedures and expected results of testing.

2.5 REPORT FORMAT AND ORGANIZATION

A. General Format and Organization:

1. Bind report in three-ring binders.
2. Label front cover and spine of each binder with report title, volume number, project name, Contractor's name, and date of report.
3. Record report on compact disk.
4. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.

B. Commissioning Report:

1. Include table of contents and an index to each test.
2. Include major tabs for each specification section.
3. Include minor tabs for each test.
4. Within each minor tab, include:

    a. Test specification.
    b. Pre-startup reports.
    c. Approved test procedures.
    d. Test data forms, completed and signed.
    e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within minor tab, in reverse chronological order (most recent on top).

PART 3 EXECUTION

3.1 COMMISSIONING PROCESS

A. Following activities outline general commissioning tasks (requiring development, execution, etc.) and order in which they occur. Specific Commissioning requirements are found in technical specification sections.

1. Commissioning Scoping Meeting.
2. Finalize Government's Project Requirements.
3. Commissioning Plan.
4. Prepare pre-functional checklists.
5. Prepare functional performance worksheets.
6. Perform Start-Up/Pre-Functional Checks in accordance with manufacturer's recommendations and pre-functional checklists.
7. Functional Performance Testing in accordance with functional performance worksheets.
8. Deficiency Report and Resolution Record.
9. Operation and Maintenance Documentation.
10. Operations and Maintenance Training.
11. Deferred Testing.

3.2 TOTAL BUILDING COMMISSIONING (TBC) REQUIREMENTS

A. TBC during construction, acceptance, and warranty phases is intended to achieve following specific objectives:

1. Verify that systems and equipment meet Government's Project Requirements.
2. Verify equipment is what was submitted and approved.
3. Verify and document equipment is installed and started per manufacturer's recommendations, industry accepted minimum standards, and Contract Documents.
4. Verify and document equipment and systems receive complete operational checkout by installing contractors.
5. Verify and document equipment capacity and system efficiency.
6. Verify performance of building envelope. Document testing and conformance to Contract Documents.
7. Verify completeness of operations and maintenance materials.
8. Ensure Governments operating personnel are adequately trained on operation and maintenance of building equipment.

3.3 COMMISSIONING SCOPING MEETING

A. Commissioning Scoping Meeting:

1. Schedule, coordinate, and facilitate a scoping meeting.
2. Review each building system to be commissioned, including intended operation, commissioning requirements, and completion and start-up schedules.
3. Establish scope of work, tasks, schedules, deliverables, and responsibilities for implementation of Commissioning Plan.
4. Attendance: Commissioning Team members.

3.4 COMMISSIONING PLAN

A. Commissioning Plan: Develop commissioning plan to identify how commissioning activities will be integrated into general construction and trade activities. Commissioning plan shall identify how commissioning responsibilities are distributed. Intent of plan is to evoke questions, expose issues, and resolve issues with input from entire commissioning team early in construction.

1. Identify who will be responsible for producing various procedures, reports, Contracting Officer notifications and forms.
2. Include commissioning tasks and activities in overall Project schedule. Tag individual activities so they can be filtered at later date.
3. List and describe each test/acceptance procedure, including acceptance criteria.

3.5 START-UP/PRE-FUNCTIONAL CHECKLISTS

A. Start-Up/Pre-Functional Checklists: Complete pre-functional checklists prior to start up. Checklist shall help verify that systems are complete and operational, so functional performance testing can be scheduled.

1. Verify equipment installed is what was approved on Submittal.
2. Manufacturer’s start-up checklists and other technical documentation guidelines may be used as basis for pre-functional checklists.

3.6 FUNCTIONAL PERFORMANCE TESTING

A. Functional Performance Testing: Test procedures fully describe system configuration and steps required for each test.

1. Test Methods: Functional performance testing and verification may be achieved by direct manipulation of system inputs (i.e. heating or cooling sensors), manipulation of system inputs with building automation system (i.e. software override of sensor inputs), trend logs of system inputs and outputs using building automation system, or short-term monitoring of system inputs and outputs using standalone data loggers. A combination of methods may be

required to completely test complete sequence of operations. CCxR shall determine which method or combination of methods is most appropriate.

2. Setup: Each test procedure shall be performed under conditions that simulate normal operating conditions as closely as possible. Where equipment requires integral safety devices to stop/prevent equipment operation unless minimum safety standards or conditions are met, functional performance test procedures shall demonstrate actual performance of safety shutoffs in real or closely simulated conditions of failure.
3. Sampling: Multiple identical pieces of non-life-safety or non-critical equipment may be functionally tested using a sampling strategy. If, after three attempts at testing the specified sample percentage, failures are still present, remaining units shall be tested at Contractors' expense.

B. Prepare functional performance test procedure forms to accommodate actual installed equipment and systems.

C. Coordinate, execute, and record results of functional performance testing.

1. Coordinate retesting as necessary until satisfactory performance is verified.
2. Verify intended operation of individual components and system interactions under various conditions and modes of operation.

