CITY OF PHOENIX, ARIZONA

SKY HARBOR INTERNATIONAL AIRPORT

PHOENIX SKY TRAIN

STAGE 2

PACKAGE B04

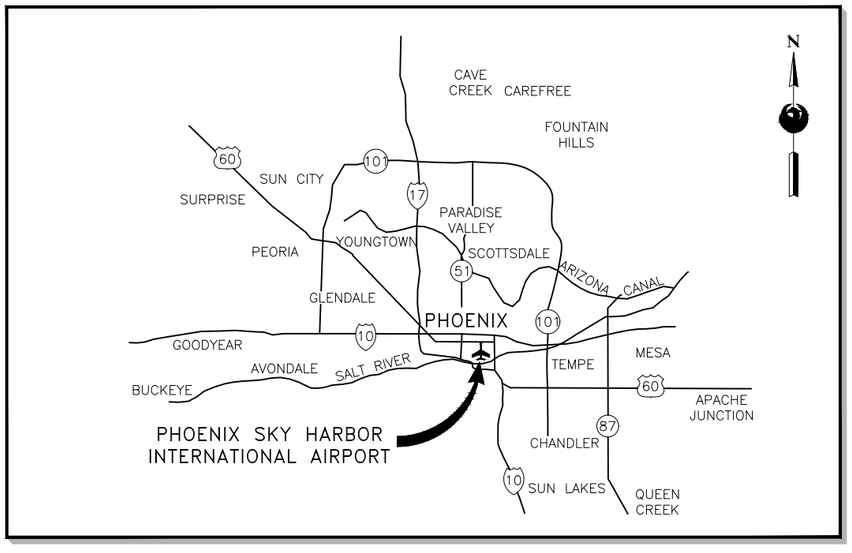
ISSUED FOR CONSTRUCTION

VOLUME 6

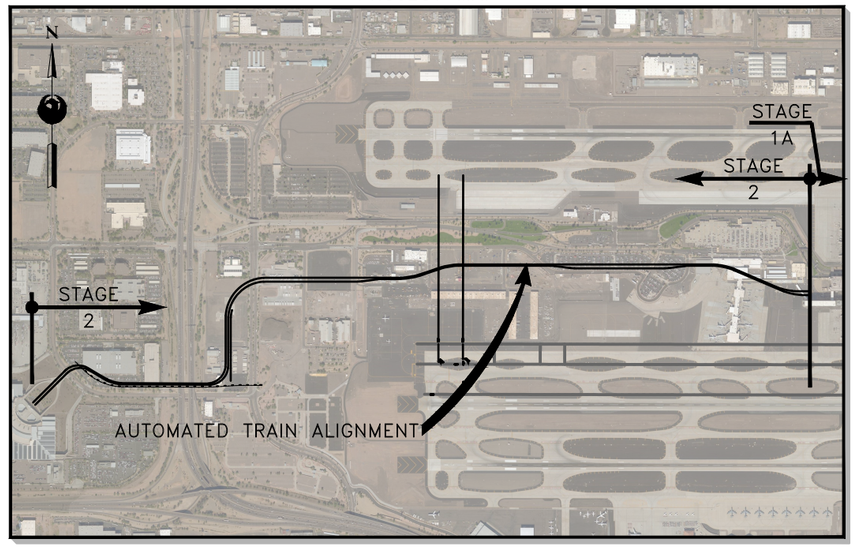
JULY 13, 2018

AIP NO. AV10000011

VICINITY MAP



PROJECT MAP



PHOENIX SKY HARBOR INTERNATIONAL AIRPORT

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

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Registered Professional Engineer Certificate 28174 MARK PILWALLIS Date Signed 7-10-2018 ARIZONA, U.S.A. EXPIRES: 09/30/2018

CITY OF PHOENIX

200 WEST WASHINGTON ST.
PHOENIX, AZ 85003

APPROVAL

JAMES BENNETT
AVIATION DIRECTOR

DATE

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\rnbiggs\d0667700\AV10000011-S-2-MSGNB040.dwgrnbiggs

THIS DOCUMENT REPRESENTS WORK IN PROGRESS. THE INFORMATION PRESENTED HEREIN IS SUBJECT TO CHANGE AND HAS NOT BEEN COMPLETELY COORDINATED, NOR DOES IT NECESSARILY REPRESENT ACCEPTED DESIGN.

VOLUME 1

GENERAL PLANS

V1 – 001	MSGN0001	COVER SHEET
V1 – 002	MSGN0002	INDEX OF DRAWINGS –1
V1 – 003	MSGN0003	INDEX OF DRAWINGS –2
V1 – 004	MSGN0004	INDEX OF DRAWINGS –3
V1 – 005	MSGN0005	INDEX OF DRAWINGS –4
V1 – 006	MSGN0006	INDEX OF DRAWINGS –5
V1 – 007	MSGN0007	INDEX OF DRAWINGS –6
V1 – 008	MSGN0008	INDEX OF DRAWINGS –7
V1 – 009	MSGN0009	INDEX OF DRAWINGS –8
V1 – 010	MSGN0010	INDEX OF DRAWINGS –9
V1 – 011	MSGN0011	INDEX OF DRAWINGS –10
V1 – 012	MSGN0012	HORIZONTAL AND VERTICAL, CONTROL PLAN
V1 – 013	MSGN0013	HORIZONTAL AND VERTICAL, CONTROL PLAN

OVERALL GUIDEWAY ALIGNMENT

V1 – 014	MSCV0000	GUIDEWAY, OVERALL PLAN LAYOUT
V1 – 015	MSCV0201	GUIDEWAY, ALIGNMENT DEFINITIONS
V1 – 016	MSCV1101	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 11+83.39 TO STA. 19+00
V1 – 017	MSCV1102	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 19+00 TO 27+00
V1 – 018	MSCV1103	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 27+00 TO STA. 35+00
V1 – 019	MSCV1104	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 35+00 TO STA. 41+50
V1 – 020	MSCV1105	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 41+50 TO STA. 49+50
V1 – 021	MSCV1106	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 49+50 TO STA. 57+50
V1 – 022	MSCV1107	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 57+50 TO STA. 65+50
V1 – 023	MSCV1108	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 65+50 TO STA. 73+50
V1 – 024	MSCV1109	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 73+50 TO STA. 81+50
V1 – 025	MSCV1110	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 81+50 TO STA. 89+50
V1 – 026	MSCV1111	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 89+50 TO STA. 97+50
V1 – 027	MSCV1112	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 97+50 TO STA. 105+50
V1 – 028	MSCV1113	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 105+50 TO STA. 113+50
V1 – 029	MSCV1114	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA. 113+50 TO STA. 121+50
V1 – 030	MSCV1115	GUIDEWAY, PLAN & PROFILE, WB ALIGNMENT, STA 121+50 TO STA. 128+64.67
V1 – 031	MSCV1116	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 412+27.00 TO STA. 419+50
V1 – 032	MSCV1117	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 419+50 TO STA. 427+50
V1 – 033	MSCV1118	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 427+50 TO STA. 435+50
V1 – 034	MSCV1119	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 435+50 TO STA. 442+00
V1 – 035	MSCV1120	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 442+00 TO STA. 450+00
V1 – 036	MSCV1121	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 450+00 TO STA.457+50
V1 – 037	MSCV1122	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 457+50 TO STA. 465+50
V1 – 038	MSCV1123	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 465+50 TO STA. 473+50
V1 – 039	MSCV1124	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 473+50 TO STA. 481+50
V1 – 040	MSCV1125	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 481+50 TOS TA. 489+50
V1 – 041	MSCV1126	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 489+50 TO STA. 497+50
V1 – 042	MSCV1127	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA 497+50 TO STA. 505+50
V1 – 043	MSCV1128	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 505+50 TO STA. 513+50
V1 – 044	MSCV1129	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 513+50 TOSTA. 521+50
V1 – 045	MSCV1130	GUIDEWAY, PLAN & PROFILE, EB ALIGNMENT, STA. 521+50 TO STA. 528+64.30
V1 – 046	MSCV1131	GUIDEWAY, PLAN & PROFILE, SPUR LINE ALIGNMENT, STA. 0+00 TO STA. 9+35.55

GUIDEWAY ELEVATED ALIGNMENT

V1 – 047	GWSG0101	GUIDEWAY, ELEVATED ALIGNMENT, PIER W11.5 @ TERMINAL 3 STATION, END CLOSURE REMOVAL DETAIL
V1 – 048	GWSG0202	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 13+48.01 TO STA 18+00.00
V1 – 049	GWSG0203	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 18+00.00 TO STA 22+50.00
V1 – 050	GWSG0204	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 22+50.00 TO 26+75.00
V1 – 051	GWSG0205	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 26+75.00 TO 31+60.04
V1 – 052	GWSG0206	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 49+83.03 TO 53+00.00
V1 – 053	GWSG0207	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 53+00.00 TO STA 56+50.00
V1 – 054	GWSG0208	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 56+50.00 TO STA 59+61.58
V1 – 055	GWSG0209	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 64+41.59 TO STA 68+25.00
V1 – 056	GWSG0210	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 68+25.00 TO STA 72+56.52
V1 – 057	GWSG0211	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 88+05.26 TO STA 92+50.00
V1 – 058	GWSG0212	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 92+50.00 TO STA 97+25.00
V1 – 059	GWSG0213	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 97+25.00 TO STA 100+11.56
V1 – 060	GWSG0214	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 105+51.56 TO STA 110+25.00
V1 – 061	GWSG0215	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 110+25.00 TO STA 114+50.00
V1 – 062	GWSG0216	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA 114+50.00 TO STA 119+00.00
V1 – 063	GWSG0217	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA STA 119+00.00 TO 123+75.00
V1 – 064	GWSG0218	GUIDEWAY, ELEVATED ALIGNMENT, PLAN AND ELEVATION, STA STA 123+75.00 TO 128+64.67
V1 – 065	GWSG0401	GUIDEWAY, ELEVATED ALIGNMENT, PRECAST U–BEAM SPANS, TYPICAL SECTIONS A AND B
V1 – 066	GWSG0402	GUIDEWAY, ELEVATED ALIGNMENT, PRECAST U–BEAM SPANS, TYPICAL SECTIONS C AND D
V1 – 067	GWSG0403	GUIDEWAY, ELEVATED ALIGNMENT, PRECAST U–BEAM SPANS, TYPICAL SECTION E
V1 – 068	GWSG0404	GUIDEWAY, ELEVATED ALIGNMENT, PRECAST U–BEAM SPANS, TYPICAL SECTIONS F AND G
V1 – 069	GWSG0405	GUIDEWAY, ELEVATED ALIGNMENT, PRECAST SPLICED U–BEAM SPANS, TYPICAL SECTION H
V1 – 070	GWSG0902	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 1, 2 & 3
V1 – 071	GWSG0903	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 4 & 5
V1 – 072	GWSG0904	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 6, 7 & 8
V1 – 073	GWSG0905	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 9, 10 & 11
V1 – 074	GWSG0906	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 12, 13, 14 & 15
V1 – 075	GWSG0907	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 16 , 17, 18 & 19
V1 – 076	GWSG0908	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 20, 21 & 22
V1 – 077	GWSG0909	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 23, 24 & 25
V1 – 078	GWSG0910	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 26, 27 & 28
V1 – 079	GWSG0911	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 29 & 30
V1 – 080	GWSG0912	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 31 & 32
V1 – 081	GWSG0913	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 33 & 34
V1 – 082	GWSG0914	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 35 & 36
V1 – 083	GWSG0915	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 37 & 38
V1 – 084	GWSG0916	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 39 & 40
V1 – 085	GWSG0917	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 41 & 42
V1 – 086	GWSG0918	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 43 & 44
V1 – 087	GWSG0919	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 45, 46, 47 & 48
V1 – 088	GWSG0920	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 49 & 50
V1 – 089	GWSG0921	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 51 & 52
V1 – 090	GWSG0922	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 53 & 54
V1 – 091	GWSG0923	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 55 & 56
V1 – 092	GWSG0924	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 57
V1 – 093	GWSG0925	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 58, 59 & 60
V1 – 094	GWSG0926	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 61 & 62
V1 – 095	GWSG0927	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 63 & 64
V1 – 096	GWSG0928	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 65, 66, 67 & 68
V1 – 097	GWSG0929	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 69, 70 & 71
V1 – 098	GWSG0930	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 72 & 73
V1 – 099	GWSG0931	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 74, 75 & 76
V1 – 100	GWSG0932	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 77 & 78
V1 – 101	GWSG0933	GUIDEWAY, ELEVATED ALIGNMENT, FRAMING PLAN, SPAN 79 & 80
V1 – 102	GWSG1000	GUIDEWAY, ELEVATED ALIGNMENT, U–BEAM DETAILS 1 OF 5, SHEAR REINFORCEMENT SCHEDULE
V1 – 103	GWSG1001	GUIDEWAY, ELEVATED ALIGNMENT, U–BEAM DETAILS 2 OF 5, BEAM SECTION & STRAND PATTERN
V1 – 104	GWSG1002	GUIDEWAY, ELEVATED ALIGNMENT, U–BEAM DETAILS 3 OF 5, BEAM REINFORCEMENT DETAILS
V1 – 105	GWSG1003	GUIDEWAY, ELEVATED ALIGNMENT, U–BEAM DETAILS 4 OF 5, MISCELLANEOUS DETAILS
V1 – 106	GWSG1004	GUIDEWAY, ELEVATED ALIGNMENT, U–BEAM DETAILS 5 OF 5, BEARING PAD & PLATE DETAILS
V1 – 107	GWSG1010	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS, BEAM SECTIONS & STRAND PATTERNS
V1 – 108	GWSG1011	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 2
V1 – 109	GWSG1012	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 3
V1 – 110	GWSG1013	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 4
V1 – 111	GWSG1014	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 5
V1 – 112	GWSG1015	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 6
V1 – 113	GWSG1016	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 7
V1 – 114	GWSG1017	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 8
V1 – 115	GWSG1018	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 9
V1 – 116	GWSG1019	GUIDEWAY, ELEVATED ALIGNMENT, SPLICED U–BEAM DETAILS 9
V1 – 117	GWSG1101	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 1 TO 3
V1 – 118	GWSG1102	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 4 AND 5
V1 – 119	GWSG1103	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 6 TO 8
V1 – 120	GWSG1104	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 9 TO 11
V1 – 121	GWSG1105	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 12 AND 13
V1 – 122	GWSG1106	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 14 AND 15
V1 – 123	GWSG1107	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 16 AND 17
V1 – 124	GWSG1108	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 18 AND 19
V1 – 125	GWSG1109	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 20 TO 22
V1 – 126	GWSG1110	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 23 TO 25
V1 – 127	GWSG1111	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 26 TO 28
V1 – 128	GWSG1112	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 29 AND 30
V1 – 129	GWSG1113	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 31 AND 32
V1 – 130	GWSG1114	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 33 AND 34
V1 – 131	GWSG1115	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 35 TO 37
V1 – 132	GWSG1116	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 38 TO 40
V1 – 133	GWSG1117	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 41 AND 42
V1 – 134	GWSG1118	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 43 AND 44
V1 – 135	GWSG1119	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 45 AND 46
V1 – 136	GWSG1120	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 47 AND 48
V1 – 137	GWSG1121	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 49 AND 50
V1 – 138	GWSG1122	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 51 AND 52
V1 – 139	GWSG1123	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 53 AND 54
V1 – 140	GWSG1124	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 55 TO 57
V1 – 141	GWSG1125	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 58 TO 60
V1 – 142	GWSG1126	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 61 AND 62
V1 – 143	GWSG1127	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 63 AND 64
V1 – 144	GWSG1128	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 65 AND 66
V1 – 145	GWSG1129	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 67 AND 68
V1 – 146	GWSG1130	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 69 AND 70
V1 – 147	GWSG1131	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPAN 71
V1 – 148	GWSG1132	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN SPAN 72
V1 – 149	GWSG1133	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPAN 73
V1 – 150	GWSG1134	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPAN 74
V1 – 151	GWSG1135	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 75 AND 76
V1 – 152	GWSG1136	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 77 AND 78
V1 – 153	GWSG1137	GUIDEWAY, ELEVATED ALIGNMENT, DECK PLAN, SPANS 79 AND 80
V1 – 154	GWSG1138	GUIDEWAY, ELEVATED ALIGNMENT, TYPICAL DECK SECTIONS 1
V1 – 155	GWSG1139	GUIDEWAY, ELEVATED ALIGNMENT, TYPICAL DECK SECTIONS 2
V1 – 156	GWSG1140	GUIDEWAY, ELEVATED ALIGNEMNT, DECK CONTINUITY DETAILS
V1 – 157	GWSG1201	GUIDEWAY, ELEVATED ALIGNMENT, DIAPHRAGM DETAILS 1
V1 – 158	GWSG1202	GUIDEWAY, ELEVATED ALIGNMENT, DIAPHRAGM DETAILS 2
V1 – 159	GWSG1203	GUIDEWAY, ELEVATED ALIGNMENT, MISCELLANEOUS DETAILS
V1 – 160	GWSG1401	GUIDEWAY, ELEVATED ALIGNMENT, CONSTRUCTION STAGING, SPANS 71–75

GUIDEWAY DRAINAGE

V1 – 161	MSCV0901	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 162	MSCV0902	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 163	MSCV0903	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 164	MSCV0904	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 165	MSCV0905	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 166	MSCV0906	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 167	MSCV0907	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 168	MSCV0908	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 169	MSCV0909	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN
V1 – 170	MSCV0910	GUIDEWAY, GUIDEWAY DRAINAGE PLAN, TRENCH DRAIN PLAN

RCC SITE FINAL CONFIGURATION

V1 – 171	RSCV0101	CIVIL, RCC SITE, DEMOLITION PLAN
V1 – 172	RSCV0303	CIVIL, RCC SITE, PARKING LOT PLAN
V1 – 173	RSCV0506	CIVIL, RCC SITE, ENTRANCE CROSSOVER PLAN
V1 – 174	RSCV0507	CIVIL, RCC SITE, PARKING LOT STAKING PLAN
V1 – 175	RSCV0508	CIVIL, RCC SITE, TEMPORARY PARKING LOT, DRIVEWAY PLAN

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011–S–2–MSGNB041.dwg mbiggs

Design Consultant
Gannett Fleming

Design Sub–Consultant

REGISTERED PROFESSIONAL ENGINEER (CIVIL) MARK PILWALLIS 19854 EXPIRES 09/30/2019

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PER CITY OF PHOENIX ORDINANCE G–4390, THESE PLANS ARE COPYRIGHTED BY CITY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – 804 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 1

Package: B04
Sheet Reference No: MSGN0002
V6 - 002 of 260

V1 – 176	RSCV0509	CIVIL, RCC SITE, SKY HARBOR CIRCLE STAKING PLAN, DRIVEWAY PLAN
V1 – 177	RSCV0510	CIVIL, RCC SITE, PARKING LOT SIDEWALK, RAMP DETAIL
V1 – 178	RSCV0602	CIVIL, RCC SITE, ENTRANCE CROSSOVER, JOINTING PLAN
V1 – 179	RSCV0803	CIVIL, RCC SITE, STRIPING & SIGNING, NOTES & DETAILS
V1 – 180	RSCV0804	CIVIL, RCC SITE, STRIPING AND SIGNING PLAN
V1 – 181	RSCV0805	CIVIL, RCC SITE, STRIPING AND SIGNING PLAN, EXISTING BUS LOOP

RCC SITE GRADING AND DRAINAGE

V1 – 182	RSCV0501	CIVIL, RCC STATION – SITE, ROOF DRAINS, STORM DRAIN PLAN
V1 – 183	RSCV0502	CIVIL, RCC STATION – SITE, ROOF DRAINS, STORM DRAIN PLAN
V1 – 184	RSCV0901	CIVIL, RCC STATION – SITE, ROOF DRAINS, STORM DRAIN PLAN
V1 – 185	RSCV0902	CIVIL, RCC STATION – SITE, ROOF DRAINS, STORM DRAIN PLAN

ROADWAY 24TH STREET COMPLEX

V1 – 186	TSCV0001	CIVIL, 24TH STREET COMPLEX – ROADWAY, LEGEND AND NOTES
V1 – 187	TSCV0002	CIVIL, 24TH STREET COMPLEX – ROADWAY, GEOMETRIC CONTROL
V1 – 188	TSCV0101	CIVIL, 24TH STREET COMPLEX – ROADWAY, DEMOLITION PLAN, E BUCKEYE ROAD, STA 90+00 TO 93+50, SKY HARBOR EB EXIT RAMP, STA 10+00 TO 11+50, SKY HARBOR WB ENTRANCE RAMP, 10+00 TO 12+00
V1 – 189	TSCV0102	CIVIL, 24TH STREET COMPLEX – ROADWAY, DEMOLITION PLAN, E BUCKEYE ROAD, STA 93+50 TO STA 100+00, SKY HARBOR EB EXIT RAMP, STA 11+50 TO 18+00, SKY HARBOR WB ENTRANCE RAMP, STA 12+00 TO 18+50
V1 – 190	TSCV0103	CIVIL, 24TH STREET COMPLEX – ROADWAY, DEMOLITION PLAN, E BUCKEYE ROAD STA 100+00 TO 106+50, SKY HARBOR EB EXIT RAMP, STA 18+00 TO 22+01.50, SKY HARBOR WB ENTRANCE RAMP, STA 18+50.00 TO 23+90.57, SKY HARBOR EB ENTRANCE RAMP, STA 50+00 TO 53+17.98, COPPERHEAD DR STA 54+50 TO 58+40
V1 – 191	TSCV0104	CIVIL, 24TH STREET COMPLEX – ROADWAY, DEMOLITION PLAN, E BUCKEYE ROAD, STA 106+50 TO 114+50, SKY HARBOR EB ENTRANCE RAMP, STA 53+25 TO 58+83.88
V1 – 192	TSCV0301	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PLAN, E BUCKEYE ROAD STA 90+00 TO 93+50, SKY HARBOR EB EXIT RAMP 10+00 TO 11+50, SKY HARBOR EB ENTRANCE RAMP, 10+00 TO 11+50
V1 – 193	TSCV0302	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PLAN, E BUCKEYE ROAD, STA 93+50 TO STA 100+00, SKY HARBOR EB EXIT RAMP, 11+50 TO 18+00, SKY HARBOR EB ENTRANCE RAMP, 12+05 TO 18+50
V1 – 194	TSCV0303	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PLAN, SKY HARBOR EB EXIT RAMP, 18+00 TO 22+01.50, SKY HARBOR WB ENTRANCE RAMP, 18+50.00 TO 23+80.57, TO SKY HARBOR EB ENTRANCE RAMP, 50+17.98 TO 53+25.00, E BUCKEYE ROAD STA 10+00 TO 106+50, COPPERHEAD DR STA 54+50 TO 58+40
V1 – 195	TSCV0304	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PLAN, SKY HARBOR EB ENTRANCE RAMP, STA 53+25 TO 58+50.43, E BUCKEYE ROAD STA 106+50 TO 114+50
V1 – 196	TSCV0305	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PLAN, NORTH ROTARY STA 10+00 TO 16+00, SOUTH ROTARY STA 10+00 TO STA 17+10, S 23RD ST STA 40+00 TO 42+50
V1 – 197	TSCV0306	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PLAN, NORTH ROTARY ST 16+00 TO 22+43.25, SOUTH ROTARY STA 17+10 TO 23+56.22, COPPERHEAD DRIVE STA 50+00 TO 54+50
V1 – 198	TSCV0504	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, NORTH ROTARY, S 23RD STREET, BUCKEYE ROAD
V1 – 199	TSCV0505	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, E BUCKEYE ROAD
V1 – 200	TSCV0506	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, COPPERHEAD DR, E BUCKEYE ROAD
V1 – 201	TSCV0507	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, COPPERHEAD DR
V1 – 202	TSCV0508	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, NORTH ROTARY, SOUTH ROTARY
V1 – 203	TSCV0509	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, NORTH ROTARY, SOUTH ROTARY, COPPERHEAD DR
V1 – 204	TSCV0510	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, NORTH ROTARY, SOUTH ROTARY, COPPERHEAD DR
V1 – 205	TSCV0511	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, SKY HARBOR WB ENTRANCE RAMP, SKY HARBOR EB EXIT RAMP
V1 – 206	TSCV0512	CIVIL, 24TH STREET COMPLEX – ROADWAY, ADA RAMP AND DRIVEWAY
V1 – 207	TSCV0513	CIVIL, 24TH STREET COMPLEX – ROADWAY, SWALE STAKING PLAN
V1 – 208	TSCV0514	CIVIL, 24TH STREET COMPLEX – ROADWAY, STAKING PLAN, NORTH ROTARY, SOUTH ROTARY, COPPERHEAD DR
V1 – 209	TSCV0602	CIVIL, 24TH STREET COMPLEX – ROADWAY, WEST ROTARY JOINTING PLAN
V1 – 210	TSCV0603	CIVIL, 24TH STREET COMPLEX – ROADWAY, EAST ROTARY JOINTING PLAN
V1 – 211	TSCV0604	CIVIL, 24TH STREET COMPLEX – ROADWAY, EB SKY HARBOR EXIT RAMP, JOINTING PLAN
V1 – 212	TSCV0605	CIVIL, 24TH STREET COMPLEX – ROADWAY, EB SKY HARBOR EXIT RAMP, JOINTING PLAN
V1 – 213	TSCV0701	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PROFILE, SKY HARBOR EB EXIT RAMP, STA 14+68.20 TO STA 22+25.54
V1 – 214	TSCV0702	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PROFILE, SKY HARBOR WB ENTRANCE RAMP, STA 15+28.81 TO STA 23+97.83
V1 – 215	TSCV0703	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PROFILE, SOUTH 23RD STREET, STA 40+00.00 TO STA 44+80.26
V1 – 216	TSCV0704	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PROFILE, COPPERHEAD DRIVE, STA 47+45.64 TO STA 58+40.00
V1 – 217	TSCV0705	CIVIL, 24TH STREET COMPLEX – ROADWAY, ROADWAY PROFILE, SKY HARBOR EB ENTRANCE RAMP, STA 50+17.98 TO STA 58+50.00
V1 – 218	TSCV1201	CIVIL, 24TH STREET COMPLEX – ROADWAY, TYPICAL SECTIONS AND DETAILS
V1 – 219	TSCV1202	CIVIL, 24TH STREET COMPLEX – ROADWAY, TYPICAL SECTIONS AND DETAILS
V1 – 220	TSCV1203	CIVIL, 24TH STREET COMPLEX – ROADWAY, TYPICAL SECTIONS AND DETAILS
V1 – 221	TSCV1204	CIVIL, 24TH STREET COMPLEX – ROADWAY, PCCP JOINTING DETAILS
V1 – 222	TSCV1205	CIVIL, 24TH STREET COMPLEX – ROADWAY, PCCP JOINTING DETAILS
V1 – 223	TSCV1206	CIVIL, 24TH STREET COMPLEX – ROADWAY, TEMPORARY PHASING PLAN, NORTH ROTARY
V1 – 224	TSCV1207	CIVIL, 24TH STREET COMPLEX – ROADWAY, BOLLARD DETAILS
V1 – 225	TSCV1208	CIVIL, 24TH STREET COMPLEX – ROADWAY, RIP–RAP DETAILS, STAMPED MEDIAN CONCRETE DETAILS

24TH ST GATE ACCESS

V1 – 226	TSCV1301	CIVIL, 24TH STREET COMPLEX SITE, CIVIL IMPROVEMENT PLAN, AIRSIDE GATE ACCESS

ELECTRICAL YARD

V1 – 227	TSEL0401	ELECTRICAL YARD, ELECTRICAL YARD FLOOR PLAN

24TH STREET COMPLEX - DRAINAGE

V1 – 228	TSCV0905	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, SKY HARBOR BLVD
V1 – 229	TSCV0906	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, BUCKEYE ROAD
V1 – 230	TSCV0907	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, BUCKEYE ROAD
V1 – 231	TSCV0908	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, SKY HARBOR BLVD
V1 – 232	TSCV0909	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, SKY HARBOR BLVD
V1 – 233	TSCV0910	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, COPPERHEAD DRIVE
V1 – 234	TSCV0911	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, COPPERHEAD DRIVE
V1 – 235	TSCV0912	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY DRAINAGE PLAN, 23RD STREET
V1 – 236	TSCV1104	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY STORM DRAIN, PROFILES
V1 – 237	TSCV1105	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY STORM DRAIN, PROFILES
V1 – 238	TSCV1106	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY STORM DRAIN, PROFILES
V1 – 239	TSCV1107	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY STORM DRAIN, PROFILES
V1 – 240	TSCV1108	CIVIL, 24TH STREET COMPLEX SITE, ROADWAY STORM DRAIN, PROFILES

24TH STREET COMPLEX GRADING AND DRAINAGE

V1 – 241	TSCV0512	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, NORTH LOT
V1 – 242	TSCV0513	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, NORTH LOT
V1 – 243	TSCV0514	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, SOUTH LOT
V1 – 244	TSCV0515	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, SOUTH LOT
V1 – 245	TSCV0516	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, RETENTION BASIN
V1 – 246	TSCV0517	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, SURCHARGE BASIN
V1 – 247	TSCV0901	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, GUIDEWAY DRAIN CONNECTION
V1 – 248	TSCV0902	CIVIL, 24TH STREET COMPLEX SITE, GRADING AND DRAINAGE PLAN, GUIDEWAY DRAIN CONNECTION
V1 – 249	TSCV0903	CIVIL, 24TH STREET COMPLEX SITE, DRAINAGE PLAN, COB SITE RETENTION
V1 – 250	TSCV0904	CIVIL, 24TH STREET COMPLEX SITE, DRAINAGE PLAN, COB SITE RETENTION
V1 – 251	TSCV1209	CIVIL, 24TH STREET COMPLEX SITE, COB SITE RETENTION, DETAILS (FOR REFERENCE ONLY)
V1 – 252	TSCV1210	CIVIL, 24TH STREET COMPLEX SITE, COB SITE RETENTION, DETAILS (FOR REFERENCE ONLY)
V1 – 253	TSCV1211	CIVIL, 24TH STREET COMPLEX SITE, COB SITE RETENTION, DETAILS (FOR REFERENCE ONLY)
V1 – 254	TSCV1212	CIVIL, 24TH STREET COMPLEX SITE, COB SITE RETENTION, DETAILS (FOR REFERENCE ONLY)
V1 – 255	TSCV1213	CIVIL, 24TH STREET COMPLEX SITE, COB SITE RETENTION, DETAILS (FOR REFERENCE ONLY)
V1 – 256	TSCV1101	CIVIL, 24TH STREET COMPLEX SITE, STORM DRAIN PROFILES
V1 – 257	TSCV1102	CIVIL, 24TH STREET COMPLEX SITE, STORM DRAIN PROFILES
V1 – 258	TSCV1103	CIVIL, 24TH STREET COMPLEX SITE, STORM DRAIN PROFILES

24TH STREET CAMPUS - LIGHTING PLANS

V1 – 259	TSEL0101	24TH STREET CAMPUS, NORTHWEST LOT, LIGHTING PLAN
V1 – 260	TSEL0102	24TH STREET CAMPUS, NORTHEAST, LIGHTING PLAN

FACILITIES PARKING LOT LIGHTING

V1 – 261	TSEL0201	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, OVERALL LIGHTING DEMOLITION
V1 – 262	TSEL0202	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, LIGHTING DEMOLITION PLAN
V1 – 263	TSEL0203	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, LIGHTING DEMOLITION PLAN
V1 – 264	TSEL0205	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, LIGHTING LAYOUT
V1 – 265	TSEL0206	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, LIGHTING LAYOUT
V1 – 266	TSEL0207	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, LIGHTING LAYOUT
V1 – 267	TSEL0208	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, LIGHTING LAYOUT
V1 – 268	TSEL1001	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, LIGHTING DETAILS
V1 – 269	TSEL1002	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, SINGLE LINE DIAGRAM
V1 – 270	TSEL1003	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, ROADWAY LIGHTING DETAILS
V1 – 271	TSEL1004	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, ROADWAY LIGHTING DETAILS
V1 – 272	TSEL1005	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, ELECTRICAL DETAILS
V1 – 273	TSEL1006	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, ELECTRICAL DETAILS
V1 – 274	TSEL1007	CIVIL, 24TH STREET STATION – SITE, FACILITIES PARKING LOT, PANEL SCHEDULE

RETAINING WALLS EXIT RAMPS

V1 – 275	MSSW0699	STRUCTURAL, RETAINING WALL, LOCATION MAP
V1 – 276	MSSW0730	STRUCTURAL, RETAINING WALL W15, PLAN AND ELEVATION 1, STA 12+50.00 TO STA 14+30.00
V1 – 277	MSSW0731	STRUCTURAL, RETAINING WALL W15, PLAN AND ELEVATION 2, STA 14+30.00 TO 15+50.00
V1 – 278	MSSW0732	STRUCTURAL, RETAINING WALL W16, PLAN AND ELEVATION 1, STA 16+50.00 TO 18+50.00
V1 – 279	MSSW0733	STRUCTURAL, RETAINING WALL W16, PLAN AND ELEVATION 2, STA 18+50.00 TO STA 20+38.09
V1 – 280	MSSW0734	STRUCTURAL, RETAINING WALL W18, PLAN AND ELEVATION 1, STA 14+42.58 TO STA 16+50.00
V1 – 281	MSSW0735	STRUCTURAL, RETAINING WALL W18, PLAN AND ELEVATION 2, STA 16+50.00 TO STA 18+65.00
V1 – 282	MSSW0736	STRUCTURAL, RETAINING WALL W18, PLAN AND ELEVATION 3, STA 18+65.00 TO STA 20+65.82
V1 – 283	MSSW0737	STRUCTURAL, RETAINING WALL W19, PLAN AND ELEVATION 1, STA 18+39.16 TO STA 20+19.00
V1 – 284	MSSW0738	STRUCTURAL, RETAINING WALL W19, PLAN AND ELEVATION 2, STA 20+19.00 TO STA 21+26.27
V1 – 285	MSSW0740	STRUCTURAL, ELEVATED GUIDEWAY, RETAINING WALL TYPICAL SECTION, WALL W15
V1 – 286	MSSW0741	STRUCTURAL, ELEVATED GUIDEWAY, RETAINING WALL TYPICAL SECTION, WALL W16, W18 & W19

VOLUME 2

GENERAL PLANS

V2 – 001	MSGN0001	COVER SHEET
V2 – 002	MSGN0002	INDEX OF DRAWINGS –1
V2 – 003	MSGN0003	INDEX OF DRAWINGS –2
V2 – 004	MSGN0004	INDEX OF DRAWINGS –3
V2 – 005	MSGN0005	INDEX OF DRAWINGS –4
V2 – 006	MSGN0006	INDEX OF DRAWINGS –5
V2 – 007	MSGN0007	INDEX OF DRAWINGS –6
V2 – 008	MSGN0008	INDEX OF DRAWINGS –7
V2 – 009	MSGN0009	INDEX OF DRAWINGS –8
V2 – 010	MSGN0010	INDEX OF DRAWINGS –9
V2 – 011	MSGN0011	INDEX OF DRAWINGS –10
V2 – 012	MSGN0012	HORIZONTAL AND VERTICAL, CONTROL PLAN
V2 – 013	MSGN0013	HORIZONTAL AND VERTICAL, CONTROL PLAN

WEST TERMINAL - FACILITIES & SERVICE LOT

V2 – 014	WSCV0104	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, DEMOLITION PLAN
V2 – 015	WSCV0105	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, DEMOLITION PLAN
V2 – 016	WSCV1310	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, IMPROVEMENT PLAN
V2 – 017	WSCV1311	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, IMPROVEMENT PLAN
V2 – 018	WSCV0601	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, JOINT LAYOUT PLAN
V2 – 019	WSCV0517	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, GRADING AND DRAINAGE
V2 – 020	WSCV0518	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, GRADING AND DRAINAGE
V2 – 021	WSCV0519	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, GRADING AND DRAINAGE
V2 – 022	WSCV0805	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, PAVEMENT MARKING AND SIGNAGE
V2 – 023	WSCV0806	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, PAVEMENT MARKING AND SIGNAGE

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011-S-2-MSGNB041.dwg mbiggs

PROFESSIONAL ENGINEER (CIVIL) MARK PILWALLIS EXPIRES 09/30/19

Design Sub-Consultant

Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

STAGE 2 – B04 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 2

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07–5204

Package: B04 - Sheet Reference No: MSGN0003
V6 - 003 of 260

V2 – 024	WSCV1207	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, PAVEMENT MARKING AND SIGNAGE, DETAILS
V2 – 025	WSCV1208	CIVIL, WEST TERMINAL, FACILITIES AND SERVICES LOT, TYPICAL SECTIONS AND DETAILS

WEST TERMINAL - BUCKEYE ROAD INTERSECTION

V2 – 026	WSCV0101	CIVIL, WEST TERMINAL SITE, DEMOLITION PLAN, BUCKEYE ROAD INTERSECTION
V2 – 027	WSCV0102	CIVIL, WEST TERMINAL SITE, DEMOLITION PLAN, BUCKEYE ROAD INTERSECTION
V2 – 028	WSCV0601	CIVIL, WEST TERMINAL SITE, PAVING PLAN, BUCKEYE ROAD INTERSECTION
V2 – 029	WSCV0602	CIVIL, WEST TERMINAL SITE, PAVING PLAN, BUCKEYE ROAD INTERSECTION
V2 – 030	WSCV0901	CIVIL, WEST TERMINAL SITE, GRADING AND DRAINAGE PLAN, BUCKEYE ROAD INTERSECTION
V2 – 031	WSCV0902	CIVIL, WEST TERMINAL SITE, GRADING AND DRAINAGE PLAN, BUCKEYE ROAD INTERSECTION
V2 – 032	WSCV0903	CIVIL, WEST TERMINAL SITE, GRADING AND DRAINAGE PLAN, BUCKEYE ROAD INTERSECTION
V2 – 033	WSCV0904	CIVIL, WEST TERMINAL SITE, GRADING AND DRAINAGE PLAN, BUCKEYE ROAD INTERSECTION
V2 – 034	WSCV0801	CIVIL, WEST TERMINAL SITE, PAVEMENT MARKING PLAN, BUCKEYE ROAD INTERSECTION
V2 – 035	WSCV0802	CIVIL, WEST TERMINAL SITE, PAVEMENT MARKING PLAN, BUCKEYE ROAD INTERSECTION
V2 – 036	WSCV1201	CIVIL, WEST TERMINAL SITE, PAVEMENT MARKING, DETAILS

WEST TERMINAL - STAIRCASE - ELECTRICAL

V2 – 037	WSEL0201	WEST TERMINAL, ELECTRICAL, STAIRCASE LIGHTING

AIRSIDE T2 - T3 - PHASE 1

V2 – 038	ASCV0201	CIVIL, AIRSIDE T2 TO T3, GEOMETRIC LAYOUT PLAN, PHASE 1
V2 – 039	ASCV0202	CIVIL, AIRSIDE T2 TO T3, GEOMETRIC LAYOUT PLAN, PHASE 1
V2 – 040	ASCV0501	CIVIL, AIRSIDE T2 TO T3, GRADING AND DRAINAGE PLAN, PHASE 1
V2 – 041	ASCV0502	CIVIL, AIRSIDE T2 TO T3, GRADING AND DRAINAGE PLAN, PHASE 1

AIRSIDE T2 - T3 - PHASE 2

V2 – 042	ASCV0103	CIVIL, AIRSIDE T2 TO T3, DEMOLITION PLAN, PHASE 2
V2 – 043	ASCV0104	CIVIL, AIRSIDE T2 TO T3, DEMOLITION PLAN, PHASE 2
V2 – 044	ASCV0105	CIVIL, AIRSIDE T2 TO T3, DEMOLITION PLAN – WEST WALL DETAIL, PHASE 2
V2 – 045	ASCV0106	CIVIL, AIRSIDE T2 TO T3, DEMOLITION PLAN – EAST WALL DETAIL, PHASE 2
V2 – 046	ASCV0203	CIVIL, AIRSIDE T2 TO T3, GEOMETRIC LAYOUT PLAN, PHASE 2
V2 – 047	ASCV0204	CIVIL, AIRSIDE T2 TO T3, GEOMETRIC LAYOUT PLAN, PHASE 2
V2 – 048	ASCV0603	CIVIL, AIRSIDE T2 TO T3, PAVING ELEVATION PLAN, PHASE 2
V2 – 049	ASCV0604	CIVIL, AIRSIDE T2 TO T3, PAVING ELEVATION PLAN, PHASE 2
V2 – 050	ASCV0503	CIVIL, AIRSIDE T2 TO T3, GRADING AND DRAINAGE PLAN, PHASE 2
V2 – 051	ASCV0504	CIVIL, AIRSIDE T2 TO T3, GRADING AND DRAINAGE PLAN, PHASE 2
V2 – 052	ASCV0901	CIVIL, WEST TERMINAL SITE, STORM DRAIN, PLAN AND PROFILE, T3 APRON EXPANSION
V2 – 053	ASCV0902	CIVIL, WEST TERMINAL SITE, STORM DRAIN, PLAN AND PROFILE, T3 APRON EXPANSION
V2 – 054	ASCV0801	CIVIL, AIRSIDE T2 TO T3, PAVEMENT MARKING PLAN, PHASE 2
V2 – 055	ASCV0802	CIVIL, AIRSIDE T2 TO T3, PAVEMENT MARKING PLAN, PHASE 2
V2 – 056	ASCV0803	CIVIL, AIRSIDE T2 TO T3, PAVEMENT MARKING , DETAILS
V2 – 057	ASCV1202	CIVIL, AIRSIDE T2 TO T3, PROJECT DETAILS
V2 – 058	ASCV1203	CIVIL, AIRSIDE T2 TO T3, PROJECT DETAILS
V2 – 059	ASCV1204	CIVIL, AIRSIDE T2 TO T3, RAMP WALL MODIFICATION DETAILS
V2 – 060	ASCV1205	CIVIL, AIRSIDE T2 TO T3, RAMP WALL MODIFICATION DETAILS
V2 – 061	ASCV1206	CIVIL, AIRSIDE T2 TO T3, RAMP WALL MODIFICATION DETAILS

TRAFFIC SIGNAL PLAN

V2 – 062	MSCV1203	SIGNAL PLAN, BUCKEYE ROAD AND COPPERHEAD DRIVE, FOUNDATION
V2 – 063	MSCV1204	SIGNAL PLAN, BUCKEYE ROAD AND COPPERHEAD DRIVE, EQUIPMENT
V2 – 064	MSCV1205	SIGNAL PLAN, BUCKEYE ROAD AND COPPERHEAD DRIVE, WIRING
V2 – 065	MSCV1210	SIGNAL PLAN, 24TH ST STATION AND COPPERHEAD DRIVE, FOUNDATION
V2 – 066	MSCV1211	SIGNAL PLAN, 24TH ST STATION AND COPPERHEAD DRIVE, EQUIPMENT
V2 – 067	MSCV1212	SIGNAL PLAN, 24TH ST STATION AND COPPERHEAD DRIVE, WIRING
V2 – 068	MSCV1213	SIGNAL PLAN, 2750 EAST AND SKY HARBOR BLVD, FOUNDATION
V2 – 069	MSCV1214	SIGNAL PLAN, 2750 EAST AND SKY HARBOR BLVD, EQUIPMENT
V2 – 070	MSCV1215	SIGNAL PLAN, 2750 EAST AND SKY HARBOR BLVD, WIRING

PAVEMENT MARKING AND SIGNING PLANS

V2 – 071	MSCV0001	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS
V2 – 072	MSCV0003	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS
V2 – 073	MSCV0801	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS, BUCKEYE RD, STA 90+82 TO STA 93+50
V2 – 074	MSCV0802	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS, BUCKEYE RD, STA 93+50 TO STA 100+00
V2 – 075	MSCV0803	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS, BUCKEYE RD, STA 100+00 TO STA 106+50
V2 – 076	MSCV0804	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS, SKY HARBOR EB, ENTRANCE RAMP, STA 52+50 TO STA 58+58
V2 – 077	MSCV0805	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS, SOUTH SIDE OF ROTARY STA 10+66 TO, NORTH SIDE OF ROTARY STA 16+00
V2 – 078	MSCV0806	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS, NORTH SIDE OF ROTARY, STA 16+00 TO, COPPERHEAD RD STA 54+50
V2 – 079	MSCV0807	24TH STREET COMPLEX SITE, CIVIL, PAVEMENT MARKING AND SIGNAGE PLANS, TONTO ST STA 68+00 TO, WB SKY HARBOR BLVD STA 55+00
V2 – 080	MSCV0808	24TH STREET COMPLEX SITE, CIVIL, SIGN SUMMARY
V2 – 081	MSCV0809	24TH STREET COMPLEX SITE, CIVIL, SIGN SUMMARY
V2 – 082	MSCV0810	24TH STREET COMPLEX SITE, CIVIL, SIGN SUMMARY
V2 – 083	MSCV0811	24TH STREET COMPLEX SITE, CIVIL, SIGN SUMMARY
V2 – 084	MSCV0812	24TH STREET COMPLEX SITE, CIVIL, SIGN SUMMARY

LANDSCAPING

V2 – 085	LA02LL01	LANDSCAPE, GENERAL NOTES
V2 – 086	LA02LL02	LANDSCAPE, SUMMARY AND LEGEND
V2 – 087	LA02LP01	LANDSCAPE, PLANTING PLAN
V2 – 088	LA02LP02	LANDSCAPE, PLANTING PLAN
V2 – 089	LA02LP03	LANDSCAPE, PLANTING PLAN
V2 – 090	LA02LP04	LANDSCAPE, PLANTING PLAN
V2 – 091	LA02LP05	LANDSCAPE, PLANTING PLAN
V2 – 092	LA02LP06	LANDSCAPE, PLANTING PLAN
V2 – 093	LA02LP07	LANDSCAPE, PLANTING PLAN
V2 – 094	LA02LP08	LANDSCAPE, PLANTING PLAN
V2 – 095	LA02LP09	LANDSCAPE, PLANTING PLAN
V2 – 096	LA02LP10	LANDSCAPE, PLANTING PLAN
V2 – 097	LA02LP11	LANDSCAPE, PLANTING PLAN
V2 – 098	LA02LP12	LANDSCAPE, PLANTING PLAN
V2 – 099	LA02LP13	LANDSCAPE, PLANTING PLAN
V2 – 100	LA02LP14	LANDSCAPE, PLANTING PLAN
V2 – 101	LA02LP15	LANDSCAPE, PLANTING PLAN
V2 – 102	LA02LP16	LANDSCAPE, PLANTING PLAN
V2 – 103	LA02LP17	LANDSCAPE, PLANTING PLAN
V2 – 104	LA02LP18	LANDSCAPE, PLANTING PLAN
V2 – 105	LA02LP19	LANDSCAPE, PLANTING PLAN
V2 – 106	LA02LP20	LANDSCAPE, PLANTING PLAN
V2 – 107	LA02LP21	LANDSCAPE, PLANTING PLAN
V2 – 108	LA02LP22	LANDSCAPE, PLANTING PLAN
V2 – 109	LA02LP23	LANDSCAPE, PLANTING PLAN
V2 – 110	LA02LP24	LANDSCAPE, PLANTING PLAN
V2 – 111	LA02LP25	LANDSCAPE, PLANTING PLAN
V2 – 112	LA02LP26	LANDSCAPE, PLANTING PLAN
V2 – 113	LA02LP27	LANDSCAPE, PLANTING PLAN
V2 – 114	LA02SM01	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 115	LA02SM02	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 116	LA02SM03	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 117	LA02SM04	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 118	LA02SM05	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 119	LA02SM06	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 120	LA02SM07	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 121	LA02SM08	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 122	LA02SM09	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 123	LA02SM10	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 124	LA02SM11	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 125	LA02SM12	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 126	LA02SM13	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 127	LA02SM14	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 128	LA02SM15	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 129	LA02SM16	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 130	LA02SM17	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 131	LA02SM18	LANDSCAPE, SURFACE MATERIAL PLAN
V2 – 132	LA03LD01	LANDSCAPE, PLANTING DETAILS
V2 – 133	LA03LD02	LANDSCAPE, PLANTING DETAILS
V2 – 134	LA03LD03	LANDSCAPE, PLANTING DETAILS
V2 – 135	LA04GR00	LANDSCAPE, HORIZONTAL CONTROL
V2 – 136	LA04GR01	LANDSCAPE, GRADING PLAN
V2 – 137	LA04GR02	LANDSCAPE, GRADING PLAN
V2 – 138	LA04GR03	LANDSCAPE, GRADING PLAN
V2 – 139	LA04GR04	LANDSCAPE, GRADING PLAN
V2 – 140	LA04GR05	LANDSCAPE, GRADING PLAN
V2 – 141	LA04GR06	LANDSCAPE, GRADING PLAN
V2 – 142	LA07GR07	LANDSCAPE, GRADING PLAN
V2 – 143	LA05HS01	LANDSCAPE, HARDSCAPE PLAN
V2 – 144	LA06HD01	LANDSCAPE, HARDSCAPE DETAILS
V2 – 145	LA06HD02	LANDSCAPE, HARDSCAPE DETAILS
V2 – 146	LA06HD03	LANDSCAPE, HARDSCAPE DETAILS
V2 – 147	LA06HD04	LANDSCAPE, HARDSCAPE DETAILS
V2 – 148	LA06HD05	LANDSCAPE, HARDSCAPE DETAILS
V2 – 149	LA06HD06	LANDSCAPE, HARDSCAPE DETAILS
V2 – 150	LA06HD07	LANDSCAPE, HARDSCAPE DETAILS
V2 – 151	LA06HD08	LANDSCAPE, HARDSCAPE DETAILS
V2 – 152	LA06HD09	LANDSCAPE, HARDSCAPE DETAILS
V2 – 153	LA07IL01	LANDSCAPE, IRRIGATION LEGEND & NOTES
V2 – 154	LA07IL02	LANDSCAPE, IRRIGATION EMITTER SCHEDULE
V2 – 155	LA07IP01	LANDSCAPE, IRRIGATION PLAN
V2 – 156	LA07IP02	LANDSCAPE, IRRIGATION PLAN
V2 – 157	LA07IP03	LANDSCAPE, IRRIGATION PLAN
V2 – 158	LA07IP04	LANDSCAPE, IRRIGATION PLAN
V2 – 159	LA07IP05	LANDSCAPE, IRRIGATION PLAN
V2 – 160	LA07IP06	LANDSCAPE, IRRIGATION PLAN
V2 – 161	LA07IP07	LANDSCAPE, IRRIGATION PLAN
V2 – 162	LA07IP08	LANDSCAPE, IRRIGATION PLAN
V2 – 163	LA07IP09	LANDSCAPE, IRRIGATION PLAN
V2 – 164	LA07IP10	LANDSCAPE, IRRIGATION PLAN
V2 – 165	LA07IP11	LANDSCAPE, IRRIGATION PLAN
V2 – 166	LA07IP12	LANDSCAPE, IRRIGATION PLAN
V2 – 167	LA07IP13	LANDSCAPE, IRRIGATION PLAN
V2 – 168	LA07IP14	LANDSCAPE, IRRIGATION PLAN
V2 – 169	LA07IP15	LANDSCAPE, IRRIGATION PLAN
V2 – 170	LA07IP16	LANDSCAPE, IRRIGATION PLAN
V2 – 171	LA07IP17	LANDSCAPE, IRRIGATION PLAN
V2 – 172	LA07IP18	LANDSCAPE, IRRIGATION PLAN
V2 – 173	LA07IP19	LANDSCAPE, IRRIGATION PLAN
V2 – 174	LA07IP20	LANDSCAPE, IRRIGATION PLAN
V2 – 175	LA07IP21	LANDSCAPE, IRRIGATION PLAN
V2 – 176	LA07IP22	LANDSCAPE, IRRIGATION PLAN
V2 – 177	LA07IP23	LANDSCAPE, IRRIGATION PLAN
V2 – 178	LA07IP24	LANDSCAPE, IRRIGATION PLAN
V2 – 179	LA07IP25	LANDSCAPE, IRRIGATION PLAN
V2 – 180	LA07IP26	LANDSCAPE, IRRIGATION PLAN
V2 – 181	LA07IP27	LANDSCAPE, IRRIGATION PLAN
V2 – 182	LA07IP28	LANDSCAPE, IRRIGATION PLAN
V2 – 183	LA07IP29	LANDSCAPE, IRRIGATION PLAN