3.7 DEFICIENCY REPORT AND RESOLUTION RECORD

A. Deficiency Report and Resolution Record: Document items of non-compliance in materials, installation or operation.

B. Non-Conformance: Non-conformance and deficiencies observed shall be addressed immediately. Notify responsible parties and provide recommended actions to correct deficiencies.

1. Corrections of minor deficiencies identified may be made during tests at discretion of CCxR. In such cases the deficiency and resolution shall be documented on procedure form.
2. For Identified Deficiencies:

a. If no dispute on deficiency and responsibility to correct it:

1) CCxR documents deficiency and adjustments or alterations required to correct it. Contractor corrects deficiency and notifies CCxR that equipment is ready to be retested.
2) CCxR reschedules test and test is repeated until satisfactory performance is achieved.

b. If there is a dispute about a deficiency or who is responsible:

1) Deficiency is documented CCxR on non-compliance form.
2) Resolutions are made at lowest management level possible. Additional parties are brought into discussions as needed. Contractor shall have responsibility for resolving construction deficiencies. If a design revision is deemed necessary and approved by Contracting Officer, Architect/Engineer (A/E) shall have responsibility for providing design revision. CCxR documents resolution process.
3) Once interpretation and resolution have been decided, appropriate party corrects deficiency and notifies CCxR that equipment is ready to be retested. CCxR reschedules test and test is repeated until satisfactory performance is achieved.

3. Cost of Retesting: Costs for retesting shall be charged to Contractor.

3.8 OPERATIONS AND MAINTENANCE TRAINING

A. Training: Develop Training Plan. Coordinate and execute training programs with CxA.

1. Stress and enhance importance of system interactions, troubleshooting, and long-term preventive maintenance and operation programs.

3.9 DEFERRED TESTING

A. Unforeseen Deferred Tests: If test cannot be completed due to building structure, required occupancy condition, or other deficiency, functional testing may be delayed upon recommendation of CCxR and approval of Contracting Officer. These tests are conducted in same manner as the seasonal tests, as soon as possible.

B. Seasonal Testing:

1. Schedule, coordinate, execute, and document additional testing for seasonal variation in operations and control strategies during appropriate season to verify performance of HVAC system and controls. Complete testing during warranty period to fully test sequences of operation.
2. Update O&M manuals and Project Record Drawings as necessary due to testing.

3.10 EQUIPMENT & SYSTEM SCHEDULE

A. Commissioned Equipment and Systems List: Following is a list of systems and equipment to be commissioned organized by system. It includes the percentage of each category that will undergo testing. The intent is to provide an overall summary

of commissioned equipment and systems, and not a comprehensive list. Refer to applicable specification sections for more information.

COMMISSIONED EQUIPMENT AND SYSTEMS LIST			
SYSTEM	**EQUIPMENT**	**CC** (Commissioning Coordinator)	**FPT** (Functional Performance Test)
HVAC Make-Up air Units	Make-up air units at Facilities 20, 32, 80		X
HVAC Dedicated Outdoor Air Units	Dedicated outdoor air units at Facility 10		X
HVAC Split System Heat Pump Units	Split system air conditioning units at Facilities 10, 20, 32, 80		X
HVAC Heat Pump Units	Packaged heat pump at Building 12		X
HVAC Exhaust Fans	Exhaust fans at Facilities 10, 12, 20, 32, 80		X
Lab Exhaust Fan	Lab hood exhaust fans at Building 10		X
HVAC Variable Refrigerant Flow	VRF/Fan coil units at Building 10		X
Sanitary Sump Pumps	Sanitary Lift Station		X

END OF SECTION

SECTION 10 14 00
SIGNAGE

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards that may be referenced in this section:

1. American Society of Mechanical Engineers (ASME): A13.1, Scheme for the Identification of Piping Systems.
2. Architectural Barriers Act (ABA).
3. ASTM International (ASTM):
   a. A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
   b. D709, Standard Specification for Laminated Thermosetting Materials.
4. International Code Council (ICC): International Fire Code (IFC): Chapter50, Hazardous Materials-General Provisions.
5. National Fire Protection Association (NFPA):
   a. 704, Standard System for the Identification of the Hazards of Materials for Emergency Response.
   b. HAZ-01, Fire Protection Guide to Hazardous Materials.
6. Occupational Safety and Health Act (OSHA).
7. U.S. Department of Transportation, Federal Highway Administration: Manual on Uniform Traffic Control Devices for Streets and Highways.

1.02 SUBMITTALS

A. Action Submittals:

1. Product Data: Manufacturer’s literature for items specified.
2. Shop Drawings:
   a. Signage: Drawings showing layouts, actual letter sizes and styles, and Project-specific mounting details.
   b. Sign Layout Plan: Submit layout plan for each facility showing locations where scheduled signs are to be placed.
   c. Pipe Label Layout Plan: Submit layout plan for each facility showing types, sizes, and locations where pipe labels are intended to be placed based on specified requirements.
   d. Pipe Label Color Chart: Submit color selections for approval prior to final acceptance of pipping submittals.