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011-S-2-MSGNB041.dwg mbiggs



Design Sub–Consultant

Design Consultant

Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PER CITY OF PHOENIX ORDINANCE G-4390, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – 804 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 3

Package: B04

Sheet Reference No: MSGN0004

V2 – 184	LA08ID01	LANDSCAPE, IRRIGATION DETAILS
V2 – 185	LA08ID02	LANDSCAPE, IRRIGATION DETAILS
V2 – 186	LA08ID03	LANDSCAPE, IRRIGATION DETAILS
V2 – 187	LA08ID04	LANDSCAPE, IRRIGATION DETAILS

GUIDEWAY FENCING

V2 – 188	MSCV1309	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 189	MSCV1310	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 190	MSCV1311	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 191	MSCV1312	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 192	MSCV1313	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 193	MSCV1314	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 194	MSCV1315	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 195	MSCV1316	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 196	MSCV1317	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 197	MSCV1318	GUIDEWAY, FENCING, LAYOUT PLAN
V2 – 198	MSCV1218	GUIDEWAY, FENCING, DETAILS
V2 – 199	MSCV1219	GUIDEWAY, FENCING, DETAILS
V2 – 200	MSCV1220	GUIDEWAY, FENCING, DETAILS
V2 – 201	MSCV1221	GUIDEWAY, FENCING, DETAILS
V2 – 202	MSCV1222	GUIDEWAY, FENCING, DETAILS
V2 – 203	MSCV1223	GUIDEWAY, FENCING, DETAILS

WAYFINDING

V2 – 204	MSWF0100	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 205	MSWF0101	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 206	MSWF0102	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 207	MSWF0103	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 208	MSWF0104	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 209	MSWF0105	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 210	MSWF0106	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 211	MSWF0107	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 212	MSWF0108	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 213	MSWF0109	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 214	MSWF0110	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 215	MSWF0111	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 216	MSWF0112	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN LOCATION AND, SIGN PANEL LAYOUT PLANS
V2 – 217	MSWF0113	WAYFINDING, OVERALL PROJECT SIGNAGE, SIGN DESCRIPTIONS
V2 – 218	MSWF0114	WAYFINDING, TYPICAL SIGNAGE DETAILS, FOR 24TH & RCC STATIONS
V2 – 219	MSWF0115	WAYFINDING, TYPICAL SIGNAGE DETAILS, FOR 24TH & RCC STATIONS
V2 – 220	MSWF0116	WAYFINDING, TYPICAL SIGNAGE DETAILS, FOR 24TH & RCC STATIONS
V2 – 221	MSWF0117	WAYFINDING, TYPICAL SIGNAGE DETAILS, FOR 24TH & RCC STATIONS
V2 – 222	MSWF0118	WAYFINDING, TYPICAL SIGNAGE DETAILS, FOR 24TH & RCC STATIONS
V2 – 223	MSWF0119	WAYFINDING, TYPICAL SIGNAGE DETAILS, FOR 24TH & RCC STATIONS
V2 – 224	MSWF0120	WAYFINDING, TYPICAL SIGNAGE DETAILS, FOR 24TH & RCC STATIONS
V2 – 225	TBWF0100	WAYFINDING, RENTAL CAR CENTER STATION, 24TH ST STATION, ILLUMINATED STATION ID SIGN
V2 – 226	TBWF0101	WAYFINDING, 24TH ST STATON, SIGN LOCATION PLANS
V2 – 227	TBWF0102	WAYFINDING, 24TH ST STATON, SIGN LOCATION PLANS
V2 – 228	RBWF0100	WAYFINDING, RCC STATION, SIGN LOCATION PLANS
V2 – 229	RBWF0101	WAYFINDING, RCC STATION, SIGN LOCATION PLANS
V2 – 230	RBWF0102	WAYFINDING, RCC STATION, SIGN LOCATION PLANS
V2 – 231	RBWF0103	WAYFINDING, RCC STATION, SIGN PANEL LAYOUT
V2 – 232	MSWF0121	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 233	MSWF0122	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 234	MSWF0123	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 235	MSWF0124	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 236	MSWF0125	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 237	MSWF0126	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 238	MSWF0127	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 239	MSWF0128	WAYFINDING, 24TH ST STATION, RCC STATION, NEW MESSAGES
V2 – 240	MSWF0129	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 241	MSWF0130	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 242	MSWF0131	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 243	MSWF0132	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 244	MSWF0133	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 245	MSWF0134	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 246	MSWF0135	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 247	MSWF0136	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 248	MSWF0137	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 3 INTERIOR
V2 – 249	MSWF0138	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 250	MSWF0139	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 251	MSWF0140	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 252	MSWF0141	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 253	MSWF0142	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 254	MSWF0143	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 255	MSWF0144	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 256	MSWF0145	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 257	MSWF0146	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, TERMINAL 4 INTERIOR
V2 – 258	MSWF0147	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, SKY TRAIN STATIONS INTERIOR
V2 – 259	MSWF0148	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, SKY TRAIN STATIONS INTERIOR
V2 – 260	MSWF0149	WAYFINDING, AFFECTS ON EXISTING SIGNAGE, SKY TRAIN STATIONS INTERIOR
V2 – 261	MSWF0199	WAYFINDING, SIGN STRUCTURE, GENERAL NOTES
V2 – 262	MSWF0200	WAYFINDING, SIGN STRUCTURE, GENERAL DETAILS
V2 – 263	MSWF0201	WAYFINDING, SIGN STRUCTURE, CONFIGURATION PLANS 1
V2 – 264	MSWF0202	WAYFINDING, SIGN STRUCTURE, CONFIGURATION PLANS 2
V2 – 265	MSWF0203	WAYFINDING, SIGN STRUCTURE, CONFIGURATION PLANS 3
V2 – 266	MSWF0204	WAYFINDING, SIGN STRUCUTRE, CONFIGURATION PLANS 4
V2 – 267	MSWF0205	WAYFINDING, SIGN STRUCUTRE, CONFIGURATION PLANS 5
V2 – 268	MSWF0206	WAYFINDING, SIGN STRUCUTRE, CONFIGURATION PLANS 6
V2 – 269	MSWF0207	WAYFINDING, SIGN STRUCTURE, CONFIGURATION PLANS 7
V2 – 270	MSWF0210	WAYFINDING, SIGN STRUCTURE, FOUNDATION DETAILS
V2 – 271	MSWF0211	WAYFINDING, SIGN STRUCTURE, DETAILS
V2 – 272	MSWF0212	WAYFINDING, SIGN STRUCTURE DETAILS, PANEL BRACKETING
V2 – 273	S–0001	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 274	S–0002	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 275	S–0003	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 276	S–2001	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 277	S–2004	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 278	S–2009	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 279	S–2010	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 280	S–2021	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 281	S–4001R	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 282	S–5001	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 283	S–5002	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)
V2 – 284	S–5005	AS–BUILT SIGN STRUCTURE PLANS (FOR REFERENCE ONLY)

WAYFINDING - POWER

V2 – 285	MSEL0201	CIVIL, WAYFINDING, OVERALL PROJECT SIGNAGE, OVERALL ELECTRICAL SITE PLAN
V2 – 286	MSEL0202	CIVIL, WAYFINDING, OVERALL PROJECT SIGNAGE, ENLARGED ELECTRICAL SITE PLAN
V2 – 287	MSEL0203	CIVIL, WAYFINDING, OVERALL PROJECT SIGNAGE, ENLARGED ELECTRICAL SITE PLAN
V2 – 288	MSEL1001	CIVIL, WAYFINDING, OVERALL PROJECT SIGNAGE, ELECTRICAL DETAILS

SKY HARBOR BLVD-ROADWAY LIGHTING

V2 – 289	WREL0201	CIVIL, OVERALL ROADWAY LIGHTING LAYOUT
V2 – 290	WREL0202	CIVIL, ROADWAY LIGHTING PLAN
V2 – 291	WREL0203	CIVIL, ROADWAY LIGHTING PLAN
V2 – 292	WREL1001	CIVIL, ROADWAY LIGHTING DETAILS
V2 – 293	WREL1002	CIVIL, ROADWAY LIGHTING DETAILS
V2 – 294	WREL1003	CIVIL, ROADWAY LIGHTING DETAILS

24TH STREET STATION-COMPLEX_ROADWAY LIGHTING

V2 – 295	TREL0201	CIVIL, 24TH STREET STATION, OVERALL ROADWAY LIGHTING LAYOUT
V2 – 296	TREL0202	CIVIL, 24TH STREET STATION, OVERALL ROADWAY LIGHTING PLAN
V2 – 297	TREL0203	CIVIL, 24TH STREET STATION, OVERALL ROADWAY LIGHTING PLAN
V2 – 298	TREL0204	CIVIL, 24TH STREET STATION, OVERALL ROADWAY LIGHTING PLAN
V2 – 299	TREL0205	CIVIL, 24TH STREET STATION, OVERALL ROADWAY LIGHTING PLAN
V2 – 300	TREL1001	CIVIL, 24TH STREET STATION, ROADWAY LIGHTING DETAILS
V2 – 301	TREL1002	CIVIL, 24TH STREET STATION, ROADWAY LIGHTING DETAILS
V2 – 302	TREL1003	CIVIL, 24TH STREET STATION, SINGLE LINE DIAGRAM, AND PANEL SCHEDULE

VOLUME 3

GENERAL PLANS

V3 – 001	MSGN0001	COVER SHEET
V3 – 002	MSGN0002	INDEX OF DRAWINGS –1
V3 – 003	MSGN0003	INDEX OF DRAWINGS –2
V3 – 004	MSGN0004	INDEX OF DRAWINGS –3
V3 – 005	MSGN0005	INDEX OF DRAWINGS –4
V3 – 006	MSGN0006	INDEX OF DRAWINGS –5
V3 – 007	MSGN0007	INDEX OF DRAWINGS –6
V3 – 008	MSGN0008	INDEX OF DRAWINGS –7
V3 – 009	MSGN0009	INDEX OF DRAWINGS –8
V3 – 010	MSGN0010	INDEX OF DRAWINGS –9
V3 – 011	MSGN0011	INDEX OF DRAWINGS –10
V3 – 012	MSGN0012	HORIZONTAL AND VERTICAL, CONTROL PLAN
V3 – 013	MSGN0013	HORIZONTAL AND VERTICAL, CONTROL PLAN

ARCHITECTURAL

V3 – 014	TBAR0001	24TH STREET STATION, ARCHITECTURAL, GENERAL NOTES & BUILDING SUMMARY
V3 – 015	TBAR0002	24TH STREET STATION, ARCHITECTURAL, GENERAL ABBREVIATIONS
V3 – 016	TBAR0003	24TH STREET STATION, ARCHITECTURAL, GENERAL ANNOTATIONS & SYMBOLS
V3 – 017	TBAR0010	24TH STREET STATION, ARCHITECTURAL, FIRE PROTECTION AXON
V3 – 018	TBAR0011	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 019	TBAR0012	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 020	TBAR0013	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 021	TBAR0014	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 022	TBAR0015	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 023	TBAR0016	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 024	TBAR0017	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 025	TBAR0018	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 026	TBAR0019	24TH STREET STATION, ARCHITECTURAL, UL DETAILS
V3 – 027	TBAR0220	24TH STREET STATION, ARCHITECTURAL, OVERALL PLANS – STREET – LEVEL 1 AND, PLATFORM – LEVEL 2
V3 – 028	TBAR0240	24TH STREET STATION, ARCHITECTURAL, OVERALL PLANS – BRIDGE – LEVEL 3 AND, ROOF – LEVEL R
V3 – 029	TBAR031A	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – STREET – LEVEL 1 – AREA A
V3 – 030	TBAR031B	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN–STREET – LEVEL 1 – AREA, B
V3 – 031	TBAR031C	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN–STREET – LEVEL 1 – AREA, C
V3 – 032	TBAR031D	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN–STREET – LEVEL 1 – AREA, D
V3 – 033	TBAR031E	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN–STREET – LEVEL 1 – AREA, E
V3 – 034	TBAR031F	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN–STREET – LEVEL 1 – AREA F
V3 – 035	TBAR03LA	24TH STREET STATION, ARCHITECTURAL, CANOPY ROOF PLAN – LEVEL L – AREA A
V3 – 036	TBAR03LB	24TH STREET STATION, ARCHITECTURAL, CANOPY ROOF PLAN – LEVEL L – AREA B
V3 – 037	TBAR03LC	24TH STREET STATION, ARCHITECTURAL, CANOPY ROOF PLAN – LEVEL L – AREA C
V3 – 038	TBAR03LD	24TH STREET STATION, ARCHITECTURAL, CANOPY ROOF PLAN – LEVEL L – AREA D
V3 – 039	TBAR03LE	24TH STREET STATION, ARCHITECTURAL, CANOPY ROOF PLAN – LEVEL L – AREA E
V3 – 040	TBAR03LF	24TH STREET STATION, ARCHITECTURAL, CANOPY ROOF PLAN – LEVEL L – AREA F
V3 – 041	TBAR032B	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 2 –, AREA B
V3 – 042	TBAR032C	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 2 –, AREA C
V3 – 043	TBAR032D	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 2 –, AREA D
V3 – 044	TBAR032E	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 2 –, AREA E
V3 – 045	TBAR034B	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – BRIDGE – LEVEL 4 – AREA B

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011–S–2–MSGNB041.dwg mbiggs

Design Consultant: Gannett Fleming

Design Sub–Consultant

PROFESSIONAL ENGINEER (Civil) MARK PILMALIS 28174 ARIZONA 07/13/18

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN STAGE 2 DESIGN

500 S. 24TH STREET PHOENIX, AZ 85034

Designed by: MB
Drawn by: JV
Checked by: MD
Date: 07/13/2018
Dwg scale: NTS
CIP No.: AV10000011
KIVA No.: 07–5204

STAGE 2 – B04 DESIGN SUBMISSION

GENERAL PLANS INDEX OF DRAWINGS - 4

Package: B04 - MSGN0005
Sheet Reference No:
V6 - 005 of 260

V3 – 046	TBAR034C	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – BRIDGE – LEVEL 4 – AREA C
V3 – 047	TBAR034D	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – BRIDGE – LEVEL 4 – AREA D
V3 – 048	TBAR034E	24TH STREET STATION, ARCHITECTURAL, FLOOR PLAN – BRIDGE – LEVEL 4– AREA E
V3 – 049	TBA5035B	24TH STREET STATION, ARCHITECTURAL, ROOF PLAN – LEVEL R – AREA B
V3 – 050	TBA5035C	24TH STREET STATION, ARCHITECTURAL, ROOF PLAN – LEVEL R – AREA C
V3 – 051	TBA5035D	24TH STREET STATION, ARCHITECTURAL, ROOF PLAN – LEVEL R – AREA D
V3 – 052	TBA5035E	24TH STREET STATION, ARCHITECTURAL, ROOF PLAN – LEVEL R – AREA E
V3 – 053	TBAR0451	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – OVERALL, NORTH – SOUTH
V3 – 054	TBAR0452	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – OVERALL, EAST – WEST
V3 – 055	TBAR0461	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – NORTH – AREA A
V3 – 056	TBAR0462	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – NORTH – AREA B
V3 – 057	TBAR0463	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – NORTH – AREA C
V3 – 058	TBAR0464	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – NORTH – AREA D
V3 – 059	TBAR0465	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – NORTH – AREA E
V3 – 060	TBAR0466	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – NORTH – AREA F
V3 – 061	TBAR0471	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – SOUTH – AREA A
V3 – 062	TBAR0472	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – SOUTH – AREA B
V3 – 063	TBAR0473	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – SOUTH – AREA C
V3 – 064	TBAR0474	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – SOUTH – AREA D
V3 – 065	TBAR0475	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – SOUTH – AREA E
V3 – 066	TBAR0476	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – SOUTH – AREA F
V3 – 067	TBAR0481	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATION – EAST
V3 – 068	TBAR0482	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATION
V3 – 069	TBAR0491	24TH STREET STATION, ARCHITECTURAL, EXTERIOR ELEVATION – WEST
V3 – 070	TBAR0611	24TH STREET STATION, ARCHITECTURAL, ROOF TOP OF STEEL COORDINATION
V3 – 071	TBAR0612	24TH STREET STATION, ARCHITECTURAL, ROOF TOP OF STEEL COORDINATION
V3 – 072	TBAR0621	24TH STREET STATION, ARCHITECTURAL, ENLARGED EDGE OF PLATFORM
V3 – 073	TBAR0641	24TH STREET STATION, ARCHITECTURAL, ENLARGED STAIR PLAN AND SECTION
V3 – 074	TBAR0651	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – WEST VERTICAL, CIRCULATION CORE
V3 – 075	TBAR0652	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – WEST VERTICAL, CIRCULATION CORE
V3 – 076	TBAR0653	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – WEST VERTICAL, CIRCULATION CORE
V3 – 077	TBAR0654	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – WEST VERTICAL, CIRCULATION CORE
V3 – 078	TBAR0655	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – WEST VERTICAL, CIRCULATION CORE
V3 – 079	TBAR0656	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – WEST VERTICAL, CIRCULATION CORE
V3 – 080	TBAR0661	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – EAST VERTICAL, CIRCULATION CORE
V3 – 081	TBAR0662	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – EAST VERTICAL, CIRCULATION CORE
V3 – 082	TBAR0663	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – EAST VERTICAL, CIRCULATION CORE
V3 – 083	TBAR0664	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – EAST VERTICAL, CIRCULATION CORE
V3 – 084	TBAR0665	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – EAST VERTICAL, CIRCULATION CORE
V3 – 085	TBAR0666	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – EAST VERTICAL, CIRCULATION CORE
V3 – 086	TBAR0671	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLAN – WEST, ESCALATORS 1, AND 2 – WEST STAIR
V3 – 087	TBAR0672	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – WEST, ESCALATORS 1 AND 2
V3 – 088	TBAR0673	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTIONS – WEST, ESCALATORS 1 AND 2
V3 – 089	TBAR0674	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – WEST STAIR
V3 – 090	TBAR0681	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLANS – EAST ESCALATORS 3, AND 4 – EAST STAIR
V3 – 091	TBAR0682	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – EAST, ESCALATORS 3 AND 4
V3 – 092	TBAR0683	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTIONS – EAST, ESCALATORS 3 AND 4
V3 – 093	TBAR0684	24TH STREET STATION, ARCHITECTURAL, ENLARGED SECTION – EAST STAIR
V3 – 094	TBAR0691	24TH STREET STATION, ARCHITECTURAL, ENLARGED PLANS AND ELEVATIONS
V3 – 095	TBAR0811	24TH STREET STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – STREET LEVEL
V3 – 096	TBAR0812	24TH STREET STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – NORTH –, PLATFORM
V3 – 097	TBAR0813	24TH STREET STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – SOUTH –, PLATFORM
V3 – 098	TBAR0814	24TH STREET STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – EAST–WEST, PLATFORM
V3 – 099	TBAR0815	24TH STREET STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – VERTICAL, CIRCULATION
V3 – 100	TBAR0960	24TH STREET STATION, ARCHITECTURAL, LONGITUDINAL SECTIONS
V3 – 101	TBAR0970	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTIONS
V3 – 102	TBAR0971	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTION
V3 – 103	TBAR0972	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTION
V3 – 104	TBAR0973	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTION
V3 – 105	TBAR0974	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTION
V3 – 106	TBAR0975	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTION
V3 – 107	TBAR0976	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTIONS
V3 – 108	TBAR0977	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTIONS
V3 – 109	TBAR0978	24TH STREET STATION, ARCHITECTURAL, TRANSVERSE SECTIONS
V3 – 110	TBAR101A	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – STREET, – LEVEL 1 – AREA A
V3 – 111	TBAR101B	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – STREET –, LEVEL 1 – AREA B
V3 – 112	TBAR101C	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – STREET –, LEVEL 1 – AREA C
V3 – 113	TBAR101D	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – STREET –, LEVEL 1 – AREA D
V3 – 114	TBAR101E	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – STREET –, LEVEL 1 – AREA E
V3 – 115	TBAR101F	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – STREET –, LEVEL 1 – AREA F
V3 – 116	TBAR102B	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PLATFORM –, LEVEL 2 – AREA B
V3 – 117	TBAR102C	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PLATFORM –, LEVEL 2 – AREA C
V3 – 118	TBAR102D	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PLATFORM –, LEVEL 2 – AREA D
V3 – 119	TBAR102E	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PLATFORM –, LEVEL 2 – AREA E
V3 – 120	TBAR103B	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – BRIDGE –, LEVEL 4 – AREA B
V3 – 121	TBAR103E	24TH STREET STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – BRIDGE –, LEVEL 4 – AREA E
V3 – 122	TBAR1201	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS
V3 – 123	TBAR1202	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS
V3 – 124	TBAR1203	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS
V3 – 125	TBAR1204	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS
V3 – 126	TBAR1210	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V3 – 127	TBAR1211	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V3 – 128	TBAR1212	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V3 – 129	TBAR1213	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPOSED ROOF, DRAIN LEADERS
V3 – 130	TBAR1214	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPOSED ROOF, DRAIN LEADERS
V3 – 131	TBAR1215	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPOSED ROOF, DRAIN LEADERS
V3 – 132	TBAR1216	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPOSED ROOF, DRAIN LEADERS
V3 – 133	TBAR1220	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – COMPOSITE PANEL, SYSTEMS DETAILS
V3 – 134	TBAR1250	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – OPENINGS
V3 – 135	TBAR1270	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPANSION JOINT, CONTROL SYSTEMS
V3 – 136	TBAR1271	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPANSION JOINT, CONTROL SYSTEMS
V3 – 137	TBAR1272	24TH STREET STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPANSION JOINT, CONTROL SYSTEMS
V3 – 138	TBAR1301	24TH STREET STATION, ARCHITECTURAL, DOOR TYPES AND DOOR SCHEDULE
V3 – 139	TBAR1302	24TH STREET STATION, ARCHITECTURAL, DOOR TYPES AND DOOR SCHEDULE
V3 – 140	TBAR1305	24TH STREET STATION, ARCHITECTURAL, FINISH SCHEDULE
V3 – 141	TBAR1306	24TH STREET STATION, ARCHITECTURAL, FURNITURE PLAN (FOR INFORMATION ONLY)
V3 – 142	TBAR1310	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V3 – 143	TBAR1311	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V3 – 144	TBAR1312	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V3 – 145	TBAR1313	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V3 – 146	TBAR1314	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V3 – 147	TBAR1315	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V3 – 148	TBAR1317	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS –, THROUGH–PENETRATION FIRESTOP, SYSTEMS
V3 – 149	TBAR1318	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS –, THROUGH–PENETRATION FIRESTOP, SYSTEMS
V3 – 150	TBAR1320	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – FLOOR SYSTEMS
V3 – 151	TBAR1330	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – DOORS AND, FRAMES
V3 – 152	TBAR1331	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – DOORS AND, FRAMES
V3 – 153	TBAR1332	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – DOOR FRAMES, AND GLAZING
V3 – 154	TBAR1340	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – CEILING SYSTEMS
V3 – 155	TBAR1341	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – CEILING SYSTEMS
V3 – 156	TBAR1342	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – CEILING SYSTEMS
V3 – 157	TBAR1350	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – STAIRS & RAILING, SYSTEMS
V3 – 158	TBAR1351	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – STAIRS & RAILING, SYSTEMS
V3 – 159	TBAR1352	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – STAIRS & RAILING, SYSTEMS
V3 – 160	TBAR1355	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – ELEVATORS AND, ESCALATORS
V3 – 161	TBAR1356	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – ELEVATORS AND, ESCALATORS
V3 – 162	TBAR1360	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – DECORATIVE METAL, & GLASS SYSTEMS
V3 – 163	TBAR1370	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – EXPANSION JOINT, CONTROL SYSTEMS
V3 – 164	TBAR1380	24TH STREET STATION, ARCHITECTURAL, INTERIOR DETAILS – MILL WORK

STRUCTURAL

V3 – 165	TBSB0010	24TH STREET STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES I
V3 – 166	TBSB0011	24TH STREET STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES II
V3 – 167	TBSB0012	24TH STREET STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES III
V3 – 168	TBSB0013	24TH STREET STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES IV
V3 – 169	TBSB0014	24TH STREET STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES V
V3 – 170	TBSB0015	24TH STREET STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES VI
V3 – 171	TBSB0016	24TH STREET STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES VII
V3 – 172	TBSB0017	24TH STREET STATION, STRUCTURAL, ABBREVIATIONS
V3 – 173	TBSB0018	24TH STREET STATION, STRUCTURAL, FLOOR LOADING MAPS
V3 – 174	TBSB0300	24TH STREET STATION, STRUCTURAL, OVERALL FOUNDATION PLAN
V3 – 175	TBSB0301	24TH STREET STATION, STRUCTURAL, FOUNDATION PLAN AREA A
V3 – 176	TBSB0302	24TH STREET STATION, STRUCTURAL, FOUNDATION PLAN AREA B
V3 – 177	TBSB0303	24TH STREET STATION, STRUCTURAL, FOUNDATION PLAN AREA C
V3 – 178	TBSB0304	24TH STREET STATION, STRUCTURAL, FOUNDATION PLAN AREA D
V3 – 179	TBSB0305	24TH STREET STATION, STRUCTURAL, FOUNDATION PLAN AREA E
V3 – 180	TBSB0306	24TH STREET STATION, STRUCTURAL, FOUNDATION PLAN AREA F
V3 – 181	TBSB0310	24TH STREET STATION, STRUCTURAL, OVERALL LOW ROOF FRAMING PLAN
V3 – 182	TBSB0311	24TH STREET STATION, STRUCTURAL, ROOF FRAMING PLAN AREA A
V3 – 183	TBSB0312	24TH STREET STATION, STRUCTURAL, LOW ROOF FRAMING PLAN AREA B
V3 – 184	TBSB0313	24TH STREET STATION, STRUCTURAL, LOW ROOF FRAMING PLAN AREA C
V3 – 185	TBSB0314	24TH STREET STATION, STRUCTURAL, LOW ROOF FRAMING PLAN AREA D
V3 – 186	TBSB0315	24TH STREET STATION, STRUCTURAL, LOW ROOF FRAMING PLAN AREA E
V3 – 187	TBSB0316	24TH STREET STATION, STRUCTURAL, ROOF FRAMING PLAN AREA F
V3 – 188	TBSB0320	24TH STREET STATION, STRUCTURAL, OVERALL GUIDEWAY FRAMING PLAN
V3 – 189	TBSB0322	24TH STREET STATION, STRUCTURAL, GUIDEWAY FRAMING PLAN AREA B
V3 – 190	TBSB0323	24TH STREET STATION, STRUCTURAL, GUIDEWAY FRAMING PLAN AREA C
V3 – 191	TBSB0324	24TH STREET STATION, STRUCTURAL, GUIDEWAY FRAMING PLAN AREA D
V3 – 192	TBSB0325	24TH STREET STATION, STRUCTURAL, GUIDEWAY FRAMING PLAN AREA E
V3 – 193	TBSB0330	24TH STREET STATION, STRUCTURAL, OVERALL PLATFORM FRAMING PLAN
V3 – 194	TBSB0332	24TH STREET STATION, STRUCTURAL, PLATFORM FRAMING PLAN AREA B
V3 – 195	TBSB0333	24TH STREET STATION, STRUCTURAL, PLATFORM FRAMING PLAN AREA C
V3 – 196	TBSB0334	24TH STREET STATION, STRUCTURAL, PLATFORM FRAMING PLAN AREA D
V3 – 197	TBSB0335	24TH STREET STATION, STRUCTURAL, PLATFORM FRAMING PLAN AREA E
V3 – 198	TBSB0340	24TH STREET STATION, STRUCTURAL, OVERALL BRIDGE FRAMING PLAN
V3 – 199	TBSB0342	24TH STREET STATION, STRUCTURAL, BRIDGE FRAMING PLAN AREA B
V3 – 200	TBSB0343	24TH STREET STATION, STRUCTURAL, BRIDGE FRAMING PLAN AREA C
V3 – 201	TBSB0344	24TH STREET STATION, STRUCTURAL, BRIDGE FRAMING PLAN AREA D
V3 – 202	TBSB0345	24TH STREET STATION, STRUCTURAL, BRIDGE FRAMING PLAN AREA E
V3 – 203	TBSB0350	24TH STREET STATION, STRUCTURAL, OVERALL ROOF FRAMING PLAN
V3 – 204	TBSB0352	24TH STREET STATION, STRUCTURAL, ROOF FRAMING PLAN AREA B
V3 – 205	TBSB0353	24TH STREET STATION, STRUCTURAL, ROOF FRAMING PLAN AREA C
V3 – 206	TBSB0354	24TH STREET STATION, STRUCTURAL, ROOF FRAMING PLAN AREA D
V3 – 207	TBSB0355	24TH STREET STATION, STRUCTURAL, ROOF FRAMING PLAN AREA E
V3 – 208	TBSB0360	24TH STREET STATION, STRUCTURAL, SCREEN WALL FRAMING PLANS
V3 – 209	TBSB0510	24TH STREET STATION, STRUCTURAL, FULL HEIGHT SECTIONS
V3 – 210	TBSB0511	24TH STREET STATION, STRUCTURAL, FULL HEIGHT SECTIONS
V3 – 211	TBSB0512	24TH STREET STATION, STRUCTURAL, FULL HEIGHT SECTIONS
V3 – 212	TBSB0513	24TH STREET STATION, STRUCTURAL, FULL HEIGHT SECTIONS
V3 – 213	TBSB0514	24TH STREET STATION, STRUCTURAL, FULL HEIGHT SECTIONS
V3 – 214	TBSB0515	24TH STREET STATION, STRUCTURAL, FULL HEIGHT SECTIONS
V3 – 215	TBSB0516	24TH STREET STATION, STRUCTURAL, FULL HEIGHT SECTIONS
V3 – 216	TBSB0610	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 217	TBSB0611	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 218	TBSB0612	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 219	TBSB0613	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 220	TBSB0614	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 221	TBSB0615	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 222	TBSB0616	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 223	TBSB0617	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 224	TBSB0618	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 225	TBSB0619	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 226	TBSB0620	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 227	TBSB0621	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 228	TBSB0622	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 229	TBSB0623	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN
V3 – 230	TBSB0624	24TH STREET STATION, STRUCTURAL, ENLARGED PLAN

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011-S-2-MSGNB041.dwg mbiggs

Design Consultant
Gannett Fleming

Design Sub-Consultant

REGISTERED PROFESSIONAL ENGINEER (CIVIL) MARK PILWALLIS 15,459 CERTIFICATE NUMBER EXPIRES 09/30/2019

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PER CITY OF PHOENIX ORDINANCE G-4390, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 – 804 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 5

Package: B04
Sheet Reference No: MSGN0006
V6 - 006 of 260

V3 – 231	TBSB0625	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 232	TBSB0626	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 233	TBSB0627	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 234	TBSB0628	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 235	TBSB0629	24TH STREET STATION, STRUCTURAL, ELEVATOR/STAIR TOWER SECTIONS
V3 – 236	TBSB0630	24TH STREET STATION, STRUCTURAL, ENLARGED PLANS
V3 – 237	TBSB0631	24TH STREET STATION, STRUCTURAL, ENLARGED LOW ROOF FRAMING PLAN
V3 – 238	TBSB0632	24TH STREET STATION, STRUCTURAL, STRUCTURAL STAIR FRAMING
V3 – 239	TBSB0640	24TH STREET STATION, STRUCTURAL, PARTIAL GUIDEWAY PLANS AND SECTIONS
V3 – 240	TBSB0710	24TH STREET STATION, STRUCTURAL, FOUNDATION MISCELLANUOUS CONCRETE
V3 – 241	TBSB0720	24TH STREET STATION, STRUCTURAL, FOUNDATION CONCRETE SLAB ON GRAGE
V3 – 242	TBSB0721	24TH STREET STATION, STRUCTURAL, FOUNDATION SECTIONS AND DETAILS
V3 – 243	TBSB0722	24TH STREET STATION, STRUCTURAL, FOUNDATION SECTIONS AND DETAILS
V3 – 244	TBSB0723	24TH STREET STATION, STRUCTURAL, SECTIONS AND DETAILS
V3 – 245	TBSB0730	24TH STREET STATION, STRUCTURAL, FOUNDATION WALL FOOTINGS
V3 – 246	TBSB0810	24TH STREET STATION, STRUCTURAL, MASONRY DETAILS I
V3 – 247	TBSB0830	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 248	TBSB0902	24TH STREET STATION, STRUCTURAL, FOUNDATION CONCRETE WALLS
V3 – 249	TBSB0903	24TH STREET STATION, STRUCTURAL, FOUNDATION CONCRETE WALLS
V3 – 250	TBSB0910	24TH STREET STATION, STRUCTURAL, FRAMING BEAM ELEVATIONS I
V3 – 251	TBSB0911	24TH STREET STATION, STRUCTURAL, GUIDEWAY DECK SLAB DRAINAGE PLAN AND SECTIONS
V3 – 252	TBSB0912	24TH STREET STATION, STRUCTURAL, FRAMING BEAM ELEVATIONS II
V3 – 253	TBSB0913	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 254	TBSB0914	24TH STREET STATION, STRUCTURAL, FRAMING BEAM ELEVATIONS III
V3 – 255	TBSB0915	24TH STREET STATION, STRUCTURAL, FRAMING BEAM ELEVATIONS IV
V3 – 256	TBSB0916	24TH STREET STATION, STRUCTURAL, FRAMING BEAM ELEVATIONS V
V3 – 257	TBSB0917	24TH STREET STATION, STRUCTURAL, FRAMING BEAM ELEVATIONS VI
V3 – 258	TBSB0918	24TH STREET STATION, STRUCTURAL, FRAMING BEAM ELEVATIONS VII
V3 – 259	TBSB0920	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 260	TBSB0921	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 261	TBSB0922	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 262	TBSB0923	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 263	TBSB0924	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 264	TBSB0925	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 265	TBSB0926	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 266	TBSB0927	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 267	TBSB0928	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 268	TBSB0929	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 269	TBSB0930	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 270	TBSB0931	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 271	TBSB0932	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 272	TBSB0933	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 273	TBSB0934	24TH STREET STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V3 – 274	TBSB0981	24TH STREET STATION, STRUCTURAL, STRUCTURAL STAIR FRAMING

VOLUME 4

GENERAL PLANS

V4 – 001	MSGN0001	COVER SHEET
V4 – 002	MSGN0002	INDEX OF DRAWINGS –1
V4 – 003	MSGN0003	INDEX OF DRAWINGS –2
V4 – 004	MSGN0004	INDEX OF DRAWINGS –3
V4 – 005	MSGN0005	INDEX OF DRAWINGS –4
V4 – 006	MSGN0006	INDEX OF DRAWINGS –5
V4 – 007	MSGN0007	INDEX OF DRAWINGS –6
V4 – 008	MSGN0008	INDEX OF DRAWINGS –7
V4 – 009	MSGN0009	INDEX OF DRAWINGS –8
V4 – 010	MSGN0010	INDEX OF DRAWINGS –9
V4 – 011	MSGN0011	INDEX OF DRAWINGS –10
V4 – 012	MSGN0012	HORIZONTAL AND VERTICAL, CONTROL PLAN
V4 – 013	MSGN0013	HORIZONTAL AND VERTICAL, CONTROL PLAN

MECHANICAL

V4 – 014	TBME0001	24TH STREET STATION, MECHANICAL, SYMBOL LIST AND GENERAL, NOTES
V4 – 015	TBME0002	24TH STREET STATION, MECHANICAL, GENERAL NOTES
V4 – 016	TBME021A	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA A
V4 – 017	TBME021B	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA B
V4 – 018	TBME021C	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA C
V4 – 019	TBME021D	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA D
V4 – 020	TBME021E	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA E
V4 – 021	TBME021F	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA F
V4 – 022	TBME022A	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LOW ROOF LEVEL –, AREA A
V4 – 023	TBME022B	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 2 – AREA B
V4 – 024	TBME022E	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 2 – AREA E
V4 – 025	TBME022F	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LOW ROOF LEVEL –, AREA F
V4 – 026	TBME023B	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 4 – AREA B
V4 – 027	TBME023C	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 4 – AREA C
V4 – 028	TBME023D	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 4 – AREA D
V4 – 029	TBME023E	24TH STREET STATION, MECHANICAL, FLOOR PLAN – LEVEL 4 – AREA E
V4 – 030	TBME024B	24TH STREET STATION, MECHANICAL, FLOOR PLAN – ROOF LEVEL –, AREA B
V4 – 031	TBME024C	24TH STREET STATION, MECHANICAL, FLOOR PLAN – ROOF LEVEL –, AREA C
V4 – 032	TBME024D	24TH STREET STATION, MECHANICAL, FLOOR PLAN – ROOF LEVEL –, AREA D
V4 – 033	TBME024E	24TH STREET STATION, MECHANICAL, FLOOR PLAN – ROOF LEVEL – AREA, E
V4 – 034	TBME030	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 1 BELOW, GRADE
V4 – 035	TBME031A	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 1 – AREA A
V4 – 036	TBME031B	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 1 – AREA B
V4 – 037	TBME031E	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 1 – AREA E
V4 – 038	TBME031F	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 1 – AREA F
V4 – 039	TBME032A	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 2 – AREA A
V4 – 040	TBME032F	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 2 – AREA F
V4 – 041	TBME033B	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 4 – AREA B
V4 – 042	TBME033E	24TH STREET STATION, MECHANICAL, PIPING PLAN – LEVEL 4 – AREA E
V4 – 043	TBME0801	24TH STREET STATION, MECHANICAL, EQUIPMENT SCHEDULES
V4 – 044	TBME0802	24TH STREET STATION, MECHANICAL, EQUIPMENT SCHEDULES
V4 – 045	TBME0803	24TH STREET STATION, MECHANICAL, EQUIPMENT SCHEDULES
V4 – 046	TBME0804	24TH STREET STATION, MECHANICAL, DETAILS
V4 – 047	TBME0805	24TH STREET STATION, MECHANICAL, DETAILS
V4 – 048	TBME0806	24TH STREET STATION, MECHANICAL, DETAILS
V4 – 049	TBME0807	24TH STREET STATION, MECHANICAL, DETAILS
V4 – 050	TBME0901	24TH STREET STATION, MECHANICAL, CONTROL DIAGRAMS
V4 – 051	TBME0902	24TH STREET STATION, MECHANICAL, CONTROL DIAGRAMS

ELECTRICAL

V4 – 052	TBEL0001	24TH STREET STATION, ELECTRICAL, NOTES
V4 – 053	TBEL0002	24TH STREET STATION, ELECTRICAL, SYMBOL LIST
V4 – 054	TBEL0301	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA A
V4 – 055	TBEL0302	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA B
V4 – 056	TBEL0303	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA C
V4 – 057	TBEL0304	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA D
V4 – 058	TBEL0305	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA E
V4 – 059	TBEL0306	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA F
V4 – 060	TBEL0307	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA B
V4 – 061	TBEL0308	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA C
V4 – 062	TBEL0309	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA D
V4 – 063	TBEL0310	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA E
V4 – 064	TBEL0311	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, BRIDGE LEVEL, AREA B
V4 – 065	TBEL0312	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, BRIDGE LEVEL, AREA E
V4 – 066	TBEL0313	24TH STREET STATION, LIGHTING FLOOR PLAN, ELECTRICAL, ELEVATOR SHAFT DETAILS
V4 – 067	TBEL0401	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA A
V4 – 068	TBEL0402	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA B
V4 – 069	TBEL0403	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA C
V4 – 070	TBEL0404	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA D
V4 – 071	TBEL0405	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA E
V4 – 072	TBEL0406	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA F
V4 – 073	TBEL0407	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA B
V4 – 074	TBEL0408	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA C
V4 – 075	TBEL0409	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA D
V4 – 076	TBEL0410	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA E
V4 – 077	TBEL0411	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, BRIDGE LEVEL, AREA B
V4 – 078	TBEL0412	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, BRIDGE LEVEL, AREA E
V4 – 079	TBEL0413	24TH STREET STATION, POWER FLOOR PLAN, ELECTRICAL, ELEVATOR SHAFT DETAILS
V4 – 080	TBEL0414	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA A
V4 – 081	TBEL0415	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA B
V4 – 082	TBEL0416	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA C
V4 – 083	TBEL0417	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA D
V4 – 084	TBEL0418	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA E
V4 – 085	TBEL0419	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLAZA LEVEL, AREA F
V4 – 086	TBEL0420	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA B
V4 – 087	TBEL0421	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA E
V4 – 088	TBEL0422	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, BRIDGE LEVEL, AREA B
V4 – 089	TBEL0423	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, BRIDGE LEVEL, AREA E
V4 – 090	TBEL0424	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 1, AREA A
V4 – 091	TBEL0425	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 1, AREA B
V4 – 092	TBEL0426	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 1, AREA E
V4 – 093	TBEL0427	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 1, AREA F
V4 – 094	TBEL0428	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 4, AREA B
V4 – 095	TBEL0429	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 4, AREA C
V4 – 096	TBEL0430	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 4, AREA D
V4 – 097	TBEL0431	24TH STREET STATION, MECHANICAL POWER FLOOR PLAN, ELECTRICAL, ROOF PLAN LEVEL 4, AREA E
V4 – 098	TBEL0901	24TH STREET STATION, PANEL SCHEDULES, ELECTRICAL
V4 – 099	TBEL0902	24TH STREET STATION, PANEL SCHEDULES, ELECTRICAL
V4 – 100	TBEL0903	24TH STREET STATION, PANEL SCHEDULES, ELECTRICAL
V4 – 101	TBEL0904	24TH STREET STATION, PANEL SCHEDULES, ELECTRICAL
V4 – 102	TBEL0905	24TH STREET STATION, PANEL SCHEDULES, ELECTRICAL
V4 – 103	TBEL0906	24TH STREET STATION, PANEL SCHEDULES, ELECTRICAL
V4 – 104	TBEL0907	24TH STREET STATION, PANEL SCHEDULES
V4 – 105	TBEL1001	24TH STREET STATION, ELECTRICAL, SINGLE LINE DIAGRAM
V4 – 106	TBEL1002	24TH STREET STATION, ELECTRICAL GROUNDING SINGLE, LINE DIAGRAM AND GROUNDING DETAIL
V4 – 107	TBEL1003	24TH STREET STATION, ELECTRICAL FEEDER SCHEDULE, CONDUIT, AND CONDUCTORS
V4 – 108	TBEL1004	24TH STREET STATION, ELECTRICAL, FAULT CURRENT CALCULATIONS
V4 – 109	TBEL1005	24TH STREET STATION, ELECTRICAL, DETAIL
V4 – 110	TBEL1006	24TH STREET STATION, LIGHTING, DETAIL
V4 – 111	TBEL1007	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 112	TBEL1008	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 113	TBEL1009	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 114	TBEL1010	24TH STREET STATION, ELECTRICAL GROUNDING, DETAILS
V4 – 115	TBEL1011	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 116	TBEL1012	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 117	TBEL1013	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 118	TBEL1014	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 119	TBEL1015	24TH STREET STATION, ELECTRICAL, LIGHTING CONTROL SYSTEM, GENERAL NOTES
V4 – 120	TBEL1016	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 121	TBEL1017	24TH STREET STATION, ELECTRICAL, DETAILS
V4 – 122	TBEL1018	24TH STREET STATION, ELECTRICAL, DAYLIGHT DIMMING DETAILS

PLUMBING

V4 – 123	TBPL0001	24TH STREET STATION, PLUMBING, SYMBOL LIST AND GENERAL, NOTES
V4 – 124	TBPL021A	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 1 LOW ROOF –, AREA A
V4 – 125	TBPL021B	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA B
V4 – 126	TBPL021C	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA C
V4 – 127	TBPL021D	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA D
V4 – 128	TBPL021E	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA E
V4 – 129	TBPL021F	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA F

PER CITY OF PHOENIX ORDINANCE G-4390, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

Design Consultant
Gannett Fleming

Design Sub–Consultant

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – B04 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 6

Package: B04 - MSGN0007
Sheet Reference No:
V6 - 007 of 260

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011-S-2-MSGNB041.dwg mbiggs

V4 – 130	TBPL022A	24TH STREET STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, A
V4 – 131	TBPL022B	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 2 – AREA B
V4 – 132	TBPL022C	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 2 – AREA C
V4 – 133	TBPL022D	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 2 – AREA D
V4 – 134	TBPL022E	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 2 – AREA E
V4 – 135	TBPL022F	24TH STREET STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, F
V4 – 136	TBPL023B	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 3 – AREA B
V4 – 137	TBPL023C	24TH STREET STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, C
V4 – 138	TBPL023D	24TH STREET STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, D
V4 – 139	TBPL023E	24TH STREET STATION, PLUMBING, FLOOR PLAN – LEVEL 3 – AREA E
V4 – 140	TBPL024B	24TH STREET STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, B
V4 – 141	TBPL024E	24TH STREET STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, E
V4 – 142	TBPL0503	24TH STREET STATION, PLUMBING, ROOF & OVERFLOW DRAINS, ISOMETRICS
V4 – 143	TBPL0505	24TH STREET STATION, PLUMBING, MAIN BUILDING ISOMETRICS
V4 – 144	TBPL0509	24TH STREET STATION, PLUMBING, SECTIONS
V4 – 145	TBPL0510	24TH STREET STATION, PLUMBING, DETAILS