B. Informational Submittals: Manufacturer’s installation instructions.

PART 2 PRODUCTS

2.01 DOOR NAMEPLATES

A. Manufacturers and Products:

1. Best Sign Systems, Montrose, CO; Graphic Blast.
2. Or equal.

B. Physical Characteristics:

1. Material: Plastic with square corners.
2. Thickness: 1/8 inch.
3. Height: 2 inches.
4. Finish: Nondirectional matte.
5. Background: Black.
6. Letters: Raised.
    a. Size: 1 inch high.
    b. Color: White.
    c. Style: Helvetica Regular upper case.
    d. Message Text: As shown on Door and Hardware Schedule on the Drawings.
    e. Braille Text: Domed or rounded as required by ABA regulations, with 3/8-inch minimum clearance on all sides.

C. Functional Characteristics: None.

D. Performance Characteristics: Exterior-rated with non-glare UV inhibiting paint.

2.02 PICTORIAL SYMBOLS

A. Manufacturers and Products:

1. Best Sign Systems, Montrose, CO; Graphic Blast.
2. Or equal.

B. Physical Characteristics:

1. Material: Plastic with square corners, match door nameplates.
2. Conform to ABA, Section F216. Provide Braille text as required by regulation.

C. Functional Characteristics: None.

D. Performance Characteristics: None.

2.03 SIGN TYPES

A. Physical Characteristics:

1. Metal Sign (Type B):
   a. Manufacturers:
      1) Seton Identification Products.
      2) Or equal.
   b. Material: Baked enamel finished 20-gauge (minimum) steel or 18-gauge (minimum) aluminum signs.
2. Fiberglass Sign (Type C):
   a. Manufacturers:
      1) Best Sign Systems.
      2) Or equal.
   b. Material: Three-ply laminated fiberglass, minimum 1/8 inch thick, with contrasting color core message layer between two clear weather-resistant surface layers.
3. Traffic Sign (Type D):
   a. Painted aluminum reflectorized signs, standard design meeting requirements of U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways.
   b. Materials and Fabrication: Arizona Department of Transportation Standard Specifications for Road and Bridge Construction.
4. Painted Sign (Type F):
   a. Stenciled.
   b. Paint System and Surface Preparation: As specified in Section 09 90 00, Painting and Coating, as appropriate for material and sign location.
5. Hazardous Material Sign (Type H):
   a. Manufacturers:
      1) Brady Signmark.
      2) Or equal.
   b. Conform to NFPA 704 and NFPA HAZ-01.
   c. Material: Fiberglass 1/8 inch thick.
   d. Background, Letters, and Numbers: Die-cut vinyl with pressure sensitive adhesive.

B. Functional Characteristics: None.

C. Performance Characteristics: None.

2.04 IDENTIFICATION LABELS

A. Pipe Labels (Type 1):

1. Manufacturers and Products:
   a. Seton Identification Products; Ultra-mark Pipe Markers
   b. Or equal.
2. Physical Characteristics:
   a. Snap-on, reversible type with lettering and directional arrows, sized for outside diameter of pipe and insulation.
   b. Provided with ties or straps for pipes typically nominal size 6 inches in diameter and larger.
   c. Designed to firmly grip pipe so labels remain fixed in vertical pipe runs.
   d. Material: Heavy-duty vinyl or polyester, suitable for exterior use, long lasting, and resistance to moisture, grease, and oils.
   e. Letters and Arrows: Black on OSHA safety yellow background.
   f. Color Field Length, and Letter Height: Meet ASME A13.1.
   g. Color Selection: By approved submittal prior to final acceptance of piping submittals.
   h. Message: See Piping Schedule on the Drawings and Section 40 27 00, Process Piping—General.
3. Functional Characteristics: None.
4. Performance Characteristics: None.

B. Pipe Labels (Type 2):

1. Manufacturers and Products:
   a. Seton Identification Products; Opti-Code Markers and Directional Arrows.
   b. Or equal.
2. Physical Characteristics:
   a. Labels: Self-adhesive, with separate directional flow arrows.
   b. Material: Pressure sensitive vinyl.
   c. Letters and Arrows: Black on OSHA safety yellow background.
   d. Color Field Length, and Letter Height: ASME A13.1.
   e. Color Selection: By approved submittal prior to final acceptance of piping submittals.
   f. Message: See Piping Schedule on the Drawings and Section 40 27 00, Process Piping—General.
3. Functional Characteristics: Typically used on all pipe sizes and exposed installations, except at locations where Type 1 would work better.
4. Performance Characteristics: None.