FIRE

V4 – 146	TBFP0001	24TH STREET STATION, FIRE SPRINKLER, FIRE PROTECTION NARRATIVE
V4 – 147	TBFP031A	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – STREET – LEVEL, 1 – AREA A
V4 – 148	TBFP031B	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – STREET – LEVEL, 1 – AREA B
V4 – 149	TBFP031C	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – STREET – LEVEL, 1 – AREA C
V4 – 150	TBFP031D	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – STREET – LEVEL, 1 – AREA D
V4 – 151	TBFP031E	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – STREET – LEVEL, 1 – AREA E
V4 – 152	TBFP031F	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – STREET – LEVEL, 1 – AREA F
V4 – 153	TBFP032B	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – PLATFORM –, LEVEL 2 – AREA B
V4 – 154	TBFP032E	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – PLATFORM –, LEVEL 2 – AREA E
V4 – 155	TBFP034B	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – BRIDGE – LEVEL, 4 – AREA B
V4 – 156	TBFP034C	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – BRIDGE – LEVEL, 4 – AREA C
V4 – 157	TBFP034D	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – BRIDGE – LEVEL, 4 – AREA D
V4 – 158	TBFP034E	24TH STREET STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN – BRIDGE – LEVEL, 4 – AREA E
V4 – 159	TBFA0001	24TH STREET STATION, FIRE ALARM, FIRE PROTECTION NARRATIVE
V4 – 160	TBFA0002	24TH STREET STATION, FIRE ALARM, FIRE ALARM RISER
V4 – 161	TBFA0003	24TH STREET STATION, FIRE ALARM, FIRE ALARM MATRIX
V4 – 162	TBFA031A	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – STREET – LEVEL 1 –, AREA A
V4 – 163	TBFA031B	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – STREET – LEVEL 1 –, AREA B
V4 – 164	TBFA031C	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – STREET – LEVEL 1 –, AREA C
V4 – 165	TBFA031D	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – STREET – LEVEL 1 –, AREA D
V4 – 166	TBFA031E	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – STREET – LEVEL 1 –, AREA E
V4 – 167	TBFA031F	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – STREET – LEVEL 1 –, AREA F
V4 – 168	TBFA032B	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – PLATFORM – LEVEL, 2 – AREA B
V4 – 169	TBFA032E	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – PLATFORM – LEVEL, 2 – AREA E
V4 – 170	TBFA034B	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – BRIDGE – LEVEL 4 –, AREA B
V4 – 171	TBFA034C	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – BRIDGE – LEVEL 4 –, AREA C
V4 – 172	TBFA034D	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – BRIDGE – LEVEL 4 –, AREA D
V4 – 173	TBFA034E	24TH STREET STATION, FIRE ALARM, FIRE ALARM PLAN – BRIDGE – LEVEL 4 –, AREA E
V4 – 174	TBLS0001	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY CODE SUMMARY
V4 – 175	TBLS0031	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 1 –, OVERALL
V4 – 176	TBLS0031A	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 1 –, AREA A
V4 – 177	TBLS0031B	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 1 –, AREA B
V4 – 178	TBLS0031C	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 1 –, AREA C
V4 – 179	TBLS0031D	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 1 –, AREA D
V4 – 180	TBLS0031E	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 1 –, AREA E
V4 – 181	TBLS0031F	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 1 –, AREA F
V4 – 182	TBLS0032	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL, 2 – OVERALL
V4 – 183	TBLS0032B	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL, 2 – AREA B
V4 – 184	TBLS0032C	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL, 2 – AREA C
V4 – 185	TBLS0032D	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL, 2 – AREA D
V4 – 186	TBLES0032E	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL, 2 – AREA E
V4 – 187	TBLS0034	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 4–, OVERALL
V4 – 188	TBLS0034B	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 4–, AREA B
V4 – 189	TBLS0034E	24TH STREET STATION, LIFE SAFETY, LIFE SAFETY PLAN – STREET – LEVEL 4–, AREA E

COMMUNICATIONS

V4 – 190	TBC00001	24TH STREET STATION, COMMUNICATIONS, GENERAL NOTES AND LEGEND
V4 – 191	TBC00201	24TH STREET STATION, KEY MAP, COMMUNICATIONS
V4 – 192	TBC00301	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLAZA LEVEL, AREA A
V4 – 193	TBC00302	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLAZA LEVEL, AREA B
V4 – 194	TBC00303	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLAZA LEVEL, AREA C
V4 – 195	TBC00304	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLAZA LEVEL, AREA D
V4 – 196	TBC00305	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLAZA LEVEL, AREA E
V4 – 197	TBC00306	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLAZA LEVEL, AREA F
V4 – 198	TBC00307	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLATFORM LEVEL, AREA B
V4 – 199	TBC00308	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLATFORM LEVEL, AREA C
V4 – 200	TBC00309	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLATFORM LEVEL, AREA D
V4 – 201	TBC00310	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, PLATFORM LEVEL, AREA E
V4 – 202	TBC00311	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, BRIDGE LEVEL, AREA B
V4 – 203	TBC00312	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, BRIDGE LEVEL, AREA E
V4 – 204	TBC00313	24TH STREET STATION, FLOOR PLAN, COMMUNICATIONS, IDF ROOM DETAILS
V4 – 205	TBC00801	24TH STREET STATION, COMMUNICATIONS DETAILS, PEDS/AED
V4 – 206	TBC00802	24TH STREET STATION, COMMUNICATIONS DETAILS, IDF GROUNDING DETAILS
V4 – 207	TBC00803	24TH STREET STATION, COMMUNICATIONS DETAILS, CABINET POWER OUTLET
V4 – 208	TBC00804	24TH STREET STATION, COMMUNICATIONS DETAILS, SECURE DOORS
V4 – 209	TBC00805	24TH STREET STATION, COMMUNICATIONS DETAILS, SECURE DOORS
V4 – 210	TBC00806	24TH STREET STATION, COMMUNICATIONS DETAILS, EMERGENCY EXIT FROM TRACK AREA
V4 – 211	TBC00807	24TH STREET STATION, COMMUNICATIONS DETAILS, EMERGENCY EXIT FROM TRACK AREA
V4 – 212	TBC00808	24TH STREET STATION, COMMUNICATIONS DETAILS, COPPER WALL FIELD
V4 – 213	TBC00809	24TH STREET STATION, COMMUNICATIONS DETAILS, MANHOLE AND PULL BOX DETAILS

MASS NOTIFICATION (ECS)

V4 – 214	TBAV0001	24TH STREET STATION, MASS NOTIFICATION (ECS), GENERAL NOTES & SCHEDULES
V4 – 215	TBAV0002	24TH STREET STATION, MASS NOTIFICATION (ECS), POWER & GROUNDING DETAILS
V4 – 216	TBAV0010	24TH STREET STATION, MASS NOTIFICATION (ECS), CABLING RISER DIAGRAM
V4 – 217	TBAV0011	24TH STREET STATION, MASS NOTIFICATION (ECS), CONDUIT RISER DIAGRAM
V4 – 218	TBAV0101	24TH STREET STATION, MASS NOTIFICATION (ECS), FLOOR PLAN, CURB LEVEL
V4 – 219	TBAV0102	24TH STREET STATION, MASS NOTIFICATION (ECS), FLOOR PLAN, PLATFORM LEVEL
V4 – 220	TBAV0201	24TH STREET STATION, MASS NOTIFICATION (ECS), REFLECTED CEILING PLAN, CURB LEVEL
V4 – 221	TBAV0202	24TH STREET STATION, MASS NOTIFICATION (ECS), REFLECTED CEILING PLAN, PLATFORM LEVEL
V4 – 222	TBAV0203	24TH STREET STATION, MASS NOTIFICATION (ECS), REFLECTED CEILING PLAN, BRIDGE LEVEL
V4 – 223	TBAV0301	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, CURB LEVEL AREA B
V4 – 224	TBAV0302	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, CURB LEVEL AREA C
V4 – 225	TBAV0303	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, CURB LEVEL AREA D
V4 – 226	TBAV0304	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, CURB LEVEL AREA E
V4 – 227	TBAV0305	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED FLOOR PLAN, PLATFORM LEVEL AREA C
V4 – 228	TBAV0306	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED FLOOR PLAN, PLATFORM LEVEL AREA D
V4 – 229	TBAV0307	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, PLATFORM LEVEL AREA B
V4 – 230	TBAV0308	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, PLATFORM LEVEL AREA C
V4 – 231	TBAV0309	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, PLATFORM LEVEL AREA D
V4 – 232	TBAV0310	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, PLATFORM LEVEL AREA E
V4 – 233	TBAV0311	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, BRIDGE LEVEL AREA B
V4 – 234	TBAV0312	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLAN, BRIDGE LEVEL AREA E
V4 – 235	TBAV0313	24TH STREET STATION, MASS NOTIFICATION (ECS), ENLARGED PLANS, IDF ROOMS
V4 – 236	TBAV0401	24TH STREET STATION, MASS NOTIFICATION (ECS), ELEVATIONS AND SECTIONS, PLATFORM LEVEL
V4 – 237	TBAV0402	24TH STREET STATION, MASS NOTIFICATION (ECS), ELEVATIONS AND SECTIONS, EXTERIOR LOBBIES
V4 – 238	TBAV0501	24TH STREET STATION, MASS NOTIFICATION (ECS), FUNCTION DIAGRAM
V4 – 239	TBAV0502	24TH STREET STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V4 – 240	TBAV0503	24TH STREET STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V4 – 241	TBAV0504	24TH STREET STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V4 – 242	TBAV0505	24TH STREET STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V4 – 243	TBAV0506	24TH STREET STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V4 – 244	TBAV0701	24TH STREET STATION, MASS NOTIFICATION (ECS), RACK ELEVATIONS
V4 – 245	TBAV0801	24TH STREET STATION, MASS NOTIFICATION (ECS), MOUNTING DETAILS

VOLUME 5

GENERAL PLANS

V5 – 001	MSGN0001	COVER SHEET
V5 – 002	MSGN0002	INDEX OF DRAWINGS –1
V5 – 003	MSGN0003	INDEX OF DRAWINGS –2
V5 – 004	MSGN0004	INDEX OF DRAWINGS –3
V5 – 005	MSGN0005	INDEX OF DRAWINGS –4
V5 – 006	MSGN0006	INDEX OF DRAWINGS –5
V5 – 007	MSGN0007	INDEX OF DRAWINGS –6
V5 – 008	MSGN0008	INDEX OF DRAWINGS –7
V5 – 009	MSGN0009	INDEX OF DRAWINGS –8
V5 – 010	MSGN0010	INDEX OF DRAWINGS –9
V5 – 011	MSGN0011	INDEX OF DRAWINGS –10
V5 – 012	MSGN0012	HORIZONTAL AND VERTICAL, CONTROL PLAN
V5 – 013	MSGN0013	HORIZONTAL AND VERTICAL, CONTROL PLAN

ARCHITECTURAL

V5 – 014	RBAR0001	RCC STATION, ARCHITECTURAL, GENERAL NOTES & BUILDING SUMMARY
V5 – 015	RBAR0002	RCC STATION, ARCHITECTURAL, GENERAL ABBREVIATIONS
V5 – 016	RBAR0003	RCC STATION, ARCHITECTURAL, GENERAL ANNOTATIONS & SYMBOLS
V5 – 017	RBAR0010	RCC STATION, ARCHITECTURAL, FIRE PROTECTION AXON
V5 – 018	RBAR0011	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 019	RBAR0012	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 020	RBAR0013	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 021	RBAR0014	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 022	RBAR0015	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 023	RBAR0016	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 024	RBAR0017	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 025	RBAR0018	RCC STATION, ARCHITECTURAL, UL DETAILS
V5 – 026	RBAR0220	RCC STATION, ARCHITECTURAL, OVERALL PLANS – GROUND – LEVEL 1, AND LOW ROOF – LEVEL 2
V5 – 027	RBAR0230	RCC STATION, ARCHITECTURAL, OVERALL PLANS – PARKING – LEVEL 2.5, AND PLATFORM – LEVEL 4
V5 – 028	RBAR0240	RCC STATION, ARCHITECTURAL, OVERALL PLAN – ROOF – LEVEL R
V5 – 029	RBAR031A	RCC STATION, ARCHITECTURAL, FLOOR PLAN – GROUND – LEVEL 1 – AREA, A
V5 – 030	RBAR031D	RCC STATION, ARCHITECTURAL, FLOOR PLAN – GROUND – LEVEL 1 – AREA, D
V5 – 031	RBAR032A	RCC STATION, ARCHITECTURAL, FLOOR PLAN – LOW ROOF – LEVEL 2 –, AREA A
V5 – 032	RBAR032D	RCC STATION, ARCHITECTURAL, FLOOR PLAN – LOW ROOF – LEVEL 2 –, AREA D
V5 – 033	RBAR033A	RCC STATION, ARCHITECTURAL, FLOOR PLAN – PARKING – LEVEL 2.5 –, AREA A
V5 – 034	RBAR034A	RCC STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 4 –, AREA A
V5 – 035	RBAR034B	RCC STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 4 –, AREA B
V5 – 036	RBAR034C	RCC STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 4 –, AREA C
V5 – 037	RBAR034E	RCC STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 4 –, AREA E
V5 – 038	RBAR034F	RCC STATION, ARCHITECTURAL, FLOOR PLAN – PLATFORM – LEVEL 4 –, AREA F
V5 – 039	RBAR035A	RCC STATION, ARCHITECTURAL, ROOF PLAN – LEVEL R – AREA A
V5 – 040	RBAR035B	RCC STATION, ARCHITECTURAL, ROOF PLAN – LEVEL R – AREA B
V5 – 041	RBAR035C	RCC STATION, ARCHITECTURAL, ROOF PLAN – LEVEL R – AREA C
V5 – 042	RBAR0451	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – OVERALL, NORTH–SOUTH
V5 – 043	RBAR0452	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATIONS – OVERALL, EAST–WEST
V5 – 044	RBAR0461	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – NORTH – AREA A
V5 – 045	RBAR0462	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – NORTH – AREA B
V5 – 046	RBAR0463	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – NORTH – AREA C
V5 – 047	RBAR0471	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – SOUTH – AREA A
V5 – 048	RBAR0472	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – SOUTH – AREA B
V5 – 049	RBAR0473	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – SOUTH – AREA C
V5 – 050	RBAR0481	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – EAST
V5 – 051	RBAR0491	RCC STATION, ARCHITECTURAL, EXTERIOR ELEVATION – WEST
V5 – 052	RBAR0611	RCC STATION, ARCHITECTURAL, ROOF TOP OF STEEL COORDINATION

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub–Consultant

Design Consultant: Gannett Fleming

REGISTERED PROFESSIONAL ENGINEER (CIVIL) MARK PILWALLIS Date Signed 7/13/18 EXPIRES 09/30/19

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – 804 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 7

Package: B04 - MSGN0008
Sheet Reference No: V6 - 008 of 260

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011-S-2-MSGNB041.dwg mbiggs

V5 – 053	RBAR0612	RCC STATION, ARCHITECTURAL, ROOF TOP OF STEEL COORDINATION
V5 – 054	RBAR0621	RCC STATION, ARCHITECTURAL, ENLARGED EDGE OF PLATFORM
V5 – 055	RBAR0651	RCC STATION, ARCHITECTURAL, ENLARGED PLAN – VERTICAL, CIRCULATION CORE
V5 – 056	RBAR0652	RCC STATION, ARCHITECTURAL, ENLARGED PLAN – VERTICAL, CIRCULATION CORE
V5 – 057	RBAR0654	RCC STATION, ARCHITECTURAL, ENLARGED SECTIONs – VERTICAL, CIRCULATION CORE
V5 – 058	RBAR0655	RCC STATION, ARCHITECTURAL, ENLARGED SECTIONS
V5 – 059	RBAR0661	RCC STATION, ARCHITECTURAL, ENLARGED PLANS AND SECTION – STAIR
V5 – 060	RBAR0691	RCC STATION, ARCHITECTURAL, ENLARGED PLAN – PUMP ROOM
V5 – 061	RBAR0811	RCC STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – NORTH –, PLATFORM
V5 – 062	RBAR0812	RCC STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – SOUTH –, PLATFORM
V5 – 063	RBAR0813	RCC STATION, ARCHITECTURAL, INTERIOR ELEVATIONS – EAST, WEST –, PLATFORM
V5 – 064	RBAR0960	RCC STATION, ARCHITECTURAL, LONGITUDINAL SECTIONS – STATION
V5 – 065	RBAR0971	RCC STATION, ARCHITECTURAL, TRANSVERSE SECTION
V5 – 066	RBAR0972	RCC STATION, ARCHITECTURAL, TRANSVERSE SECTION
V5 – 067	RBAR0973	RCC STATION, ARCHITECTURAL, TRANSVERSE SECTION
V5 – 068	RBAR0974	RCC STATION, ARCHITECTURAL, TRANSVERSE SECTION
V5 – 069	RBAR0975	RCC STATION, ARCHITECTURAL, TRANSVERSE SECTION
V5 – 070	RBAR0976	RCC STATION, ARCHITECTURAL, TRANSVERSE SECTION
V5 – 071	RBAR0977	RCC STATION, ARCHITECTURAL, TRANSVERSE SECTION
V5 – 072	RBAR103A	RCC STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PARKING, LEVEL 2.5 – AREA A
V5 – 073	RBAR104A	RCC STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PLATFORM –, LEVEL 4 – AREA A
V5 – 074	RBAR104B	RCC STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PLATFORM –, LEVEL 4 – AREA B
V5 – 075	RBAR104C	RCC STATION, ARCHITECTURAL, REFLECTED CEILING PLAN – PLATFORM –, LEVEL 4 – AREA C
V5 – 076	RBAR1201	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS
V5 – 077	RBAR1202	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS
V5 – 078	RBAR1203	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS
V5 – 079	RBAR1204	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS
V5 – 080	RBAR1208	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF DRAIN, LEADER
V5 – 081	RBAR1210	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V5 – 082	RBAR1211	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V5 – 083	RBAR1212	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V5 – 084	RBAR1213	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V5 – 085	RBAR1214	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V5 – 086	RBAR1215	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – ROOF
V5 – 087	RBAR1220	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – COMPOSITE PANEL, SYSTEM
V5 – 088	RBAR1250	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – OPENINGS
V5 – 089	RBAR1270	RCC STATION, ARCHITECTURAL, EXTERIOR DETAILS – EXPANSION JOINT, CONTROL SYSTEMS
V5 – 090	RBAR1301	RCC STATION, ARCHITECTURAL, DOOR TYPES AND DOOR SCHEDULE
V5 – 091	RBAR1305	RCC STATION, ARCHITECTURAL, FINISH SCHEDULE
V5 – 092	RBAR1310	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V5 – 093	RBAR1311	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V5 – 094	RBAR1312	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V5 – 095	RBAR1313	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V5 – 096	RBAR1314	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – PARTITIONS AND, WALL FINISH SYSTEMS
V5 – 097	RBAR1315	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS –, THROUGH–PENETRATION FIRESTOP, SYSTEMS
V5 – 098	RBAR1316	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS –, THROUGH–PENETRATION FIRESTOP, SYSTEMS
V5 – 099	RBAR1320	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – FLOOR SYSTEMS
V5 – 100	RBAR1330	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – DOORS, FRAMES,, AND GLAZING
V5 – 101	RBAR1331	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – DOORS, FRAMES,, AND GLAZING
V5 – 102	RBAR1340	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – CEILING SYSTEMS
V5 – 103	RBAR1341	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – CEILING SYSTEMS
V5 – 104	RBAR1342	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – CEILING SYSTEMS
V5 – 105	RBAR1350	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – STAIRS AND RAILING, SYSTEMS
V5 – 106	RBAR1351	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – STAIRS AND RAILING, SYSTEMS
V5 – 107	RBAR1365	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – DECORATIVE METAL, AND GLASS SYTEMS
V5 – 108	RBAR1370	RCC STATION, ARCHITECTURAL, INTERIOR DETAILS – EXPANSION JOINT, CONTROL SYSTEMS
V5 – 109	RBAR154A	RCC STATION, ARCHITECTURAL, FLOOR PATTERN PLAN, PLATFORM –, LEVEL 4 – AREA A
V5 – 110	RBAR154B	RCC STATION, ARCHITECTURAL, FLOOR PATTERN PLAN, PLATFORM –, LEVEL 4 – AREA B
V5 – 111	RBAR154C	RCC STATION, ARCHITECTURAL, FLOOR PATTERN PLAN, PLATFORM –, LEVEL 4 – AREA C
V5 – 112	RBAR154E	RCC STATION, ARCHITECTURAL, FLOOR PATTERN PLAN, PLATFORM –, LEVEL 4 – AREA E
V5 – 113	RBAR154F	RCC STATION, ARCHITECTURAL, FLOOR PATTERN PLAN, PLATFORM –, LEVEL 4 – AREA F

STRUCTURAL

V5 – 114	RBSB0010	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES I
V5 – 115	RBSB0011	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES II
V5 – 116	RBSB0012	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES III
V5 – 117	RBSB0013	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES IV
V5 – 118	RBSB0014	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES V
V5 – 119	RBSB0015	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES VI
V5 – 120	RBSB0016	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES VII
V5 – 121	RBSB0017	RCC STATION, STRUCTURAL, GENERAL STRUCTURAL NOTES VIII
V5 – 122	RBSB0020	RCC STATION, STRUCTURAL, FLOOR LOADING MAPS
V5 – 123	RBSB0021	RCC STATION, STRUCTURAL, FLOOR LOADING MAPS
V5 – 124	RBSB0022	RCC STATION, STRUCTURAL, RCC STATION LOADING DIAGRAM
V5 – 125	RBSB0023	RCC STATION, STRUCTURAL, CONNECTION DESIGN DATA
V5 – 126	RBSB0024	RCC STATION, STRUCTURAL, CONNECTION DESIGN DETAILS
V5 – 127	RBSB0025	RCC STATION, STRUCTURAL, CONNECTION DESIGN DETAILS
V5 – 128	RBSB0026	RCC STATION, STRUCTURAL, CONNECTION DESIGN DETAILS
V5 – 129	RBSB0030	RCC STATION, STRUCTURAL, CONSTRUCTION SEQUENCE AT, CONCRETE POUR BACK
V5 – 130	RBSB0300	RCC STATION, STRUCTURAL, OVERALL BASE LEVEL PLAN
V5 – 131	RBSB0301	RCC STATION, STRUCTURAL, BASE LEVEL PLAN AREA A
V5 – 132	RBSB0302	RCC STATION, STRUCTURAL, BASE LEVEL PLAN AREA D
V5 – 133	RBSB0310	RCC STATION, STRUCTURAL, VISITOR PARKING LEVEL AREA A
V5 – 134	RBSB0311	RCC STATION, STRUCTURAL, VISITOR PARKING AREA D
V5 – 135	RBSB0320	RCC STATION, STRUCTURAL, OVERALL GUIDEWAY PLAN
V5 – 136	RBSB0321	RCC STATION, STRUCTURAL, GUIDEWAY LEVEL PLAN AREA A
V5 – 137	RBSB0322	RCC STATION, STRUCTURAL, GUIDEWAY LEVEL PLAN AREA B
V5 – 138	RBSB0323	RCC STATION, STRUCTURAL, GUIDEWAY LEVEL PLAN AREA C
V5 – 139	RBSB0330	RCC STATION, STRUCTURAL, OVERALL PLATFORM LEVEL PLAN
V5 – 140	RBSB0331	RCC STATION, STRUCTURAL, PLATFORM LEVEL PLAN AREA A
V5 – 141	RBSB0332	RCC STATION, STRUCTURAL, PLATFORM LEVEL PLAN AREA B
V5 – 142	RBSB0333	RCC STATION, STRUCTURAL, PLATFORM LEVEL PLAN AREA C
V5 – 143	RBSB0334	RCC STATION, STRUCTURAL, PLATFORM LEVEL PLAN AREA E
V5 – 144	RBSB0335	RCC STATION, STRUCTURAL, PLATFORM LEVEL PLAN AREA F
V5 – 145	RBSB0340	RCC STATION, STRUCTURAL, OVERALL ROOF PLAN
V5 – 146	RBSB0341	RCC STATION, STRUCTURAL, ROOF LEVEL PLAN AREA A
V5 – 147	RBSB0342	RCC STATION, STRUCTURAL, ROOF LEVEL PLAN AREA B
V5 – 148	RBSB0343	RCC STATION, STRUCTURAL, ROOF LEVEL PLAN AREA C
V5 – 149	RBSB0350	RCC STATION, STRUCTURAL, OVERALL MECHANICAL PLAN
V5 – 150	RBSB0351	RCC STATION, STRUCTURAL, MECHANICAL LEVEL PLAN AREA A
V5 – 151	RBSB0352	RCC STATION, STRUCTURAL, MECHANICAL LEVEL PLAN AREA B
V5 – 152	RBSB0510	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 153	RBSB0511	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 154	RBSB0512	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 155	RBSB0513	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 156	RBSB0514	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 157	RBSB0515	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 158	RBSB0516	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 159	RBSB0517	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 160	RBSB0518	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 161	RBSB0519	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 162	RBSB0520	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 163	RBSB0521	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 164	RBSB0522	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 165	RBSB0523	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 166	RBSB0524	RCC STATION, STRUCTURAL, FULL HEIGHT BUILDING SECTION
V5 – 167	RBSB0600	RCC STATION, STRUCTURAL, ENLARGED STAIR CORE VISITOR PLAN
V5 – 168	RBSB0601	RCC STATION, STRUCTURAL, ENLARGED STAIR CORE PLATFORM AND, ROOF PLANS
V5 – 169	RBSB0602	RCC STATION, STRUCTURAL, ENLARGED PLAN PLATFORM ACCESS, DOOR FRAMING PLAN
V5 – 170	RBSB0603	RCC STATION, STRUCTURAL, ENLARGED BASE LEVEL PLAN AREA A
V5 – 171	RBSB0604	RCC STATION, STRUCTURAL, PARTIAL MECHANICAL ROOF PLAN
V5 – 172	RBSB0706	RCC STATION, STRUCTURAL, PIER CAP PLAN AND DETAILS
V5 – 173	RBSB0707	RCC STATION, STRUCTURAL, FOUNDATION SECTIONS AND DETAILS
V5 – 174	RBSB0708	RCC STATION, STRUCTURAL, FOUNDATION SECTIONS AND DETAILS
V5 – 175	RBSB0709	RCC STATION, STRUCTURAL, FOUNDATION SECTIONS AND DETAILS
V5 – 176	RBSB0800	RCC STATION, STRUCTURAL, MASONRY DETAILS I
V5 – 177	RBSB0801	RCC STATION, STRUCTURAL, MASONRY SECTIONS AND DETAILS
V5 – 178	RBSB0802	RCC STATION, STRUCTURAL, MASONRY SECTIONS AND DETAILS
V5 – 179	RBSB0803	RCC STATION, STRUCTURAL, MASONRY SECTIONS AND DETAILS
V5 – 180	RBSB0900	RCC STATION, STRUCTURAL, CONCRETE DETAILS I
V5 – 181	RBSB0901	RCC STATION, STRUCTURAL, CONCRETE DETAILS II
V5 – 182	RBSB0902	RCC STATION, STRUCTURAL, CONCRETE DETAILS III
V5 – 183	RBSB0903	RCC STATION, STRUCTURAL, CONCRETE SECTIONS AND DETAILS
V5 – 184	RBSB0904	RCC STATION, STRUCTURAL, CONCRETE SECTIONS AND DETAILS
V5 – 185	RBSB0905	RCC STATION, STRUCTURAL, CONCRETE SECTIONS AND DETAILS
V5 – 186	RBSB0906	RCC STATION, STRUCTURAL, CONCRETE SECTIONS AND DETAILS
V5 – 187	RBSB0907	RCC STATION, STRUCTURAL, MSE PARTIAL WALL ELEVATIONS
V5 – 188	RBSB0908	RCC STATION, STRUCTURAL, SECTIONS AND DETAILS
V5 – 189	RBSB0909	RCC STATION, STRUCTURAL, SECTIONS AND DETAILS
V5 – 190	RBSB0910	RCC STATION, STRUCTURAL, BEAM ELEVATIONS
V5 – 191	RBSB0911	RCC STATION, STRUCTURAL, BEAM ELEVATIONS
V5 – 192	RBSB0912	RCC STATION, STRUCTURAL, BEAM ELEVATIONS
V5 – 193	RBSB0913	RCC STATION, STRUCTURAL, BEAM ELEVATIONS
V5 – 194	RBSB0914	RCC STATION, STRUCTURAL, BEAM ELEVATIONS
V5 – 195	RBSB0915	RCC STATION, STRUCTURAL, SECTIONS AND DETAILS
V5 – 196	RBSB0916	RCC STATION, STRUCTURAL, SECTIONS AND DETAILS
V5 – 197	RBSB0917	RCC STATION, STRUCTURAL, SECTIONS AND DETAILS
V5 – 198	RBSB0918	RCC STATION, STRUCTURAL, SECTIONS AND DETAILS
V5 – 199	RBSB0919	RCC STATION, STRUCTURAL, SECTIONS AND DETAILS
V5 – 200	RBSB0920	RCC STATION, STRUCTURAL, STANDARD FRAMING SECTIONS AND, DETAILS
V5 – 201	RBSB0921	RCC STATION, STRUCTURAL, STANDARD FRAMING SECTIONS AND, DETAILS
V5 – 202	RBSB0922	RCC STATION, STRUCTURAL, STANDARD FRAMING SECTIONS AND, DETAILS
V5 – 203	RBSB0923	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 204	RBSB0924	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 205	RBSB0925	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 206	RBSB0926	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 207	RBSB0927	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 208	RBSB0928	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 209	RBSB0929	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 210	RBSB0930	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 211	RBSB0931	RCC STATION, STRUCTURAL, CONCRETE SECTIONS AND DETAILS
V5 – 212	RBSB0940	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 213	RBSB0941	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 214	RBSB0942	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 215	RBSB0943	RCC STATION, STRUCTURAL, COLUMN BASE PLATES – GRID S–1
V5 – 216	RBSB0944	RCC STATION, STRUCTURAL, COLUMN BASE PLATES – GRID N1
V5 – 217	RBSB0945	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS
V5 – 218	RBSB0946	RCC STATION, STRUCTURAL, FRAMING SECTIONS AND DETAILS

VOLUME 6

GENERAL PLANS

V6 – 001	MSGN0001	COVER SHEET
V6 – 002	MSGN0002	INDEX OF DRAWINGS –1
V6 – 003	MSGN0003	INDEX OF DRAWINGS –2
V6 – 004	MSGN0004	INDEX OF DRAWINGS –3
V6 – 005	MSGN0005	INDEX OF DRAWINGS –4
V6 – 006	MSGN0006	INDEX OF DRAWINGS –5
V6 – 007	MSGN0007	INDEX OF DRAWINGS –6
V6 – 008	MSGN0008	INDEX OF DRAWINGS –7
V6 – 009	MSGN0009	INDEX OF DRAWINGS –8
V6 – 010	MSGN0010	INDEX OF DRAWINGS –9
V6 – 011	MSGN0011	INDEX OF DRAWINGS –10
V6 – 012	MSGN0012	HORIZONTAL AND VERTICAL, CONTROL PLAN
V6 – 013	MSGN0013	HORIZONTAL AND VERTICAL, CONTROL PLAN

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011–S–2–MSGNB041.dwg mbiggs

Design Consultant
Gannett Fleming

Design Sub–Consultant

PER CITY OF PHOENIX ORDINANCE G-4390, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: MB
Drawn by: JV
Checked by: MD
Date: 07/13/2018
Dwg scale: NTS
CIP No.: AV10000011
KIVA No.: 07–5204

STAGE 2 – B04 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 8

Package: B04
Sheet Reference No: MSGN0009

V6 - 009 of 260

MECHANICAL

V6 – 014	RBME0001	RCC STATION, MECHANICAL, SYMBOL LIST AND GENERAL, NOTES
V6 – 015	RBME0002	RCC STATION, MECHANICAL, GENERAL NOTES
V6 – 016	RBME010	RCC STATION, MECHANICAL, SITE PLAN
V6 – 017	RBME021A	RCC STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA A
V6 – 018	RBME021D	RCC STATION, MECHANICAL, FLOOR PLAN – LEVEL 1 – AREA D
V6 – 019	RBME022A	RCC STATION, MECHANICAL, FLOOR PLAN – LEVEL 2.5 – AREA A
V6 – 020	RBME022D	RCC STATION, MECHANICAL, FLOOR PLAN – LEVEL 2.5 – AREA D
V6 – 021	RBME024A	RCC STATION, MECHANICAL, FLOOR PLAN –PLATFORM – LEVEL 4, – AREA A
V6 – 022	RBME024B	RCC STATION, MECHANICAL, FLOOR PLAN –PLATFORM – LEVEL 4, – AREA B
V6 – 023	RBME025A	RCC STATION, MECHANICAL, FLOOR PLAN – ROOF LEVEL –, AREA A
V6 – 024	RBME025B	RCC STATION, MECHANICAL, FLOOR PLAN – ROOF LEVEL –, AREA B
V6 – 025	RBME031A	RCC STATION, MECHANICAL, PIPING PLAN – LEVEL 1 – AREA A
V6 – 026	RBME031D	RCC STATION, MECHANICAL, PIPING PLAN – LEVEL 1 – AREA D
V6 – 027	RBME032A	RCC STATION, MECHANICAL, PIPING PLAN – LEVEL 2.5 – AREA A
V6 – 028	RBME0401	RCC STATION, MECHANICAL, ENLARGED PUMP STATION
V6 – 029	RBME0501	RCC STATION, MECHANICAL, SECTIONS
V6 – 030	RBME0801	RCC STATION, MECHANICAL, EQUIPMENT SCHEDULES
V6 – 031	RBME0802	RCC STATION, MECHANICAL, EQUIPMENT SCHEDULES
V6 – 032	RBME0803	RCC STATION, MECHANICAL, EQUIPMENT SCHEDULES
V6 – 033	RBME0805	RCC STATION, MECHANICAL, DETAILS
V6 – 034	RBME0806	RCC STATION, MECHANICAL, DETAILS
V6 – 035	RBME0807	RCC STATION, MECHANICAL, DETAILS
V6 – 036	RBME0808	RCC STATION, MECHANICAL, DETAILS
V6 – 037	RBME0901	RCC STATION, MECHANICAL, CONTROL DIAGRAMS
V6 – 038	RBME0902	RCC STATION, MECHANICAL, CONTROL DIAGRAMS

ELECTRICAL

V6 – 039	RBEL0001	RCC STATION, ELECTRICAL, NOTES
V6 – 040	RBEL0002	RCC STATION, ELECTRICAL, SYMBOL LIST
V6 – 041	RBEL0302	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, LEVEL 1, AREA A AND AREA D
V6 – 042	RBEL0303	RCC STATION, LIGHTING DEMOLITION PLAN, ELECTRICAL
V6 – 043	RBEL0304	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, AREA A
V6 – 044	RBEL0305	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, AREA D
V6 – 045	RBEL0306	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, BACK–OF–HOUSE DETAILS
V6 – 046	RBEL0307	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, LEVEL 2.5 SITE PLAN, AREA A
V6 – 047	RBEL0308	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL
V6 – 048	RBEL0309	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA A
V6 – 049	RBEL0310	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA B
V6 – 050	RBEL0311	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, PLATFORM LEVEL, AREA C
V6 – 051	RBEL0312	RCC STATION, LIGHTING FLOOR PLAN, ELECTRICAL, CORE BUILDING AND IDF ROOM
V6 – 052	RBEL0313	RCC STATION, LIGHTING SECTIONS, ELECTRICAL, CORE BUILDING DETAILS
V6 – 053	RBEL0401	RCC STATION, POWER SITE PLAN, ELECTRICAL, LEVEL 1 / GROUND, AREA A AND AREA D
V6 – 054	RBEL0402	RCC STATION, POWER SITE PLAN, ELECTRICAL, LEVEL 2 / LOW ROOF, AREA A AND AREA D
V6 – 055	RBEL0403	RCC STATION, POWER SITE PLAN, ELECTRICAL, LEVEL 4 / PLATFORM LEVEL
V6 – 056	RBEL0404	RCC STATION, POWER SITE PLAN, ELECTRICAL, LEVEL 4 / PLATFORM LEVEL, AREA A
V6 – 057	RBEL0405	RCC STATION, POWER SITE PLAN, ELECTRICAL, LEVEL 4 / PLATFORM LEVEL, AREA B
V6 – 058	RBEL0406	RCC STATION, POWER SITE PLAN, ELECTRICAL, LEVEL 4 / PLATFORM LEVEL
V6 – 059	RBEL0407	RCC STATION, POWER SITE PLAN, ELECTRICAL, VERTICAL CIRCULATION CORE, AND IDF ROOM
V6 – 060	RBEL0408	RCC STATION, POWER SITE PLAN, ELECTRICAL, BACK–OF–HOUSE DETAILS
V6 – 061	RBEL0409	RCC STATION, POWER SITE PLAN, IDF ROOM AND, PUMP ROOM DETAILS
V6 – 062	RBEL0410	RCC STATION, POWER SECTIONS, ELECTRICAL, BACK–OF–HOUSE DETAILS
V6 – 063	RBEL0411	RCC STATION, CONDUIT ROUTING, ELECTRICAL, ELEVATION – CORE STAIR
V6 – 064	RBEL0412	RCC STATION, MECHANICAL POWER FLOOR PLAN, MECHANICAL POWER, LEVEL 1, AREA A AND AREA D
V6 – 065	RBEL0413	RCC STATION, MECHANICAL POWER FLOOR PLAN, MECHANICAL POWER, BACK–OF–HOUSE DETAILS
V6 – 066	RBEL0414	RCC STATION, MECHANICAL POWER FLOOR PLAN, MECHANICAL POWER, PLATFORM LEVEL
V6 – 067	RBEL0415	RCC STATION, MECHANICAL POWER FLOOR PLAN, MECHANICAL POWER, PLATFORM LEVEL, AREA A
V6 – 068	RBEL0416	RCC STATION, MECHANICAL POWER FLOOR PLAN, MECHANICAL POWER, PLATFORM LEVEL, AREA B
V6 – 069	RBEL0417	RCC STATION, MECHANICAL POWER FLOOR PLAN, MECHANICAL POWER, CORE BUILDING AND IDF ROOM, AND PUMP ROOM
V6 – 070	RBEL0418	RCC STATION, MECHANICAL POWER FLOOR PLAN, MECHANICAL POWER, ROOF LEVEL
V6 – 071	RBEL0419	RCC STATION, ELECTRICAL YARD DETAIL, ELECTRICAL
V6 – 072	RBEL0901	RCC STATION, PANEL SCHEDULES
V6 – 073	RBEL0902	RCC STATION, PANEL SCHEDULES
V6 – 074	RBEL0903	RCC STATION, PANEL SCHEDULES
V6 – 075	RBEL1001	RCC STATION, RCC SINGLE LINE, DIAGRAM
V6 – 076	RBEL1002	RCC STATION, SERVICE ENTRANCE, SINGLE LINE DIAGRAM
V6 – 077	RBEL1003	RCC STATION, ELECTRICAL GROUNDING, DETAILS
V6 – 078	RBEL1004	RCC STATION, ELECTRICAL GROUNDING, SPECIFICATIONS, NOTES, AND LEGEND
V6 – 079	RBEL1005	RCC STATION, FAULT CURRENT, CLACULATIONS
V6 – 080	RBEL1006	RCC STATION, ELECTRICAL, DETAILS
V6 – 081	RBEL1007	RCC STATION, ELECTRICAL, DETAILS
V6 – 082	RBEL1008	RCC STATION, ELECTRICAL, DETAILS
V6 – 083	RBEL1009	RCC STATION, ELECTRICAL, DETAILS
V6 – 084	RBEL1010	RCC STATION, ELECTRICAL, DETAILS
V6 – 085	RBEL1011	RCC STATION, ELECTRICAL, DETAILS
V6 – 086	RBEL1012	RCC STATION, ELECTRICAL, DETAILS
V6 – 087	RBEL1013	RCC STATION, ELECTRICAL, DETAILS
V6 – 088	RBEL1014	RCC STATION, ELECTRICAL, DETAILS
V6 – 089	RBEL0201	RCC STATION, ELECTRICAL YARD DETAIL, SECTION VIEWS
V6 – 090	RSEL0201	RCC STATION – SITE, ELECTRICAL, RCC PERMANENT LIGHTING PLAN

PLUMBING

V6 – 091	RBPL0001	RCC STATION, PLUMBING, SYMBOL LIST AND GENERAL, NOTES
V6 – 092	RBPL0010	RCC STATION, PLUMBING, PLUMBING SITE PLAN
V6 – 093	RBPL020A	RCC STATION, PLUMBING, BELOW SLAB – FLOOR PLAN–, LEVEL 1 – AREA A
V6 – 094	RBPL020B	RCC STATION, PLUMBING, BELOW SLAB – FLOOR PLAN–, LEVEL 1 – AREA B
V6 – 095	RBPL020D	RCC STATION, PLUMBING, BELOW SLAB – FLOOR PLAN–, LEVEL 1 – AREA D
V6 – 096	RBPL021A	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA A
V6 – 097	RBPL021B	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA B
V6 – 098	RBPL021D	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 1 – AREA D
V6 – 099	RBPL022A	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 2 – AREA A
V6 – 100	RBPL023A	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 3 – AREA A
V6 – 101	RBPL023C	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 3 – AREA C
V6 – 102	RBPL024A	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 4 – AREA A
V6 – 103	RBPL024B	RCC STATION, PLUMBING, FLOOR PLAN – LEVEL 4 – AREA B
V6 – 104	RBPL025A	RCC STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, A
V6 – 105	RBPL025B	RCC STATION, PLUMBING, FLOOR PLAN – ROOF LEVEL – AREA, B
V6 – 106	RBPL0503	RCC STATION, PLUMBING, ISOMETRICS
V6 – 107	RBPL0504	RCC STATION, PLUMBING, ISOMETRICS
V6 – 108	RBPL0505	RCC STATION, PLUMBING, SECTIONS
V6 – 109	RBPL0506	RCC STATION, PLUMBING, SECTIONS
V6 – 110	RBPL0507	RCC STATION, PLUMBING, PLUMBING DETAILS

FIRE

V6 – 111	RBFP0001	RCC STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN, DESIGN NARRATIVE
V6 – 112	RBFP031A	RCC STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN, LEVEL 1 – AREA A
V6 – 113	RBFP031D	RCC STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN, LEVEL 1 – AREA D
V6 – 114	RBFP032A	RCC STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN, LEVEL 2.5 – AREA A
V6 – 115	RBFP034A	RCC STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN, PLATFORM LEVEL – AREA A
V6 – 116	RBFP034B	RCC STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN, PLATFORM LEVEL – AREA B
V6 – 117	RBFP034C	RCC STATION, FIRE SPRINKLER, FIRE SPRINKLER PLAN, PLATFORM LEVEL – AREA C
V6 – 118	RBFP0501	RCC STATION, FIRE SPRINKLER, DETAILS AND SECTIONS
V6 – 119	RBFA0001	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, DESIGN NARRATIVE
V6 – 120	RBFA0002	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, FIRE ALARM RISER
V6 – 121	RBFA0003	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, FIRE ALARM MATRIX
V6 – 122	RBFA031A	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, LEVEL 1 – AREA A
V6 – 123	RBFA031D	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, LEVEL 1 – AREA D
V6 – 124	RBFA032A	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, LEVEL 2.5 – AREA A
V6 – 125	RBFA034A	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, PLATFORM LEVEL – AREA A
V6 – 126	RBFA034B	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, PLATFORM LEVEL – AREA B
V6 – 127	RBFA034C	RCC STATION, FIRE ALARM, FIRE ALARM PLAN, PLATFORM LEVEL – AREA C
V6 – 128	RBLS0001	RCC STATION, LIFE SAFETY, LIFE SAFETY PLAN, CODE SUMMARY
V6 – 129	RBLS0031	RCC STATION, LIFE SAFETY, LIFE SAFETY PLAN, LEVEL 1 – OVERALL
V6 – 130	RBLS0032	RCC STATION, LIFE SAFETY, LIFE SAFETY PLAN, LEVEL 2.5 – OVERALL
V6 – 131	RBLS0034	RCC STATION, LIFE SAFETY, LIFE SAFETY PLAN, PLATFORM LEVEL – OVERALL

COMMUNICATION

V6 – 132	RBC00001	RCC STATION, COMMUNICATIONS, GENERAL NOTES AND LEGEND
V6 – 133	RBC0030A	RCC STATION, KEY MAP, COMMUNICATIONS
V6 – 134	RBC0031A	RCC STATION, SITE PLAN, COMMUNICATIONS, LEVEL 1, AREA A AND AREA D
V6 – 135	RBC0034A	RCC STATION, SITE PLAN, COMMUNICATIONS, LEVEL 4 – PLATFORM, AREA A
V6 – 136	RBC0034B	RCC STATION, SITE PLAN, COMMUNICATIONS, LEVEL 4 – PLATFORM, AREA B
V6 – 137	RBC0034C	RCC STATION, SITE PLAN, COMMUNICATIONS, LEVEL 4 – PLATFORM, AREA C
V6 – 138	RBC0061A	RCC STATION, SITE PLAN, COMMUNICATIONS, LEVEL 1 – ENLARGED PLAN, ATC, ELECTRICAL, AND MECHANICAL, ROOMS
V6 – 139	RBC0062A	RCC STATION, DETAILS SITE PLAN, COMMUNICATIONS ENLARGED PLAN, CORE BUILDING AND IDF ROOM, AND PUMP ROOM
V6 – 140	RBC00401	RCC STATION, SECTIONS, COMMUNICATIONS, CONDUIT ROUTING
V6 – 141	RBEL0201	RCC STATION, PRIMARY STATION FEEDER, SITE PLAN, ELECTRICAL
V6 – 142	RBEL0301	RCC STATION, KEY MAP, LIGHTING
V6 – 143	RBC00801	RCC STATION, COMMUNICATIONS DETAILS, PEDS/AED
V6 – 144	RBC00802	RCC STATION, COMMUNICATIONS DETAILS, IDF GROUNDING DETAILS
V6 – 145	RBC00803	RCC STATION, COMMUNICATIONS DETAILS, SECURE DOORS
V6 – 146	RBC00804	RCC STATION, COMMUNICATIONS DETAILS, SECURE DOORS
V6 – 147	RBC00805	RCC STATION, COMMUNICATIONS DETAILS, EMERGENCY EXIT FROM TRAIN AREA
V6 – 148	RBC00806	RCC STATION, COMMUNICATIONS DETAILS, MANHOLE AND PULLBOX DETAILS
V6 – 149	RBC00807	RCC STATION, COMMUNICATIONS DETAILS, CABINET POWER OUTLET
V6 – 150	RBC00808	RCC STATION, COMMUNICATIONS DETAILS, COPPER WALL FIELD

MASS NOTIFICATION (ECS)

V6 – 151	RBAV0001	RCC STATION, MASS NOTIFICATION (ECS), GENERAL NOTES & SCHEDULES
V6 – 152	RBAV0002	RCC STATION, MASS NOTIFICATION (ECS), POWER & GROUNDING DETAILS
V6 – 153	RBAV0010	RCC STATION, MASS NOTIFICATION (ECS), CABLING RISER DIAGRAM
V6 – 154	RBAV0011	RCC STATION, MASS NOTIFICATION (ECS), CONDUIT RISER DIAGRAM
V6 – 155	RBAV0101	RCC STATION, MASS NOTIFICATION (ECS), OVERALL CALLOUT PLANS, VISITOR PARKING LEVEL
V6 – 156	RBAV0102	RCC STATION, MASS NOTIFICATION (ECS), OVERALL CALLOUT PLANS, PLATFORM LEVEL
V6 – 157	RBAV0301	RCC STATION, MASS NOTIFICATION (ECS), ENLARGED FLOOR PLANS, PLATFORM LEVEL (AREA A)
V6 – 158	RBAV0302	RCC STATION, MASS NOTIFICATION (ECS), ENLARGED FLOOR PLANS, PLATFORM LEVEL (AREA B)
V6 – 159	RBAV0303	RCC STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLANS, PLATFORM LEVEL (AREA A)
V6 – 160	RBAV0304	RCC STATION, MASS NOTIFICATION (ECS), ENLARGED REFLECTED CEILING PLANS, PLATFORM LEVEL (AREA B)
V6 – 161	RBAV0305	RCC STATION, MASS NOTIFICATION (ECS), ENLARGED PLANS, IDF ROOM
V6 – 162	RBAV0401	RCC STATION, MASS NOTIFICATION (ECS), ELEVATIONS AND SECTIONS, PLATFORM LEVEL (AREA A)
V6 – 163	RBAV0402	RCC STATION, MASS NOTIFICATION (ECS), ELEVATIONS AND SECTIONS, PLATFORM LEVEL (AREA B)
V6 – 164	RBAV0501	RCC STATION, MASS NOTIFICATION (ECS), FUNCTION DIAGRAM
V6 – 165	RBAV0502	RCC STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V6 – 166	RBAV0503	RCC STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V6 – 167	RBAV0504	RCC STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V6 – 168	RBAV0505	RCC STATION, MASS NOTIFICATION (ECS), SINGLE LINE DIAGRAMS
V6 – 169	RBAV0701	RCC STATION, MASS NOTIFICATION (ECS), RACK ELEVATIONS
V6 – 170	RBAV0801	RCC STATION, MASS NOTIFICATION (ECS), MOUNTING DETAILS
V6 – 171	RBAV0802	RCC STATION, MASS NOTIFICATION (ECS), MOUNTING DETAILS

WEST TERMINAL STATION

ARCHITECTURAL

V6 – 172	WBAR033E	WEST TERMINAL STATION, ARCHITECTURAL, FLOOR PLAN – APRON – LEVEL 3 – AREA E
V6 – 173	WBAR0601	WEST TERMINAL STATION, ARCHITECTURAL, ENLARGED PLANS – STAIR
V6 – 174	WBAR0602	WEST TERMINAL STATION, ARCHITECTURAL, ENLARGED PLANS – STAIR
V6 – 175	WBAR0603	WEST TERMINAL STATION, ARCHITECTURAL, ENLARGED SECTION – STAIR
V6 – 176	WBAR1201	WEST TERMINAL STATION, ARCHITECTURAL, STAIRS AND RAILING SYSTEMS
V6 – 177	WBAR1202	WEST TERMINAL STATION, ARCHITECTURAL, STAIRS AND RAILING SYSTEMS

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011-S-2-MSGNB041.dwg mbiggs

Design Consultant
Gannett Fleming

Design Sub-Consultant

MARK PILWALLIS 29814 REGISTERED PROFESSIONAL ENGINEER (CIVIL) 06/30/2019

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – 804 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 9