C. Equipment Labels:

1. Manufacturers and Products:
   a. Seton Identification Products; Etched Equipment Nameplates.
   b. Or equal.
2. Physical Characteristics:
   a. Material: Stainless steel, 25 gauge.
   b. Letters: Etched, uppercase.
   c. Background: Natural metal.
   d. Furnish with square corners and four mounting holes; provide adhesive mounting application requires.
   e. Size: 6 inches wide by 3 inches high.
3. Functional Characteristics:
   a. Applies to equipment with assigned tag numbers, where specified.
   b. Message: Equipment names and tag numbers as used in sections where equipment is specified.
4. Performance Characteristics: Message: Equipment names and tag numbers as used in sections where equipment is specified.

2.05 ANCILLARY MATERIALS

A. Physical Characteristics:

1. Fasteners: Stainless steel screws or bolts of appropriate sizes.
2. Wood Posts: Preservative treated 4 by 4 wood as specified in Section 06 10 00, Rough Carpentry.
3. Pipe Posts: 2-1/2-inch galvanized steel pipe meeting ASTM A53/A53M, Type S, Grade B.
4. Chain: Type 304 stainless steel, No. 16 single jack chain or No. 2 double loop coil chain.

B. Functional Characteristics: None.

C. Performance Characteristics: None.

PART 3 EXECUTION

3.01 INSTALLATION—GENERAL

A. In accordance with manufacturer’s recommendations.

B. Mount securely, plumb, and level.

3.02 DOOR NAMEPLATES AND PICTORIAL SYMBOLS

A. Attach to doors or walls adjacent to doors with self-sticking removable adhesive. See Door and Hardware Schedule for locations and messages.

B. Mount with bottom of nameplates in the Administration Building (10) at a height between 4 feet and 5 feet above floor for ABA mounting and 5 feet 6 inches above floor for non-ABA mounting.

3.03 SIGNS

A. General:

1. Fasten to walls or posts, or hang as scheduled.
2. Anchor in place for easy removal and reinstallation with ordinary hand tools.

B. Traffic Signs: Mount each sign on scheduled support using two 1/4-inch stainless steel bolts through sign and post.

C. Hazardous Material Sign:

1. Install where required by NFPA No. 704 and IFC, Chapter 50.
2. Install at entrances to spaces where hazardous materials are stored, dispensed, used, or handled, and on sides of stationary tanks.
3. Specific Materials:

Sign Schedule—Hazardous Material Signs

Mark	Material	Health Hazard (Blue)	Flammability Hazard (Red)	Instability Hazard (Yellow)	Special Hazard (White)	Location	Mounting Method	Height to Top
H-1	Magnesium Hydroxide (53% solution)	0	0	0		Wall	Bolts	5'-6"
H-2	Sodium Hypochlorite (12-15% solution)	3	0	0	COR	Wall	Bolts	5'-6"

3.04 IDENTIFICATION LABELS

A. Pipe Labels:

1. Use Type 1 (Snap-on) labels for pipes 3 inches in diameter and smaller.
2. Use Type 2 (Adhesive) labels for pipes larger than 3 inches in diameter.
3. Locate at connections to equipment, valves, or branching fittings at wall boundaries.
4. At intervals along piping not greater than 18 feet on center with at least one label applied to each exposed horizontal and vertical run of pipe.
5. At exposed piping not normally in view, such as above suspended ceilings and in closets and cabinets.
6. Apply to pipe after painting in vicinity is complete, or as approved by Contracting Officer.
7. Install in accordance with manufacturer's instructions.

B. Equipment Labels:

1. Locate and install on equipment or concrete equipment base.
2. Anchor to equipment or base for easy removal and replacement with ordinary hand tools.

3.05 SUPPLEMENT

A. The supplement listed below, following “End of Section,” is a part of this specification:

1. Sign Schedule: Tabulation of characteristics and mounting information for signs on Project. Provide items as scheduled. Meet requirements of Occupational Safety and Health Act (OSHA).

END OF SECTION

Sign Schedule

Sign									Lettering					
			Size			Mounting								
Number[1]	Sign Type[2]	Detail Reference[3]	Width	Height	Color	Location	Method	Height to Top	Height	Style	Color	Message	Faces	Other Requirements
S-1	C	1014-002, 1 of 2[REV1][ADD1]	20"	14"	Yellow	Hanging	Chain	5'-6"	1" min.	Helvetica	Black	CAUTION Equipment Starts Automatically	1	At Pumps
S-3	C	1014-001	20"	14"	White	Door	Screws or Bolts	5'-6"	1" min.	Helvetica	Black	DANGER High Voltage	1	At each Electrical Rom Door
S-6	C	1014-001	20"	14"	White	Wall	Bolts	5'-6"	1" min.	Helvetica	Black	DANGER No Smoking	1	At Digesters, near name door 32104A
S-8	~~C~~B[REV1][ADD1]	1014-00~~1~~2, 2 of 2[REV1][ADD1]	20"	14"	White	Wall	Bolts	3'-6"	1" min.	Helvetica	Black	~~DANGER~~Nonpotable water utilized for [application name] CAUTION Nonpotable Water Do No~~t for~~ Drink~~ing~~[REV1][ADD1]	1	Provide at interior W2 and RW hose valves [REV1][ADD1]
S-9	~~B~~C[REV1][ADD1]	1014-00~~1~~2, 2 of 2[REV1][ADD1]	20"	14"	White	Pipe Post	Bolts	3'-6"	1" min.	Helvetica	Black	~~DANGER~~Nonpotable water utilized for [application name] CAUTION Nonpotable Water Do No~~t for~~ Drink~~ing~~[REV1][ADD1]	1	Provide at exterior W2 and RW hose valves [REV1][ADD1]
S-10	F	N/A	As required		White	Tank Side	Painted	5'-0"	3" min.	Block	Red	*DANGER COMBUSTIBLE LIQUIDS	1	*Put message on one line
S-11[4]	C	1014-001	10"	7"	White	Door	Screws	5'-6"	1" min.	Helvetica	Black	DANGER CONFINED SPACE AUTHORIZED EMPLOYEES ONLY	1	At Digesters