Package: B04 - MSGN0010
Sheet Reference No: V6 - 010 of 260

STRUCTURAL

V6 – 178	WBSB0006	WEST TERMINAL STATION, STRUCTURAL, GENERAL NOTES I
V6 – 179	WBSB0007	WEST TERMINAL STATION, STRUCTURAL, GENERAL NOTES II
V6 – 180	WBSB0008	WEST TERMINAL STATION, STRUCTURAL, GENERAL NOTES III
V6 – 181	WBSB0009	WEST TERMINAL STATION, STRUCTURAL, ABBREVIATIONS
V6 – 182	WBSB0011	WEST TERMINAL STATION, STRUCTURAL, FUTURE BAGGAGE CLAIM LEVEL, FLOOR LOADING MAPS
V6 – 183	WBSB0012	WEST TERMINAL STATION, STRUCTURAL, FUTURE ARRIVALS LEVEL, FLOOR LOADING MAPS
V6 – 184	WBSB0013	WEST TERMINAL STATION, STRUCTURAL, FUTURE DEPARTURES LEVEL, FLOOR LOADING MAPS
V6 – 185	WBSB0015	WEST TERMINAL STATION, STRUCTURAL, FUTURE SECURITY AND BRIDGE LEVEL, FLOOR LOADING MAPS
V6 – 186	WBSB0016	WEST TERMINAL STATION, STRUCTURAL, FUTURE CONCOURSE BRIDGE/, TERMINAL ROOF BELOW GUIDEWAY, FLOOR LOADING MAPS
V6 – 187	WBSB0017	WEST TERMINAL STATION, STRUCTURAL, FUTURE TERMINAL ROOF, FLOOR LOADING MAPS
V6 – 188	WBSB0018	WEST TERMINAL STATION, STRUCTURAL, FUTURE STATION, PLATFORM AND ROOF LEVEL, FLOOR LOADING MAPS
V6 – 189	WBSB0300	WEST TERMINAL STATION, STRUCTURAL, OVERALL GUIDEWAY LEVEL
V6 – 190	WBSB0301	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY LEVEL AREA A
V6 – 191	WBSB0302	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY LEVEL AREA B
V6 – 192	WBSB0303	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY LEVEL AREA C
V6 – 193	WBSB0304	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY LEVEL AREA D
V6 – 194	WBSB0305	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY LEVEL AREA E
V6 – 195	WBSB0306	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY LEVEL AREA F
V6 – 196	WBSB0510	WEST TERMINAL STATION, STRUCTURAL, TYPICAL STATION SECTION
V6 – 197	WBSB0511	WEST TERMINAL STATION, STRUCTURAL, PROPOSED DESIGN OF FUTURE, TERMINAL
V6 – 198	WBSB0512	WEST TERMINAL STATION, STRUCTURAL, EMERGENCY STAIR SECTIONS
V6 – 199	WBSB0600	WEST TERMINAL STATION, STRUCTURAL, ENLARGED PLANS – AREA E, EMERGENCY STAIRS FRAMING
V6 – 200	WBSB0601	WEST TERMINAL STATION, STRUCTURAL, PARTIAL GUIDEWAY PLANS AND, SECTIONS
V6 – 201	WBSB0910	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY GIRDER DETAILS
V6 – 202	WBSB0911	WEST TERMINAL STATION, STRUCTURAL, GIRDER DETAILS/ELEVATIONS
V6 – 203	WBSB0912	WEST TERMINAL STATION, STRUCTURAL, GIRDER DETAILS/ELEVATIONS
V6 – 204	WBSB0913	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY GIRDER DETAILS
V6 – 205	WBSB0914	WEST TERMINAL STATION, STRUCTURAL, GUIDEWAY GIRDER DETAILS
V6 – 206	WBSB0980	WEST TERMINAL STATION, STRUCTURAL, STRUCTURAL STAIR FRAMING DETAILS

PLUMBING

V6 – 207	WBPL0001	WEST TERMINAL STATION, PLUMBING, SYMBOLS LEGEND AND ABBREVIATIONS
V6 – 208	WBPL0301	WEST TERMINAL STATION, PLUMBING, GUIDEWAY LEVEL AREA A
V6 – 209	WBPL0302	WEST TERMINAL STATION, PLUMBING, GUIDEWAY LEVEL AREA B
V6 – 210	WBPL0303	WEST TERMINAL STATION, PLUMBING, GUIDEWAY LEVEL AREA C
V6 – 211	WBPL0304	WEST TERMINAL STATION, PLUMBING, GUIDEWAY LEVEL AREA D
V6 – 212	WBPL0305	WEST TERMINAL STATION, PLUMBING, GUIDEWAY LEVEL AREA E
V6 – 213	WBPL0306	WEST TERMINAL STATION, PLUMBING, GUIDEWAY LEVEL AREA F
V6 – 214	WBPL0401	WEST TERMINAL STATION, PLUMBING, SECTIONS
V6 – 215	WBPL0402	WEST TERMINAL STATION, PLUMBING, SECTIONS
V6 – 216	WBPL0501	WEST TERMINAL STATION, PLUMBING, GUIDEWAY ISOMETRIC

COB - CENTRAL PLANT BUILDING

ARCHITECTURAL

V6 – 217	ACAR0001	COB – CENTRAL PLANT BUILDING, ARCHITECTURAL, GENERAL NOTES
V6 – 218	ACAR0301	COB – CENTRAL PLANT BUILDING, ARCHITECTURAL, FLOOR PLAN, ROOF PLAN, ELEVATIONS, SECTION
V6 – 219	ACAR1201	COB – CENTRAL PLANT BUILDING, ARCHITECTURAL, DETAILS

STRUCTURAL

V6 – 220	ACSB0001	COB – CENTRAL PLANT BUILDING, STRUCTURAL, GENERAL STRUCTURAL NOTES I
V6 – 221	ACSB0002	COB – CENTRAL PLANT BUILDING, STRUCTURAL, GENERAL STRUCTURAL NOTES II
V6 – 222	ACSB0003	COB – CENTRAL PLANT BUILDING, STRUCTURAL, GENERAL STRUCTURAL NOTES III
V6 – 223	ACSB0004	COB – CENTRAL PLANT BUILDING, STRUCTURAL, GENERAL STRUCTURAL NOTES IV
V6 – 224	ACSB0100	COB – CENTRAL PLANT BUILDING, STRUCTURAL, DEMOLITION PLAN
V6 – 225	ACSB0200	COB – CENTRAL PLANT BUILDING, STRUCTURAL, FOUNDATION PLAN
V6 – 226	ACSB0300	COB – CENTRAL PLANT BUILDING, STRUCTURAL, FRAMING PLAN
V6 – 227	ACSB0400	COB – CENTRAL PLANT BUILDING, STRUCTURAL, FULL HEIGHT SECTION
V6 – 228	ACSB0500	COB – CENTRAL PLANT BUILDING, STRUCTURAL, COOLING TOWER SECTIONS
V6 – 229	ACSB0501	COB – CENTRAL PLANT BUILDING, STRUCTURAL, COOLING TOWER SECTIONS
V6 – 230	ACSB0700	COB – CENTRAL PLANT BUILDING, STRUCTURAL, CONCRETE DETAILS
V6 – 231	ACSB0701	COB – CENTRAL PLANT BUILDING, STRUCTURAL, CONCRETE SECTIONS
V6 – 232	ACSB0800	COB – CENTRAL PLANT BUILDING, STRUCTURAL, MASONRY TYPICAL DETAILS
V6 – 233	ACSB0900	COB – CENTRAL PLANT BUILDING, STRUCTURAL, STEEL TYPICAL DETAILS

MECHANICAL

V6 – 234	ACME0001	COB – CENTRAL PLANT BUILDING, MECHANICAL, SYMBOLS LEGEND AND ABBREVIATIONS
V6 – 235	ACME0101	COB – CENTRAL PLANT BUILDING, MECHANICAL, SITE PLAN
V6 – 236	ACMED0201	COB – CENTRAL PLANT BUILDING, MECHANICAL, HVAC DEMOLITION PLAN
V6 – 237	ACME0201	COB – CENTRAL PLANT BUILDING, MECHANICAL, HVAC PLAN
V6 – 238	ACMED0301	COB – CENTRAL PLANT BUILDING, MECHANICAL, PIPING DEMOLITION PLAN
V6 – 239	ACME0301	COB – CENTRAL PLANT BUILDING, MECHANICAL, PIPING PLAN
V6 – 240	ACME0501	COB – CENTRAL PLANT BUILDING, MECHANICAL, DETAILS
V6 – 241	ACME0502	COB – CENTRAL PLANT BUILDING, MECHANICAL, DETAILS
V6 – 242	ACME0503	COB – CENTRAL PLANT BUILDING, MECHANICAL, DETAILS
V6 – 243	ACME0601	COB – CENTRAL PLANT BUILDING, MECHANICAL, PIPING SCHEMATIC
V6 – 244	ACME0701	COB – CENTRAL PLANT BUILDING, MECHANICAL, CONTROLS
V6 – 245	ACME0702	COB – CENTRAL PLANT BUILDING, MECHANICAL, CONTROLS
V6 – 246	ACME0801	COB – CENTRAL PLANT BUILDING, MECHANICAL, SCHEDULES
V6 – 247	ACME0802	COB – CENTRAL PLANT BUILDING, MECHANICAL, SCHEDULES

ELECTRICAL

V6 – 248	ACEL0001	COB – CENTRAL PLANT BUILDING, ELECTRICAL, NOTES
V6 – 249	ACEL0002	COB – CENTRAL PLANT BUILDING, ELECTRICAL SYMBOLS, AND ABBREVIATIONS
V6 – 250	ACEL0301	COB – CENTRAL PLANT BUILDING, LIGHTING FLOOR PLAN, ELECTRICAL
V6 – 251	ACEL0401	COB – CENTRAL PLANT BUILDING, POWER FLOOR PLAN, ELECTRICAL
V6 – 252	ACEL0402	COB – CENTRAL PLANT BUILDING, GROUNDING FLOOR PLAN
V6 – 253	ACEL0901	COB – CENTRAL PLANT BUILDING, ELECTRICAL, PANEL SCHEDULE
V6 – 254	ACEL1001	COB – CENTRAL PLANT BUILDING, ELECTRICAL, SINGLE LINE DIAGRAM – DEMOLITION
V6 – 255	ACEL1002	COB – CENTRAL PLANT BUILDING, ELECTRICAL, SINGLE LINE DIAGRAM – PROPOSED

PLUMBING

V6 – 256	ACPL0001	COB – CENTRAL PLANT BUILDING, PLUMBING, SYMBOLS LEGEND ABBREVIATIONS
V6 – 257	ACPL0002	COB – CENTRAL PLANT BUILDING, PLUMBING, GENERAL AND DEMOLITION NOTES
V6 – 258	ACPLD0201	COB – CENTRAL PLANT BUILDING, PLUMBING, DEMOLITION PLAN
V6 – 259	ACPL0201	COB – CENTRAL PLANT BUILDING, PLUMBING, WASTE AND VENT FLOOR PLAN
V6 – 260	ACPL0202	COB – CENTRAL PLANT BUILDING, PLUMBING, DOMESTIC SERVICES FLOOR PLAN

VOLUME 7

GENERAL PLANS

V7 – 001	MSGN0001	COVER SHEET
V7 – 002	MSGN0002	INDEX OF DRAWINGS –1
V7 – 003	MSGN0003	INDEX OF DRAWINGS –2
V7 – 004	MSGN0004	INDEX OF DRAWINGS –3
V7 – 005	MSGN0005	INDEX OF DRAWINGS –4
V7 – 006	MSGN0006	INDEX OF DRAWINGS –5
V7 – 007	MSGN0007	INDEX OF DRAWINGS –6
V7 – 008	MSGN0008	INDEX OF DRAWINGS –7
V7 – 009	MSGN0009	INDEX OF DRAWINGS –8
V7 – 010	MSGN0010	INDEX OF DRAWINGS –9
V7 – 011	MSGN0011	INDEX OF DRAWINGS –10
V7 – 012	MSGN0012	HORIZONTAL AND VERTICAL, CONTROL PLAN
V7 – 013	MSGN0013	HORIZONTAL AND VERTICAL, CONTROL PLAN

SECURITY - 24TH STREET STATION

V7 – 014	TBSC0501	24TH STREET STATION, KEY MAP, SECURITY
V7 – 015	TBSC0502	24TH STREET STATION, SECURITY, PLAZA LEVEL, AREA A
V7 – 016	TBSC0503	24TH STREET STATION, SECURITY, PLAZA LEVEL, AREA B
V7 – 017	TBSC0504	24TH STREET STATION, SECURITY, PLAZA LEVEL, AREA C
V7 – 018	TBSC0505	24TH STREET STATION, SECURITY, PLAZA LEVEL, AREA D
V7 – 019	TBSC0506	24TH STREET STATION, SECURITY, PLAZA LEVEL, AREA E
V7 – 020	TBSC0507	24TH STREET STATION, SECURITY, PLAZA LEVEL, AREA F
V7 – 021	TBSC0508	24TH STREET STATION, SECURITY, PLATFORM LEVEL, AREA B
V7 – 022	TBSC0509	24TH STREET STATION, SECURITY, PLATFORM LEVEL, AREA C
V7 – 023	TBSC0510	24TH STREET STATION, SECURITY, PLATFORM LEVEL, AREA D
V7 – 024	TBSC0511	24TH STREET STATION, SECURITY, PLATFORM LEVEL, AREA E
V7 – 025	TBSC0512	24TH STREET STATION, SECURITY, BRIDGE LEVEL, AREA B
V7 – 026	TBSC0513	24TH STREET STATION, SECURITY, BRIDGE LEVEL, AREA E
V7 – 027	TBSC0801	24TH STREET STATION, SECURITY DETAILS, ACAMS LOGIC DIAGRAM
V7 – 028	TBSC0802	24TH STREET STATION, SECURITY DETAILS, ACAMS LOGIC DIAGRAM
V7 – 029	TBSC0803	24TH STREET STATION, SECURITY, DETAILS
V7 – 030	TBSC0804	24TH STREET STATION, SECURITY, DETAILS
V7 – 031	RBSC0301	RCC STATION,KEY MAP, SECURITY
V7 – 032	RBSC0302	RCC STATION, SECURITY FLOOR PLAN, LEVEL 4 – PLATFORM, AREA A
V7 – 033	RBSC0303	RCC STATION, SECURITY FLOOR PLAN, LEVEL 4 – PLATFORM, AREA B
V7 – 034	RBSC0304	RCC STATION, SECURITY FLOOR PLAN, LEVEL 4 – PLATFORM, AREA C
V7 – 035	RBSC0305	RCC STATION, SECURITY, ENLARGED FLOOR PLAN, CORE BUILDING AND IDF ROOM
V7 – 036	RBSC0306	RCC STATION, SECURITY, LEVEL 1 – ENLARGED PLANS, ATC, ELECTRICAL, AND, MECHANICAL ROOMS
V7 – 037	RBSC0801	RCC STATION, SECURITY, DETAILS
V7 – 038	RBSC0802	RCC STATION, SECURITY, CCTV LOGIC DIAGRAM
V7 – 039	RBSC0803	RCC STATION, SECURITY, DETAILS

PLOT DATE: Jul 10, 2018 FILE PATH: C:\pwworking\gfpw01\mbiggs\d0667700\AV10000011-S-2-MSGNB041.dwg mbiggs

Design Consultant
Gannett Fleming
Design Sub-Consultant



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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

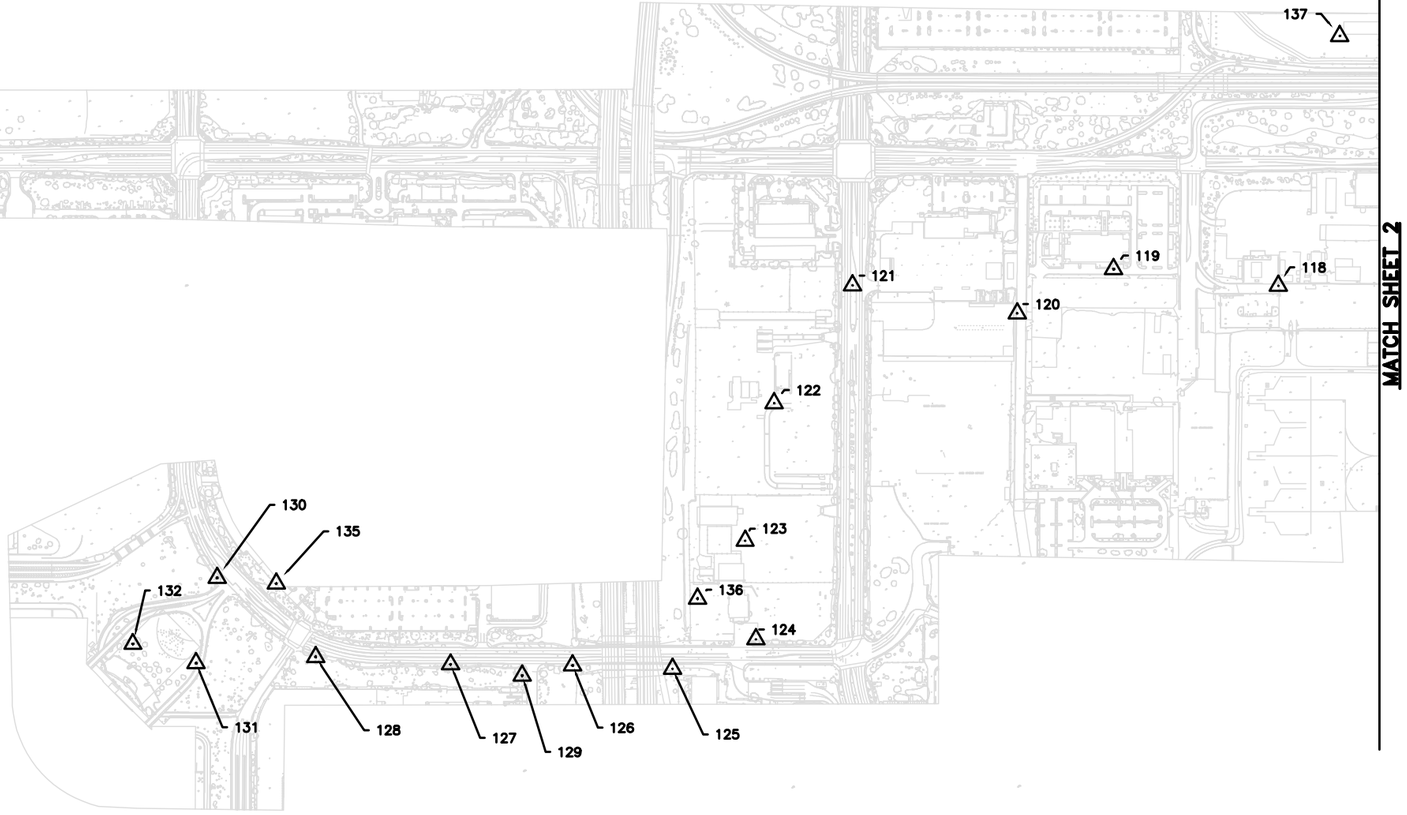
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MB
Drawn by:	JV
Checked by:	MD
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 – B04 DESIGN SUBMISSION

GENERAL PLANS
INDEX OF DRAWINGS - 10

Package: B04 - MSGN0011
Sheet Reference No: V6 - 011 of 260



GENERAL NOTES

1. ALL COORDINATES LISTED ARE NAD 83 (1992 EPOCH) STATE PLANE GROUND COORDINATES, ARIZONA CENTRAL ZONE, STANDARD TRANSVERSE MERCATOR PROJECTION, WITH A SCALE ORIGIN POINT X=0.000, Y=0.000, USING A COMBINED GRID ADJUSTMENT FACTOR OF 1.0001480129. THESE COORDINATES CAN BE UTILIZED AS GROUND DATUM. TO CONVERT BACK TO GRID COORDINATES DIVIDE THESE VALUES BY 1.0001480129.
2. UNITS = INTERNATIONAL FEET 1 FOOT = .3048 METER EXACTLY
3. THE COORDINATES PRESENTED ON THIS SURVEY ARE SHOWN TO FOUR DECIMAL PLACES FOR CALCULATION PURPOSES, AND ARE NOT A REPRESENTATION OF THE PRECISION OF THE SURVEY MEASUREMENTS.
4. ELEVATIONS LISTED ARE ON THE NAVD 88 VERTICAL DATUM. TO CONVERT TO NGVD 29 ELEVATIONS, SUBTRACT 1.92 FEET FROM THE ELEVATIONS LISTED.
5. THE SURVEY CONTROL POINTS SHOWN ON THIS SHEET WERE ESTABLISHED BY FIELD TRAVERSE METHODS.

BASIS OF BEARING

THE BASIS OF BEARINGS IS THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 14, TOWNSHIP 1 NORTH, RANGE 3 EAST, GILA AND SALT RIVER MERIDIAN, MONUMENTED AT THE WEST END BY A CITY OF PHOENIX BRASS CAP IN HANDHOLE, MONUMENTED AT THE EAST END BY A CITY OF PHOENIX BRASS CAP IN HANDHOLE, AND BEING CONSIDERED TO BEAR SOUTH 89°48'03 EAST, SAID BEARING BASED ON GRID NORTH, NAD 83 STATE PLANE, ARIZONA CENTRAL ZONE.

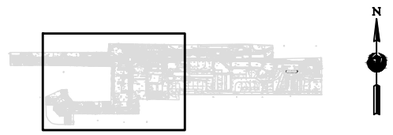
BENCHMARK

THE CONTROLLING BENCHMARK FOR THIS PROJECT IS A CITY OF PHOENIX BRASS CAP IN HANDHOLE AT THE NORTHWEST CORNER OF SECTION 14, TOWNSHIP 1 NORTH, RANGE 3 EAST, (INTERSECTION OF OLD 24TH STREET AND BUCKEYE ROAD). THE PROJECT ELEVATION (NAVD 88) IS 1105.28. THE SUPERCEDED CITY OF PHOENIX ELEVATION (NGVD 29) IS 1103.36.

GRAPHIC SCALE
300 0 150 300 600
(IN FEET)

TABLE 1 STAGE 2 CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
118	886104.5450	665796.0131	1103.66	MAG CPT
119	886171.5519	665139.9047	1105.07	MAG CPT
120	885994.9089	664755.4848	1101.38	MAG CPT
121	886106.5197	664100.3008	1099.87	RB CPT
122	885637.2302	663788.2907	1099.50	MAG CPT
123	885089.2329	663672.2327	1098.24	MAG CPT
124	884696.6560	663714.8914	1099.00	PK CPT
125	884579.4438	663383.0477	1097.84	RB CPT
126	884592.5406	662985.6222	1096.29	RB CPT
127	884597.0083	662498.8675	1095.40	RB CPT
128	884626.6218	661961.7830	1097.24	RB CPT
129	884552.4960	662784.6009	1094.97	RB CPT
130	884941.2355	661569.4792	1097.92	X CPT
131	884601.6854	661485.8032	1111.79	RB CPT
132	884678.4481	661234.1923	1115.10	RB CPT
135	884918.8317	661804.9522	1096.23	MAG CPT
136	884858.8088	663482.5252	1099.43	MAG CPT
137	887099.9558	666040.5878	1105.52	MAG CPT



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In Maricopa County (602) 263-1100

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
KENNETH ALAN REECE
7/13/18
Date Signed
Expires 3/31/2019

Design Sub-Consultant
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4251 E. McDowell Road
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Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
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	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
City of Phoenix Aviation Department

PHX SKY TRAIN STAGE 2 DESIGN
500 S. 24TH STREET PHOENIX, AZ 85034

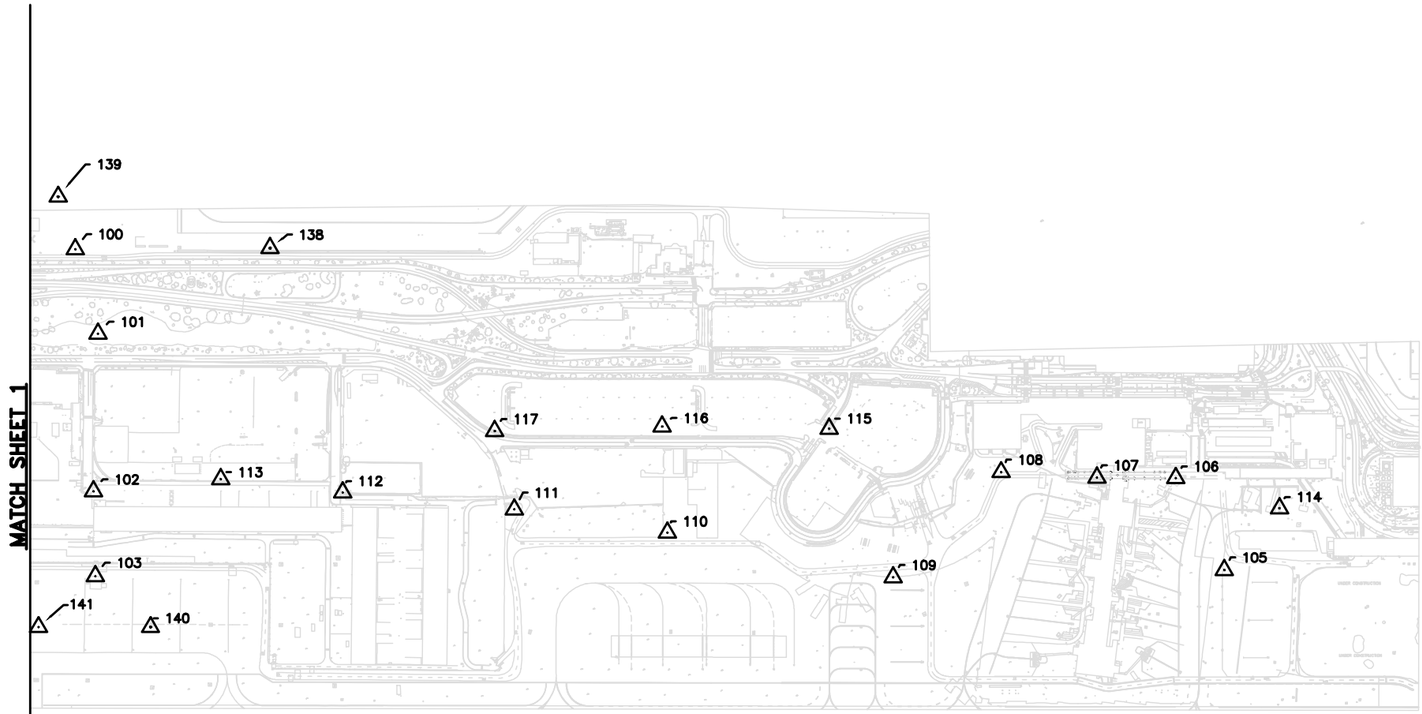
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Drawn by: GLG
Checked by: ADR
Date: 07/13/18
Dwg scale: 1"=300'
CIP No.: AV100000011
KWA No.: 07-5204

STAGE 2 – B04 DESIGN SUBMISSION

HORIZONTAL AND VERTICAL CONTROL PLAN

Package: B04 - MSGN0012
Sheet Reference No:
V6 - 012 of 260

PLOT DATE: Sep 13, 2017 FILE PATH: R:\Phoenix\Projects\AZSVY1602_PhoenixSkyTrainPhase2\CADD\Survey\Dwg\AV100000011-X-2-MSSV00 00 01.dwg ggreen



GENERAL NOTES

1. ALL COORDINATES LISTED ARE NAD 83 (1992 EPOCH) STATE PLANE GROUND COORDINATES, ARIZONA CENTRAL ZONE, STANDARD TRANSVERSE MERCATOR PROJECTION, WITH A SCALE ORIGIN POINT X=0.000, Y=0.000, USING A COMBINED GRID ADJUSTMENT FACTOR OF 1.0001480129. THESE COORDINATES CAN BE UTILIZED AS GROUND DATUM. TO CONVERT BACK TO GRID COORDINATES DIVIDE THESE VALUES BY 1.0001480129.

2. UNITS = INTERNATIONAL FEET 1 FOOT = .3048 METER EXACTLY

3. THE COORDINATES PRESENTED ON THIS SURVEY ARE SHOWN TO FOUR DECIMAL PLACES FOR CALCULATION PURPOSES, AND ARE NOT A REPRESENTATION OF THE PRECISION OF THE SURVEY MEASUREMENTS.

4. ELEVATIONS LISTED ARE ON THE NAVD 88 VERTICAL DATUM. TO CONVERT TO NGVD 29 ELEVATIONS, SUBTRACT 1.92 FEET FROM THE ELEVATIONS LISTED.

5. THE SURVEY CONTROL POINTS SHOWN ON THIS SHEET WERE ESTABLISHED BY FIELD TRAVERSE METHODS.

BASIS OF BEARING

THE BASIS OF BEARINGS IS THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 14, TOWNSHIP 1 NORTH, RANGE 3 EAST, GILA AND SALT RIVER MERIDIAN, MONUMENTED AT THE WEST END BY A CITY OF PHOENIX BRASS CAP IN HANDHOLE, MONUMENTED AT THE EAST END BY A CITY OF PHOENIX BRASS CAP IN HANDHOLE, AND BEING CONSIDERED TO BEAR SOUTH 89°48'03 EAST, SAID BEARING BASED ON GRID NORTH, NAD 83 STATE PLANE, ARIZONA CENTRAL ZONE.

BENCHMARK

THE CONTROLLING BENCHMARK FOR THIS PROJECT IS A CITY OF PHOENIX BRASS CAP IN HANDHOLE AT THE NORTHWEST CORNER OF SECTION 14, TOWNSHIP 1 NORTH, RANGE 3 EAST, (INTERSECTION OF OLD 24TH STREET AND BUCKEYE ROAD). THE PROJECT ELEVATION (NAVD 88) IS 1105.28. THE SUPERCEDED CITY OF PHOENIX ELEVATION (NGVD 29) IS 1103.36.

GRAPHIC SCALE
300 0 150 300 600
(IN FEET)

TABLE 1 STAGE 2 CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	887033.0386	666379.618	1106.47	MAG WASHER
101	886696.5353	666469.2842	1106.57	RB
102	886069.1995	666451.9643	1105.36	BCFL
103	885730.873	666459.0825	1108.96	MAG WASHER
105	885755.7901	670955.2828	1116.46	MAG CPT
106	886122.037	670761.9232	1115.52	MAG CPT
107	886123.8173	670447.8951	1108.91	MAG CPT
108	886145.3535	670066.4005	1115.20	NAIL CPT
109	885726.5835	669636.6562	1113.91	MAG CPT
110	885904.3960	668737.4440	1111.77	MAG CPT
111	885997.2929	668127.4018	1110.68	MAG CPT
112	886064.512	667444.569	1108.20	RB CPT
113	886117.3842	666958.6387	1107.42	MAG CPT
114	886001.8475	671174.5344	1117.23	MAG CPT
115	886318.4340	669381.6357	1114.64	X CPT
116	886327.2393	668716.6990	1112.02	MAG CPT
117	886309.0812	668049.7833	1111.32	RB CPT
138	887037.4834	667155.0813	1107.32	MAG CPT
139	887242.5711	666310.5630	1105.87	MAG CPT
140	885528.2901	666678.6493	1109.59	MAG CPT
141	885528.4796	666233.1649	1108.82	MAG CPT



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REGISTERED LAND SURVEYOR 23396 ADAM D. REECE 7/13/18 Date Signed

Existing 3/31/2019

Design Sub-Consultant
AZTEC
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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: ADR
Drawn by: GLG
Checked by: ADR
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KWA No.: 07-5204

STAGE 2 – B04 DESIGN SUBMISSION

HORIZONTAL AND VERTICAL CONTROL PLAN

Package: B04 - MSGN0013
Sheet Reference No:
V6 - 013 of 260

PLOT DATE: Sep 13, 2017 FILE PATH: R:\Phoenix\Projects\AZSVY1602_PhoenixSkyTrainPhase2\CADD\Survey\Dwg\AV100000011-X-2-MSSV00 00 02.dwg ggreen

ABBREVIATIONS

@	AT	°F	DEGREES FAHRENHEIT	%	PERCENT
A	AIR	(F)	FUTURE	P	PUMP
AAV	AUTOMATIC AIR VENT	FSD	COMBINATION FIRE/SMOKE DAMPER	PC	PUMPED CONDENSATE
ABV	ABOVE	FD	FLOOR DRAIN, FIRE DAMPER	PCR	PUMP (STEAM) CONDENSATE RETURN
AC	AIR CONDITIONING	FDC	FIRE DEPARTMENT CONNECTION	PD	PRESSURE DROP
ACU	AIR CONDITIONING UNIT	FDR	FLOOR DRAIN	PH	PHASE
ACCU	AIR COOLED CONDENSING UNIT	FF	FINISHED FLOOR	PLBG	PLUMBING
AD	ACCESS DOOR, AIR DRYER	FG	FUEL GAS	PNEU	PNEUMATIC
ADJ	ADJUST, ADJUSTABLE	FLR	FLOOR	POS	POSITION
ADA	AMERICANS WITH DISABILITIES ACT	FLA	FULL LOAD AMPS	PROP	PROPELLER
AF	AIRFOIL, ANTI-FREEZE	FLEX	FLEXIBLE	PRESS	PRESSURE
AFF	ABOVE FINISHED FLOOR	FO	FUEL OIL	PRV	PRESSURE REDUCING VALVE
AFMS	AIR FLOW MONITORING STATION	FOB	FLAT ON BOTTOM	PS	PRESSURE SWITCH
AHU	AIR HANDLING UNIT	FOF	FUEL OIL FILL	PSI	POUNDS PER SQUARE INCH
AI	ANALOG INPUT	FOG	FUEL OIL GAUGE	PSIG	POUNDS PER SQUARE INCH GAUGE
ALUM	ALUMINUM	FOR	FUEL OIL RETURN	PVC	POLYVINYL CHLORIDE
AO	ANALOG OUTPUT	FOS	FUEL OIL SUPPLY		
AP	ACCESS PANEL	FOT	FLAT ON TOP	(RX)	REMOVE EXISTING
APD	AIR PRESSURE DROP	FOV	FUEL OIL VENT	R	RISE
APPROX	APPROXIMATELY	FRP	FIBERGLASS REINFORCED PLASTIC	RA	RETURN AIR
ARCH	ARCHITECTURAL	FPM	FEET PER MINUTE	RD	ROOF DRAIN
ARU	AIR ROTATION UNIT	FPS	FEET PER SECOND	REF	REFRIGERANT
AS	AIR SEPARATOR	FS	FLOW SWITCH	REQ'D	REQUIRED
ASHP	AIR SOURCE HEAT PUMP	FM	FLOW METER	RH	RELATIVE HUMIDITY
AST	ABOVEGROUND STORAGE TANK	FT, '	FOOT, FEET	RL	REFRIGERANT LIQUID
ATC	AUTOMATIC TEMPERATURE CONTROL	FT HD	FEET OF HEAD	RLA	RATED LOAD AMPS
ATV	ATMOSPHERIC VENT	FZ	FREEZE, FREEZSTAT	RM	ROOM
AV	ANALOG VALVE			RPM	REVOLUTIONS PER MINUTE
AVG	AVERAGE	GA	GAUGE	RS	REFRIGERANT SUCTION
		GAL	GALLON, GALLONS		
BAS	BUILDING AUTOMATION SYSTEM	GALV	GALVANIZED	S	SWITCH
BBD	BOILER BLOW DOWN	GEN	GENERATOR	SM	SHEET METAL
BDD	BACKDRAFT DAMPER, BOILER BLOWDOWN	GPH	GALLONS PER HOUR	SA	SUPPLY AIR
		GPM	GALLONS PER MINUTE	SAN	SANITARY
BF	BOILER FEED	GWR	GLYCOL WATER RETURN	SAT	SUPPLY AIR TEMPERATURE
BFP	BACKFLOW PREVENTER	GWS	GLYCOL WATER SUPPLY	SD	SMOKE DETECTOR, SMOKE DAMPER
BLW	BELOW			SENS	SENSIBLE
BLDG	BUILDING	H	HEIGHT	SF	SUPPLY FAN, SQUARE FEET
BMS	BUILDING MANAGEMENT SYSTEM	H2O	WATER	SHT	SHEET
BOD	BOTTOM OF DUCT, BASIS OF DESIGN	HB	HOSE BIB	SL	SOUND LINING
BOL	BOTTOM OF LOUVER	HC	HEATING COIL	SP	STATIC PRESSURE
BOT	BOTTOM	HCU	HUMIDIFICATION CONTROL UNIT	SPR	SPRINKLER
BTU	BRITISH THERMAL UNIT	HGB	HOT GAS BYPASS	SPEC	SPECIFICATION
BTUH	BRITISH THERMAL UNITS PER HOUR	HORIZ	HORIZONTAL	SQ	SQUARE
		HP	HORSEPOWER	SQ FT	SQUARE FOOT, SQUARE FEET
C	COMMON	HPS	HIGH PRESSURE STEAM	S/S	START/STOP
CA	COMPRESSED AIR	HTG	HEATING	SS	STAINLESS STEEL
CC	COOLING COIL	HUM	HUMIDIFIER	STD	STANDARD
CD	CONDENSATE DRAIN	HWR	HOT WATER RETURN	STL	STEEL
CFM	CUBIC FEET PER MINUTE	HWS	HOT WATER SUPPLY		
CH	CHILLER	HX	HEAT EXCHANGER	ΔT	TEMPERATURE DIFFERENTIAL
CHWR	CHILLED WATER RETURN	HZ	HERTZ (CYCLES PER SECOND)	TEMP	TEMPERATURE, TEMPORARY
CHWS	CHILLED WATER SUPPLY			TD	TRANSFER DUCT
CI	CAST IRON	ID	INSIDE DIAMETER	TG	TRANSFER GRILLE
CL	CENTER LINE	IGV	INLET GUIDE VANE	TOD	TOP OF DUCT
CLG	COOLING	IN, "	INCH, INCHES	TOL	TOP OF LOUVER
CLNG	CEILING	IN WG	INCHES OF WATER GAUGE	TSP	TOTAL STATIC PRESSURE
CNG	COMPRESSED NATURAL GAS	INFO	INFORMATION	TYP	TYPICAL
CO	CLEANOUT, CARBON MONOXIDE	INT	INTERIOR		
CO2	CARBON DIOXIDE	INV	INVERT ELEVATION	UC	UNDERCUT DOOR
COL	COLUMN	ISOL	ISOLATION	UH	UNIT HEATER
CONC	CONCRETE	IW	INDUSTRIAL WASTE	UL	UNDERWRITERS LABORATORIES
CONN	CONNECTION			UON	UNLESS OTHERWISE NOTED
CONT	CONTINUATION	KW	KILOWATTS	UST	UNDERGROUND STORAGE TANK
CONT'D	CONTINUED				
CP	CONDENSATE PUMP, CONTROL PANEL	L	LENGTH, LONG	V	VOLTS, VENT
CPVC	CHLORINATED POLYVINYL CHLORIDE	LAT	LEAVING AIR TEMPERATURE	VAR	VARIABLE
CRAC	COMPUTER ROOM AIR CONDITIONER	LAV	LAVATORY	VAV	VARIABLE AIR VOLUME
CRAH	COMPUTER ROOM AIR HANDLER	LBS	POUNDS	VCO	VERTICAL CLEAN OUT
CV	CONTROL VOLUME, CHECK VALVE	LBS/HR	POUNDS PER HOUR	VD	VOLUME DAMPER
CT	COOLING TOWER	LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN	VEL	VELOCITY
CW	COLD WATER			VENT	VENTILATION
CWR	CONDENSER WATER RETURN	LP	LIQUID PROPANE	VERT	VERTICAL
CWS	CONDENSER WATER SUPPLY	LPS	LOW PRESSURE STEAM	VFD	VARIABLE FREQUENCY DRIVE
Cx	COMMISSIONING	LRA	LOAD RATED AMPS	VIB	VIBRATION
CxA	COMMISSIONING AUTHORITY	LWT	LEAVING WATER TEMPERATURE	VRF	VARIABLE REFRIGERANT FLOW
				VSD	VARIABLE SPEED DRIVE
(D)	DEMOLISH, REMOVE	M	METER	VTR	VENT THROUGH ROOF
D	DRAIN, DEPTH	MA	MIXED AIR		
DAT	DISCHARGE AIR TEMPERATURE	MAV	MANUAL AIR VENT	W	WIDTH, WIDE
DB	DRY BULB TEMPERATURE, DECIBELS	MAX	MAXIMUM	W/	WITH
DCW	DOMESTIC COLD WATER	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR	W/O	WITHOUT
DDC	DIRECT DIGITAL CONTROL			WB	WET BULB TEMPERATURE
DEG, °	DEGREES	MCA	MINIMUM CIRCUIT AMPACITY	WC	WATER COLUMN
DEH	DEHUMIDIFIER	MECH	MECHANICAL	WG	WATER GAUGE
DEPT	DEPARTMENT	MFR	MANUFACTURER	WH	WATER HEATER
DESG	DESIGNATION	MO	MOTOR OIL	WMS	WIRE MESH SCREEN
DI	DIGITAL INPUT	MOD	MOTOR OPERATED DAMPER, MODULATING	WPD	WATER PRESSURE DROP
DIA, ø	DIAMETER			WSHP	WATER SOURCE HEAT PUMP
DIFF	DIFFERENTIAL, DIFFERENCE	MIN	MINIMUM	WT	WEIGHT
DISC	DISCONNECT	MPCR	MEDIUM PRESSURE CONDENSATE RETURN	ZN	ZONE
DN	DOWN				
DO	DIGITAL OUTPUT	MPS	MEDIUM PRESSURE STEAM		
DP	DIFFERENTIAL PRESSURE	MTD	MOUNTED		
DTWR	DUAL TEMPERATURE WATER RETURN	MTG	MOUNTING		
DTWS	DUAL TEMPERATURE WATER SUPPLY	MUW	MAKE UP WATER		
DV	DIGITAL VALVE				
DWG	DRAWING	N/A	NOT APPLICABLE		
DX	DIRECT EXPANSION	NC	NORMALLY CLOSED, NOISE CRITERIA		
		NIC	NOT IN CONTRACT		
(ER)	EXISTING RELOCATED	NFPA	NATIONAL FIRE PROTECTION AGENCY		
(EX)	EXISTING TO REMAIN				
EA	EXHAUST AIR	NG	NATURAL GAS		
EAT	ENTERING AIR TEMPERATURE	No	NUMBER		
EF	EXHAUST FAN	NO	NORMALLY OPENED		
EFF	EFFICIENCY	NOM	NOMINAL		
EJ	EXPANSION JOINT	NTS	NOT TO SCALE		
EL	ELEVATION				
ELEC	ELECTRIC, ELECTRICAL	OA	OUTSIDE AIR		
ELEV	ELEVATOR	OAT	OUTSIDE AIR TEMPERATURE		
EMS	ENERGY MANAGEMENT SYSTEM	OC	ON CENTER		
(ER)	EXISTING RELOCATED	OED	OPEN ENDED DUCT		
ESP	EXTERNAL STATIC PRESSURE	OFD	OVERFLOW DRAIN		
ET	EXPANSION TANK	OI	OIL INTERCEPTOR		
EWB	ENTERING WET BULB TEMPERATURE	OSD	OPEN SITE DRAIN		
EWT	ENTERING WATER TEMPERATURE	OS&Y	OUTSIDE STEM AND YOKE VALVE		
EXT	EXTERIOR	OVH	OVERHEAD		
		OWS	OIL WATER SEPARATOR		

DUCTWORK

SYMBOL DOUBLE LINE	SYMBOL SINGLE LINE	DESCRIPTION
20x12	20x12	DUCTWORK, SIZE AS INDICATED
20x12	20x12	DUCTWORK, WITH SOUNDLINING
		VANED ELBOW
		UN-VANED ELBOW
		VANED TEE
		UN-VANED TEE
		SUPPLY DUCT TURNING UP AND DOWN
		RETURN DUCT TURNING UP AND DOWN
		EXHAUST DUCT TURNING UP AND DOWN
R/D	R/D	DUCT RISE/DROP IN AIRFLOW DIRECTION
		DUCT TRANSITION, SQUARE TO SQUARE
		DUCT TRANSITION, SQUARE TO ROUND
		DUCT CAPPED
		45 DEGREE TAP
		CONICAL TAP
		SPUN-IN RUNOUT FITTING W/ FLEX. & VD
		FLEXIBLE DUCT
		FLEXIBLE CONNECTION
		MANUAL VOLUME DAMPER
		FIRE DAMPER
		SMOKE DAMPER
		COMBINATION FIRE/SMOKE DAMPER
BDD	BDD	BACKDRAFT DAMPER
MD	MD	MOTORIZED DAMPER
BD	BD	BAROMETRIC DAMPER
		DUCT CONTINUATION

	SUPPLY AIR FLOW DIRECTION
OA	OUTSIDE AIR FLOW DIRECTION
	RETURN/EXHAUST AIR FLOW DIRECTION
	RETURN, EXHAUST GRILLE OR REGISTER
	SUPPLY AIR DIFFUSER, 4-WAY BLOW
	SUPPLY AIR DIFFUSER, 3-WAY BLOW
	SUPPLY AIR DIFFUSER, 2-WAY BLOW
	SUPPLY AIR DIFFUSER, 1-WAY BLOW
	LINEAR SLOT DIFFUSER
UC	UNDERCUT DOOR
DL 12x12	DOOR LOUVER
AD	DUCT ACCESS DOOR
T	THERMOSTAT, MASTER THERMOSTAT
TS	TEMPERATURE SENSOR
H	HUMIDISTAT
FZ	FREEZESTAT
HS	HUMIDITY SENSOR
S	DUCT SMOKE DETECTOR
CO2	CARBON DIOXIDE SENSOR
CO	CARBON MONOXIDE SENSOR
SP	STATIC PRESSURE SENSOR
AFMS	AIR FLOW MEASURING STATION
S	SWITCH OR TOGGLE SWITCH
TM	MANUAL TIMER SWITCH
HOA	HAND/OFF/AUTO SWITCH
1 2	STATIC PRESSURE CLASSIFICATION DESIGNATION (IN. W.G.)

PIPING, FITTINGS, AND VALVES

SYMBOL	DESCRIPTION
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CNG	COMPRESSED NATURAL GAS
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
FOF	FUEL OIL FILL
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
G	GAS
GWR	GLYCOL WATER RETURN
GWS	GLYCOL WATER SUPPLY
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HPS	HIGH PRESSURE STEAM
LWS	LOOP WATER SUPPLY
LWR	LOOP WATER RETURN
LPS	LOW PRESSURE STEAM
MUW	MAKE UP WATER
MPS	MEDIUM PRESSURE STEAM
NG	NATURAL GAS
PSC	PUMPED STEAM CONDENSATE RETURN
RD	REFRIGERANT DISCHARGE
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
SC	STEAM CONDENSATE RETURN
STM	STEAM
	PIPING TURNING UP
	PIPING TURNING DOWN
	TEE DOWN
	PIPE BRANCH BOTTOM TAKEOFF
	PIPE BRANCH TOP TAKEOFF
	VALVE IN VERTICAL PIPE
	CAP
	FLOW DIRECTION
R/D	PIPE SLOPE RISE/DROP
	PIPE RISER UP/DOWN
	CONCENTRIC REDUCER/INCREASER
	ECCENTRIC REDUCER/INCREASER (FOB)
	UNION
	PIPE CONTINUATION
W H	EXPANSION LOOP (WxH)
	PIPE ANCHOR
	FLEXIBLE PIPE CONNECTOR
EJ	EXPANSION JOINT
	PIPE GUIDE
	STEAM TRAP
	BLIND FLANGE

SYMBOL	DESCRIPTION
	GEN. SHUTOFF VALVE (BALL, GATE, BUTTERFLY)
	GATE VALVE
	GLOBE VALVE
	OUTSIDE STEM & YOKE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GAS COCK
	PRESSURE REDUCING VALVE
	CALIBRATED BALANCING VALVE
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	CONTROL VALVE, THREE-WAY (ELECTRIC)
	THREE-WAY MANUAL VALVE
S	SOLENOID VALVE
AAV	AUTOMATIC AIR VENT (EXTEND TO DRAIN)
MAV	MANUAL AIR VENT
	RELIEF/SAFETY VALVE
	STRAINER
	STRAINER WITH DRAIN VALVE AND CAP
	PRESSURE/TEMPERATURE TEST PORT
	AQUASTAT
	PRESSURE GAUGE WITH COCK
	THERMOMETER
T	TEMPERATURE SENSOR
P	PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE TRANSDUCER
FS	FLOW SWITCH
FM	FLOW METER
	VENTURI FLOW METER
	PUMP

LINES AND REFERENCE SYMBOLS

SYMBOL	DESCRIPTION
	NEW WORK LINEWEIGHT
	DEMOLITION LINEWEIGHT
	EXISTING LINEWEIGHT
	FUTURE LINEWEIGHT
	CONNECTION OF NEW TO EXISTING
	TERMINATION POINT OF DEMOLITION
X	SHEET KEYED NOTE
	DRAWING REVISION NUMBER

E-1 — EQUIPMENT DESIGNATION

D1 / 8"ø / 150 — TYPE: DIFFUSER, REGISTER, OR GRILLE; NECK; CFM: DESIGNATION AND AIRFLOW TAG

1 / TITLE / SCALE: — INDICATES PLAN/DETAIL NUMBER; PLAN/DETAIL TITLE; SCALE (AS REQUIRED)

1 / M301 — INDICATES PLAN/DETAIL NUMBER; INDICATES DRAWING ON WHICH DRAWING SECTION APPEARS

Design Consultant: Gannett Fleming

Design Sub-Consultant

ARIZONA (Imperial) — EXPIRES 03/31/20 — 66328 — HITEN SHETH — Gannett Fleming, Inc.