Sign Schedule

Sign														
			Size			Mounting			Lettering					
Number[1]	Sign Type[2]	Detail Reference[3]	Width	Height	Color	Location	Method	Height to Top	Height	Style	Color	Message	Faces	Other Requirements
S-16	B	1014-009	10"	7"	White	Door	Adhesive	5'-6"	1" min.	Helvetica	Red	FIRE DOOR DO NOT OBSTRUCT	1	As noted on Door and Hardware Schedule
S-20	G	1014-011	10"	14"	White	Door	Adhesive	6'-0"	6”	Block	Red	Not An Exit	1	Door 80S01D
S-19	D	STD	30"	30"	Red	Post	Bolts	7'-6" min.	7" min.	Block	White	STOP	1	Where shown on Civil Drawings
S-22	D	1014-004	12"	18"	Blue	Pipe Post	Bolts	5'-6"	1" min.	Block	White	*HANDICAPPED PARKING STATE PERMIT REQUIRED	1	*With symbol above
S-23	H	1014-006	10" min	10” min	*	Wall	Screws	5'-6"	4	Block	Black	*	1	*See format detail and article Signs; provide at all locations hazardous materials are stored and used

[1]Numbers refer to a particular sign type with a particular message.
[2]Letters refer to Sign Types specified in this section.
[3]Numbers refer to Design Details that show sign layout.
[4]Verify requirements for this sign with Regulations in state where Project is located.

SECTION 28 31 00
FIRE ALARM AND DETECTION

PART 1 GENERAL

1.01 SUMMARY

A. The contractor must provide a new, code compliant fire alarm system meeting the requirements of applicable local and national codes. This system will act as a monitoring and supervising system for the fire sprinkler system. Design of this fire alarm system is a delegated design to the fire alarm contractor using this performance specification and the design drawings.

B. Provide a listed fire alarm control panel (FACP) to serve to serve the building.

1. System is to supervise the installed fire sprinkler system and send fire, tamper, and supervisory signals at a minimum.

C. Section Includes:

1. Fire alarm control panel (FACP).
2. Initiating devices.
3. Notification devices.
4. Miscellaneous devices.

1.02 QUALITY ASSURANCE

A. Referenced standards as adopted by the authority having jurisdiction including local amendments.

1. Architectural Barriers Act (ABA).
2. National Electrical Manufacturers Association (NEMA).
3. National Fire Protection Association (NFPA).
    a. NFPA 70, National Electric Code.
        1) Article 760, fire alarm systems.
    b. NFPA 72 National Fire Alarm and Signaling Code.
4. National Institute for Certification of Engineering Technologies (NICET).
5. International Building Code (IBC).
    a. 2021 edition.

B. Design Criteria:

1. Provide a complete fire alarm system as described in the contract documents and per the requirements of the authorities having jurisdiction and all applicable national and local codes.
   a. Where system requirements exceed those of the authority having jurisdiction and/or NFPA, meet the requirements of both.
   b. Coordinate with other trades materials and installation.
   c. Contractor is responsible for providing a fully functional and code compliant fire alarm system at no additional costs to the Government.
   d. Submit documents after fire alarm detailed design has been approved by the authorities having jurisdiction.
   e. Design of fire alarm systems must be performed by one of the following:
      1) A licensed fire protection engineer.
      2) A NICET certified engineering technician at Level III or Level IV in the subfield of Fire Alarm Systems.
      3) As approved by the FCO.

C. Service Organization Qualifications:

1. Offer an annual maintenance contract to include complete service and equipment of the system.
2. Must have 10 years' experience of fire alarm system installation.
3. Provide 24-hour emergency service. Response time to the site must be 24 hours or less and a service office must be within 250 miles of the project site.
4. Installation of fire alarm systems must be performed by one of the following:
   a. A ~~s~~State ~~of~~or municipal certified/licensed fire alarm ~~company~~contractor.[REV. 1][ADD1]
   ~~a.~~b. Qualified by manufacturer.[REV. 1][ADD1]
   ~~b.~~c. ~~A contractor qualified by a manufacturer.~~NICET Level II.[REV. 1][ADD1]
   ~~c.~~d. As approved by the FCO.

D. Field Quality Control:

1. Provide service by factory-authorized and certified service representative to supervise field assembly and connection of components and pretesting, testing, and adjustment of systems.
2. Perform pretesting to ensure system meets requirements of plans, specification, and code requirements. Correct deficiencies and retest to verify proper operation before commissioning.

3. Inspection:
    a. Inspect equipment installation, interconnection with system devices, mounting locations, and mounting methods.
    b. Verify units and controls are properly installed, connected, and labeled and that interconnecting wires and terminals are identified.

E. Authority Having Jurisdiction (AHJ) Review:

1. Before installation, submit shop drawings, product data, and calculations to the authority having jurisdiction for review and approval.
2. Installation of the fire alarm system must not begin without both authority having jurisdiction and Contracting Officer approval.
3. Upon receipt of comments from the authority having jurisdiction, make resubmissions, if required, for clarification or revisions to obtain approval.
4. The authority having jurisdiction will witness the final testing and inspection in order to obtain final approval for the system.

1.03 DEFINITIONS

A. For the purpose of providing materials and installing electrical work, the following definitions will be used:

1. Outdoor Area: Exterior locations where equipment is normally exposed to the weather and includes below grade structures such as vaults, manholes, and in-ground pump stations.
2. Architecturally Finished Area: Offices, laboratories, conference rooms, restrooms, corridors, and other similarly occupied spaces.
3. Non-architecturally Finished Area: pump, chemical, mechanical, electrical rooms and other similar type rooms.
4. Hazardous Areas: Class I, Class II, or Class III areas as defined in NFPA 70.
5. Shop Fabricated: Manufactured or assembled equipment for which a UL test procedure has not been established.
6. Service Organization: Commercial entity comprised of professionals capable of providing the technical knowledge and a supply of replacement equipment required for the comprehensive maintenance of fire alarm systems.

1.04 SYSTEM DESCRIPTION

A. Automatic and manual, addressable, general alarm, supervised, closed-circuit, 24V dc fire detection and alarm system.

B. Provide components and features as required by applicable codes, authorities having jurisdiction, and Contract Documents but not limited to; the following:

1. Main FACP as shown on contract documents.
2. Manual alarm box at fire alarm panel.
3. Smoke detector above FACP.
4. Sprinkler System Interface:
    a. Sprinkler flow switch.
    b. Control valve tamper switch.
    c. Notification device above fire department connection.

C. Fire Alarm System Wire: All wiring must be in conduit.

D. Digital Alarm Communicator Transmitter (DACT):

1. The IP DACT must communicate over the business network.
2. DACT must automatically communicate all alarm, supervisory, and trouble signals to a listed Central Station.
    a. For alarm signals, the Central Station must contact the local fire department to initiate Emergency Services Notification.
    b. For supervisory or trouble signals, the Central Station must contact the appropriate parties to inform them the system requires maintenance.

E. Basic Performance:

1. Signal Line Circuits (SLC) must be wired Class B.
2. Notification Appliance Circuits (NAC) must be wired Class B.
3. Each SLC and NAC must be limited to 80 percent of its total capacity at the time of initial installation.
4. The fire alarm system and all associated equipment and devices must be suited to the environment in which it is installed.
5. All fire alarm systems must report in Radionics Modem II, Radionics Modem IIIau2, or Modem 4 format.
6. FACP must be capable of handling a Bosch Zonex expander or report to the central station in the same format of point identification as the Zonex expander and be compatible with remote programming system.
7. All flow switches must report on Zone 2 or Point No. 2.
8. All FACP must have four wires between powered sensing devices. If possible, zone or point identification must be used, using the best English possible (example: “SMOKE SE OFFICE” indicating a smoke detector in a southeast office).
9. All tamper switches must have a tag or permanent marking matching the FACT point or zone description for that valve.
10. Each building must have its own account number.

11. All telephone lines connected to a FACP must have an “RJ31” phone jack.
12. All programming in the panel must be submitted in hardcopy at time of acceptance.
13. No parts of the programming may be made invisible, locked out, or required keypad only programming.
14. All work must be done in a neat and professional manner.

1.05 SUBMITTALS

A. Shop Drawings:

1. Shop drawings must include the minimum required documentation as required by NFPA 72 including but not limited to the following:
   a. Narrative describing design intent and system description.
   b. Floor plan layout showing location of all devices and control equipment.
      1) Indicate salient features of each device (weatherproof, strobe candela rating, etc.).
      2) Designate where protective equipment is provided (pull station covers, guards, etc.).
      3) Wiring diagrams.
      4) Include system details including location of FACP and all devices and circuits.
      5) System power and battery backup calculation with voltage drop calculations per NFPA 72.
      6) Equipment technical data submittals for all products provided.
      7) System operation description including method of operation and supervision of each circuit and sequence of operations for all manual and automatic inputs and outputs.
      8) Provide list of all input and output points in system with label indicating location or use of IDC, SLC, NAC.
      9) Operating instructions for FACP.
      10) Completed NFPA 72 record of inspection and testing.
      11) Copy of site specific software.
      12) Name of local service organization.
      13) Documentation of authorities having jurisdiction approval.