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PHX SKY TRAIN

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
SYMBOL LIST AND GENERAL NOTES

Package: B04 - RBME0001

Sheet Reference No: V6 - 014 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCMEXX01_R17_A360.rvt

Project Number: #####
7/11/2018 4:09:23 PM

GENERAL NOTES

1. THE MECHANICAL DRAWINGS CANNOT BE FULLY AND CORRECTLY INTERPRETED WITHOUT REFERENCE TO THE ENTIRE SET OF BID DOCUMENTS INCLUDING SPECIFICATIONS, SYMBOLS, ABBREVIATIONS, SCHEDULES, DETAILS AND SCHEMATICS.

2. ANY SYMBOLS OR ABBREVIATIONS SHOWN ON THE MECHANICAL COVER SHEET MAY APPEAR ON THE DRAWINGS; NOT ALL WILL NECESSARILY APPEAR. USE ONLY THOSE PERTAINING TO THESE DOCUMENTS.

3. THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE CAPACITY, SIZE, APPROXIMATE LOCATION AND GENERAL ARRANGEMENT, NOT THE SPECIFIC DETAILS OF CONSTRUCTION AND INTERCONNECTION OF SYSTEMS.

4. THE LOCATIONS OF DUCTWORK, EQUIPMENT, AND PIPING ETC SHOWN ON THE DRAWINGS IS APPROXIMATE AND IS NOT INTENDED TO SHOW EXACT LOCATIONS.

5. CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE. PROVIDE ALL NECESSARY OFFSETS AND FITTINGS FOR A COMPLETE INSTALLATION.

6. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS.

7. COORDINATE HVAC WORK WITH THE WORK OF ALL OTHER TRADES. REWORK DUE TO THE LACK OF COORDINATION IS THE RESPONSIBILITY OF THE CONTRACTOR.

8. ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES, UNLESS NOTED OTHERWISE.

9. RUN PIPING AND DUCTWORK CONCEALED, EXCEPT IN MECHANICAL ROOMS OR WHERE OTHERWISE INDICATED.

10. WHERE PIPING IS RUN IN EXTERIOR WALLS OR AREAS OF POTENTIAL FREEZING PROVIDE 1 INCH OF ADDITIONAL INSULATION.

11. FURNISH AND INSTALL ACCESS PANELS WHERE REQUIRED FOR ACCESS TO ALL CONCEALED VALVES, DAMPERS OR EQUIPMENT WHERE NO OTHER MEANS IS PROVIDED. FINISH ACCESS PANELS TO MATCH WALL COVERING.

12. RUN CONCEALED PIPING ON ROOM SIDE OF BUILDING INSULATION, UNLESS NOTED OTHERWISE.

13. INSTALL ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS, LOCAL, STATE AND FEDERAL.

14. UNLESS OTHERWISE NOTED, CONSTRUCTION MATERIAL AND EQUIPMENT REMOVED TO BE THE PROPERTY OF THE CONTRACTOR AND LEGALLY DISPOSED OF OFF SITE. OWNER SHALL BE GIVEN FIRST RIGHT OF REFUSAL FOR EQUIPMENT WHICH MAY BE REUSED WITHIN THE FACILITY.

15. WHERE EQUIPMENT, PIPING CONDUIT, ETC. TO REMAIN IS SUPPORTED FROM EQUIPMENT AND/OR PIPING BEING REMOVED, EXTEND EXISTING HANGERS OR PROVIDE NEW HANGERS AND SUPPORTS AS REQUIRED TO RESUPPORT ITEMS FROM BUILDING STRUCTURE.

16. PATCH ALL OPENINGS IN BUILDING CONSTRUCTION WHERE PIPING ETC IS REMOVED. PATCHING MATERIAL TO MATCH THE SURROUNDING CONSTRUCTION AND ASSEMBLY TYPE. FINISH TO MATCH EXISTING TO THE EXTENT POSSIBLE.

17. SEAL ALL WALL AND FLOOR PENETRATIONS. SEAL ALL PENETRATIONS IN FIRE RATED WALLS AND FLOORS IN ACCORDANCE WITH UL LISTED ASSEMBLIES.

18. PROTECT FINISHES FROM DAMAGED DURING CONSTRUCTION.

19. DEMOLISH EXISTING PIPING AS NOTED ON DRAWINGS, INCLUDING ALL FITTINGS, VALVES, PIPE INSULATION, HANGERS AND SUPPORTS.

20. DEMOLITION, CUTTING AND PATCHING WHERE INDICATED ON THE DRAWINGS IS INTENDED ONLY AS A GUIDELINE FOR UNDERSTANDING THE SCOPE OF WORK AND TO BE USED ONLY FOR THAT PURPOSE.

21. ALL WORK TO COMPLY WITH THE 2012 INTERNATIONAL MECHANICAL CODE, 2012 INTERNATIONAL ENERGY CONSERVATION VODE, AND ALL CITY OF PHOENIX ADOPTED CODES AND AMENDMENTS.

22. MECHANICAL DESIGN IS INTENDED SO THE AIR CONDITIONING SYSTEM WILL OPERATE CONTINUOUSLY TO MAINTAIN VENTILATION REQUIREMENTS DURING OCCUPANCY.

23. CALL FOR INSPECTION OF ALL MECHANICAL SYSTEMS PRIOR TO COVER OR CONCEALMENT.

24. ALL MECHANICAL AIR CONDITIONING EQUIPMENT TO HAVE A MINIMUM EER RATING PER 2012 IECC, TABLE C403.2.3. SUBMIT MECHANICAL AC EQUIPMENT TO OWNER OR ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDER.

25. SUBMIT FINAL AIR BALANCE REPORT TO BUILDING INSPECTOR FOR FINAL REVIEW AND APPROVAL.

26. SMOKE DETECTORS TO CONNECT TO FIRE ALARM SYSTEM AND ACTIVATE A SUPERVISORY ALARM UPON ACTIVATION.

27. CONDENSATE DRAIN PIPE MATERIAL SHALL BE COPPER TYPE-DWV OR OTHER APPROVED MATERIALS. NO PLASTIC PIPE SHALL BE USED FOR OUTDOOR EXPOSED PIPE.

28. DUCTS AND AIR TRANSFER OPENINGS THAT PENETRATE FIRE WALLS, FIRE BARRIERS, PARTITIONS SHALL BE PROTECTED WITH LISTED FIRE DAMPERS IN ACCORDANCE WITH IMC 607.5.1, 607.5.2, & 607.5.3. 1

29. PROVIDE FIRE AND SMOKE DAMPER TESTING AND PROVIDE RESULTS REPORT TO OWNER AND BUILDING INSPECTOR FOR REVIEW AND APPROVAL PRIOR TO OCCUPANCY, IMC 607.3.

30. PROVIDE 2" EXTERNAL INSULATION FOR ALL SUPPLY, RETURN & OUTSIDE AIR DUCTS.

31. A LISTED SMOKE DAMPER SHALL BE INSTALLED WHERE A DUCT OR AIR TRANSFER OPENING PENETRATES A SMOKE BARRIER WALL OR CORRIDOR PER IMC 607.5.4 OR MEET THE EXCEPTIONS IN IMC 607.5.4.

32. DUCTS AND AIR TRANSFER OPENINGS THAT PENETRATE SHAFT ENCLOSURES SHALL BE PROTECTED WITH APPROVED FIRE AND SMOKE DAMPERS IN ACCORDANCE WITH IMC 607.5.5.

33. DUCTS AND AIR TRANSFER OPENINGS THAT PENETRATE A FLOOR, FLOOR/CEILING ASSEMBLY OR THE CEILING MEMBRANE OF ROOF CEILING ASSEMBLY SHALL BE PROTECTED BY A SHAFT ENCLOSURE THAT COMPLIES WITH SECTION 7.1.3 AND SECTIONS 7.1.7.6.1 THROUGH 7.7.6.3 OF THE IBC OR SHALL COMPLY WITH IMC SECTIONS 607.6.1 THROUGH 607.6.3.

34. FLEXIBLE DUCTS, AIR CONNECTORS SHALL NOT PASS THROUGH FIRE-RESISTANCE-RATED ASSEMBLIES, IMC 607.7.

35. SEE FIRE LIFE SAFETY AND ARCHITECTURAL DRAWINGS FOR WALL CONSTRUCTION TYPES SUCH AS FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SHAFTENCLOSURES, AND NON-RATED WALLS. 1

PROFESSIONAL ENGINEER (MECHANICAL)
65328
HITEN SHETH
Date Signed
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
1	PDD COMMENTS	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

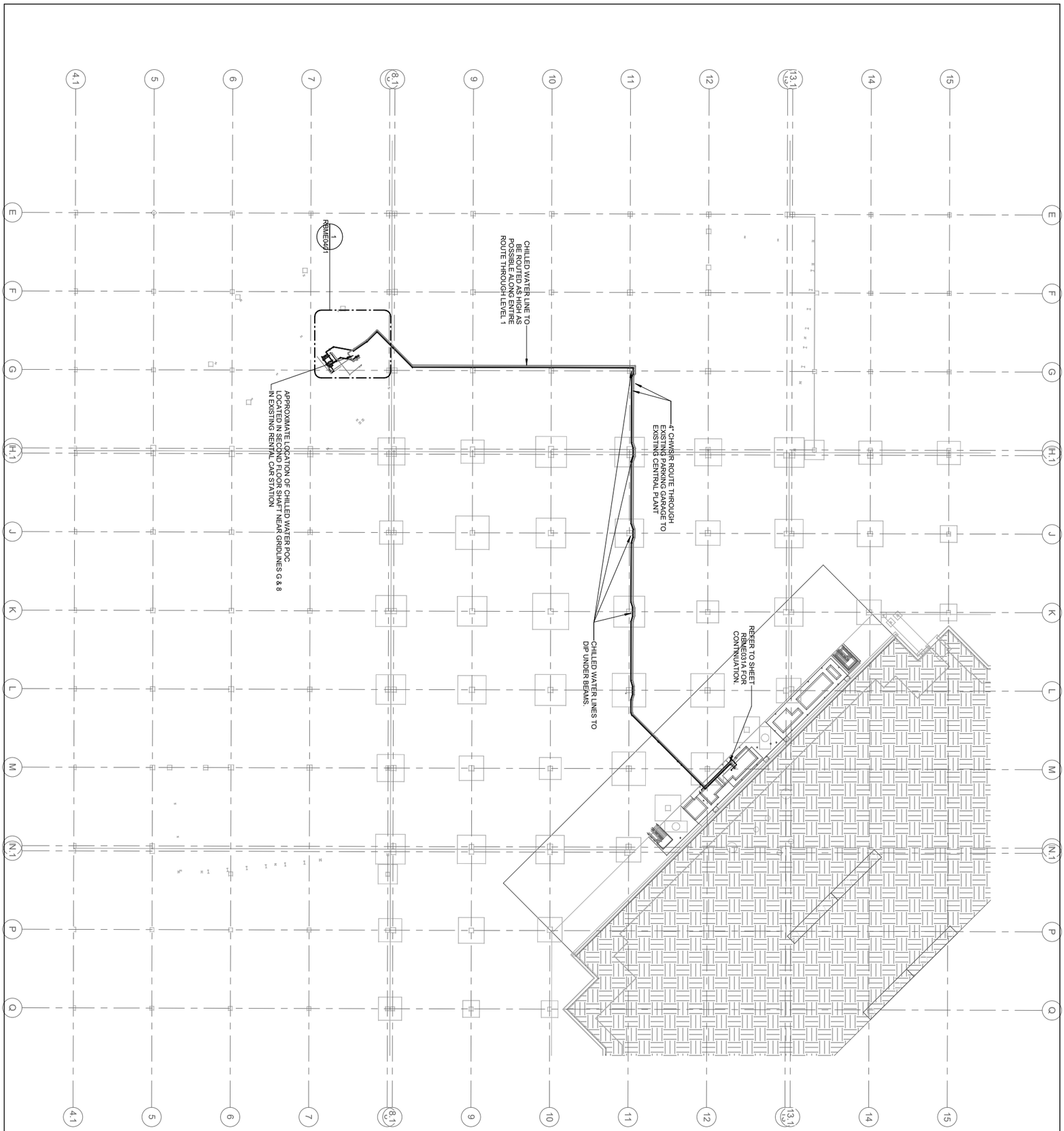
RCC STATION
MECHANICAL
GENERAL NOTES

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V6 - 015 of 260

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SHEET NOTES

1. CHILLED WATER PIPING TO BE ROUTED AS HIGH AS POSSIBLE ALONG ENTIRE ROUTE.
2. SEE STRUCTURAL DRAWINGS FOR CHILLED WATER PIPE SUPPORTS.
3. PROVIDE AUTOMATIC VENTS AT HIGH POINTS AND DRAIN VALAVES AT LOW PONTS FOR CHILLED WATER PIPING.
4. PROVIDE A MINIMUM 1.5" THICK INSULATION FOR CHILLED WATER PIPING IN THE EXISTING PARKING STRUCTURE.

N

STAGE 2 - B04 DESIGN SUBMISSION

Package: **B04 - RBME010** Sheet Reference No:
V6 - 016 of 260

RCC STATION MECHANICAL SITE PLAN

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Checked by:	HS
Date:	07/13/2018
Dwg scale:	1" = 40'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN STAGE 2 DESIGN 500 S 24TH STREET PHOENIX, AZ 85034

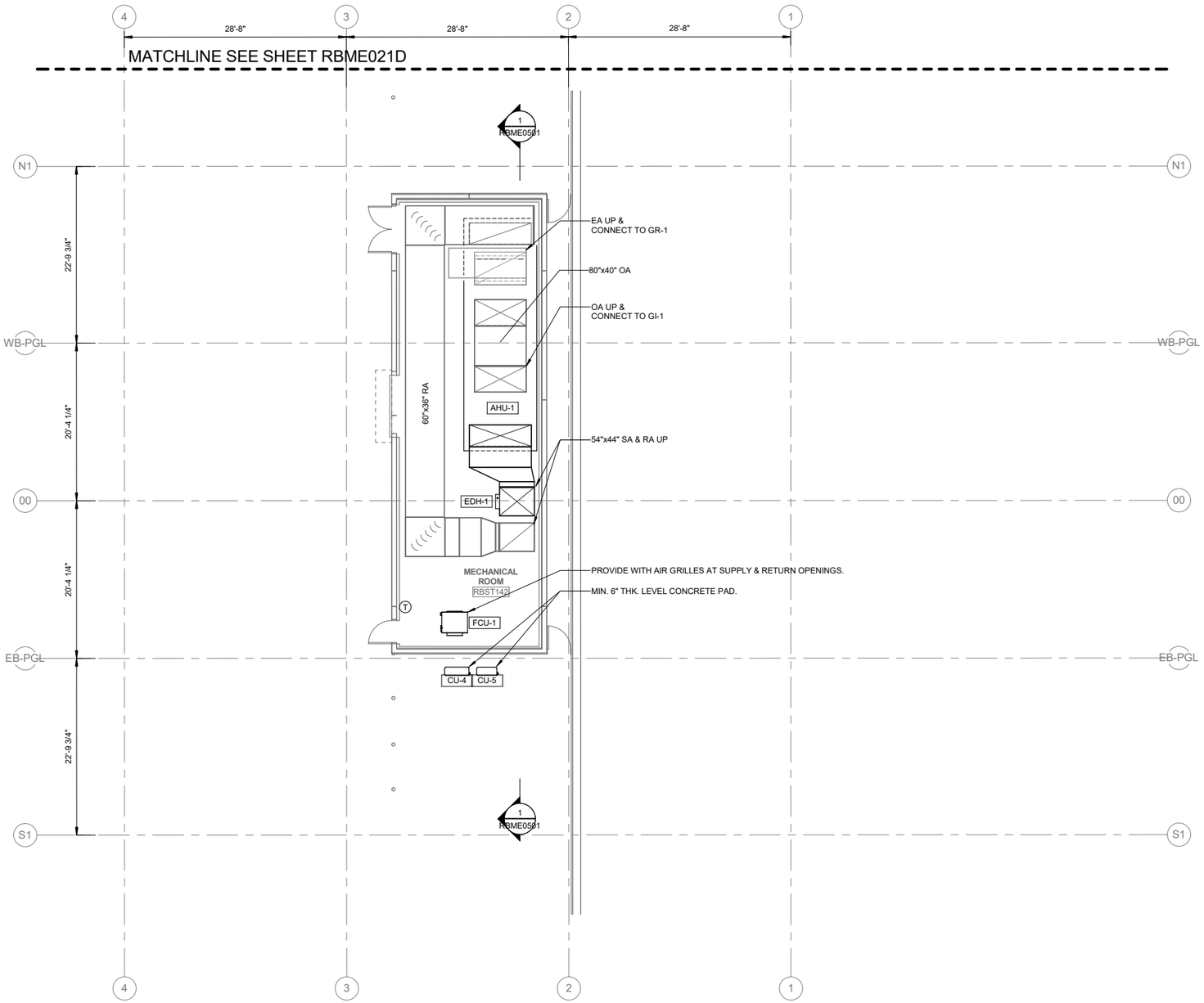
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer (Mechanical)
CERTIFICATE NO.
66328
HITEN SHETH
Date Signed
ARIZONA, U.S.A.
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

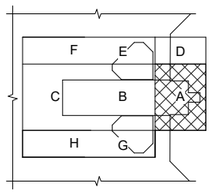


1 RBME021A **FLOOR PLAN - LEVEL 1 - AREA A**
SCALE: 1/8" = 1'-0"

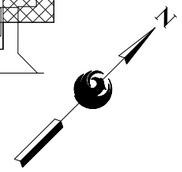
8' 4' 0' 8' 16'
1/8" = 1'-0"

SHEET NOTES

1. ALL NEW EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
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3. PROVIDE MANUAL VOLUME DAMPER IN THE BRANCH DUCT UPSTREAM OF EACH AIR INLET/OUTLET TO FACILITATE PROPER BALANCE, WHETHER SHOWN OR NOT ON THE DRAWINGS. VOLUME DAMPER INTEGRAL TO DIFFUSERS, GRILLES AND REGISTERS SHALL NOT BE USED FOR AIR BALANCING.
4. VOLUME DAMPERS SHALL BE LOCATED IN THE BRANCH DUCTWRK AS FAR UPSTREAM FROM THE OUTLET AS POSSIBLE.
5. THE NECK SIZE OF AIR DEVICES SHOULD MATCH WITH DUCT SIZE UNLESS NOTED OTHERWISE.
6. INSULATE ALL DUCTWORK ABOVE THE CEILING. INSULATION THICKNESS SHALL BE IN ACCORDANCE WITH CONCEALED SPACES.
7. THE DIFFUSER LOCATIONS AND INSTALLATION SHALL BE FULLY COORDINATED WITH THE ARCHITECTURAL CEILING ASSEMBLY PRIOR TO START THE DUCTWORK INSTALLATION.
8. THE SPECIFIED AIR HANDLING UNITS (AHUS) ARE FULLY CUSTOM-BUILT UNITS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING DUCT CONNECTION SIZES AT AHUS; AND SHALL PROVIDE TRANSITIONS AS REQUIRED TO CONNECT TO UNIT.
9. TURNING VANES SHALL BE PROVIDED FOR ALL RECTANGULAR DUCT ELBOWS.



KEY PLAN



PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR ONE-TIME USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
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	SUBMITTED FOR REVIEW	04/06/18

Design Consultant
Gannett Fleming

Design Sub-Consultant

EXPIRES 03/31/20
#63128
HITEN
SHETH

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

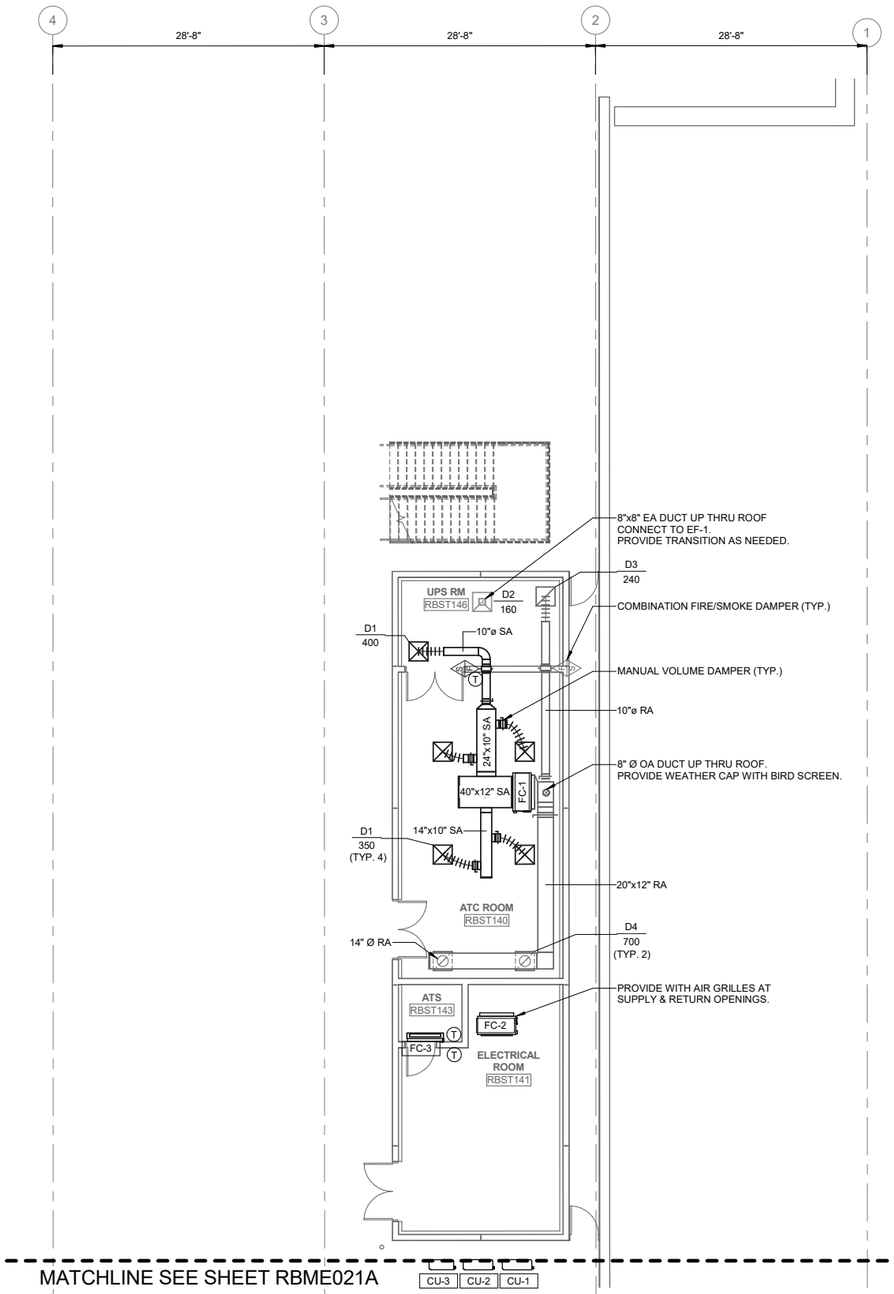
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Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - LEVEL 1 - AREA A

Package: **B04 - RBME021A**
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V6 - 017 of 260

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1 RBME021D **FLOOR PLAN - LEVEL 1 - AREA D**
SCALE: 1/8" = 1'-0"

CALCULATIONS OF UPS ROOM CONTINUOUS VENTILATION

AREA = 150 SQ. FT.

REQUIRED VENTILATION = 1 CFM/SQ. FT. x 150 SQ. FT. PER IMC 502.4

REQUIRED VENTILATION = 150 CFM

DESIGN CFM = 160 CFM

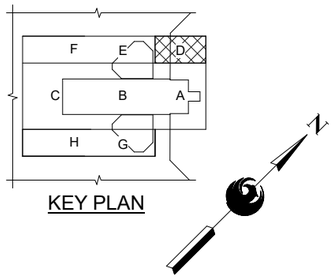
NOTES:

1. EF-1 (160 CFM) IS PROVIDED FOR UPS ROOM.; AND IT WILL RUN CONTINUOUSLY TO PROVIDE CONTINUOS VENTILATION WHICH COMPLIES WITH 2012 IMC 502.4 AND IFC 608.6.1.
2. THE FAN SAHLL BE PROVIDED WITH CONTROLS AND CONNECTED TO FIRE ALARM SYSTEM TO ACTIVATE VISIBLE AND AUDIBLE ALARM SYSTEM PER 2012 IMC 502.4.3 IF THE FAN IS INOPERABLE.

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

SHEET NOTES

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4. VOLUME DAMPERS SHALL BE LOCATED IN THE BRANCH DUCTWRK AS FAR UPSTREAM FROM THE OUTLET AS POSSIBLE.
5. THE NECK SIZE OF AIR DEVICES SHOULD MATCH WITH DUCT SIZE UNLESS NOTED OTHERWISE.
6. INSULATE ALL DUCTWORK ABOVE THE CEILING. INSULATION THICKNESS SHALL BE IN ACCORDANCE WITH CONCEALED SPACES.
7. THE DIFFUSER LOCATIONS AND INSTALLATION SHALL BE FULLY COORDINATED WITH THE ARCHITECTURAL CEILING ASSEMBLY PRIOR TO START THE DUCTWORK INSTALLATION.
8. TURNING VANES SHALL BE PROVIDED FOR ALL RECTANGULAR DUCT ELBOWS.



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER (MECHANICAL)
63328
HITEN SHETH
CERTIFICATE NO.
Date Signed
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

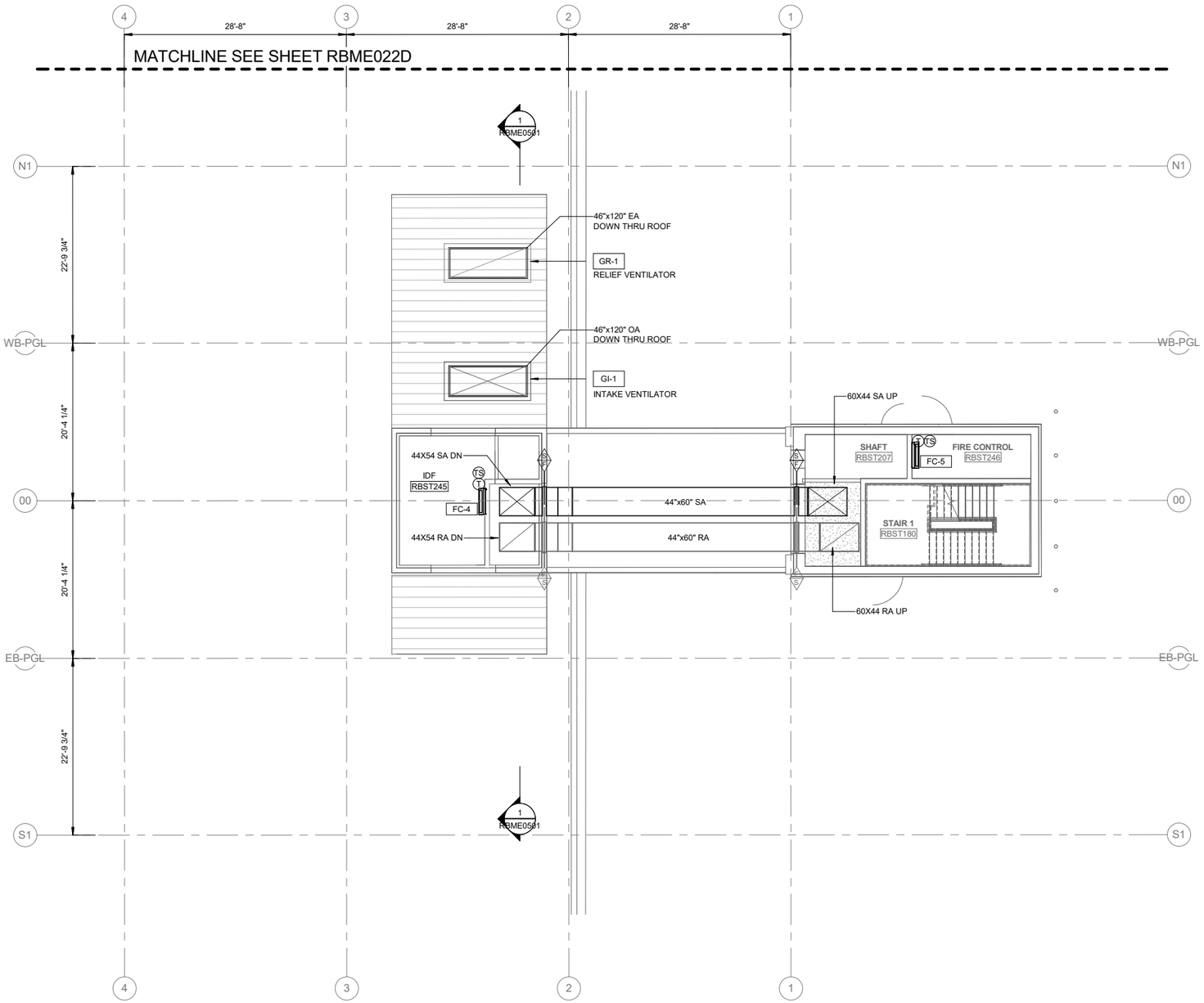
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CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - LEVEL 1 - AREA D

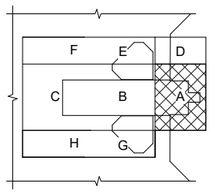
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1 ZZ_RBME0XXX **FLOOR PLAN - LEVEL 2.5 - AREA A**
SCALE: 1/8" = 1'-0"

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



KEY PLAN

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Design Consultant
Gannett Fleming

Design Sub-Consultant

PROFESSIONAL ENGINEER (Mechanical)
65328
HITEN
SHETH
STATE OF ARIZONA
EXPIRES 03/31/20

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

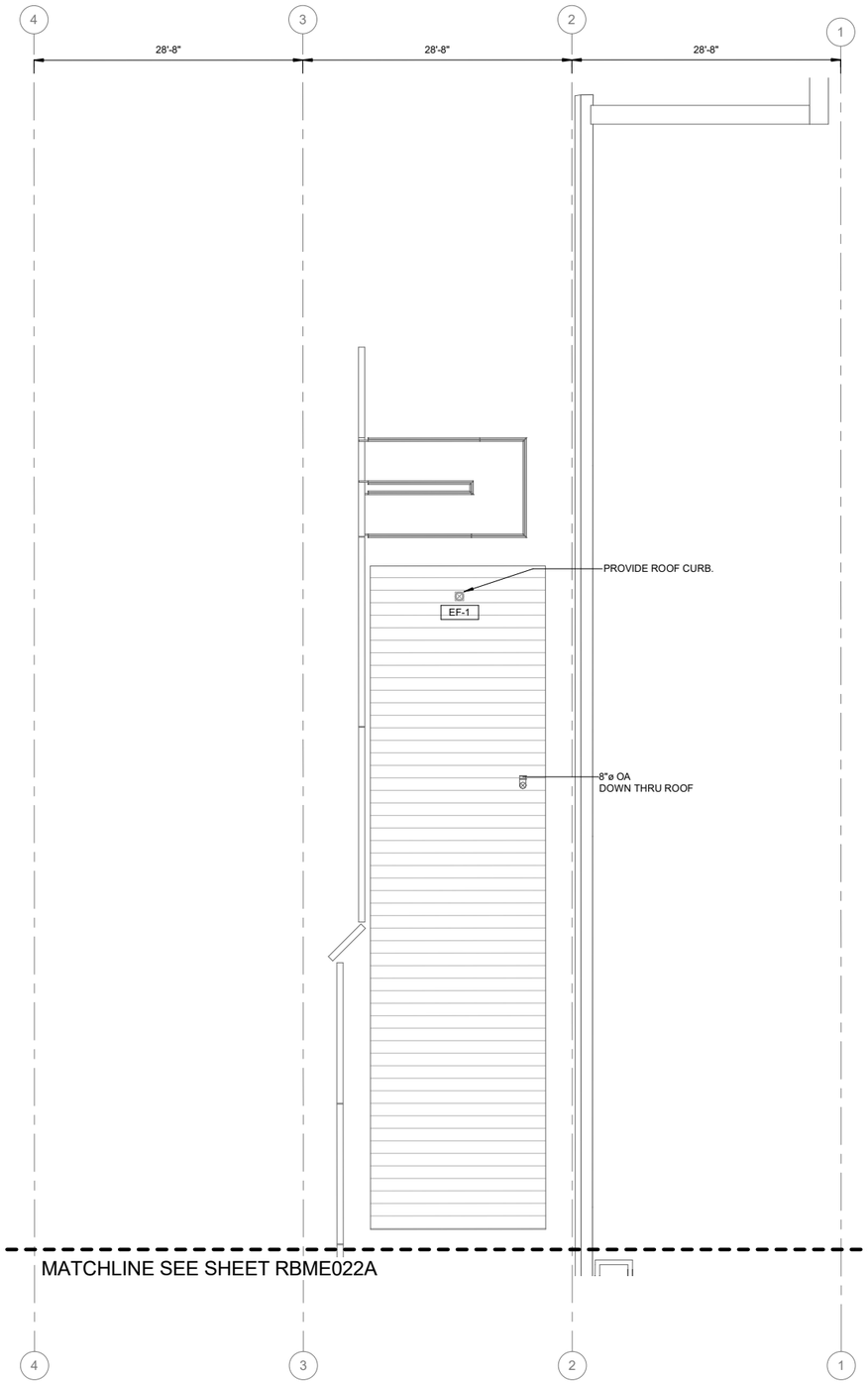
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CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - LEVEL 2.5 - AREA A

Package: **B04 - RBME022A**
Sheet Reference No:
V6 - 019 of 260

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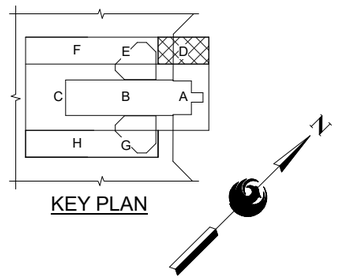


1 ZZ_RBME0XXX **FLOOR PLAN - LEVEL 2 - AREA D**
SCALE: 1/8" = 1'-0"

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

SHEET NOTES

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KEY PLAN

REGISTERED PROFESSIONAL ENGINEER (Mechanical)
65328
HITEN SHETH
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

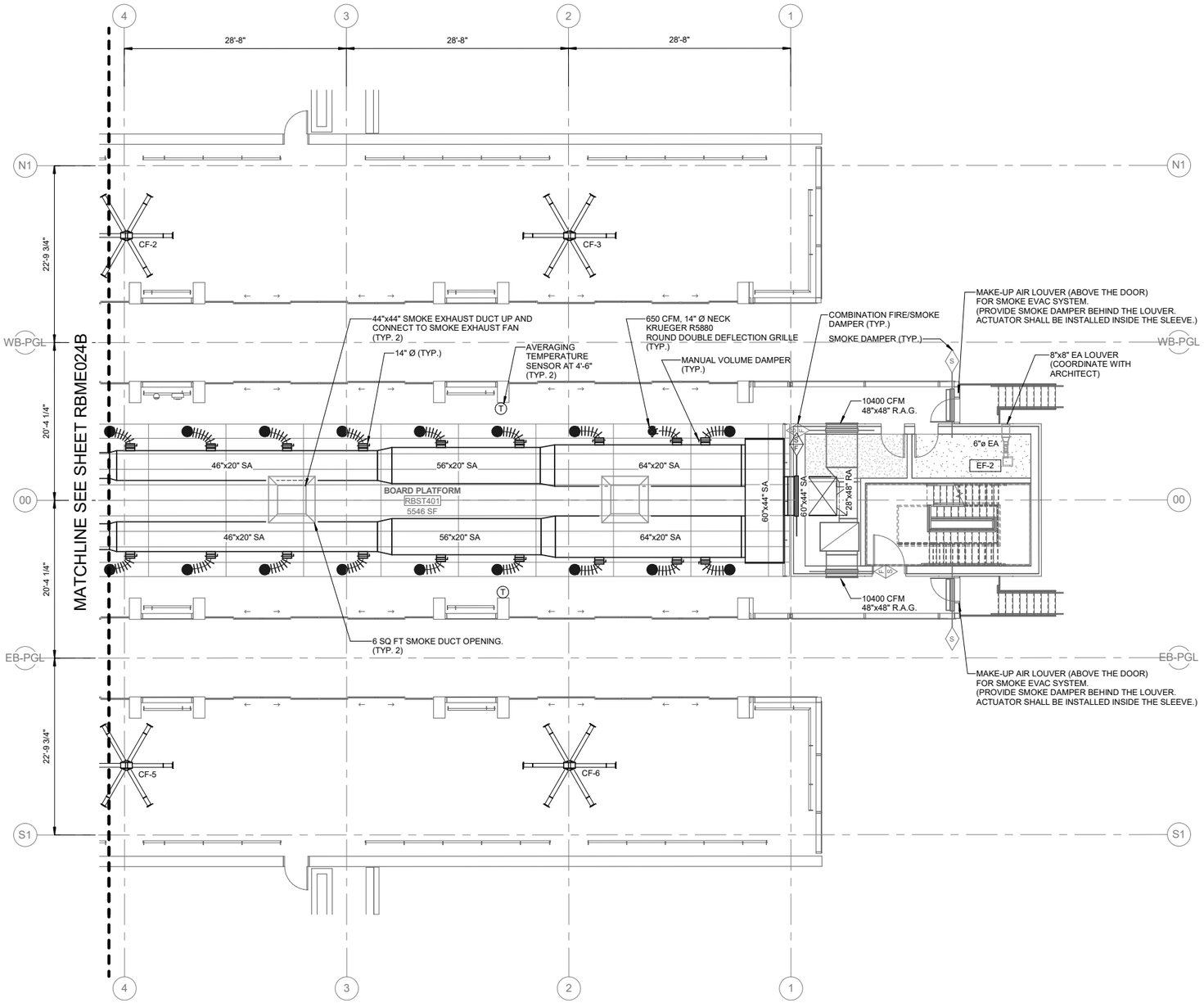
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Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - LEVEL 2.5 - AREA D

Package: **B04 - RBME022D**
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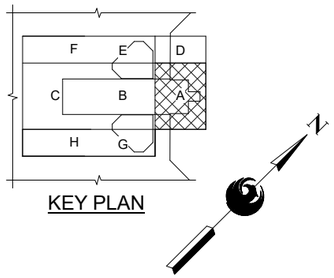


1 ZZ_RBME031G **FLOOR PLAN - LEVEL 4 - AREA A** SCALE: 1/8" = 1'-0"

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

SHEET NOTES

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7. THE DIFFUSER LOCATIONS AND INSTALLATION SHALL BE FULLY COORDINATED WITH THE ARCHITECTURAL CEILING ASSEMBLY PRIOR TO START THE DUCTWORK INSTALLATION.
8. TURNING VANES SHALL BE PROVIDED FOR ALL RECTANGULAR DUCT ELBOWS.
9. PROVIDE 35 FT. OF 1" THICK, 1.5 PCF INTERNAL DUCT LINING IMMEDIATELY UPSTREAM OF DIFFUSERS FOR SUPPLY.
10. PROVIDE 30 FT. OF 1" THICK, 1.5 PCF INTERNAL DUCT LINING IMMEDIATELY DOWNSTREAM OF RETURN AIR GRILLE / OPENING.
11. PROVIDE 5 FT. OF ACOUSTICAL FLEX DUCT UPSTREAM OF EACH SUPPLY DIFFUSER (TYP.).
12. ALIGN KRUEGER ROUND GRILLE EXTERNAL BLADES WITH LONG SIDE OF THE CEILING PANELS. (TYP.)



KEY PLAN

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

REGISTERED PROFESSIONAL ENGINEER (Mechanical) 65328 HITEN SHETH STATE OF ARIZONA
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

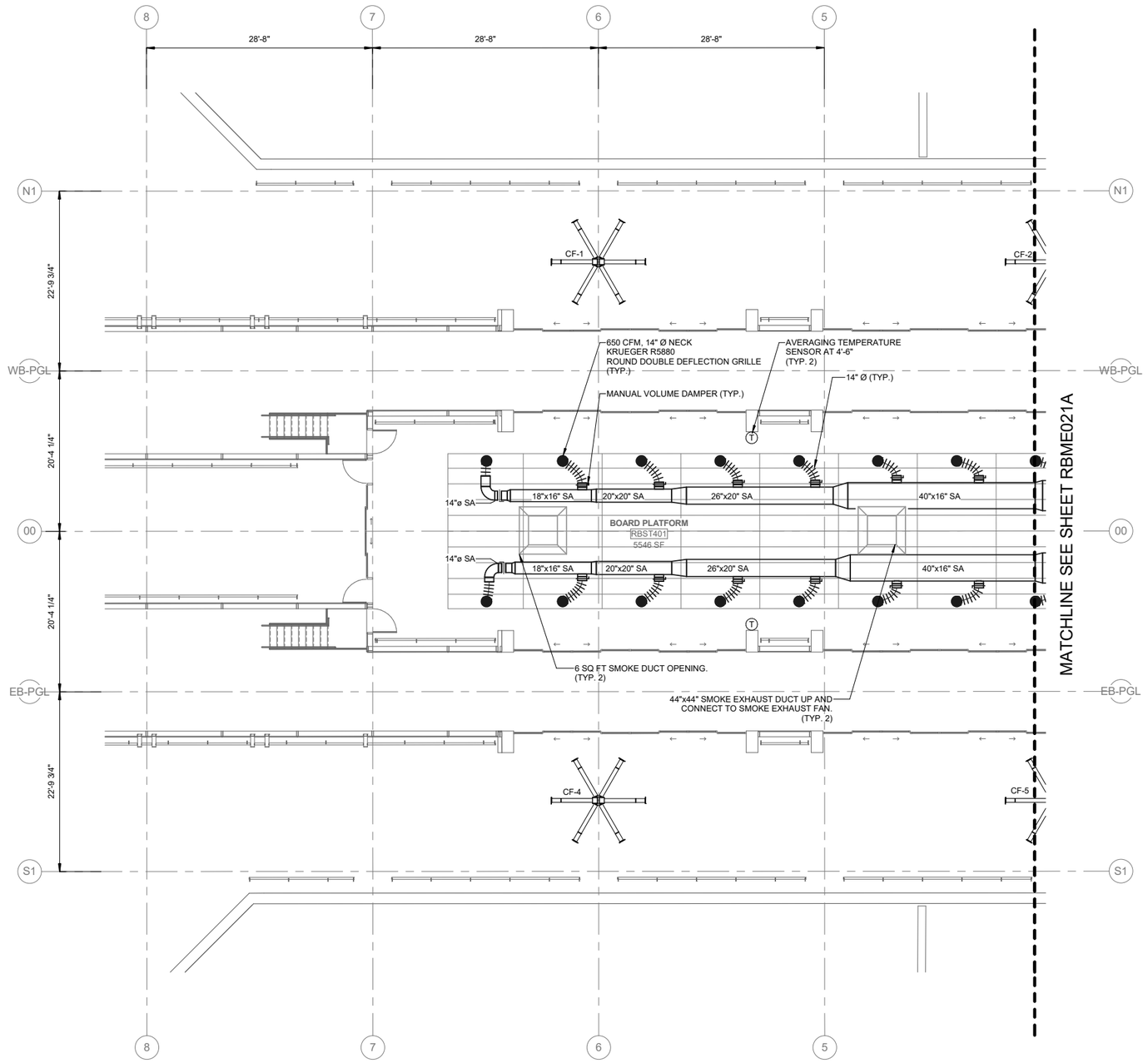
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Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - PLATFORM - LEVEL 4
- AREA A

Package: **B04 - RBME024A**
Sheet Reference No: V6 - 021 of 260

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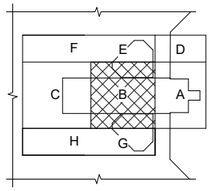


1 ZZ_RBME031G **FLOOR PLAN - LEVEL 4 - AREA B** SCALE: 1/8" = 1'-0"

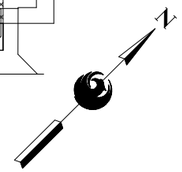
8' 4' 0' 8' 16'
1/8" = 1'-0"

SHEET NOTES

1. ALL NEW EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. THE INSTALLED MECHANICAL EQUIPMENT AND APPLIANCES SHALL BE ACCESSIBLE, AND CLEARANCES SHALL BE MAINTAINED FOR INSPECTION, SERVICE, REPAIR, AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION.
3. PROVIDE MANUAL VOLUME DAMPER IN THE BRANCH DUCT UPSTREAM OF EACH AIR INLET/OUTLET TO FACILITATE PROPER BALANCE, WHETHER SHOWN OR NOT ON THE DRAWINGS. VOLUME DAMPER INTEGRAL TO DIFFUSERS, GRILLES AND REGISTERS SHALL NOT BE USED FOR AIR BALANCING.
4. VOLUME DAMPERS SHALL BE LOCATED IN THE BRANCH DUCTWRK AS FAR UPSTREAM FROM THE OUTLET AS POSSIBLE.
5. THE NECK SIZE OF AIR DEVICES SHOULD MATCH WITH DUCT SIZE UNLESS NOTED OTHERWISE.
6. INSULATE ALL DUCTWORK ABOVE THE CEILING. INSULATION THICKNESS SHALL BE IN ACCORDANCE WITH CONCEALED SPACES.
7. THE DIFFUSER LOCATIONS AND INSTALLATION SHALL BE FULLY COORDINATED WITH THE ARCHITECTURAL CEILING ASSEMBLY PRIOR TO START THE DUCTWORK INSTALLATION.
8. TURNING VANES SHALL BE PROVIDED FOR ALL RECTANGULAR DUCT ELBOWS.
9. PROVIDE 5 FT. OF ACOUSTICAL FLEX DUCT UPSTREAM OF EACH SUPPLY DIFFUSER (TYP.).
10. ALIGN KRUEGER ROUND GRILLE EXTERNAL BLADES WITH LONG SIDE OF THE CEILING PANELS. (TYP.)



KEY PLAN



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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Consultant
Gannett Fleming

Design Sub-Consultant

EXPIRES 03/31/20
65328
HITEN
SHETH

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

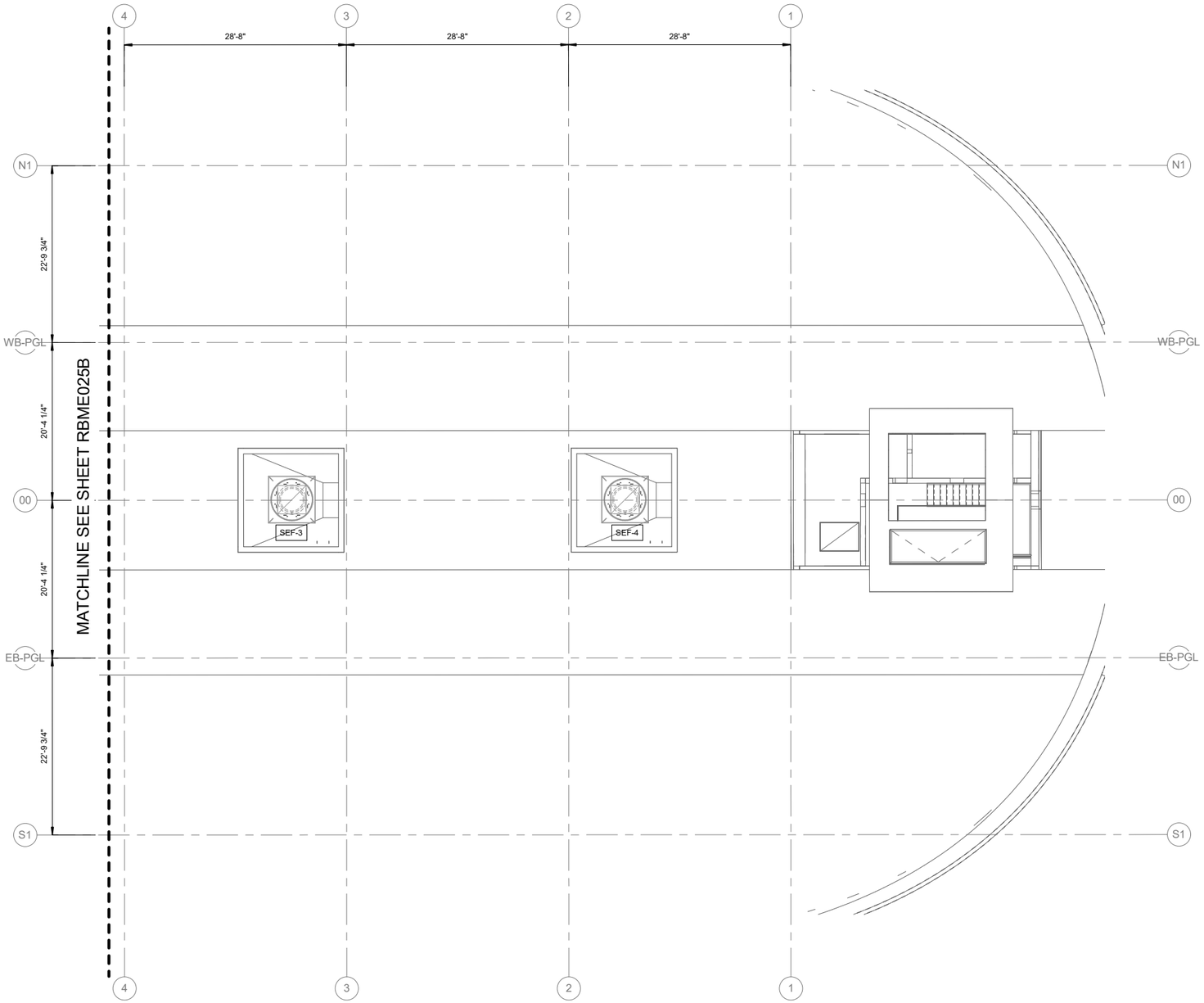
STAGE 2 - BOM DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - PLATFORM - LEVEL 4
- AREA B

Package: B04 - RBME024B
Sheet Reference No: V6 - 022 of 260

Project Number: ######
7/11/2018 4:11:06 PM

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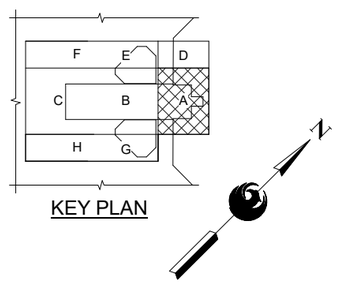


1 RBME025A **FLOOR PLAN - ROOF LEVEL - AREA A**
SCALE: 1/8" = 1'-0"

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

SHEET NOTES

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2. THE INSTALLED MECHANICAL EQUIPMENT AND APPLIANCES SHALL BE ACCESSIBLE, AND CLEARANCES SHALL BE MAINTAINED FOR INSPECTION, SERVICE, REPAIR, AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION.