B. Contract Closeout Information:

1. Operation and Maintenance Data.
2. Field test reports.
3. Pro-rated warranty for batteries.

4. Spare Parts: Provide extra materials with protective packaging for storage and identifiable with labels describing the contents.
    a. Manual Alarm Boxes: No fewer than one.
    b. Notification Devices: No fewer than one of each type.
    c. Initiation Devices: No fewer than one of each type.
    d. Detector Bases: No fewer than two of each type.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with the contract documents, the following manufacturers are acceptable:

1. Fire Alarm System:
    a. Edwards System Technology (EST).
    b. Gamewell FCI.
    c. Notifier.
    d. Monaco.
    e. Siemens.
    f. Silent Knight.
    g. JCI.
    h. Bosch.
    i. Cooper Wheelock.
2. Manufacturer must have a service organization local to the project site.

B. Submit request for substitution per Section 01 26 01, Contract Modification Procedures.

C. All Equipment:

1. UL listed as a product of a single manufacturer.
2. Equipment must not be modified or installed to altered or void UL listing.
3. Approved by authorities having jurisdiction.

2.02 FIRE ALARM CONTROL PANEL (FACP)

A. FACP must perform operations as described in Fire Alarm System Operation:

B. The fire alarm system must have 100-point minimum initiating device capacity with the capability to add additional minimum 100 initiating device control modules.

C. Construction must be modular with solid-state electronics.

1. An 80-character LCD display must display alarm, supervisory, and trouble signals.

D. Keyboards or keypads must not be required to operation system during fire conditions.

E. Provide required switches, relays, lamps, wiring terminals, etc. for complete operations supervising, control, and testing facilities for entire system.

F. FACP must allow for loading or editing special instructions and operating sequences as required.

1. System must be capable of on-site programming to accommodate and facilitate expansion, building parameter changes, or changes as required by local codes.
2. All software operations must be stored in non-volatile memory inside the FACP.

G. System must have provisions for disabling and enabling all circuits individually for maintenance and testing.

H. System must be capable of logging and storing 300 events in history log.

1. Events must be stored in battery-protected random access memory (RAM).
2. Each recorded event must include time and date of occurrence.
3. System must have capability of recalling alarms, supervisory conditions, trouble conditions, acknowledgements, silence, and reset activating in chronological order for recreating an event history.

I. FACP must be listed under UL 864.

J. FACP must be in enclosed metal panel.

1. Mounting: Surface.
2. Finish: Red enamel.

K. Each addressable device must be represented individually in the FACP.

1. Indicate trouble by discreet LCD readout for each supervised circuit.
2. Indicate alarm by a discreet LCD readout for each alarm initiating device addressable device.
3. Include individual supervisory and alarm relays in each circuit arranged so that ground or open conditions will not affect proper operation of other devices.

L. FACP must include the capability to report alarm and trouble conditions via telephone lines to a third party alarm reporting service.

M. FACP must include a system testing capability to help ensure zoning and supervision has been maintained.

1. Actuation of enable walk must activate walk test mode causing the following to occur:
   a. Third party reporting connection circuit must be disconnected or put in test mode with the central station.
   b. Control relay functions must be bypassed.
   c. FACP must display a trouble condition.
   d. FACP must be capable of causing audible signals to activate for 2 seconds upon alarm activation of any initiating device.
   e. FACP must automatically reset itself after code is complete.
   f. Any momentary opening of alarm initiating or alarm indicating circuit wiring must cause audible signals to sound continuously for 4 seconds to indicate trouble condition.
   g. Power supply:
      1) Power limited operation per NFPA 70 Article 760.
      2) 120V ac dedicated circuit from panel to integral 24V dc regulated power supply in FACP and battery charger.
         a) The power supply must provide all panel and device power needs.
      3) Provide transient voltage surge suppression for the FACP for power and communication channels.
      4) Battery:
         a) Low maintenance sealed type for fire alarm use with automatic battery charger.
         b) The fire alarm system must have batteries capable of operating maximum normal loads of the system for 24 hours, and after 20 hours operate system under alarm condition.
         c) Size batteries for the total maximum number of devices that can be connected to the FACP, not the number of installed devices.

2.03 INITIATING DEVICES

A. Addressable Manual Pull Stations:

1. Latching Pull Station:
   a. Reset using key or special tool.
   b. Non-coded.
   c. Single action.

2. High Impact Red Lexan with operating directions in white letters.
   a. Surface mount.
3. Key stations to match FACP.

B. Addressable Detector Base:

1. Detector and associated electronic components mounted in module that connects to a fixed base with twist locking plug connection.
2. Plug connections must not require springs for secure mounting and contact maintenance.
3. Terminals in the base must accept building wiring.
4. Detector construction must have a mounting base with twist lock.
5. Locking feature must be field removable when not required.
6. Removal of detector head must cause a trouble signal at the FACP.