KEY PLAN



Design Sub-Consultant

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

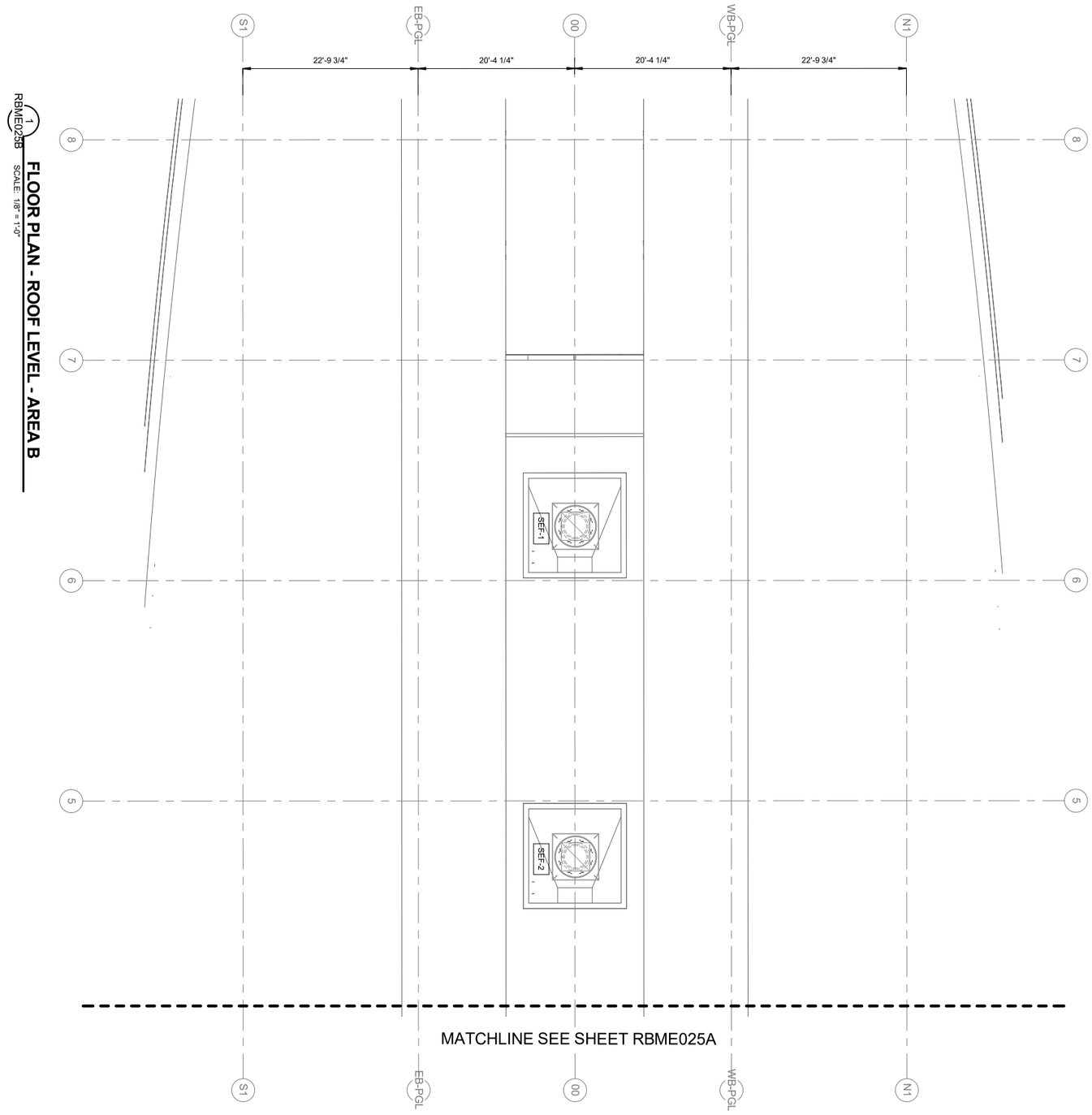
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Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - ROOF LEVEL - AREA A

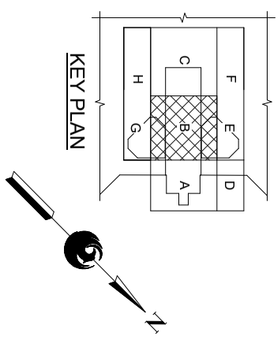
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Project Number: ######
7/11/2018 4:11:18 PM



1 RBME025B
FLOOR PLAN - ROOF LEVEL - AREA B
SCALE: 1/8" = 1'-0"

KEY PLAN



SHEET NOTES

1. ALL NEW EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. THE INSTALLED MECHANICAL EQUIPMENT AND APPLIANCES SHALL BE ACCESSIBLE, AND CLEARANCES SHALL BE MAINTAINED TO ALLOW FOR NORMAL OPERATION AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION.

Package: **B04 - RBME025B**
Sheet Reference No: V6 - 024 of 260

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
FLOOR PLAN - ROOF LEVEL - AREA B

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

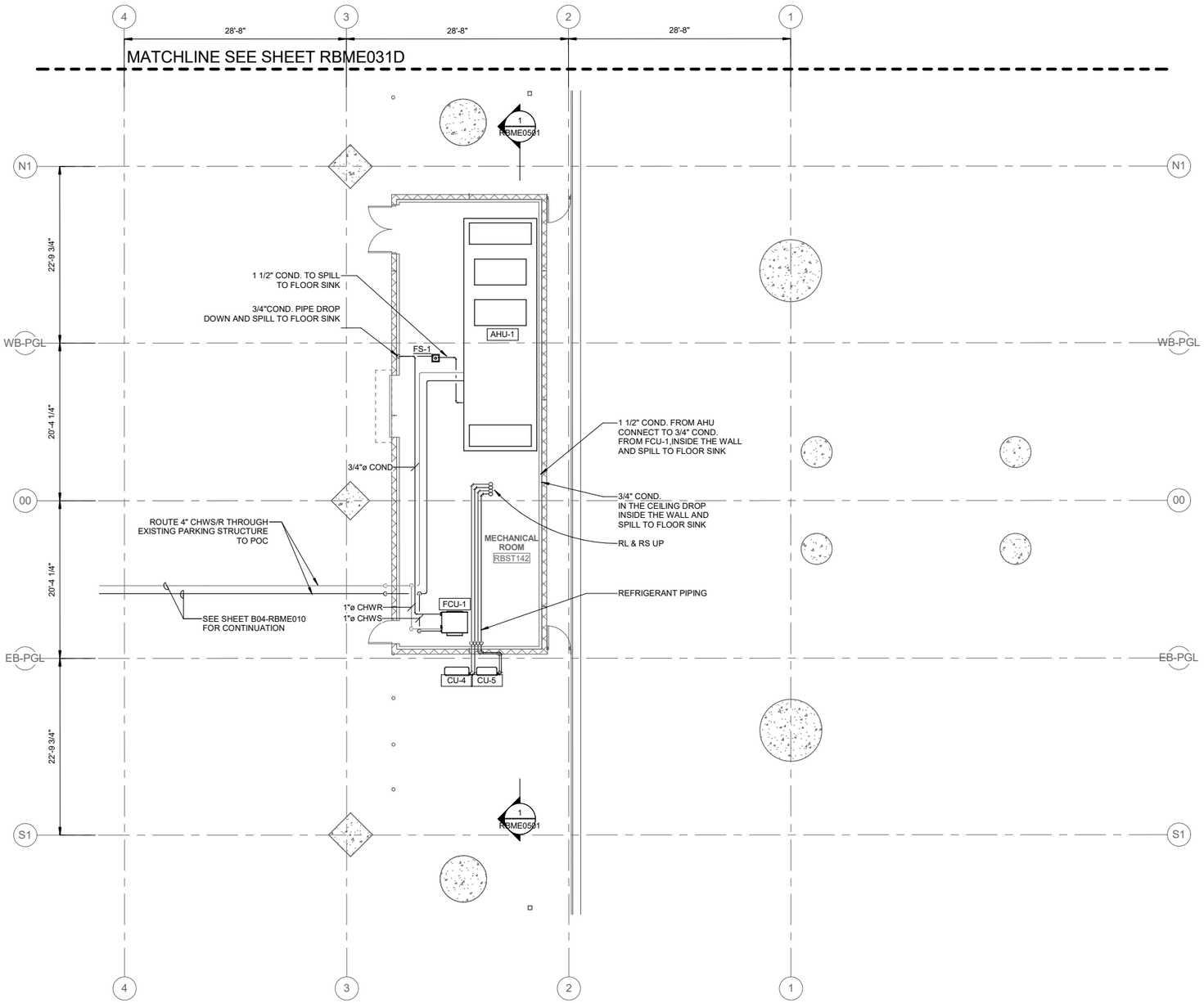
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer (Retired)
CERTIFICATE NO.
66328
HITEN
SHETH
Date Signed
ARIZONA, U.S.A.
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

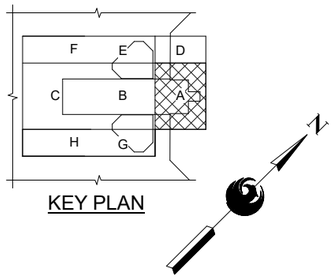


1 RBME031A **PIPING PLAN - LEVEL 1 - AREA A**
SCALE: 1/8" = 1'-0"

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

SHEET NOTES

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3. CONFIRM FINAL REFRIGERANT PIPE SIZING WITH MANUFACTURER UPON DETERMINATION OF ACTUAL DEVELOPED LENGTH. ALL PIP MATERIALS SHALL BE PER MANUFACTURER'S RECOMMENDATION.
4. INSULATE ALL REFRIGERANT PIPING.



KEY PLAN

Registered Professional Engineer (Mechanical)
CERTIFICATE NO.
65328
HITEN SHETH
Date Signed
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

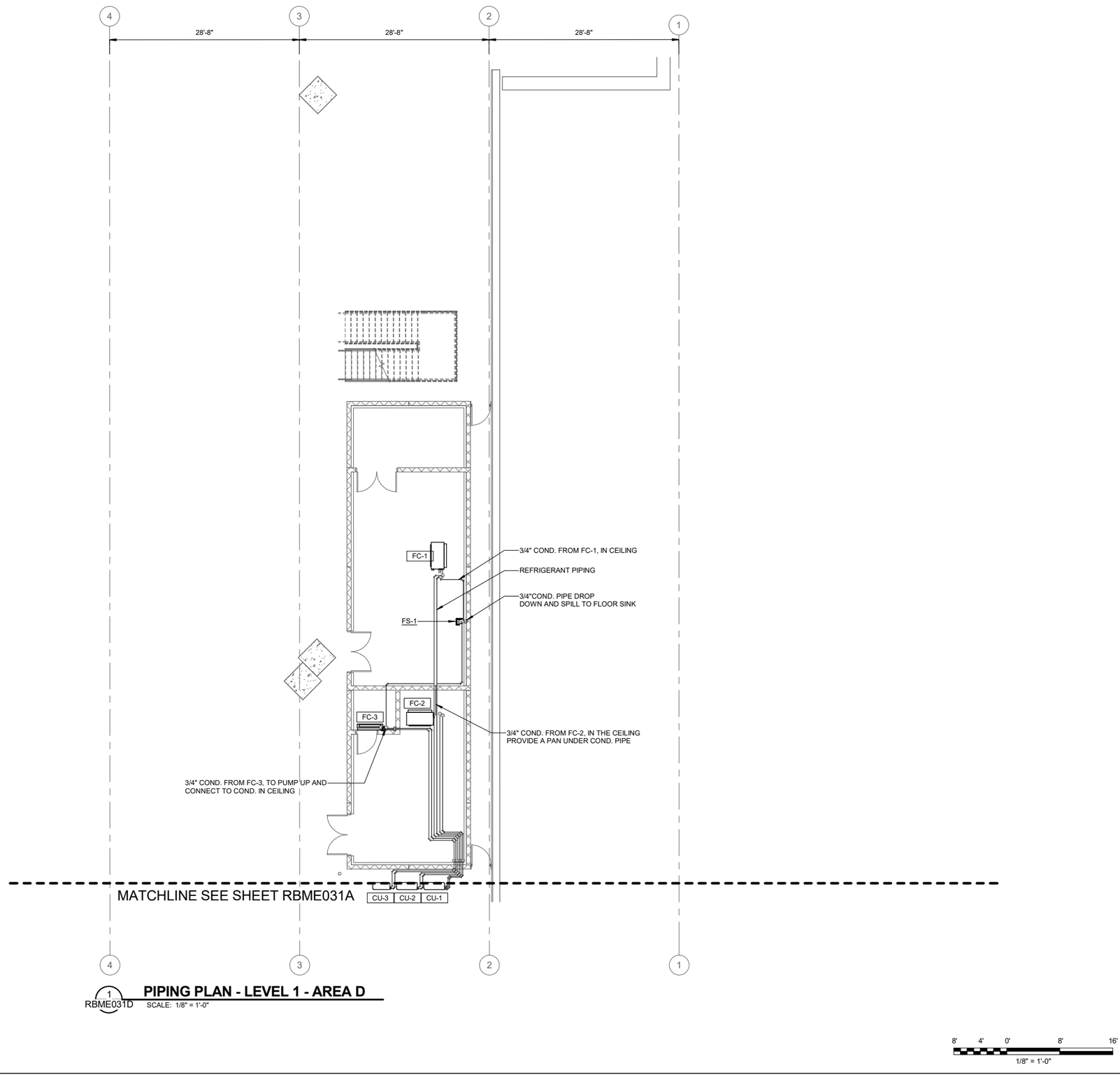
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Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
PIPING PLAN - LEVEL 1 - AREA A

Package: **B04 - RBME031A**
Sheet Reference No:
V6 - 025 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCMEX01_R17_A360.rvt
Project Number: ######
7/11/2018 4:11:41 PM



1 RBME031D **PIPING PLAN - LEVEL 1 - AREA D**

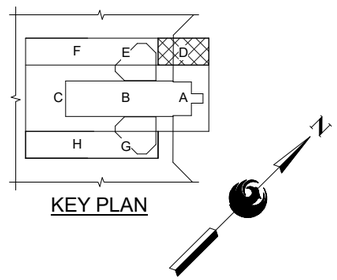
SCALE: 1/8" = 1'-0"

8' 4' 0' 8' 16'

1/8" = 1'-0"

SHEET NOTES

1. ALL NEW EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
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3. CONFIRM FINAL REFRIGERANT PIPE SIZING WITH MANUFACTURER UPON DETERMINATION OF ACTUAL DEVELOPED LENGTH. ALL PIP MATERIALS SHALL BE PER MANUFACTURER'S RECOMMENDATION.
4. INSULATE ALL REFRIGERANT PIPING.



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
#63328
HITEN SHETH
STATE OF ARIZONA
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	DATE
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SUBMITTED FOR REVIEW	04/06/18
ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
PIPING PLAN - LEVEL 1 - AREA D

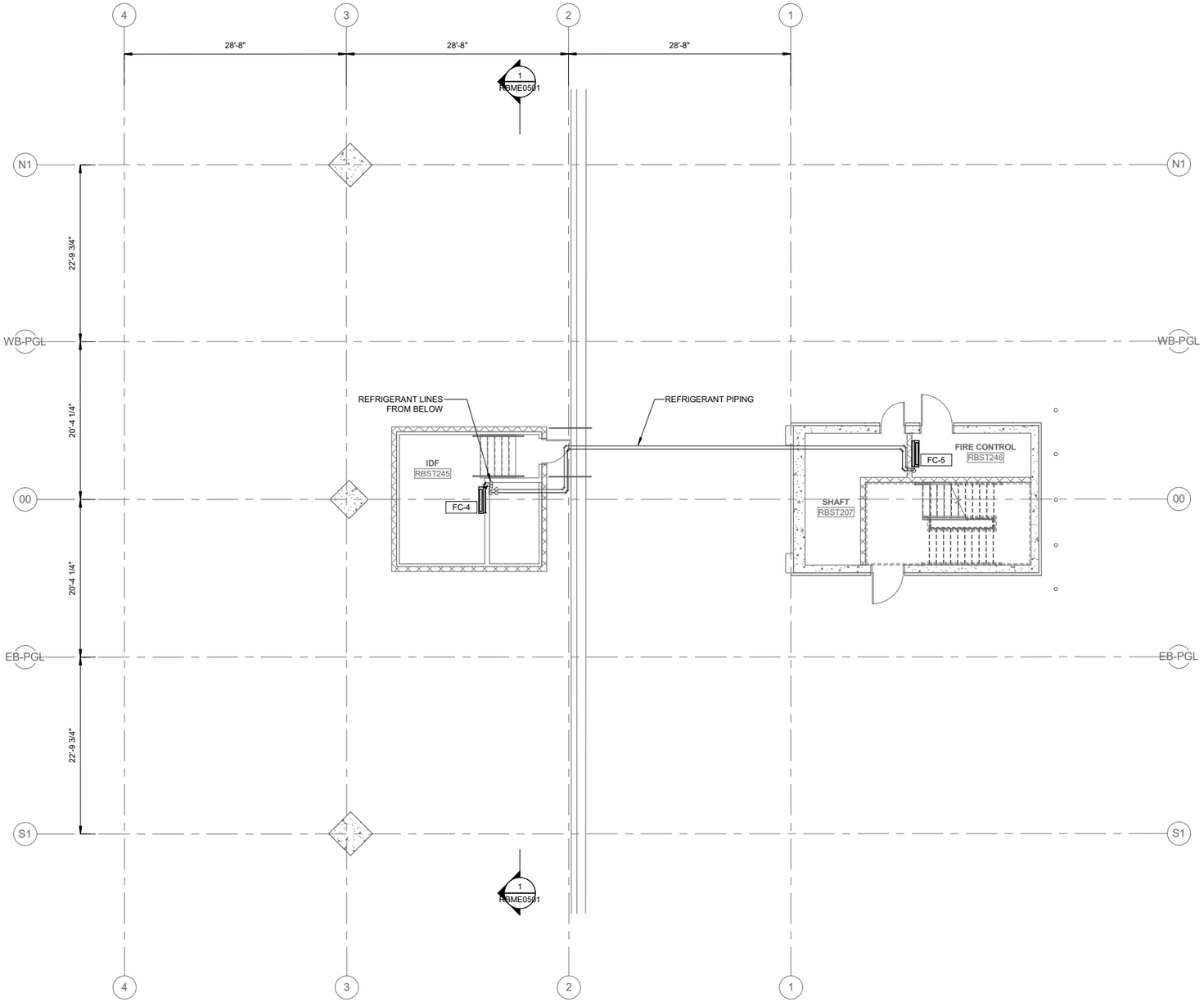
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Sheet Reference No:

V6 - 026 of 260

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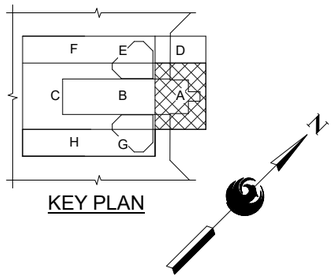


1 RBME032A **PIPING PLAN - LEVEL 2.5 - AREA A**
SCALE: 1/8" = 1'-0"

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

SHEET NOTES

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2. THE INSTALLED MECHANICAL EQUIPMENT AND APPLIANCES SHALL BE ACCESSIBLE, AND CLEARANCES SHALL BE MAINTAINED FOR INSPECTION, SERVICE, REPAIR, AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION.
3. CONFIRM FINAL REFRIGERANT PIPE SIZING WITH MANUFACTURER UPON DETERMINATION OF ACTUAL DEVELOPED LENGTH. ALL PIP MATERIALS SHALL BE PER MANUFACTURER'S RECOMMENDATION.
4. INSULATE ALL REFRIGERANT PIPING.



KEY PLAN

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	SUBMITTED FOR REVIEW	04/06/18

Design Consultant
Gannett Fleming

Design Sub-Consultant

PE 63328 HITEN SHETH
EXPIRES 03/31/20

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

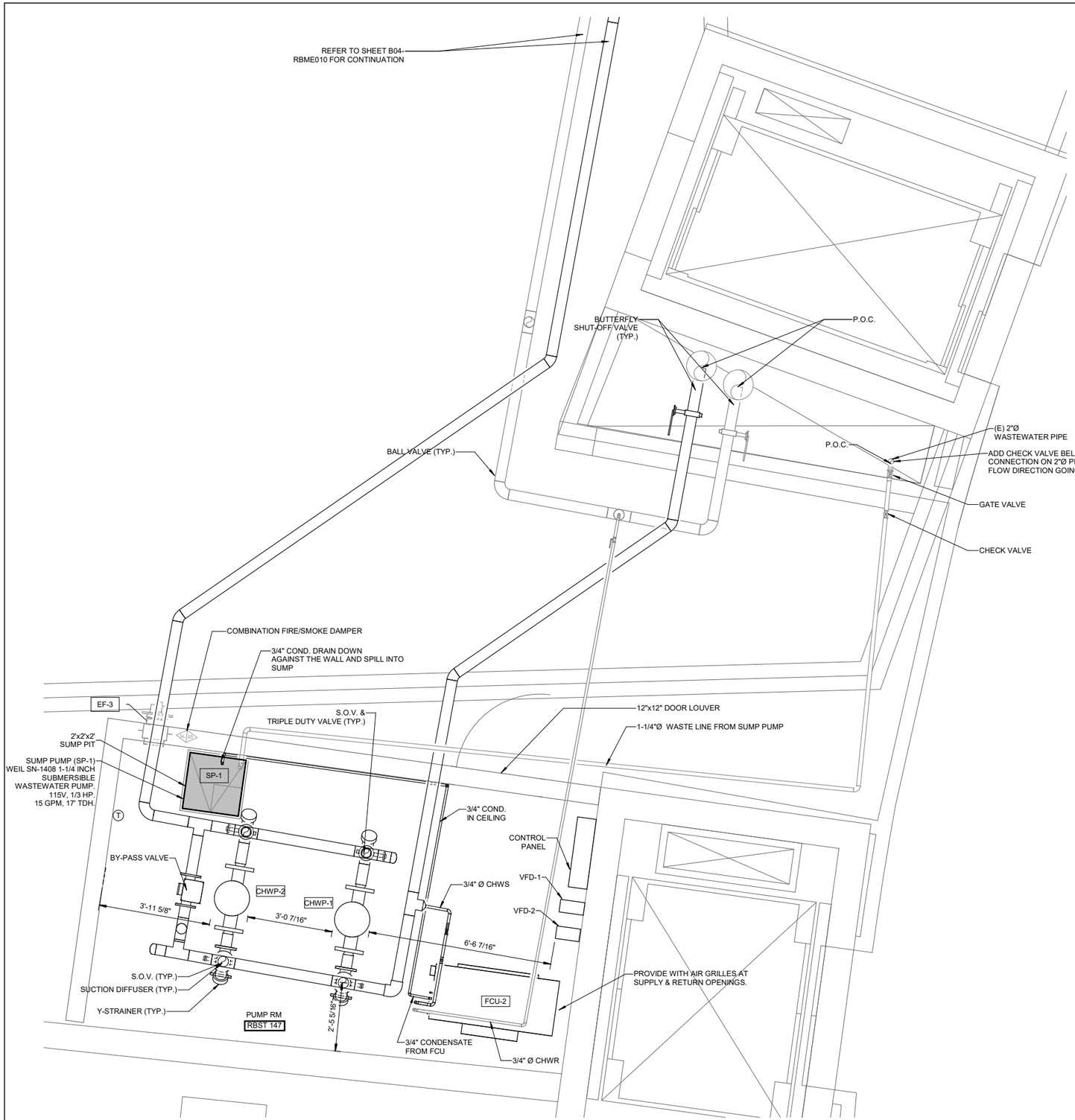
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Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

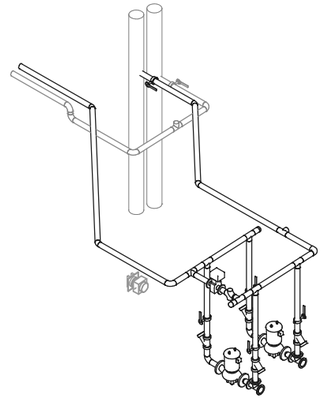
RCC STATION
MECHANICAL
PIPING PLAN - LEVEL 2.5 - AREA A

Package: **B04 - RBME032A**
Sheet Reference No:
V6 - 027 of 260

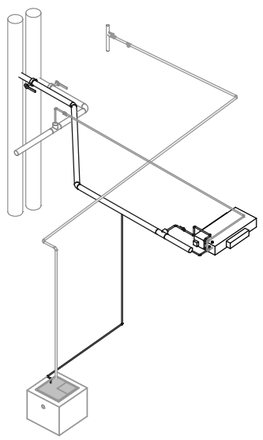
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Project Number: ######
7/11/2018 4:12:03 PM



1 RBME010 **PIPING PLAN - EXISTING BUILDING - PUMP STATION**
SCALE: 1/2" = 1'-0"



2 RBME0401 **PUMP STATION - 3D**
SCALE: NTS



3 RBME0401 **PUMP STATION - FANCOIL - 3D**
SCALE: NTS

SHEET NOTES:

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3. PROVIDE 2 FT. x 2FT. x 2 FT. SUMP PIT AND COVER WITH FLOOR MOUNTED WEIL 1.25-INCH SUBMERSIBLE PUMP 1408 (115/1/60) AT PUMP ROOM - RSBT 147. PROVIDE WEIL SIMPLEX PUMP CONTROL PANEL (8109) (115/1/60), CONTROLS, LEVEL CONTROL AND CONNECT TO BAS FOR STATUS AND ALARM. COORDINATE WITH ELECTRICAL FOR POWER REQUIREMENTS.

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Professional Engineer (Mechanical) 65328 HITEN SHETH EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

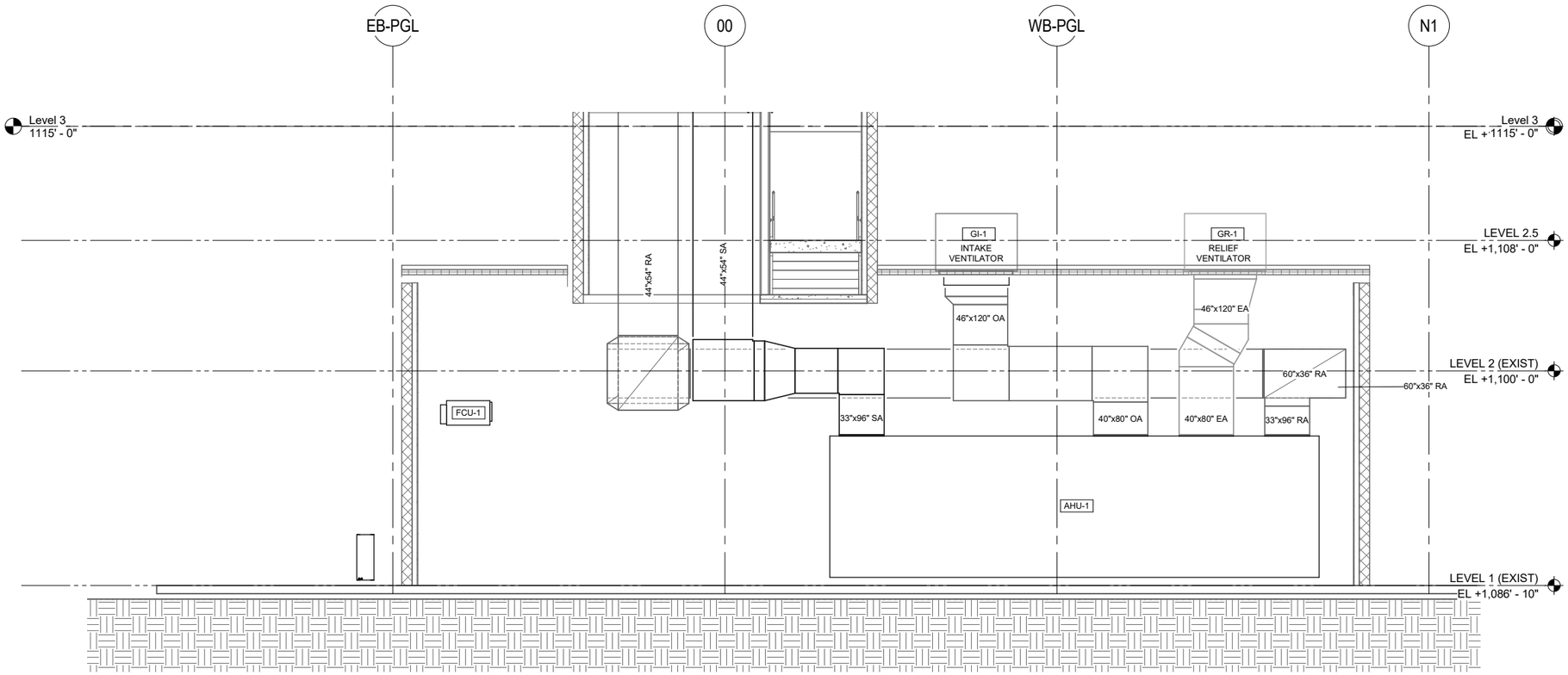
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Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/2" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
ENLARGED PUMP STATION

Package: **B04 - RBME0401**
Sheet Reference No:
V6 - 028 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCMEXX01_R17_A360.rvt
Project Number: ######
7/11/2018 4:12:17 PM



1 RBME0501 **MECHANICAL AHU SECTION**
SCALE: NTS

ARIZONA STATE OF
HITEN SHETH
65328
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	DATE
REVISIONS / SUBMISSIONS	
SUBMITTED FOR REVIEW	04/06/18
ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
SECTIONS

Package: **B04 - RBME0501**
Sheet Reference No:
V6 - 029 of 260

Project Number: ######
7/11/2018 4:12:28 PM
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCMEXX01_R17_A360.rvt

AIR HANDLING UNIT SCHEDULE

MARK	AIRFLOW (CFM)	MIN. OA (CFM)	MAX. OA (DCV) (CFM)	SUPPLY FAN			RETURN FAN			CHILLED WATER COIL										ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
				FAN HP	FAN QTY.	ESP (IN WC)	FAN HP	FAN QTY.	ESP (IN WC)	TOTAL MBH	SENSIBLE MBH	EA DB (F)	EA WB (F)	LA DB (F)	LA WB (F)	EWT (F)	LWT (F)	GPM	MAX WPD (FT H20)	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
AHU-1	26250	2000	4500	10.0	6	4.50	5	4	1.15	1027.30	689.40	80.00	67.00	54.30	53.90	42	56	147.0	12.10	460	3	60	ENERGY LABS INC	C104113-FC-L	22900	

NOTES:
1. CUSTOM-BUILT MODULAR AIR HANDLING UNIT.
2. SOUND POWER LEVEL DATA SHALL BE IN ACCORDANCE WITH CURRENT AMCA STANDARDS.
3. N+1 REDUNDANCY FOR BOTH SUPPLY & RETURN AIR FANS.
4. FANWALL TECHNOLOGY ON SUPPLY AND RETURN AIR FANS.
5. AIRSIDE ECONOMIZER. FACTORY INSTALLED EBTRON AIR FLOW MEASUREMENT STATIONS FOR OUTSIDE AIR & EXHAUST AIR; AND SUPPLY & RETURN FANS AIR FLOW MONITORS.
6. PROVIDE FACTORY INSTALLED ABB VFD ON THE UNIT. PROVIDE ONE VFD FOR EACH FAN MOTOR.
7. CHILLED WATER COIL: MAXIMUM FACE VELOCITY OF 400 FPM; MAXIMUM AIR PRESSURE DROP = 0.55" W.C.; 5/8" O.D. COPPER TUBES.
8. STAINLESS STEEL DRAIN PAN.
9. STANDARD SIZE FILTERS, 2" THICK CLASS 2 MERV 8 PRIMARY FILTERS, 12" THICK CLASS 2 MERV 13 SECONDARY FILTERS.
10. FACTORY INSTALLED GLOBAL PLASMA SOLUTIONS (GPS) AIR PURIFICATION SYSTEM (GPS-IMOD). CONNECT TO BAS SYSTEM TO MONITOR STATUS AND PROVIDE ALRAM.
11. PROVIDE BELIMO ENERGY VALVE FOR CHILLED WATER COIL.
12. UNLESS NOTED OTHERWISE, ALL CONTROLS, SENSORS AND DEVICES TO BE PROVIDED BY CONTROLS CONTRACTOR.
13. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

SMOKE EXHAUST FAN SCHEDULE

MARK	AIRFLOW (CFM)	ESP (IN WC)	FAN HP	FAN RPM	DRIVE TYPE	FAN TYPE	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
							VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
SEF-1	13750	1.20	7.5	556	Belt	Upblast Centrifugal	460	3	60	Greenheck	CUBE-420-75	488	1
SEF-2	13750	1.20	7.5	556	Belt	Upblast Centrifugal	460	3	60	Greenheck	CUBE-420-75	488	1
SEF-3	13750	1.20	7.5	556	Belt	Upblast Centrifugal	460	3	60	Greenheck	CUBE-420-75	488	1
SEF-4	13750	1.20	7.5	556	Belt	Upblast Centrifugal	460	3	60	Greenheck	CUBE-420-75	488	1

NOTES:
1. PROVIDE WITH MINIMUM 12" TALL ADJUSTABLE FACTORY ROOF CURB.
2. UL LISTED AS POWER VENTS FOR SMOKE CONTROL SYSTEMS.
3. NEMA PREMIUM EFFICIENT MOTOR.
4. DUAL DRIVES.
5. INTERLOCK FAN WITH SMOKE CONTROL PANEL LOCATED IN XXX ROOM.
6. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

CEILING FAN SCHEDULE

MARK	BLADE DIA (FT)	AIRFOIL CLEARANCE - CEILING (FT)	AIRFOIL CLEARANCE - SIDES (FT)	FAN HP	MCA	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
						VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
CF-1	12	5	2	1.05	2.3	460	3	60	MACROAIR	AIRVOLUTION-D 550	162	GEARLESS DIRECT DRIVE
CF-2	12	5	2	1.05	2.3	460	3	60	MACROAIR	AIRVOLUTION-D 550	162	GEARLESS DIRECT DRIVE
CF-3	12	5	2	1.05	2.3	460	3	60	MACROAIR	AIRVOLUTION-D 550	162	GEARLESS DIRECT DRIVE
CF-4	12	5	2	1.05	2.3	460	3	60	MACROAIR	AIRVOLUTION-D 550	162	GEARLESS DIRECT DRIVE
CF-5	12	5	2	1.05	2.3	460	3	60	MACROAIR	AIRVOLUTION-D 550	162	GEARLESS DIRECT DRIVE
CF-6	12	5	2	1.05	2.3	460	3	60	MACROAIR	AIRVOLUTION-D 550	162	GEARLESS DIRECT DRIVE

NOTES:
1. CLEARCOAT EXTRUDED ANODIZED ALUMINUM AIRFOIL BLADES, GEARLESS DIRECT DRIVE, RATED FOR OUTDOOR USE
2. OPERATING TEMPERATURE RANGE: 16 ºF - 140 ºF; 50,000-HOUR WARRANTY
3. PROVIDE WITH SAFETY CABLE, UNIVERSAL MOUNT WITH I-BEAM HARDWARE KIT, MOUNTING BOLT KITS, 4-GUY WIRE ASSEMBLEY FOR EACH FAN, BLADE RETAINER LINKS AND REQUIRED ACCESSORIES.
4. ~~PROVIDE AIRLINK BACNET CONTROLS TO INTEGRATE WITH BAS~~
5. PROVIDE CONTROLS AND CONNECT TO FIRE ALARM SYSTEM TO SHUT DOWN WHEN FIRE ALARM SYSTEM IS ACTIVATED PER CITY OF PHOENIX FIRE DEPARTMENT REQUIREMENTS, NFPA 13, SECTIONS 11.1.7 & 12.1.4.
6. INSTALL PER MANUFACTURER'S SPECIFICATIONS

1

ELECTRIC DUCT HEATER SCHEDULE

MARK	KW	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
		VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
EDH-1	200	480	3	60	INDEECO	QUZ SERIES	N.A.	

NOTES:
1. FINNED TUBULAR ELECTRIC DUCT HEATER.
2. UL LISTED UNDER REFERENCE E23192 & E53412.
3. CONTROL PANEL, SCR FULLY MODULATING CONTROLS, STEP CONTROLLER.
4. INSTALLATION FLANGES, STAINLESS STEEL HEATING ELEMENT, AUTOMATIC AND MANUAL THERMAL CUT-OFF, ZERO CLEARANCE TO COMBUSTIBLES INSTALLATION, INSULATED TERMINAL BOX, POSITIVE AIRFLOW SWITCH, AIRFLOW DIRECTING SWITCH, LOW TEMPERATURE LIMIT.
5. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

CHILLED WATER FAN COIL UNIT SCHEDULE

MARK	AREA SERVED	AIRFLOW (CFM)	E.S.P. (IN WG)	CHILLED WATER COIL								ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
				TOTAL BTU/H	SENS. BTU/H	EA DB (F)	EA WB (F)	EWT (F)	LWT (F)	GPM	WPD (FT H2O)	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
FCU-1	MECHANICAL ROOM RBST 142	800	0.31	24197.00	18759.00	80.0	67.0	42	56	3.4	1.80	230	1	60	IEC	HXY10	84	
FCU-2	PUMP RM RBST 147	300	0.30	11816.00	8293.00	80.0	67.0	42	56	1.7	2.40	230	1	60	IEC	CXB06	84	

NOTES:
1. HORIZONTAL SUPPLY AND RETURN CONFIGURATION.
2. 2" MERV 11 FILTERS WITH A STANDARD FILTER RACK; CLOGGED FILTER SWITCH.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

EXHAUST FAN SCHEDULE

MARK	AIRFLOW (CFM)	ESP (IN WC)	FAN HP	FAN RPM	DRIVE TYPE	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
						VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
EF-1	160	0.30	0.5	1378	DIRECT	115	1	60	GREENHECK	G-070-VG	35	ROOF MOUNTED
EF-2	100	0.50	0.12	950	DIRECT	115	1	60	GREENHECK	CSP-B110	11	CEILING MOUNTED
EF-3	100	0.10	0.25	651	DIRECT	115	1	60	GREENHECK	AER-E20C-305-VG	53	WALL MOUNTED

NOTES:
1. PROVIDE WITH MINIMUM 12" TALL ADJUSTABLE FACTORY ROOF CURB & BACKDRAFT DAMPER FOR EF-1.
2. EXHAUST FAN SERVING UPS ROOM SHALL BE PROVIDED CONTROLS AND CONNECTED TO FIRE ALARM SYSTEM TO ACTIVATE VISIBLE AND AUDIBLE ALARM SYSTEM PER IMC 502.4.3 IF THE FAN IS INOPERABLE.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

Design Consultant
Gannett Fleming

Design Sub-Consultant

ARIZONA
66328
HITEN
SHETH
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 03/31/20

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
1	PDD COMMENTS	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
EQUIPMENT SCHEDULES

Package: B04 - RBME0801
Sheet Reference No: V6 - 030 of 260

Local File:BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCMEX00 1_R17_A360.rvt
Project Number: ######
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VARIABLE FREQUENCY DRIVE SCHEDULE

MARK	SERVING	ELECTRICAL DATA				BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS.)	REMARKS
		HP	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
VFD-1	CHWP-1	5	480	3	60	ABB	ACH550-VCR-08A8-4	N.A.	
VFD-2	CHWP-2	5	480	3	60	ABB	ACH550-VCR-08A8-4	N.A.	

NOTES:
1. PROVIDE WITH E-CLIPSE BY-PASS, CIRCUIT BREAKER AND NEMA 1 ENCLOSURE.
2. COMPATIBLE WITH BACNET PROTOCOL.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

PUMP SCHEDULE

Mark	GPM	FT HEAD	NPSH	RPM	PUMP HP	PUMP TYPE	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS.)	REMARKS
							VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
CHWP-1	155	46	3.7	1200	5	In-Line Centrifugal	460	3	60	Bell & Gossett	e-80 3x3x11B	355	
CHWP-2	155	46	3.7	1200	5	In-Line Centrifugal	460	3	60	Bell & Gossett	e-80 3x3x11B	355	

NOTES:
1. PROVIDE SHUT-OFF VALVE, LOW PRESSURE DROP STRAINER AND SUCTION DIFFUSER PRIOR TO INLET OF PUMP.
2. PROVIDE TRIPLE DUTY VALVE AND SHUT-OFF VALVE AT UPSTREAM OF PUMP.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

DX FAN COIL SCHEDULE

MARK	AREA SERVED	AIRFLOW (CFM)	RATED COOLING CAPACITY BTU/H	TYPE	REMOTE CONDENSER UNIT	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS.)	REMARKS
						VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
FC-1	ATC ROOM RBST 140 , UPS ROOM RBST 146	1801	54000.00	DUCTED	ARUN060GSS4	208	1	60	LG	ARNU543BRA4	112	
FC-2	ELECTRICAL ROOM RBST 141	1582	48100.00	DUCTED	ARUN060GSS4	208	1	60	LG	ARNU543BRA4	112	
FC-3	ATS ROOM RBST 143	622	18200.00	WALL-MOUNTED	LSU180HSV4	208	1	60	LG	LSN180HSV4	31	
FC-4	IDF ROOM RBST 245	494	24200.00	WALL-MOUNTED	ARUN024GSS4	208	1	60	LG	ARNU243SCL4	31	
FC-5	FIRE CONTROL RBST 246	622	18200.00	WALL-MOUNTED	LSU180HSV4	208	1	60	LG	LSN180HSV4	31	

NOTES:
1. PROVIDE WITH WALL-MOUNTED STANDALONE 7-DAY PROGRAMMABLE WIRED CONTROLLER WITH DISPLAY AND CONTROLS KIT FOR DX WALL-MOUNTED DUCTLESS FAN COIL UNITS.
2. PROVIDE ADDITIONAL TEMPERATURE SENSOR AND CONTROLS TO MONITOR & ALARM FOR DX WALL-MOUNTED DUCTLESS FAN COIL UNITS.
3. PROVIDE TEMPERATURE SENSOR WITH DISPLAY AND CONTROLS FOR DUCTED FAN COIL UNITS AND INTEGRATE INTO BAS SYSTEM.
4. DX FAN COIL UNITS SERVING IDF ROOMS, ELEVATOR CONTROL ROOMS, AND ELEVATOR SHAFTS SHALL BE ON EMERGENCY POWER.
5. PROVIDE CONDENSATE PUMPS FOR FC AS NEEDED. COORDINATE WITH ELECTRICL FOR POWER REQUIREMENT.
6. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

AIR COOLED CONDENSING UNIT SCHEDULE

MARK	RATED COOLING CAPACITY BTU/H	ELECTRICAL DATA				BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
		VOLTS	PHASE	HERTZ	MOP	MANUFACTURER	MODEL		
CU-1	60000.00	208	1	60	40	LG	ARUN060GSS4	260	
CU-2	48000.00	208	1	60	50	LG	ARUN048GSS4	207	
CU-3	18200.00	208	1	60	25	LG	LSU180HSV4	121	
CU-4	24000.00	208	1	60	30	LG	ARUN024GSS4	159	
CU-5	22000.00	208	1	60	25	LG	LSU180HSV4	125	

NOTES:
1. R-410A REFRIGERANT.
2. AMBIENT DB TEMP = 115 F.
3. PROVIDE WITH COMPRESSOR SHORT CYCLE PROTECTOR, COIL GUARDS, THERMOSTATIC EXPANSION VALVE, CRANKCASE HEATER & LOW AMBIENT CONTROL KIT.
4. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS BASED ON THE ACTUAL FILED ROUTING.
5. ALL MECHANICAL AIR CONDITIONING EQUIPMENT TO HAVE A MINIMUM EER RATING PER 2012 IECC, TABLE C403.2.3. SUBMIT MECHANICAL AIR CONDITIONING EQUIPMENT TO OWNER OR ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDER.
6. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

GRAVITY VENTILATOR SCHEDULE

MARK	AIRFLOW (CFM)	AIR P.D. (IN WC)	THROAT SIZE (WxL)	OUTSIDE DIMENSIONS (W x L x H)	BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
					MANUFACTURER	MODEL		
GI-1	26250	0.065	60"x120"	74" x 134" x 46"	GREENHECK	WIH	450	
GR-1	26250	0.059	60"x120"	74" x 134" x 46"	GREENHECK	WRH	450	

NOTES:
1. PROVIDE WITH MINIMUM 12" TALL ADJUSTABLE ROOF CURB.
2. TO BE ASSEMBLED IN THE FIELD.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

Mark	DESCRIPTION	REMARKS AND DIRECTION OF FLOW	NOISE CRITERIA	MANUFACTURER	MODEL	COMMENTS
D1	SQUARE CEILING DIFFUSER	24"x24" SUPPLY MODULE WITH 10" Ø NECK		TITUS		
D2	SQUARE CEILING DIFFUSER	24"x24" EXHAUST MODULE WITH 10" Ø NECK		TITUS		
D3	SQUARE CEILING DIFFUSER	24"x24" RETURN MODULE WITH 10" Ø NECK		TITUS		
D4	SQUARE CEILING DIFFUSER	24"x24" RETURN MODULE WITH 14" Ø NECK		TITUS		
D5	ROUND CEILING DIFFUSER	14" Ø ROUND DIFFUSER WITH 14" Ø NECK		TITUS		

REGISTERED PROFESSIONAL ENGINEER (MECHANICAL)
65328
HITEN SHETH
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
EQUIPMENT SCHEDULES

Package: B04 - RBME0802

Sheet Reference No: V6 - 031 of 260

Project Number: ######
7/11/2018 4:12:53 PM
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ROOM NAME	ROOM NO.	AREA	2012 IMC Table 403.3						REMARK
			OCCUPANT CLASSIFICATION	OCCUPANT DENSITY	OCCUPANT	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE	BREATHING ZONE OUTDOOR AIRFLOW	
		SQ. FT.		# / 1000 SQ. FT.	#	CFM / PERSON	CFM / SQ. FT.		
BOARD PLATFORM	401	5540	TRANSPORTATION WAITING	100	554	7.5	0.06	4487	
							TOTAL REQUIRED OUTDOOR AIRFLOW :	4487	

NOTE:
1. THE CALCULATED REQUIRED OUTSIDE AIR AMOUNT IS 4,490 CFM. THE SPECIFIED OUTSIDE AIR FOR AHU-1 IS 4500 CFM WHICH COMPLIES WITH 2012 IMC 403.3, TABLE 403.3.

SUMMARY OF COOLING LOAD

CALCULATED COOLING LOAD:	COMBINED AHU COOLING CAPACITY:
TOTAL (MBH): 912	TOTAL (MBH): 1,027

NOTES:
1. COOLING LOAD IS CALCULATED UTILIZING TRACE 700 (VER.6.3.3.1.S) WITH THE ENVELOPE, LIGHTING, VENTILATION, AND OCCUPANCY PARAMETERS SPECIFIED BY THE ARCHITECT.
2. THE COMBINED COOLING CAPACITY OF THE PROPOSED AIR HANDLING UNIT IS LESS THAN 15% OF THE CALCULATED COOLING LOADS.

1

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EXPIRES 03/31/20
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Design Consultant
Gannett Fleming

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1	PDD COMMENTS	07/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

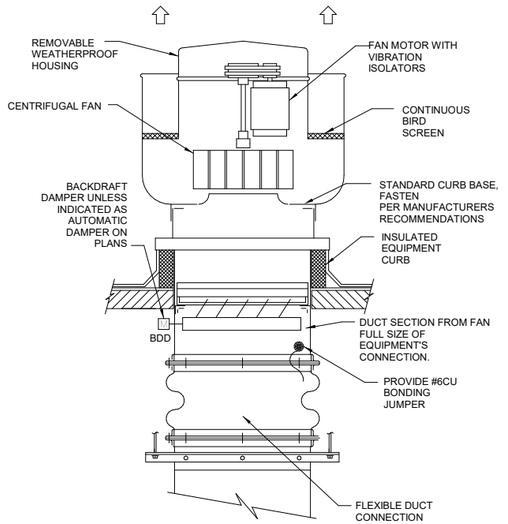
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL
EQUIPMENT SCHEDULES

Designed by:	HL
Drawn by:	AP
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Date:	07/13/2018
Dwg scale:	
CIP No.:	AV100000011
KIVA No.:	07-5204

Package: **B04 - RBME0803**
Sheet Reference No:
V6 - 032 of 260

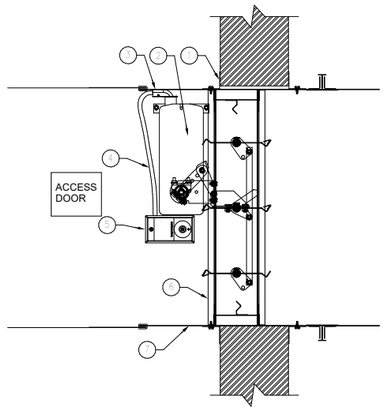
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6 ROOF MOUNTED UPBLAST FAN DETAIL

SCALE: NTS

POTTORFF
FD-140 OR FSD-142



KEYNOTES:

1. SINGLE-SIDED OR CONVENTIONAL RETAINING ANGLE.
2. ACTUATOR
3. SLEEVE OR DUCT CONNECTION
4. ELECTRICAL FLEX CONDUIT
5. HS-10 ONE TEMPERATURE MANUALLY RE-SETTABLE LINK
6. FD-140 SERIES FIRE DAMPER OR FSD-142 SERIES COMBINATION FIRE SMOKE DAMPER
7. DAMPER SLEEVE
8. UL555 & UL555S LISTING #: R11767

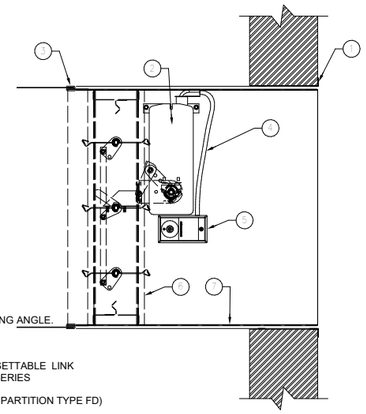
NOTES:

1. BOTH INSIDE & OUTSIDE OF FIRE DAMPER SLEEVE SHALL BE COATED WITH INTUMESCENT MASTIC TO THE CENTERLINE OF THE FIRE DAMPER.
2. COORDINATE CEILING ACCESS DOORS & DAMPER ACCESS DOORS AS REQUIRED FOR ACCESS TO DAMPERS.
3. FIRE DAMPER ASSEMBLIES INCLUDING SLEEVES AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.
4. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL.
5. COORDINATE INTERLOCK WITH ELECTRICAL ENGINEER.
6. UPON SMOKE DETECTION THE SYSTEM SHALL BE SHUT DOWN.

4 FIRE & COMBINATION FIRE/SMOKE DAMPER DETAIL

SCALE: NTS

POTTORFF
FD-140-OP OR FSD-142-OP



KEYNOTES:

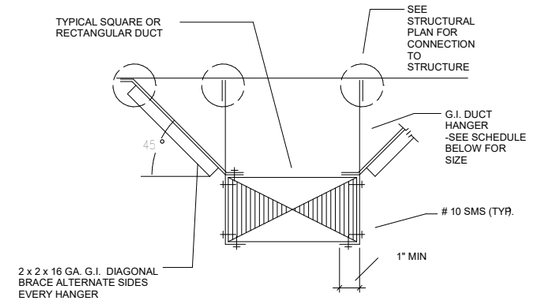
1. SINGLE-SIDED OR CONVENTIONAL RETAINING ANGLE.
2. ACTUATOR
3. SLEEVE OR DUCT CONNECTION
4. ELECTRICAL FLEX CONDUIT
5. HS-10 ONE TEMPERATURE MANUALLY RE-SETTABLE LINK
6. FD-140 SERIES FIRE DAMPER OR FSD-142 SERIES COMBINATION FIRE SMOKE DAMPER
7. DAMPER SLEEVE (THERMAL BLANKET FOR PARTITION TYPE FD)
8. UL555 & UL555S LISTING #: R11767

NOTES:

1. BOTH INSIDE & OUTSIDE OF FIRE DAMPER SLEEVE SHALL BE COATED WITH INTUMESCENT MASTIC TO THE CENTERLINE OF THE FIRE DAMPER.
2. COORDINATE CEILING ACCESS DOORS & DAMPER ACCESS DOORS AS REQUIRED FOR ACCESS TO DAMPERS.
3. FIRE DAMPER ASSEMBLIES INCLUDING SLEEVES AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.
4. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL.
5. UPON SMOKE DETECTION THE SYSTEM SHALL BE SHUT DOWN.

2 COMBINATION FIRE/SMOKE DAMPER (OUT-OF-PARTITION) DETAIL

SCALE: NTS



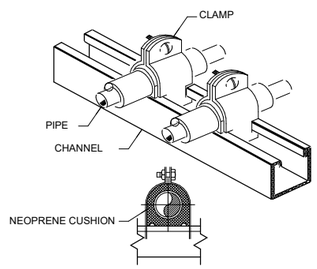
NOTE:

1. WHERE DUCT IS 6 SF. OR LARGER IN CROSS SECTIONAL AREA - USE 2 1/2 x 2 1/2 x 16 GA. VERTICAL ANGLE IN PLACE OF HANGER AT SEISMIC BRACE.

MAX. HALF OF DUCT PERIMETER	MAX. LOAD EACH HANGER	HANGER SIZE	HANGER SPACING
P/2 = 30"	260 LBS	1" x 22 GA.	10'-0" O/C
P/2 = 72"	420 LBS	1" x 18 GA.	10'-0" O/C
P/2 = 96"	700 LBS	1" x 16 GA.	10'-0" O/C
P/2 = 120"	1100 LBS	1 1/2" x 16 GA.	10'-0" O/C

5 RECTANGULAR DUCT HANGING DETAIL

SCALE: NTS

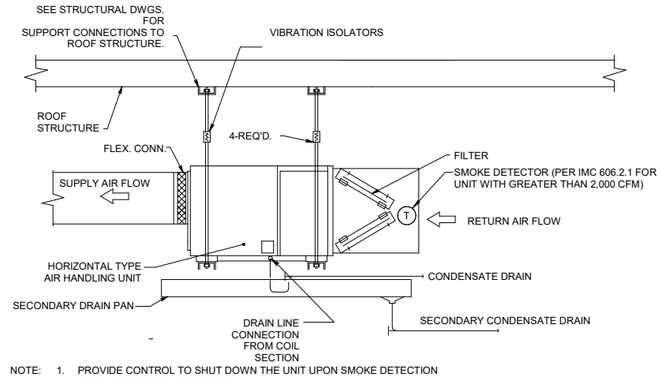


NOTES:

1. USE GRINNELL PS SERIES POWER-STRUT CHANNEL WITH PS1400 PIPE AND CONDUIT CLAMPS OR EQUIVALENT. CLAMPS TO HAVE CAPTIVE MACHINE SCREW/NYLON LOCKNUT AND A THERMOPLASTIC RUBBER INSERT.
2. REFRIGERANT PIPING TO BE SECURED AS NECESSARY TO PREVENT MOVEMENT, VIBRATION, AND NOISE. MAXIMUM DISTANCE BETWEEN ANCHORAGE POINTS = 6'-0".
3. USE GRINNELL SERIES PS 684 BEAM CLAMPS OR EQUIVALENT TO ATTACH CHANNELS TO ROOF/FLOOR SUPPORT BEAMS.
4. USE EXPANSION TYPE FASTENERS APPROVED FOR USE IN BASE MATERIAL FOR ATTACHING CHANNELS TO INTERIOR WALLS.

3 CONDENSATE AND REFRIGERANT PIPE SUPPORT DETAIL

SCALE: NTS



NOTE:
1. PROVIDE CONTROL TO SHUT DOWN THE UNIT UPON SMOKE DETECTION FROM THE SMOKE DETECTOR.
2. PROVIDE CODE APPROVED DUCT SMOKE DETECTOR UPSTREAM OF AIR FILTERS.
3. THE DUCT SMOKE DETECTOR SHALL BE CONNECTED TO FIRE ALARM SYSTEM TO ACTIVATE VISIBLE AND AUDIBLE ALARM UPON SMOKE DETECTION.
4. PROVIDE WALL MOUNTED STAND-ALONE 7 DAY PROGRAMMABLE WIRED CONTROLLER WITH DISPLAY AND CONTROLS KIT.
5. PROVIDE SECONDARY DRAIN PAN.

1 CEILING SUSPENDED FAN COIL UNIT DETAIL

SCALE: NTS

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Designed by: HL
Drawn by: AP
Checked by: HS
Date: 07/13/2018
Dwg scale: NTS
CIP No.: AV10000011
KIVA No.: 07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION MECHANICAL DETAILS

Package: B04 - RBME0805

Sheet Reference No: V6 - 033 of 260

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

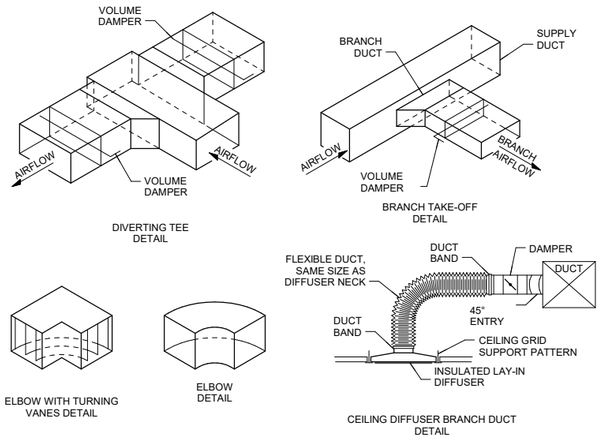
PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Design Consultant
Gannett Fleming

Design Sub-Consultant

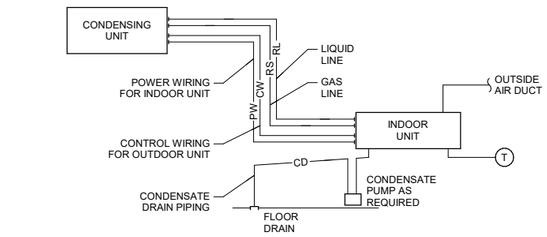
REGISTERED PROFESSIONAL ENGINEER (Mechanical)
66328
HITEN SHETH
EXPIRES 03/31/20

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCMEXX01_R17_A360.rvt
Project Number: ######
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6 TYPICAL DUCT DETAILS

SCALE: NTS

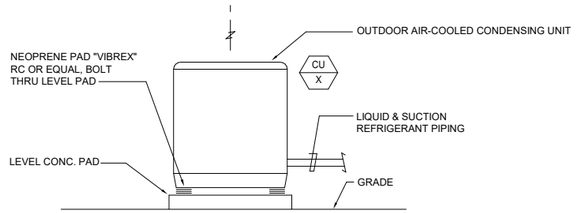


NOTES:

1. INSTALL COPPER TYPE 'ACR' REFRIGERANT PIPING AND ACCESSORIES AS RECOMMENDED BY AND IN ACCORDANCE WITH MFR. AND RECOGNIZED PRACTICES.
2. PIPE SIZES AND CONFIGURATIONS SHALL BE PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
3. INSULATE BOTH REFRIGERANT LINES PER MFR RECOMMENDATIONS. MIN 1/2".
4. ROUTE OUTDOOR CONTROL WIRING WITH, AND SECURE TO, GAS LINE BETWEEN UNITS.
5. INSTALL REFRIGERANT PIPING PARALLEL OR PERPENDICULAR TO THE LINES OF THE BUILDING STRUCTURE ALLOWING A MINIMUM OF FOUR INCHES CLEARANCE TO EXISTING PIPING, EQUIPMENT, AND ELECTRICAL/CONTROL WIRING.

4 SPLIT SYSTEM DETAIL

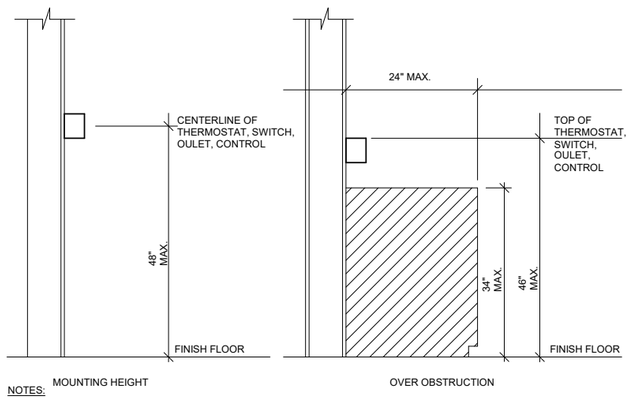
SCALE: NTS



NOTES: 1. COORDINATE CLEARANCES WITH EQUIPMENT MANUFACTURER'S INSTALLATION GUIDELINES.

2 OUTDOOR CONDENSING UNIT MOUNTING DETAIL

SCALE: NTS

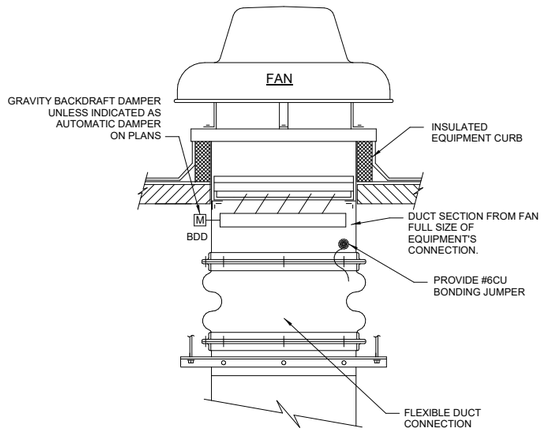


NOTES:

PROVIDE VANDALISM PROTECTION ON ALL THERMOSTATS AND TEMPERATURE TRANSMITTERS BY SAFETY TECHNOLOGY INTERNATIONAL, INC.

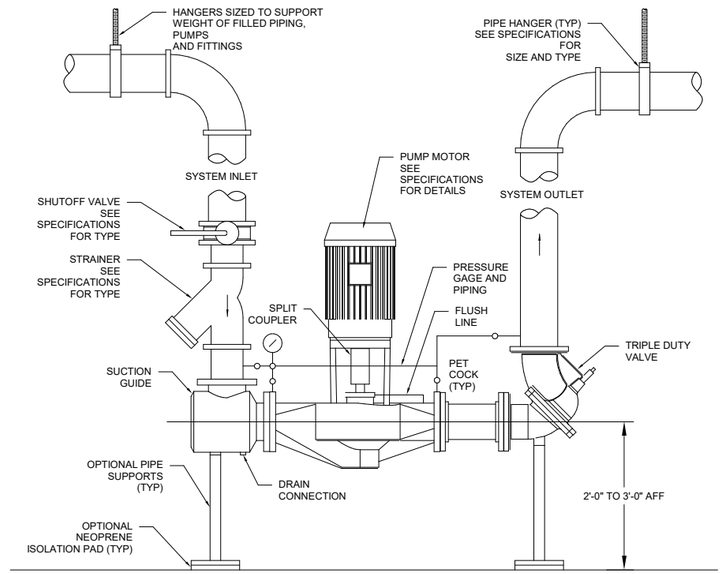
5 THERMOSTAT MOUNTING DETAIL

SCALE: NTS



3 ROOF MOUNTED FAN DETAIL

SCALE: NTS



1 TYPICAL VERTICAL INLINE PUMP INSTALLATION

SCALE: NTS

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#6328
HITEN SHETH
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

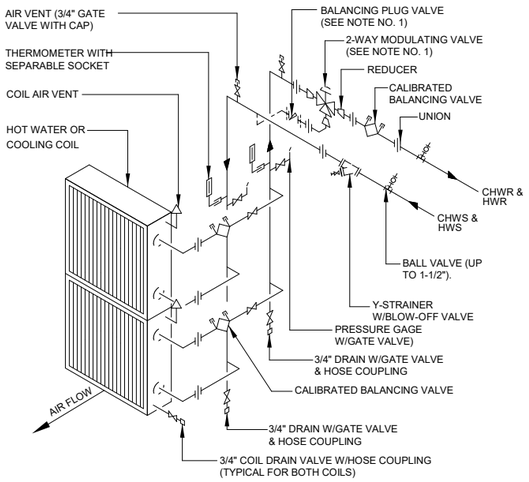
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION MECHANICAL DETAILS

Package: B04 - RBME0806

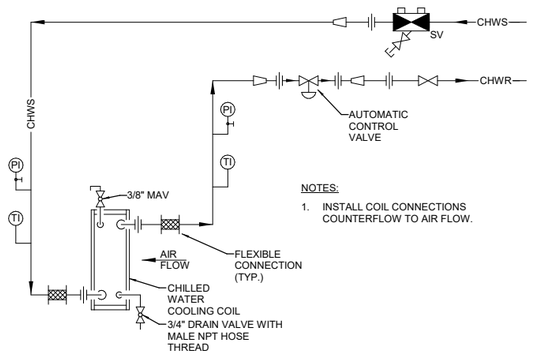
Sheet Reference No: V6 - 034 of 260

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Project Number: ######
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NOTES:
1. WHERE 3-WAY MODULATING VALVES ARE REQUIRED, PROVIDE ADDITIONAL PIPING AND ACCESSORIES AS SHOWN.

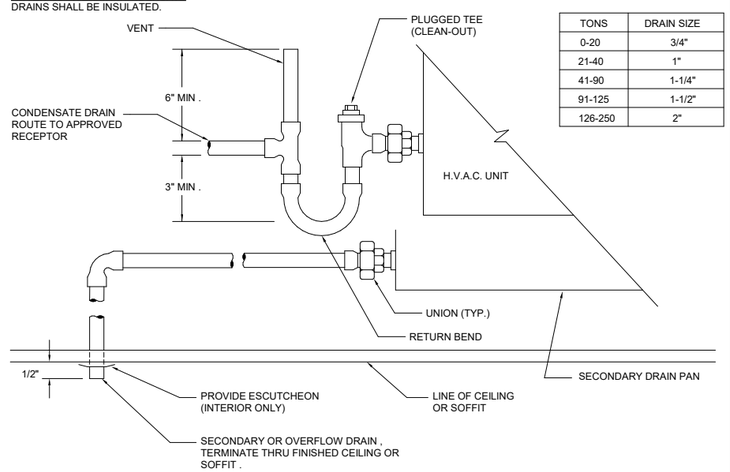
6 CHILLED WATER PIPING DETAIL (AHU)
SCALE: NTS



NOTES:
1. INSTALL COIL CONNECTIONS COUNTERFLOW TO AIR FLOW.

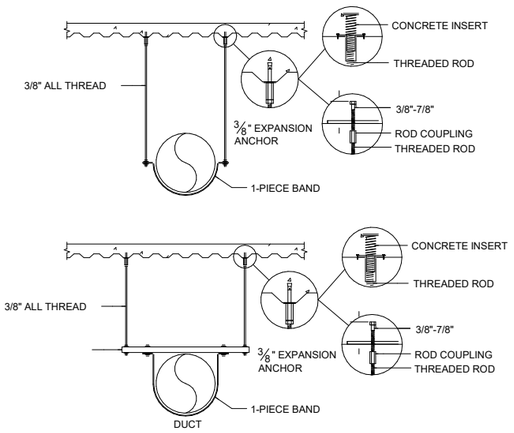
4 CHILLED WATER PIPING DETAIL (FCU)
SCALE: NTS

NOTE: ALL INTERIOR CONDENSATE DRAINS SHALL BE INSULATED.

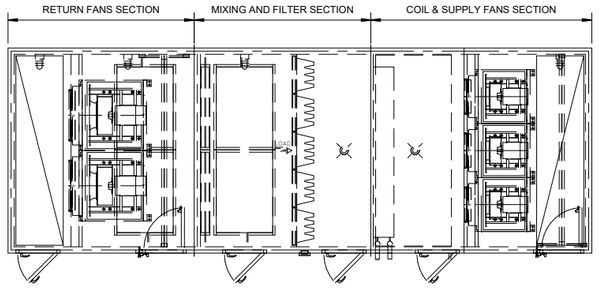


TONS	DRAIN SIZE
0-20	3/4"
21-40	1"
41-90	1-1/4"
91-125	1-1/2"
126-250	2"

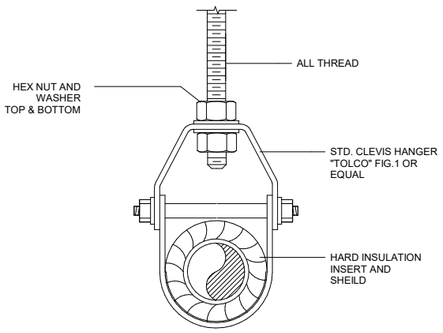
2 CONDENSATE DRAIN DETAIL
SCALE: NTS



5 ROUND DUCT HANGER DETAIL
SCALE: NTS



3 TYPICAL AHU SECTIONS
SCALE: NTS



INSULATED STEEL PIPE 3" THRU 24"

1 HANGER DETAIL (PIPE DIA. 3" THRU 24")
SCALE: NTS

Design Consultant: Gannett Fleming

Design Sub-Consultant

EXPIRES 03/31/20

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

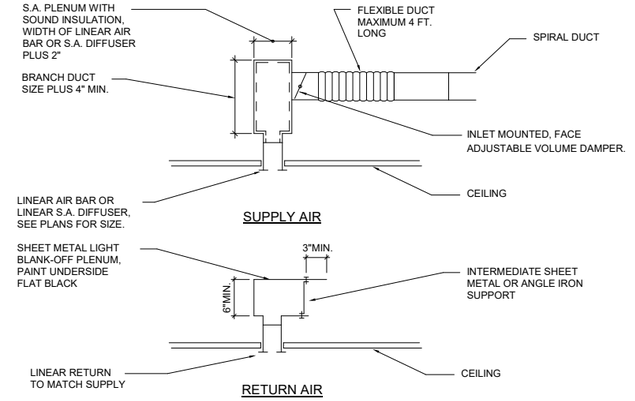
RCC STATION MECHANICAL DETAILS

Package: B04 - RBME0807

Sheet Reference No: V6 - 035 of 260

Project Number: ######
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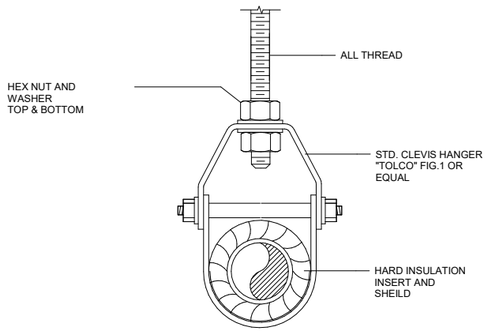


NOTES:

1. FOR EXACT MOUNTING AND INTEGRATION OF LINEAR AIR BAR / DIFFUSER INTO CEILING SYSTEM, SEE ARCH. DWGS.

2 LINEAR DIFFUSER DETAIL

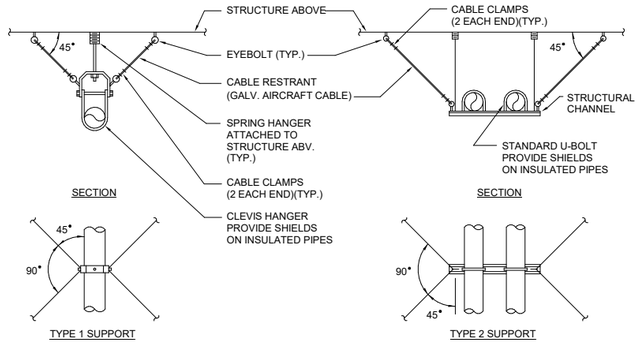
SCALE: NTS



INSULATED COPPER PIPE 3/4" THRU 2-1/2"

3 HANGER DETAIL (PIPE DIA. 3/4" THRU 2-1/2")

SCALE: NTS



NOTES:

1. CABLE SIZE IS DETERMINED ASSUMING TOTAL LOAD ON ONE CABLE .
2. ANCHOR BOLTS ARE KWIK-BOLT CONCRETE INSERTS (OR EQUAL)
3. BOLT SIZE IS DETERMINED ASSUMING TOTAL LOAD ON ONE BOLT OR BOLT GROUP .
4. SIZES SHOWN ARE MINIMUM.
5. CABLE TO BE SLACK & ALLOW 1/4" MOVEMENT BEFORE BECOMING TAUT .
6. TRAPEZE CHANNELS REQUIRE WEB STIFFENERS 1/4" MINIMUM .
7. SUPPORTS TO BE CONSTRUCTED PER SMACNA STANDARDS.

1 PIPE SUPPORT DETAIL

SCALE: NTS

Registered Professional Engineer
STATE OF ARIZONA
66328
HITEN SHETH
Date Signed 7/13/18
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

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CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

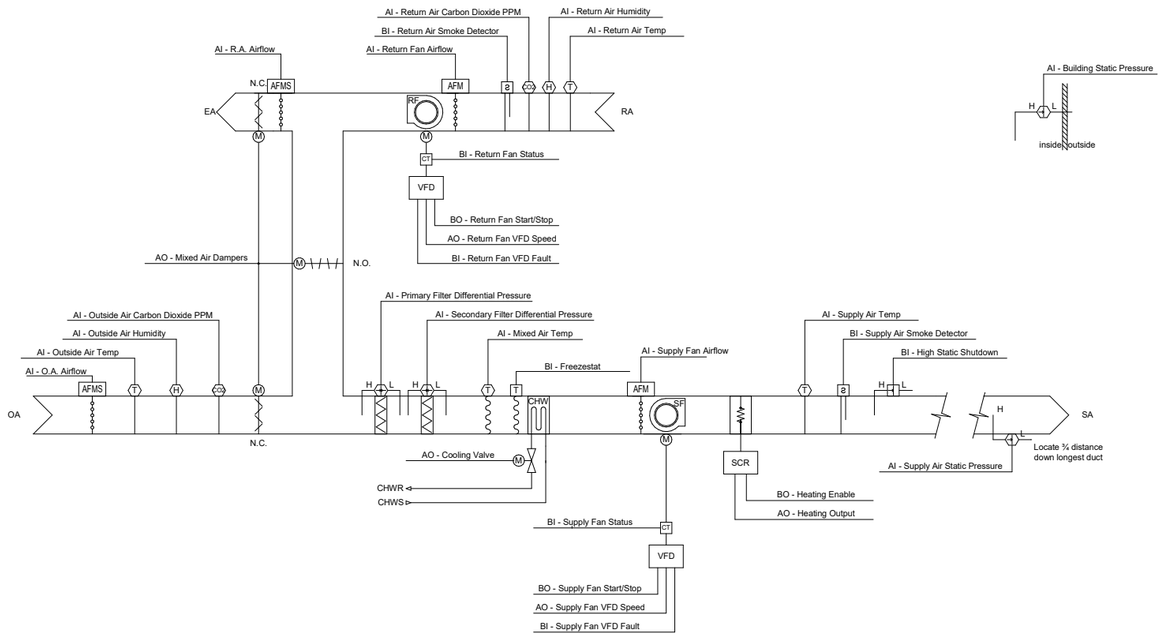
RCC STATION MECHANICAL DETAILS

Package: **B04 - RBME0808**

Sheet Reference No: V6 - 036 of 260

Project Number: ######
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VARIABLE AIR VOLUME - AHU

UNLESS OTHERWISE NOTED, ALL THE SETPOINTS AND TIME DELAYS SHALL BE ADJUSTABLE THRU BAS.

RUN CONDITIONS - CONTINUOUS:
THE UNIT SHALL BE ENABLE THROUGH BAS SYSTEM AND SHALL RUN CONTINUOUSLY.

EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

FREEZE PROTECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

HIGH STATIC SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A HIGH STATIC SHUTDOWN SIGNAL.

RETURN AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A RETURN AIR SMOKE DETECTOR STATUS.

SUPPLY AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

DEMAND LIMITING - SETPOINT ADJUST:
TO LOWER POWER CONSUMPTION, THE SUPPLY AIR TEMPERATURE SETPOINT SHALL AUTOMATICALLY RELAX (RAISED FOR COOLING; LOWERED FOR HEATING) WHEN THE FACILITY POWER CONSUMPTION EXCEEDS DEFINABLE THRESHOLDS. THE AMOUNT OF RELAXATION SHALL BE ACCOMPLISHED BY ONE OF THE FOLLOWING METHODS:

- THE SUPPLY AIR TEMPERATURE SETPOINT SHALL RELAX BY 2°F (ADJ.) FOR EACH DEMAND THRESHOLD EXCEEDED.
- THE SETPOINTS IN THE ZONES SUPPLIED BY THIS UNIT SHALL BE RELAXED AS SPECIFIED IN THE SEQUENCE OF OPERATIONS FOR THE ZONES. THIS SHALL IN TURN RELAX THE UNIT'S SUPPLY AIR TEMPERATURE SETPOINT BY A USER DEFINABLE AMOUNT.

ALL SETPOINTS SHALL AUTOMATICALLY RETURN TO THEIR PREVIOUS SETTINGS WHEN THE FACILITY POWER CONSUMPTION DROPS BELOW THE THRESHOLDS.

SUPPLY FAN:
THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.
ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

SUPPLY AIR DUCT STATIC PRESSURE CONTROL:
THE CONTROLLER SHALL MEASURE DUCT STATIC PRESSURE AND SHALL MODULATE THE SUPPLY FAN VFD SPEED TO MAINTAIN A DUCT STATIC PRESSURE SETPOINT OF 1.5IN H2O (ADJ.). THE SUPPLY FAN VFD SPEED SHALL NOT DROP BELOW 30% (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR STATIC PRESSURE: IF THE SUPPLY AIR STATIC PRESSURE IS 25% (ADJ.) GREATER THAN SETPOINT.
- LOW SUPPLY AIR STATIC PRESSURE: IF THE SUPPLY AIR STATIC PRESSURE IS 25% (ADJ.) LESS THAN SETPOINT.
- SUPPLY FAN VFD FAULT.

RETURN FAN:
THE RETURN FAN SHALL RUN WHENEVER THE SUPPLY FAN RUNS.
ALARMS SHALL BE PROVIDED AS FOLLOWS:

- RETURN FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RETURN FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RETURN FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).
- RETURN FAN VFD FAULT.

BUILDING STATIC PRESSURE CONTROL:
THE CONTROLLER SHALL MEASURE BUILDING STATIC PRESSURE AND MODULATE THE RETURN FAN VFD SPEED TO MAINTAIN A BUILDING STATIC PRESSURE SETPOINT OF 0.05IN H2O (ADJ.). THE RETURN FAN VFD SPEED SHALL NOT DROP BELOW 20% (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH BUILDING STATIC PRESSURE: IF THE BUILDING AIR STATIC PRESSURE IS 25% (ADJ.) GREATER THAN SETPOINT.
- LOW BUILDING STATIC PRESSURE: IF THE BUILDING AIR STATIC PRESSURE IS 25% (ADJ.) LESS THAN SETPOINT.

SUPPLY AIR TEMPERATURE SETPOINT - OUTSIDE AIR RESET:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL MAINTAIN A SUPPLY AIR TEMPERATURE SETPOINT RESET BASED ON OUTSIDE AIR TEMPERATURE.

THE SUPPLY AIR TEMPERATURE SETPOINT SHALL RESET FOR COOLING AS FOLLOWS:

- AS OUTSIDE AIR TEMPERATURE RISES FROM 50°F (ADJ.) TO 85°F (ADJ.)
  THE SUPPLY AIR TEMPERATURE SETPOINT SHALL RESET DOWNWARDS FROM 65°F (ADJ.) TO 55°F (ADJ.).

IF THE RETURN AIR TEMPERATURE DROPS BELOW 68°F (ADJ.), THEN THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FOR HEATING AS FOLLOWS:

- AS OUTSIDE AIR TEMPERATURE DROPS FROM 50°F (ADJ.) TO 20°F (ADJ.).
  THE SUPPLY AIR TEMPERATURE SETPOINT SHALL RESET UPWARDS FROM 75°F (ADJ.) TO 95°F (ADJ.)

COOLING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE COOLING COIL VALVE TO MAINTAIN ITS COOLING SETPOINT (ADJ.).
THE COOLING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE ECONOMIZER IS DISABLED OR FULLY OPEN.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE RETURN FAN STATUS IS ON.
- AND THE HEATING IS NOT ACTIVE.

THE COOLING COIL VALVE SHALL OPEN TO 50% (ADJ.) WHENEVER THE FREEZESTAT (IF PRESENT) IS ON.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS 5°F (ADJ.) GREATER THAN SETPOINT.

ELECTRIC HEATING WITH SCR:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT.

THE HEATING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE RETURN FAN STATUS IS ON.
- AND THE COOLING IS NOT ACTIVE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS 5°F (ADJ.) LESS THAN SETPOINT.

ECONOMIZER:
THE CONTROLLER SHALL MEASURE THE MIXED AIR TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F (ADJ.) LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT (ADJ.). THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM OUTSIDE AIR SETPOINT (ADJ.) (SEE EQUIPMENT SCHEDULE FOR THE AIR QUANTITY) WHENEVER OCCUPIED.

THE ECONOMIZER SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN 22BTU/LB (ADJ.)
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE RETURN FAN STATUS IS ON.

THE ECONOMIZER SHALL CLOSE WHENEVER:

- MIXED AIR TEMPERATURE DROPS FROM 40°F TO 35°F (ADJ.)
- OR THE FREEZESTAT IS ON.
- OR ON LOSS OF SUPPLY FAN STATUS.
- OR ON LOSS OF RETURN FAN STATUS.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF.

OUTSIDE AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:
THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 CONCENTRATION.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH OUTSIDE AIR CARBON DIOXIDE CONCENTRATION: IF THE OUTSIDE AIR CO2 CONCENTRATION IS GREATER THAN 750PPM (ADJ.) WHEN THE UNIT IS RUNNING.

OUTSIDE AIR HUMIDITY:
THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR HUMIDITY CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH OUTSIDE AIR HUMIDITY: IF THE OUTSIDE AIR HUMIDITY IS GREATER THAN 70% (ADJ.).
- LOW OUTSIDE AIR HUMIDITY: IF THE OUTSIDE AIR HUMIDITY IS LESS THAN 35% (ADJ.).

OUTSIDE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE OUTSIDE AIR TEMPERATURE AND USE AS REQUIRED FOR SETPOINT CONTROL OR ECONOMIZER CONTROL.

MINIMUM OUTSIDE AIR VENTILATION - ECONOMIZER DISABLED:
WHEN ECONOMIZER IS DISABLED, THE OUTSIDE AIR DAMPERS SHALL BE OPENED TO MAINTAIN A MINIMUM OUTSIDE AIR CFM SETPOINT (ADJ.) (SEE EQUIPMENT SCHEDULE FOR THE AIR QUANTITY) DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

MINIMUM OUTSIDE AIR VENTILATION - DEMAND CONTROLLED VENTILATION OR CO2 CONTROL:

WHEN IN THE OCCUPIED MODE, THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 CONCENTRATION AND MODULATE THE OUTSIDE AIR DAMPERS OPEN ON RISING CO2 CONCENTRATIONS, OVERRIDING NORMAL DAMPER OPERATION TO MAINTAIN A CO2 SETPOINT OF 750 PPM (ADJ.).

WHEN RETURN AIR CO2 CONCENTRATION HAS BEEN RESTORED TO SETPOINT, THE OUTSIDE AIR DAMPERS SHALL MODULATE CLOSED TO THE MINIMUM OUTSIDE AIR FLOW POSITION.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH RETURN AIR CARBON DIOXIDE CONCENTRATION: IF THE RETURN AIR CO2 CONCENTRATION IS GREATER THAN 1000PPM (ADJ.) WHEN IN THE OCCUPIED MODE.

PRIMARY FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PRIMARY FILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- PRIMARY FILTER CHANGE REQUIRED: PRIMARY FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

SECONDARY FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE SECONDARY FILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SECONDARY FILTER CHANGE REQUIRED: SECONDARY FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

MIXED AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
- LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

RETURN AIR CARBON DIOXIDE (CO2) CONCENTRATION MONITORING:
THE CONTROLLER SHALL MEASURE THE RETURN AIR CO2 CONCENTRATION.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH RETURN AIR CARBON DIOXIDE CONCENTRATION: IF THE RETURN AIR CO2 CONCENTRATION IS GREATER THAN 1000PPM (ADJ.) WHEN IN THE UNIT IS RUNNING.

RETURN AIR HUMIDITY:
THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR HUMIDITY CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70% (ADJ.).
- LOW RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS LESS THAN 35% (ADJ.).

RETURN AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS REQUIRED FOR SETPOINT CONTROL OR ECONOMIZER CONTROL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
- LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

SUPPLY AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

OUTSIDE AIR FLOW MEASURING STATION:
THE CONTROLLER SHALL MEASURE AND MONITOR THE OUTSIDE AIR FLOW (CFM).

OUTSIDE AIR DAMPER:
THE CONTROLLER SHALL MONITOR THE OUTSIDE AIR DAMPER POSITION.

EXHAUST AIR FLOW MEASURING STATION:
THE CONTROLLER SHALL MEASURE AND MONITOR THE EXHAUST AIR FLOW (CFM).

EXHAUST AIR DAMPER:
THE CONTROLLER SHALL MONITOR THE EXHAUST AIR DAMPER POSITION.

SUPPLY FAN AIR FLOW MONITOR:
THE CONTROLLER SHALL MEASURE AND MONITOR THE SUPPLY AIR FLOW (CFM).

RETURN FAN AIR FLOW MONITOR:
THE CONTROLLER SHALL MEASURE AND MONITOR THE RETURN AIR FLOW (CFM).

1 VARIABLE AIR VOLUME AHU CONTROLS

SCALE: 12" = 1'-0"

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NO.	REVISIONS / SUBMISSIONS	DATE
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	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer (Mechanical)
CERTIFICATE NO.
65328
HITEN SHETH
Date Signed
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

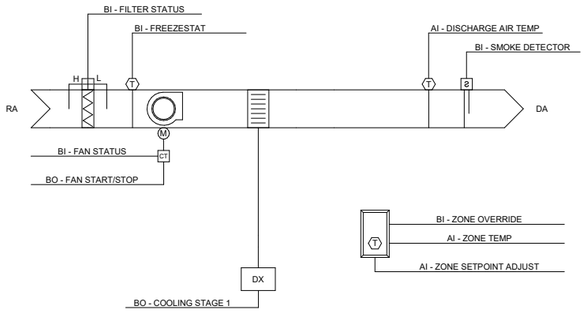
Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	12" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION MECHANICAL CONTROL DIAGRAMS

Package: B04 - RBME0901
Sheet Reference No: V6 - 037 of 260

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FAN COIL UNIT - DX

RUN CONDITIONS - CONTINUOUS:
THE UNIT SHALL RUN CONTINUOUSLY AND SHALL MAINTAIN:
- A 75°F (ADJ.) COOLING SETPOINT
- A 70°F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

FREEZE PROTECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

FAN:
THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES.

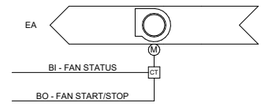
COOLING STAGE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.
THE COOLING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE FAN IS ON.

FILTER STATUS:
THE CONTROLLER SHALL MONITOR THE FILTER STATUS.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FILTER CHANGE REQUIRED: FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

1 DX - FAN COIL UNIT CONTROLS
SCALE: NTS



1. EXHAUST FAN - ON/OFF

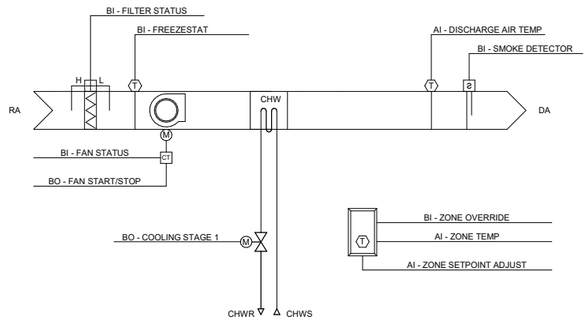
RUN CONDITIONS - SCHEDULED:
THE FAN SHALL RUN ACCORDING TO A USER DEFINABLE SCHEDULE.

FAN:
THE FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

2 EXHAUST FAN ON OFF CONTROLS
SCALE: NTS



FAN COIL UNIT - CHILLED WATER

RUN CONDITIONS - CONTINUOUS:
THE UNIT SHALL RUN CONTINUOUSLY AND SHALL MAINTAIN:
- A 75°F (ADJ.) COOLING SETPOINT
- A 70°F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

FREEZE PROTECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

FAN:
THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES.

COOLING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE COOLING COIL VALVE TO MAINTAIN ITS COOLING SETPOINT.

THE COOLING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE FAN IS ON

THE COOLING COIL VALVE SHALL OPEN WHENEVER THE FREEZESTAT IS ON.

FILTER STATUS:
THE CONTROLLER SHALL MONITOR THE FILTER STATUS.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FILTER CHANGE REQUIRED: FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

REMARK:
1. FOR DX WALL-MOUNTED DUCTLESS FAN COIL UNITS, PROVIDE ADDITIONAL TEMPERATURE SENSOR AND INTEGRATE WITH BAS TO MONITOR & ALARM.

3 CHILLED WATER FAN COIL UNIT CONTROLS
SCALE: NTS

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCMEXX01_R17_A360.rvt
Project Number: ######
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Design Consultant
Gannett Fleming
Design Sub-Consultant
PE 63328 HITEN SHETH
EXPIRES 03/31/20

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HL
Drawn by:	AP
Checked by:	HS
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION MECHANICAL CONTROL DIAGRAMS

Package: B04 - RBME0902
Sheet Reference No:
V6 - 038 of 260

ELECTRICAL NOTES:

1. DUE TO THE REQUIREMENTS TO INTERFACE WITH EXISTING FACILITIES AND UTILITIES. IT IS RECOMMENDED THAT THE CONTRACTOR VISIT THE SITE TO DETERMINE EXISTING CONDITIONS PRIOR TO BID.
2. VERIFY THE EXACT LOCATION AND ELEVATION OF ALL ELECTRICAL EQUIPMENT PRIOR TO ROUGH-IN. FINAL CONNECTIONS OF EQUIPMENT SHALL BE PER MANUFACTURERS APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. THE ELECTRICAL CONTRACTOR SHALL PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
3. ALL WIRE SHALL BE COPPER AND A MINIMUM #10 UNLESS OTHERWISE NOTED.
4. APPEARANCE AND WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY AND STANDARDS.
5. PROVIDE PHYSICAL SEPARATION OF LIFE SAFETY SYSTEMS (NEC 700) FROM OPTIONAL STANDBY (NEC 701) AND LEGALLY REQUIRED (NEC 702) SYSTEMS PER 2017 NEC.
6. FURNISH ALL LABOR, MATERIALS, TOOLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE WORKING ELECTRICAL SYSTEM.
7. ALL FLUORESCENT LUMINAIRES WITH DOUBLE ENDED LAMPS, PROVIDE DISCONNECTING MEANS PER NEC 430.73(G).
8. ALL UNDERGROUND CONDUIT SHALL BE WRAPPED RIGID STEEL WITH THREADED COUPLINGS AND CONNECTORS, AND/OR PVC SCHEDULE 40. ALL CONDUIT PENETRATING CONCRERE OR GRADE SHALL BE WRAPPED IN RIGID STEEL.
9. ALL RECEPTACLES SHALL MATCH THE MALE PLUG CONNECTOR OF ALL EQUIPMENT PROVIDED. VERIFY PRIOR TO PURCHASE.
10. ALL PANEL BOARDS, SWITCHES, MOTOR STARTERS AND SWITCHBOARD CIRCUIT BREAKERS SHALL HAVE ENGRAVED MICARTA NAMEPLATES.
11. ALL EMERGENCY SYSTEMS SHALL BE INSTALLED PER 2017 NEC.
12. PROVIDE ALL TRENCHING, EXCAVATION, BACK FILLING, SHORING. PUMPING, COMP ACTION TEST ETC. THAT ARE REQUIRED FOR THE SCOPE OF ELECTRICAL WORK.
13. ELECTRICAL CONTRACTOR SHALL GUARANTEE THE ELECTRICAL WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
14. VERIFY EXACT LOCATION OF ALL RECEPTACLES. ABOVE OR ADJACENT TO COUNTERS, FIXTURES, MIRRORS OUTDOOR FIXTURES AND MOUNTING HEIGHTS AND LOCATIONS OF ALL FIXTURES & BOXES PRIOR TO ROUGH-IN. NO EXTRA COSTS WILL BE ALLOWED FOR FAILURE TO COMPLY.
15. ALL ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE STATE, COUNTY AND LOCAL CODES AND ORDINANCES, AS WALL AS ALL CURRENT STANDARDS, CODES AND PRACTICES AS REQUIRED BY NEC, NEMA, ANSI, NFPA, UBC, UL, IEEE, AND UTILITY COMPANY STANDARDS.
16. ORDER AND/OR RELEASE ORDERED MATERIALS PROMPTLY AFTER SUBMITTAL APPROVAL. NO SUBSTITUTIONS OR ALTERNATE METHODS OF INSTALLATION WILL BE ACCEPTED FOR FAILURE TO ORDER MATERIALS IN A TIMELY FASHION.
17. ALL EQUIPMENT, MATERIALS AND WORK SHOWN ARE NEW UNLESS SPECIFICALLY NOTED AS EXISTING OR NOTED OTHERWISE ON OTHER SHEETS.
18. TYPE MC OR TYPE AC CABLE SHALL ONLY BE USED WITH THE SPECIFIC WRITTEN PERMISSION OF THE PROGRAM/PROJECT MANAGER. ENT TYPE CONDUIT IS NOT ALLOWED.
19. CONDUIT/ CONDUCTOR RUNS SHOWN ARE DIAGRAMMATICAL ONLY. THE BEST FINAL CONDUIT ROUTING SHALL BE AS DETERMINED BY THE ELECTRICAL CONTRACTOR AT THE TIME OF CONSTRUCTION.
20. PRIOR TO PURCHASE OF ANY PANEL, PROTECTIVE DEVICES, SWITCH, STARTER, CONDUIT, WIRE, ETC., TO FEED ANY PIECE OF MECHANICAL EQUIPMENT VERIFY THE VOLTAGE, PHASE, AND LOAD OF THAT ITEM IN THE FIELD AND/OR WITH THE PARTICULAR ENTITY INVOLVED IN THE FURNISHING THE ITEM SUCH THAT THE PROPER SIZE & RATING OF THE MATERIALS ARE PURCHASED. NO EXTRAS WILL BE ALLOWED FOR FAILURE TO COMPLY. THIS APPLIES TO ALL EQUIPMENT UNDER OTHER SECTIONS & BY THE OWNER.
21. ALL ELBOWS AND EXPOSED RISERS SHALL BE RIGID STEEL CONDUIT.
22. PROVIDE ALL PANEL BOARDS WITH TYPED DIRECTORIES INSTALLED UNDER A CLEAR PLASTIC COVER. SUBMIT DIRECTORY INFORMATION TO THE OWNER FOR APPROVAL PRIOR TO FINALIZATION.
23. SERIES RATING OF UPSTREAM OR DOWNSTREAM CIRCUIT BREAKERS OR FUSES IS PROHIBITED. ONLY FULLY RATED SYSTEM COMPONENTS WILL BE ACCEPTED.
24. PULL ROPES: PROVIDE 300 POUND PULL WIRE OR NYLON EQUIVALENT IN ALL INTERIOR EMPTY CONDUIT RUNS. PROVIDE 1/4" DIA NYLON PULL ROPE IN EACH EMPTY EXTERIOR CONDUIT OR DUCT.
25. ELECTRICAL EQUIPMENT WITHIN PROPULSION POWER SUBSTATIONS SHALL NOT BE OIL FILLED.
26. ALL CONDUIT SHALL BE ROUTED UNDER FOOTINGS WHERE APPLICABLE. REFER TO STRUCTURAL DETAILS.
27. ALL MULTIPLE POLE CIRCUITS SHALL BE PROVIDED WITH HANDLE TIES AS REQUIRED BY NEC.
28. ALL EQUIPMENT SERVED BY MORE THAN ONE SOURCE SHALL BE LABELED AS REQUIRED BY THE CODE.
29. COORDINATE WITH MECHANICAL CONTRACTOR TO AVOID CONFLICTS BETWEEN DUCT WORK, SUPPLY & EXHAUST DIFFUSERS AND LIGHTING, SOUND SYSTEMS & FIRE ALARM SYSTEM FIXTURES.
30. OBTAIN WRITTEN APPROVAL FROM THE ENGINEER OF ALL SHOP DRAWINGS AND MANUFACTURERS DATA FOR PANEL BOARDS, TRANSFORMERS, WIRING DEVICES, ETC. BEFORE RELEASING ORDERED MATERIALS. SUBMITTAL DATA SHALL INDICATE THAT THE CONTRACTOR HAS REVIEWED THE INFORMATION THEREIN AND THAT THE PROPOSED EQUIPMENT WILL MEET THE PHYSICAL CONSTRAINTS AT THE JOB SITE. ANY SUBSTITUTIONS SHALL BE OF THE EQUIVALENT OR BETTER QUALITY THAN THE SPECIFIED COMPONENTS.
31. ANY POWER OUTAGE OF ANY CIRCUIT SHALL BE APPROVED BY THE OWNER IN WRITING A MINIMUM OF TWO WEEKS PRIOR TO OUTAGE. ALL OUTAGES SHALL BE DONE EXACTLY WHEN DETERMINED BY THE OWNER AND DONE BEFORE OR AFTER WORKING HOURS AND ON WEEKENDS. NO SINGLE OUTAGE SHALL REQUIRE MORE THAN 4 HOURS. PROVIDE TEMPORARY POWER, HEAT & COOLING IS REQUIRED DURING OUTAGE.
32. ALL EQUIPMENT AND REQUIREMENTS OF CITY OF PHOENIX AVIATION DEPARTMENT DESIGN MANUAL SHALL BE MET.
33. ALL EXISTING AND NEW FACILITIES SHALL BE PROVIDED WITH EMERGENCY BACKUP POWER AT ALL TIMES DURING SWITCH OVER. BOTH FACILITIES (NEW AND EXISTING) SHALL HAVE REDUNDANCY PROVIDED TO MATCH THAT OF FINAL CONDITIONS. PROVIDE ALL REQUIRED EQUIPMENT AND PATHWAYS NECESSARY.
34. REFER TO MECHANICAL CONTROLS DIAGRAMS SHEETS FOR ADDITIONAL POWER AND EQUIPMENT REQUIREMENTS NOT SHOWN ON THE ELECTRICAL DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE PRODUCTS OF COMBUSTION DETECTORS (POCD) FOR ALL MECHANICAL UNITS AS REQUIRED BY CODE AND CONTROLS POWER. COORDINATE WITH MECHANICAL CONTRACTOR FOR ALL POWER REQUIREMENTS FOR A COMPLETE SYSTEM.
35. COLOR ALL CONDUIT AS REQUIRED BY CITY OF PHOENIX AVIATION DEPARTMENT DESIGN MANUAL UNLESS OTHERWISE NOTED ON PLANS.
    a. ELECTRICAL: RACEWAY SUPPLIED COLOR
    b. COMMUNICATIONS: YELLOW
    c. FIRE ALARM: RED
    d. HVAC CONTROL: WHITE
36. ALL UNDERGROUND CONDUIT SHALL BE INCASED IN RED CONCRETE.
37. ALL CIRCUITS SHALL BE PROVIDED WITH DEDICATED NEUTRAL UNLESS OTHERWISE NOTED.
38. ALL FIRE ALARM EQUIPMENT REQUIRES A LOCK-ON DEVICE, SHALL HAVE RED IDENTIFICATION, AND IDENTIFIED AS FIRE ALARM CIRCUIT PER NEC 760.41 (A) & (B) AND NFPA 72.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL00EL01.dwg Daniel.Thompson