C. LED with Flash on FACP Scan:

1. Steady LED on detector base indicating abnormal conditions.

D. Each detector type must be verified on scan by FACP.

1. FACP must display “wrong device” or other message indicating the wrong type of device is installed.

E. Addressable Smoke Detectors:

1. Photoelectric type.
2. Self-restoring.
3. Provide quantity and spacing per NFPA 72.

F. Addressable Monitor Modules:

1. Provide addressability and supervision to initiating devices (tamper, flow switches).
2. Wiring must be Class B.

2.04 NOTIFICATION DEVICES

A. Horn Strobes:

1. Red tamper resistant weatherproof lens with 24V dc xenon strobe.
2. Housing: Red with white “FIRE” lettering.
   a. Surface mount.

2.05 WIRING

A. Conduit: 1/2 inch minimum, metal tubing.

B. Conductors:

1. All wiring must be in conduit.
2. Insulation type per NFPA 70, Article 760.
3. 120V ac and power supply, 12 GA minimum.
4. Low-Voltage General Alarm Circuits: 14 GA minimum.
5. Low-Voltage Initiating Circuits: 18 GA minimum.

2.06 SYSTEM OPERATION

A. Activation of any alarm causing initiating device must cause the following:

1. Horn strobe at exterior fire department connection.
2. Alarm information displayed at FACP.
3. Indicate device sending alarm signal.
4. DACT must automatically sent alarm signal to central station.

B. Lock alarm information display at panel until signaling device has returned to normal and FACP is reset.

C. Activation of any trouble signal must cause the following:

1. Trouble signal display at FACP.
2. Indicate device sending trouble signal.
3. DACT must automatically sent trouble signal to central station.

D. Activation of any supervisory signal must cause the following:

1. Supervisory signal display at FACP.
2. Indicate device sending supervisory signal.
3. DACT must automatically sent supervisory signal to central station.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install all fire alarm equipment and wiring in accordance with NFPA 72, local, and national codes.

B. Install all wiring in raceways and all devices in boxes.

1. Install raceways and boxes per Section 26 05 33, Raceway and Boxes.
2. Fire alarm conduit must be red.
3. All boxes must be red.

C. Install all components as indicated and per manufacturer's wiring diagrams, instructions, and recommendations.

D. Make all fire alarm wiring continuous from terminal to terminal or from terminal to device pigtail lead.

1. Circuit splices not permitted.
2. Wiring joints, only when required at device pigtail leads shall use insulated conical spring connector.

E. Color coding is required for all fire alarm wiring.

F. Detection devices must be protected during construction. Damaged devices must be replaced with new at no cost.

G. Device Mounting Schedule:

1. Manual Pull Stations: 48 inches above finished floor to operating handle.
2. Notification Devices: Lens not less than 80 inches and not more than 96 inches.
3. FACP: 72 inches to top of panel.

3.02 TESTING

A. Provide services of factory-trained representatives of system manufacturers to supervise the installation and its progress, supervise final connections to equipment, and provide testing to assure system is in proper operating condition and conforms to applicable codes and standards.

B. Entire system must test free of opens, grounds, and short circuits.

C. Test system and provide documentation of acceptance by authorities having jurisdiction.

D. Acceptance Operational Tests:

1. Perform operation tests to verify system operation.
   a. Each alarm initiating device must be tested.
   b. Each device must be tested for alarm and trouble conditions.
   c. Contractor must provide certification the system installation is complete, and all punch list items have been corrected.
   d. Test operation of fire alarm system battery backup for durations per NFPA 72.
   e. Test supervising station transmitter. Confirm receipt of signals at monitoring firm.

f. Test each notification device.
g. Test FACP.

2. Provide a minimum of 5 days' notice of acceptance testing performance schedule.

E. Retesting: Correct deficiencies found by testing and retest work until operation is confirmed code compliant and meets design specifications.

F. Provide final test report and record of completion.

G. Test system as required by authorities having jurisdiction to obtain certificate of occupancy.

3.03 CLEANING AND ADJUSTING

A. Cleaning: Remove paint splatters and other spots, dirt, and debris from all devices and panels. Clean only using methods and materials recommended by manufacturer.

B. Occupancy Adjustments: When requested within one year of date of substantial completion, provide on-site assistance in adjusting sound pressure levels and control sensitivities. Provide up to three visits to the site for this purpose.

3.04 TRAINING

A. Provide services of factory authorized technicians to demonstrate system and train personnel in operation.

1. Train personnel in procedures and schedules involved in operating, troubleshooting, servicing, and preventative maintenance.
2. Provide a minimum of 8 hours of training.
3. Schedule training a minimum of 2 weeks in advance.
4. Provide documentation of training.

END OF SECTION