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MLB
Drawn by:	MLB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION ELECTRICAL NOTES

Package: B04 Sheet Reference No: RBEL0001

ELECTRICAL SYMBOLS:

- CONDUIT RUN IN OR ON CEILING OR WALL
- CONDUIT RUN IN OR UNDER FLOOR OR UNDERGROUND
- HASH MARKS INDICATE NUMBER OF #12 AWG CONDUCTORS IN CONDUIT. NO MARKS INDICATE 2 #12'S. DOES NOT INCLUDE GROUND WIRE. IF NON-METALLIC OR EMT CONDUIT ADD GROUND PER NEC.
- LONG SLASH WITH HASH MARKS AS SHOWN INDICATES GROUND WIRE FOR ISOLATED GROUNDING SYSTEM. SIZE PER N.E.C.
- LA-1 — HOMERUN TO PANEL WITH PANEL AND CIRCUIT INDICATED
- LA-(1,3,5) — HOMERUN TO PANEL WITH CIRCUIT NUMBER IN BRACKETS INDICATING MULTI-POLE BREAKER.
- P — PRIMARY UTILITY LINE
- S — SECONDARY UTILITY LINE
- OH — OVERHEAD UTILITY LINE
- RACEWAY UP
- RACEWAY DOWN
- FLEX CONDUIT TO LAY-IN FIXTURE IN CEILING
- ON HA-6 — "ON" INDICATES CIRCUITING IS SPLIT AT DIFFERENT LOCATIONS
- FLUORESCENT FIXTURE – SEE FIXTURE SCHEDULE FOR MOUNTING
- FLUORESCENT FIXTURE – LAY-IN
- FLUORESCENT FIXTURE – RECESSED
- FLUORESCENT FIXTURE – STRIP LIGHT
- NL NL — FLUORESCENT FIXTURE – TO BE USED FOR NIGHT LIGHT ON UNSWITCHED CIRCUIT
- INCANDESCENT OR H.I.D. FIXTURE – CEILING OR WALL MOUNTED SEE FIXTURE SCHEDULE
- INCANDESCENT OR H.I.D. FIXTURE – RECESSED
- H.I.D. FIXTURE WITH QUARTZ RESTRIKE.
- EXIT LIGHT – WITH OR WITHOUT DIRECTIONAL ARROWS AS INDICATED (SHADED PORTION INDICATES ILLUMINATED SURFACE) – ON UNSWITCHED CIRCUIT
- EMERGENCY BATTERY UNIT WITH TWIN HEADS ON UNSWITCHED CIRCUIT
- POLE MOUNTED LIGHT FIXTURE
- HIGH MAST POLE LIGHT FIXTURE
- FLOOD LIGHT
- $ — SINGLE POLE SWITCH +48" AFF
- $$ — DUAL LEVEL SWITCHING FOR 3 OR 4 LAMP FLUORESCENT FIXTURES. ONE SWITCH TO CONTROL OUTBOARD LAMPS, ONE SWITCH TO CONTROL IN BOARD LAMPS. PROVIDE 3 #12'S IN FLEX TO LAYIN FIXTURES.
- $3 — THREE-WAY SWITCH +48" AFF
- $4 — FOUR-WAY SWITCH +48" AFF
- $D — DIMMER SWITCH +48" AFF
- $K — KEY OPERATED SWITCH +48" AFF
- $L — SINGLE POLE TOGGLE SWITCH WITH LIGHTED HANDLE +48" AFF
- $M — FRACTIONAL HORSEPOWER MOTOR MANUAL STARTER
- $MOM — MOMENTARY CONTACT SWITCH +48" AFF
- $W — AUTOMATIC WALL SWITCHES, WATT STOPPER CAT. WS 120/277. +48" AFF
- $W2 — DUAL LEVEL AUTOMATIC WALL SWITCHES, WATT STOPPER CAT NO. WI-300 120/277. +48"AFF
- $T — INTELSWITCH DIGITAL TIME SWITCH, WATT STOPPER CAT NO. TS-200. +48" AFF
- F — DISCONNECT SWITCH (30A/3P UNLESS INDICATED ON DWGS) "F" INDICATES FUSES PER MANUFACTURERS NAMEPLATE RATING
- PEDS — PASSENGER EMERGENCY AND DURESS SYSTEM (PEDS)

ELECTRICAL SYMBOLS (CONTINUED):

- MAGNETIC MOTOR STARTER (SIZE AS INDICATED ON DRAWINGS)
- COMBINATION STARTER / FUSED DISCONNECT SWITCH (SIZE AS INDICATED ON DRAWINGS – FUSES SIZED PER MANUFACTURER'S NAMEPLATE RATING)
- 120V DUPLEX CONVENIENCE RECEPTACLE +18" AFF
- 120V DUPLEX CONVENIENCE RECEPTACLE +48" AFF
- 120V DOUBLE DUPLEX CONVENIENCE RECEPTACLE +18" AFF
- 120V DOUBLE DUPLEX RECEPTACLE W/ DEDICATED CIRCUIT & ISOLATED GROUND +18" AFF
- 120V DOUBLE DUPLEX RECEPTACLE FLUSH FLOOR MOUNTED
- 208V – 1~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 208V – 3~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 480V – 1~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 480V – 3~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF

(TO MATCH MALE PLUG CONNECTOR ON EQUIPMENT FURNISHED)

- 120V DUPLEX CONVENIENCE OUTLET – FLUSH FLOOR TYPE
- PM — PLUG MOLD – SURFACE MOUNTED
- JUNCTION BOX AS REQUIRED BY NATIONAL ELECTRICAL CODE
- JB_AW — JUNCTION BOX FOR ART WALL
- JB_S — JUNCTION BOX FOR SIGN LIGHTING
- JB_SMP — JUNCTION BOX FOR SUMP PUMP
- JB_WH — JUNCTION BOX FOR WATER HEATER
- JUNCTION BOX – FLUSH FLOOR TYPE – AS REQUIRED BY NATIONAL ELECTRICAL CODE
- ELECTRICAL PANELBOARD – SURFACE MOUNTED
- ELECTRICAL PANELBOARD – FLUSH MOUNTED
- FUSED BREAKER
- SERVICE OR DISTRIBUTION EQUIPMENT
- T — TRANSFORMER
- AUXILIARY SYSTEM TERMINAL CABINET
- PRECAST CONCRETE PULLBOX (SIZE AS INDICATED)
- X — EXISTING WIRE AND/OR CONDUIT TO BE REMOVED OR ABANDONED
- E — EXISTING WIRE AND/OR CONDUIT TO REMAIN
- DASHED DEVICES, LIGHT FIXTURES, ETC. EXISTING TO BE REMOVED
- E E E — "E" ADJACENT TO DEVICES, LIGHT FIXTURES, ETC. INDICATES EXISTING TO REMAIN
- K - - K — KIRK KEY INTERLOCK
- 1 — SHEET NOTE
- A / 90 — LIGHT FIXTURE DESIGNATION & WATTAGE. SEE FIXTURE SCHEDULE
- AC / 1 — MECHANICAL EQUIPMENT DESIGNATION. SEE MECHANICAL & PLUMBING PLANS
- 2 — FEEDER – SIZE AS INDICATED ON SINGLE LINE DIAGRAM
- ~ — DETAIL DESIGNATION – "~" INDICATES DETAIL # ON SHEET
- A100 — ROOM NUMBER
- PQM — POWER QUALITY METER
- NOTE: ALL MOUNTING HEIGHTS AS INDICATED UNLESS NOTED OTHERWISE. ALL SYMBOLS MAY NOT BE USED.
- M — MOTOR

ELECTRICAL ABBREVIATIONS:

AC	ABOVE COUNTER. INSTALL 4" ABOVE SPLASH COUNTER OR AT HEIGHT AS INDICATED ON DRAWINGS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
℄	CENTERLINE
CU	COPPER
DA	DAMPER ACTUATOR
EC	EMPTY CONDUIT WITH PULL WIRE
EDF	ELECTRIC DRINKING FOUNTAIN
EWC	ELECTRIC WATER COOLER
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHER SECTION
GFI/GFCI	GROUND FAULT INTERRUPTING
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NL	NIGHTLIGHT
PNL	PANEL
S/N	SWITCHED NEUTRAL
SPD	SURGE PROTECTION DEVICE
TL	TWISTLOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UNO	UNLESS NOTED OTHERWISE
UNSW	UNSWITCHED
W/	WITH
WP	WEATHERPROOF (NEMA 3R)
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

Registered Professional Engineer (Electrical) — CERTIFICATE NO. 49025 — PETER M. SYNTAX — Date Signed 07/13/18 — ARIZONA, USA

Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX DVT BYR — CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MLB
Drawn by:	MLB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 – B04 DESIGN SUBMISSION

RCC STATION
ELECTRICAL
SYMBOL LIST

Package: B04 - RBEL0002

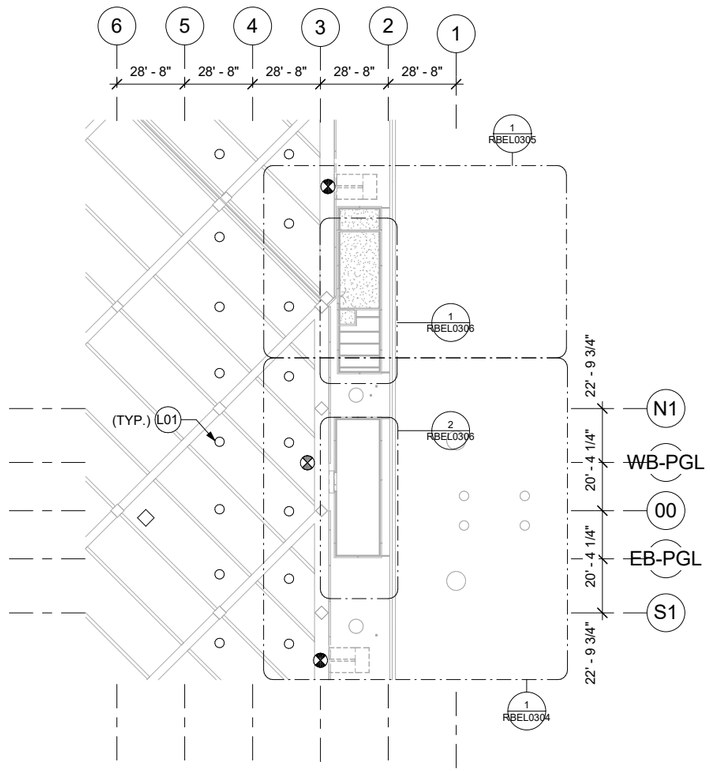
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V6 - 040 of 260

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL00EL01.dwg Daniel.Thompson

BUILDING LIGHTING FIXTURE SCHEDULE

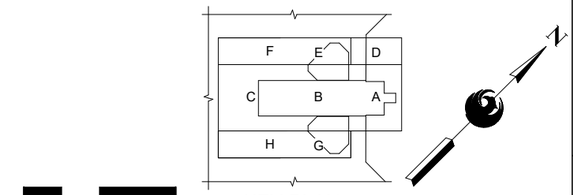
LABEL	MANUFACTURER	DESCRIPTION	MODEL	LAMP	VOLTAGE	WATTAGE	WET LABEL
A	LITHONIA LIGHTING OR DUAL-LITE	EXIT SIGN - EMERGENCY	LE-S W 1 R EL N OR SESRWE. PROVIDE 90 MINUTE EMERGENCY BATTERY	LED	277	4 VA	NO
B	ALIGHT OR FINELITE	RECESSED CEILING OR WALL MOUNTED FIXTURE	D5 LS 40 U HE OR HP-2R-V-840-277-SC	LED	277	40 VA	NO
C	FINELITE OR ALIGHT	EXTERIOR LINEAR WALL MOUNTED FIXTURE	HP-4 WL SM 4' V 840 277V SC OR D3-4'-LH-40-U-HE-R-E	LED	277	40 VA	YES
D	FINELITE OR ALIGHT	LINEAR PENDANT	HP-4 D-12'-HO-4000K-277-FM-MC OR D3-12'-LH-40-U-HE-R-E	LED	277	111 VA	YES
E	IGUZZINI	RADIAL PUCK LIGHT	I.BU23-UNV	LED	277	20 VA	YES



1 LEVEL 1 AREA A AND AREA D
SCALE: 1/32" = 1'-0"

CONSTRUCTION NOTES

L01 EXISTING LUMINAIRES SHALL REMAIN IN PLACE.



KEY PLAN

0' 16' 32' 64'

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

Expires 12-31-2020

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/32" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

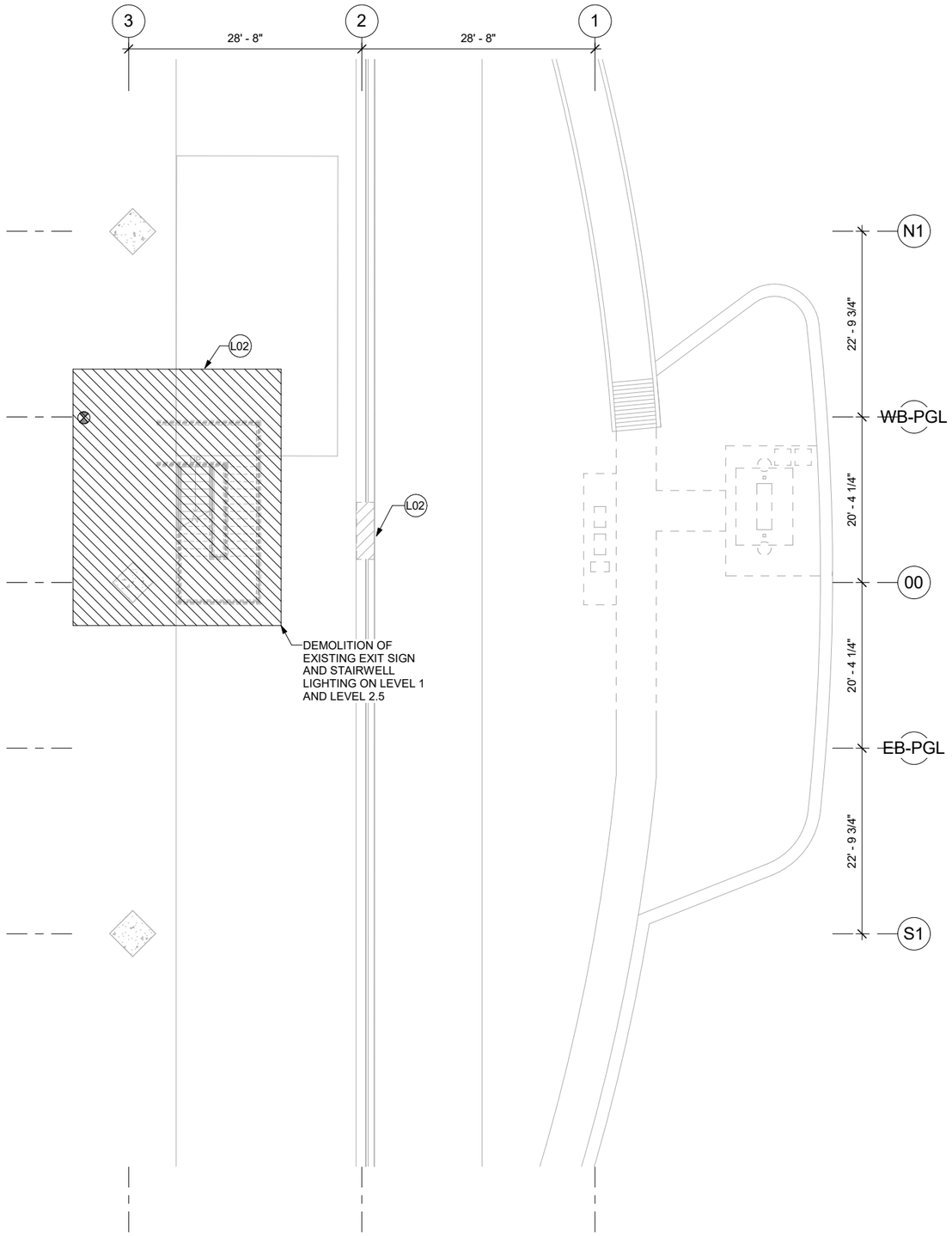
RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
LEVEL 1
AREA A AND AREA D

Package: B04 - RBEL0302

Sheet Reference No: V6 - 041 of 260

Project Number: Project Number
7/13/2018 5:31:06 PM

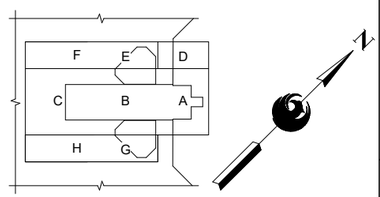
Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt



1 **LEVEL 1 TO LEVEL 2.5 - DEMOLITION**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

L02 DEMO EXISTING CONDUIT AND LIGHTING CIRCUIT SERVING EXIT SIGN AND STAIRWELL BACK TO SOURCE.



KEY PLAN

0' 4' 8' 16'

Licensed Professional Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4336, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

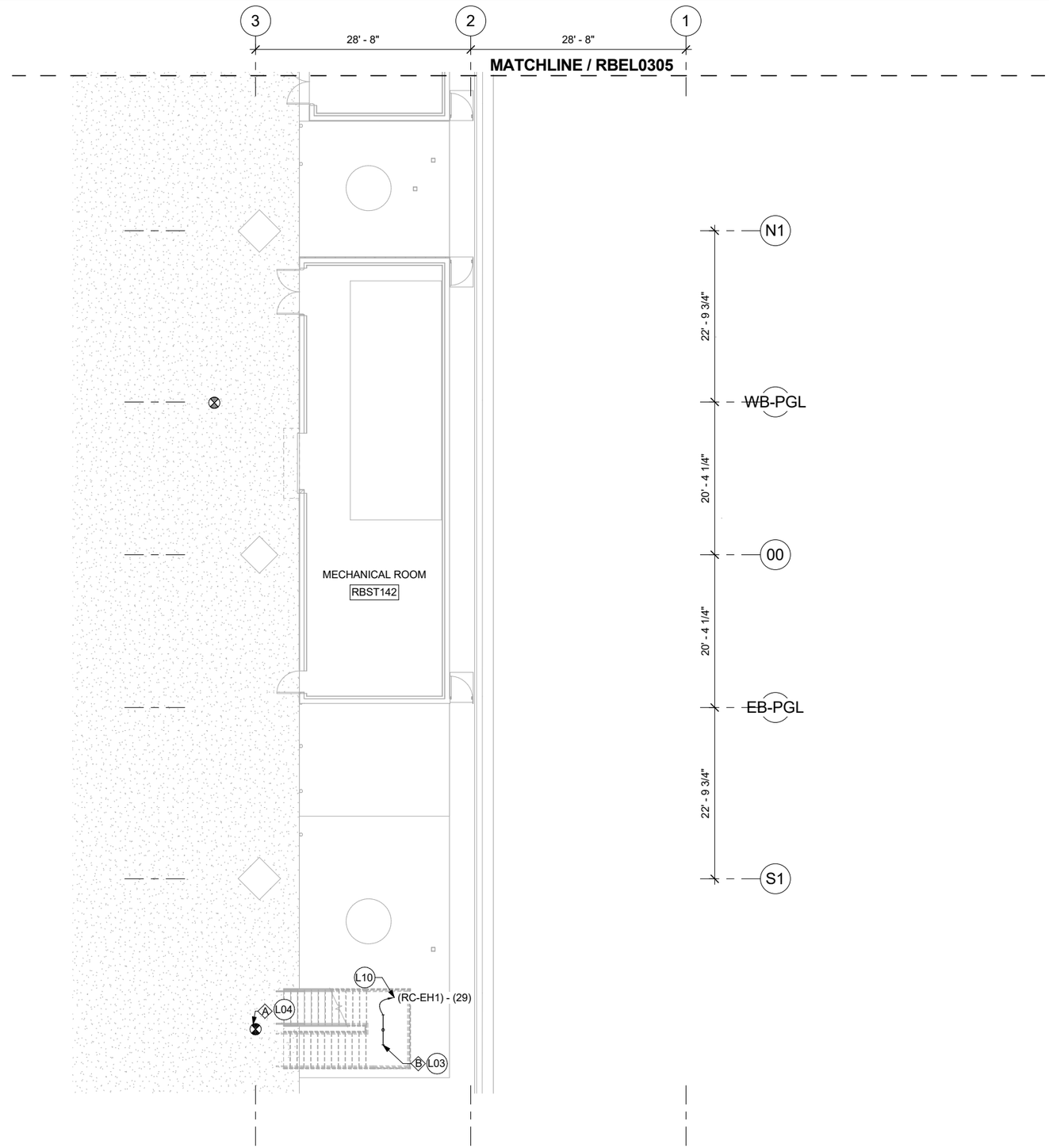
Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING DEMOLITION PLAN
ELECTRICAL

Package: B04 - RBEL0303
Sheet Reference No: V6 - 042 of 260

Project Number: Project Number
7/13/2018 5:31:07 PM
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1 **LEVEL 1 - GROUND - AREA A**
SCALE: 1/8" = 1'-0"

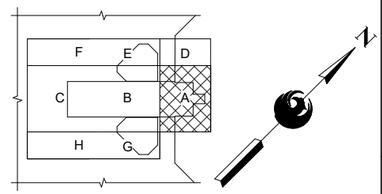
CONSTRUCTION NOTES

~

L03 ROUTE NEW EMERGENCY LIGHTING CIRCUIT FROM ELECTRICAL ROOM LIGHTING CONTROL PANEL TO NEW EMERGENCY STAIR LIGHTING. COORDINATE ROUTING WITH STAIR SUPPLIER FOR COMPLETE SYSTEM.

L04 EXTEND EXISTING CONDUIT FROM NEAREST EMERGENCY CIRCUIT TO NEW EXIT SIGN MOUNTED ON EXISTING STRUCTURE. COORDINATE ROUTING FOR COMPLETE SYSTEM.

L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).



KEY PLAN

0' 4' 8' 16'

Registered Professional Engineer
Electrical
49025
PETER M. SYNYAK
Expires 12-31-2020
Design Sub-Consultant
Kimley»Horn
Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

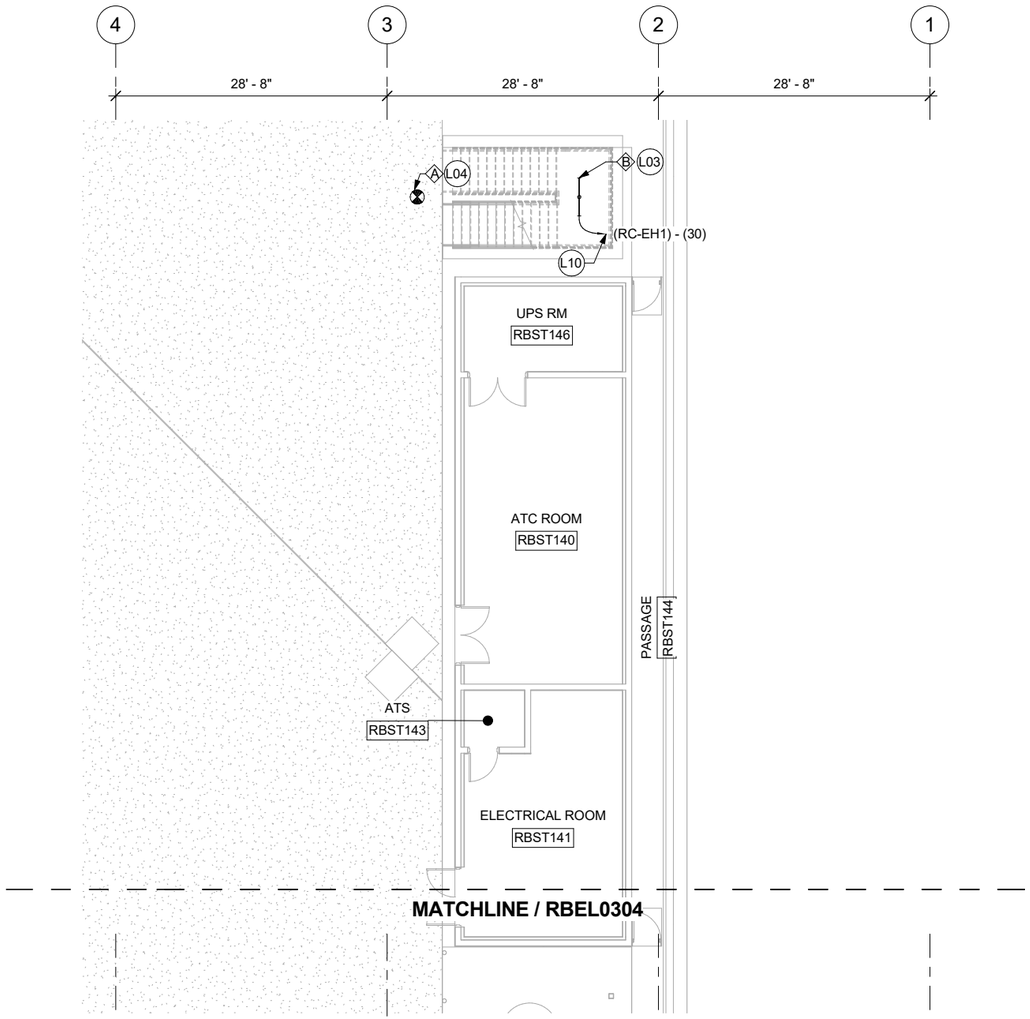
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Checked by:	MAC
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KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
AREA A

Package: **B04 - RBEL0304**
Sheet Reference No:
V6 - 043 of 260

Project Number: Project Number
7/13/2018 5:31:11 PM
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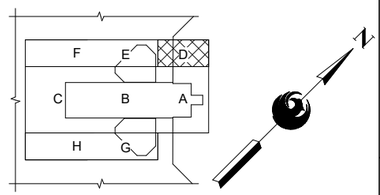
1 **LEVEL 1 - GROUND - AREA D**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

L03 ROUTE NEW EMERGENCY LIGHTING CIRCUIT FROM ELECTRICAL ROOM LIGHTING CONTROL PANEL TO NEW EMERGENCY STAIR LIGHTING. COORDINATE ROUTING WITH STAIR SUPPLIER FOR COMPLETE SYSTEM.

L04 EXTEND EXISTING CONDUIT FROM NEAREST EMERGENCY CIRCUIT TO NEW EXIT SIGN MOUNTED ON EXISTING STRUCTURE. COORDINATE ROUTING FOR COMPLETE SYSTEM.

L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).



KEY PLAN

0' 4' 8' 16'

Project Number: Project Number
7/13/2018 5:31:16 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt

Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

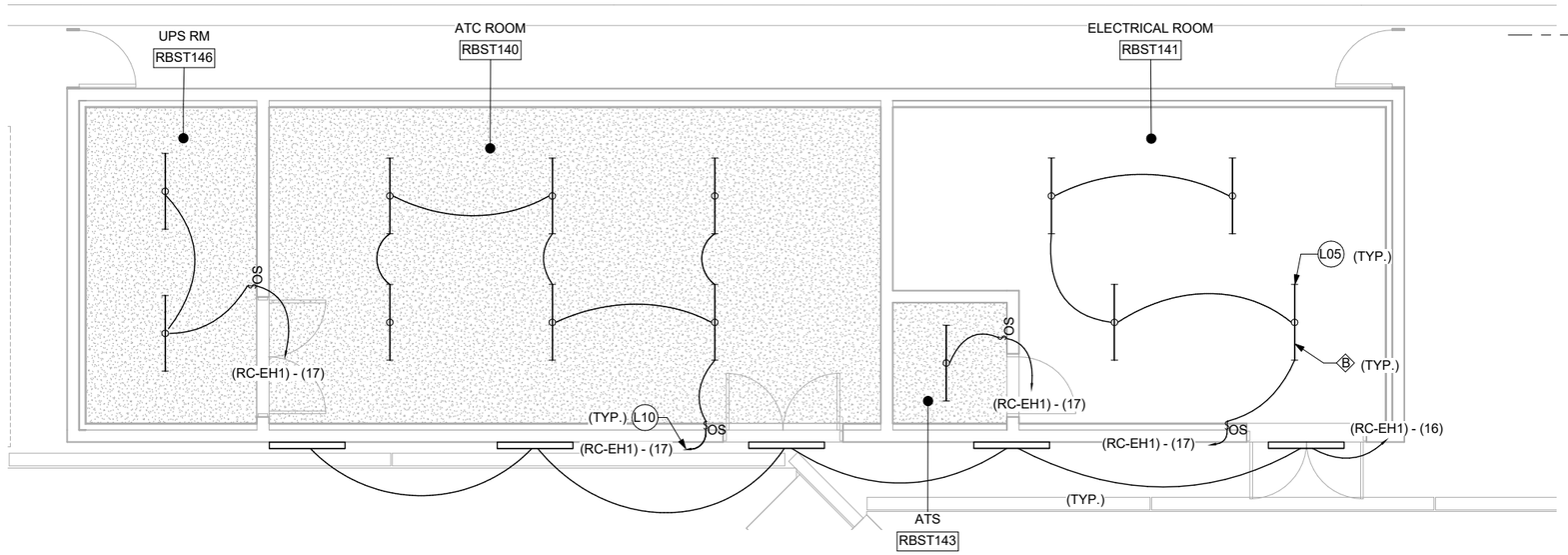
Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
AREA D

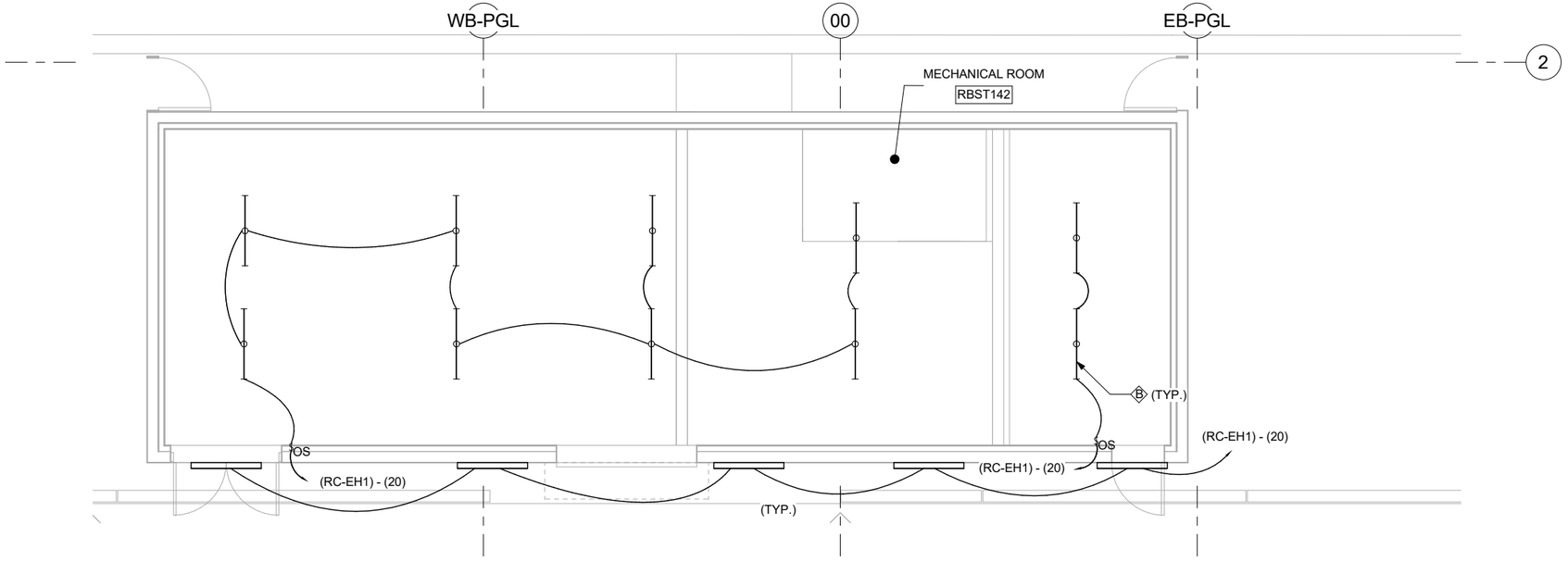
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Sheet Reference No:
V6 - 044 of 260



1 LEVEL 1 - ELECTRICAL AND ATC ROOMS - AREA D

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



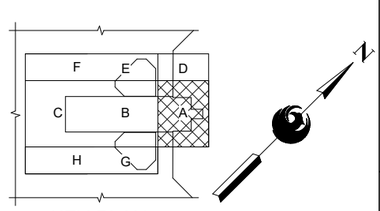
2 LEVEL 1 - MECHANICAL ROOM - AREA A

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

CONSTRUCTION NOTES

L05 ALL LUMINAIRES SHALL BE EMERGENCY LIGHTING.

L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).



KEY PLAN

0' 2' 4' 8'

Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

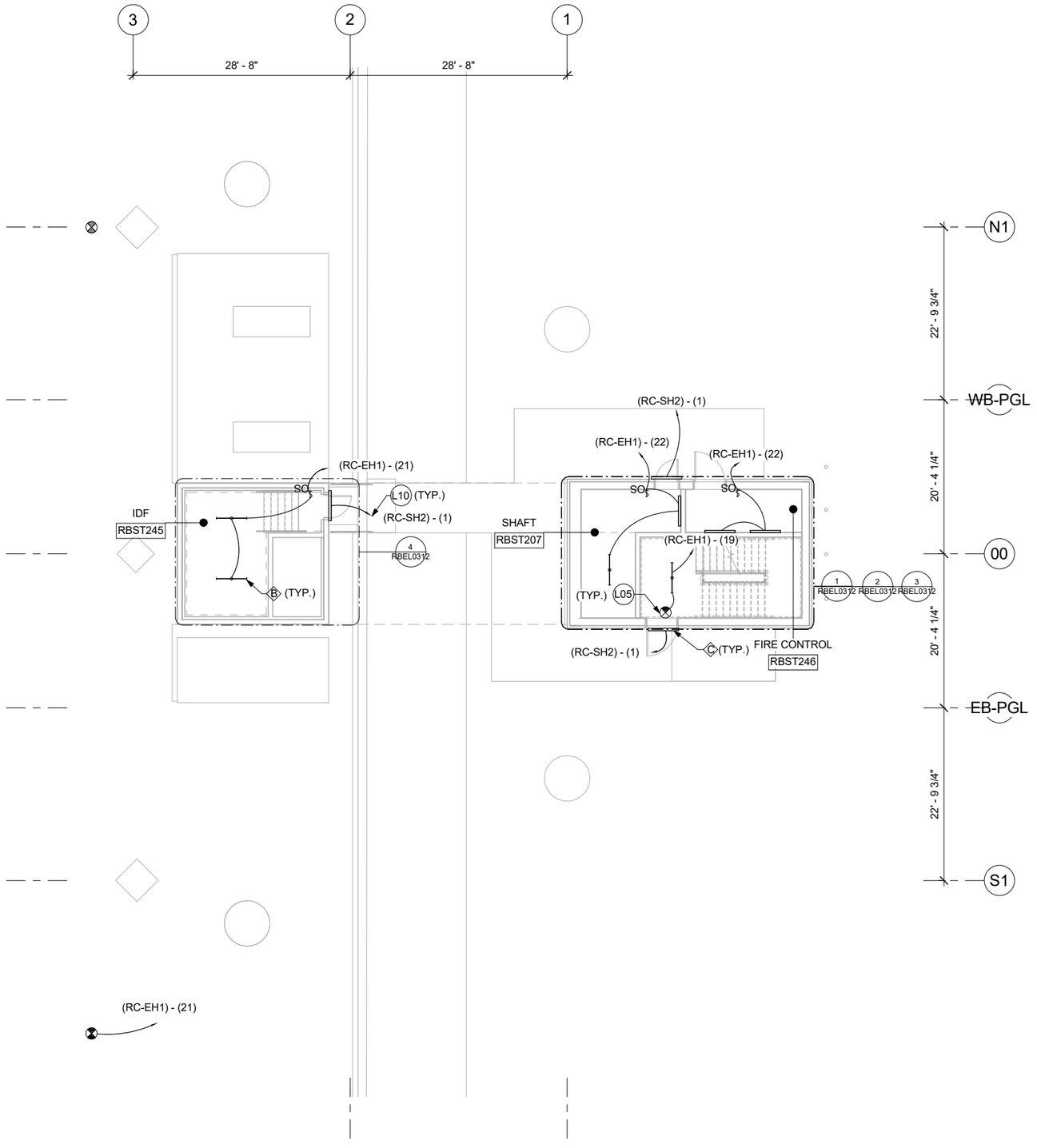
RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
BACK-OF-HOUSE DETAILS

Package: B04 - RBEL0306

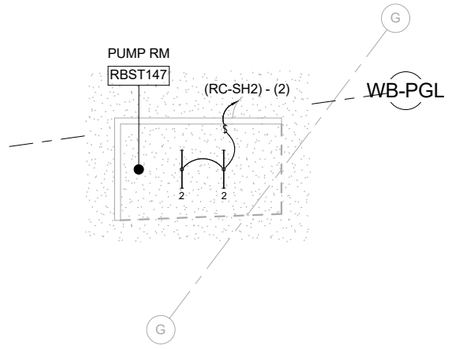
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V6 - 045 of 260

Project Number: Project Number
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1 **LEVEL 2.5 - PARKING - AREA A**
SCALE: 1/8" = 1'-0"

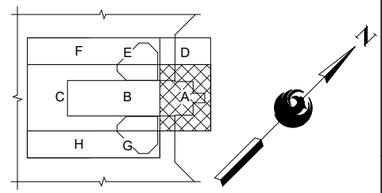


2 **LIGHTING - PUMP ROOM**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

L05 ALL LUMINAIRES SHALL BE EMERGENCY LIGHTING.

L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).



KEY PLAN

0' 4' 8' 16'

Licensed Professional Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

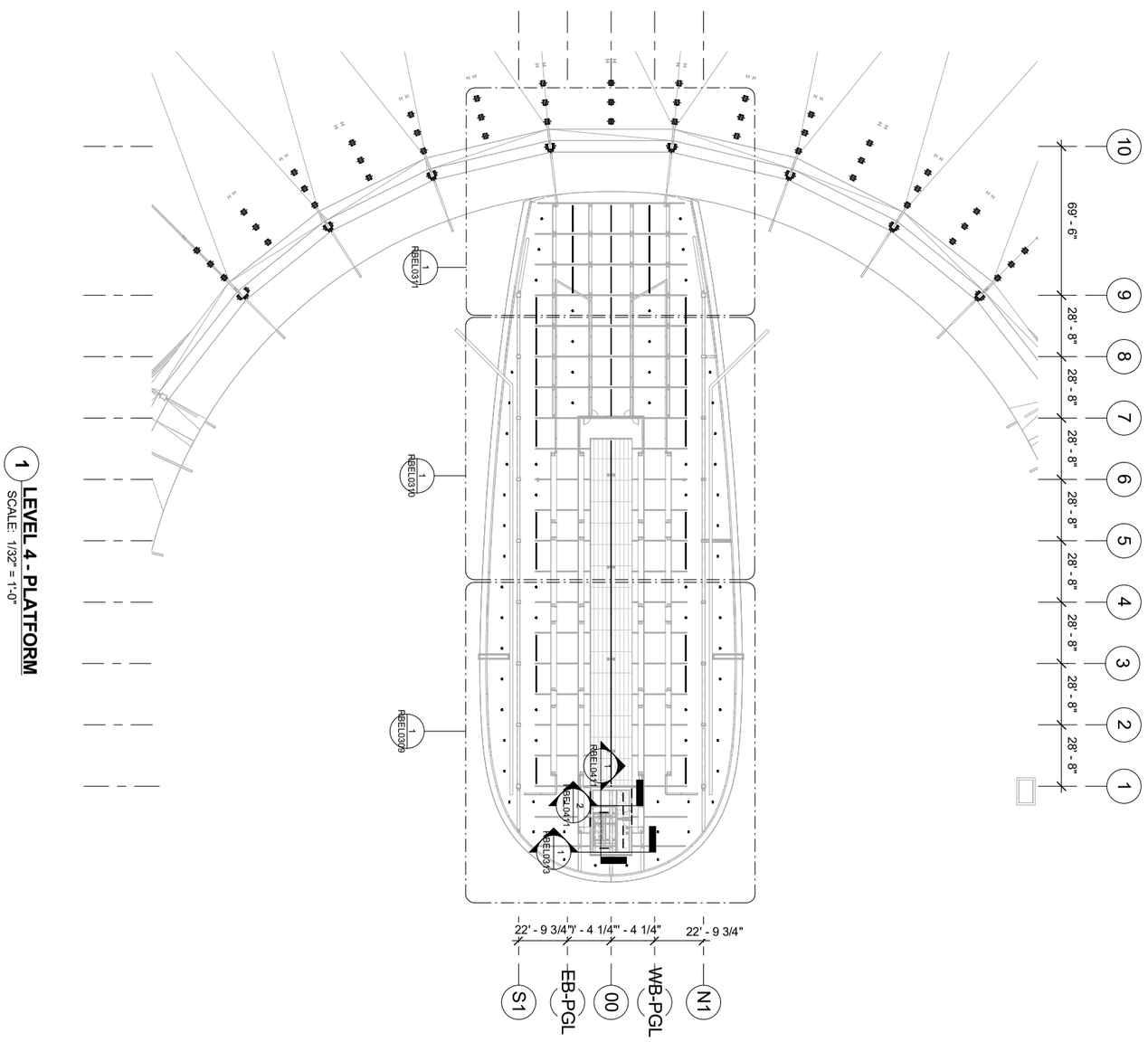
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
LEVEL 2.5 SITE PLAN
AREA A AND PUMP ROOM

Package: **B04 - RBEL0307**
Sheet Reference No:
V6 - 046 of 260

Project Number: Project Number
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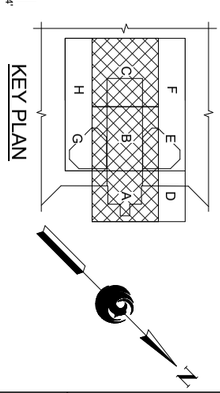
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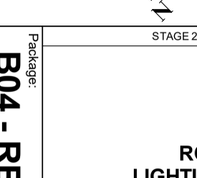


1 **LEVEL 4 - PLATFORM**
SCALE: 1/32" = 1'-0"

0' 16' 32' 64'

KEY PLAN





STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
PLATFORM LEVEL

Package: **B04 - RBEL0308** Sheet Reference No:
V6 - 047 of 260

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/32" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

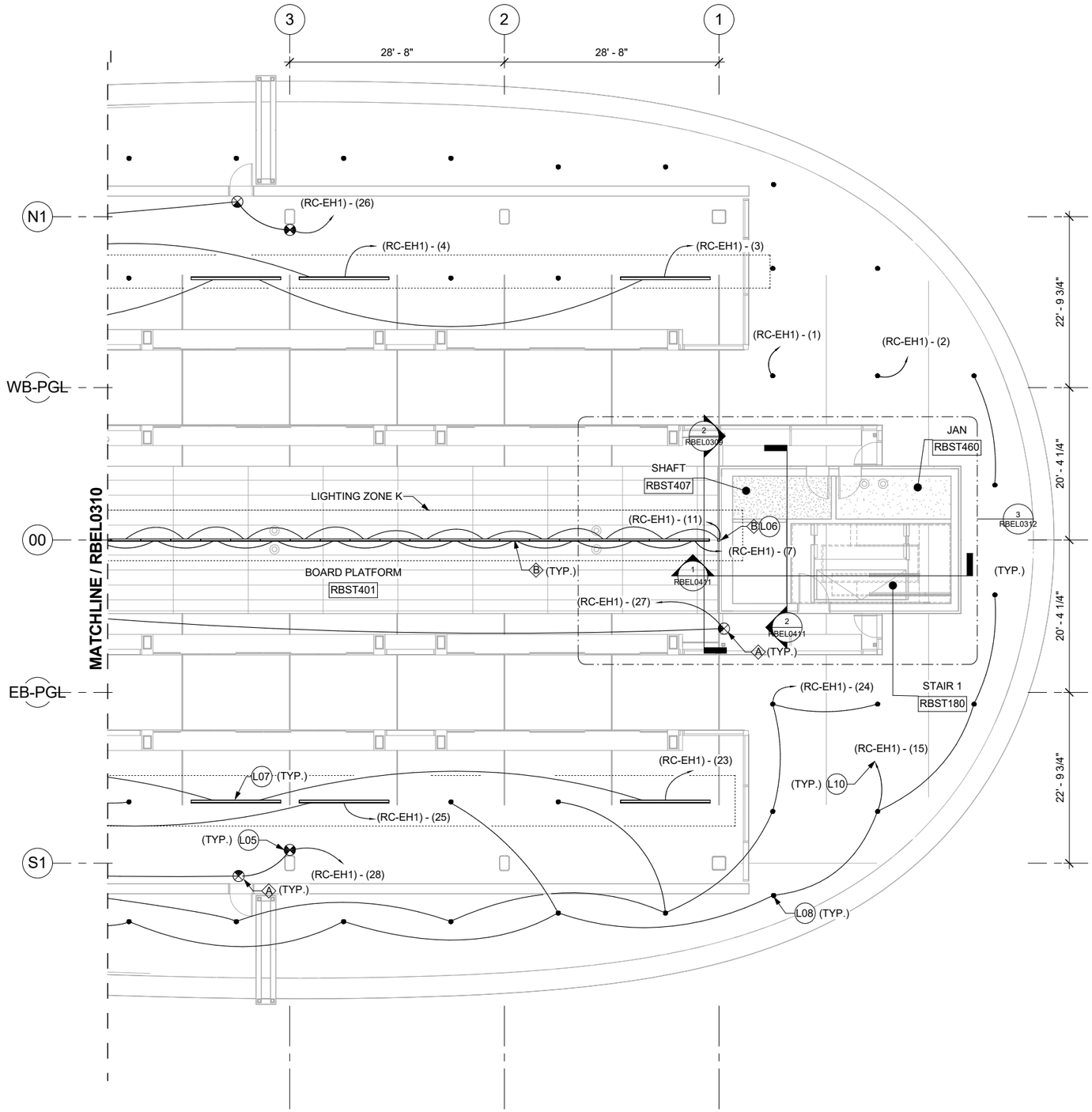
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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer
49025
PETER M.
SYNTAX
Date Signed 07/13/18
ARIZONA U.S.A.
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

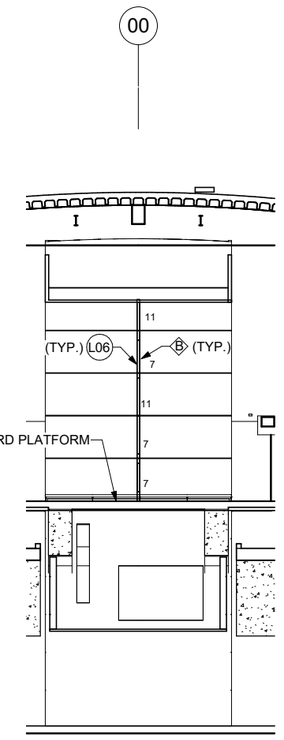
Design Consultant
Gannett Fleming



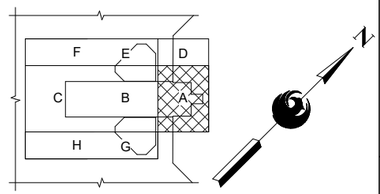
1 LEVEL 4 - PLATFORM - AREA A
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

- L05 ALL LUMINAIRES SHALL BE EMERGENCY LIGHTING.
- L06 ROUTE LINEAR LIGHTING DOWN WALL. REFER TO ARCHITECTURAL PLANS FOR DETAILS.
- L07 MOUNT FIXTURE ON BEAM TIGHT TO ROOF STRUCTURE.
- L08 ALL CONDUIT SHALL BE ROUTED WITHIN THE DECK. CONTRACTOR TO COORDINATE ROUTING AND ACCESS POINTS WITH DECK SUPPLIER PRIOR TO ROUGH-IN.
- L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).



2 BOARD PLATFORM VERTICAL WALL LIGHT
SCALE: 1/8" = 1'-0"



KEY PLAN

Licensed Professional Engineer
PETER M. SYNTAX
49025
Arizona U.S.A.
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

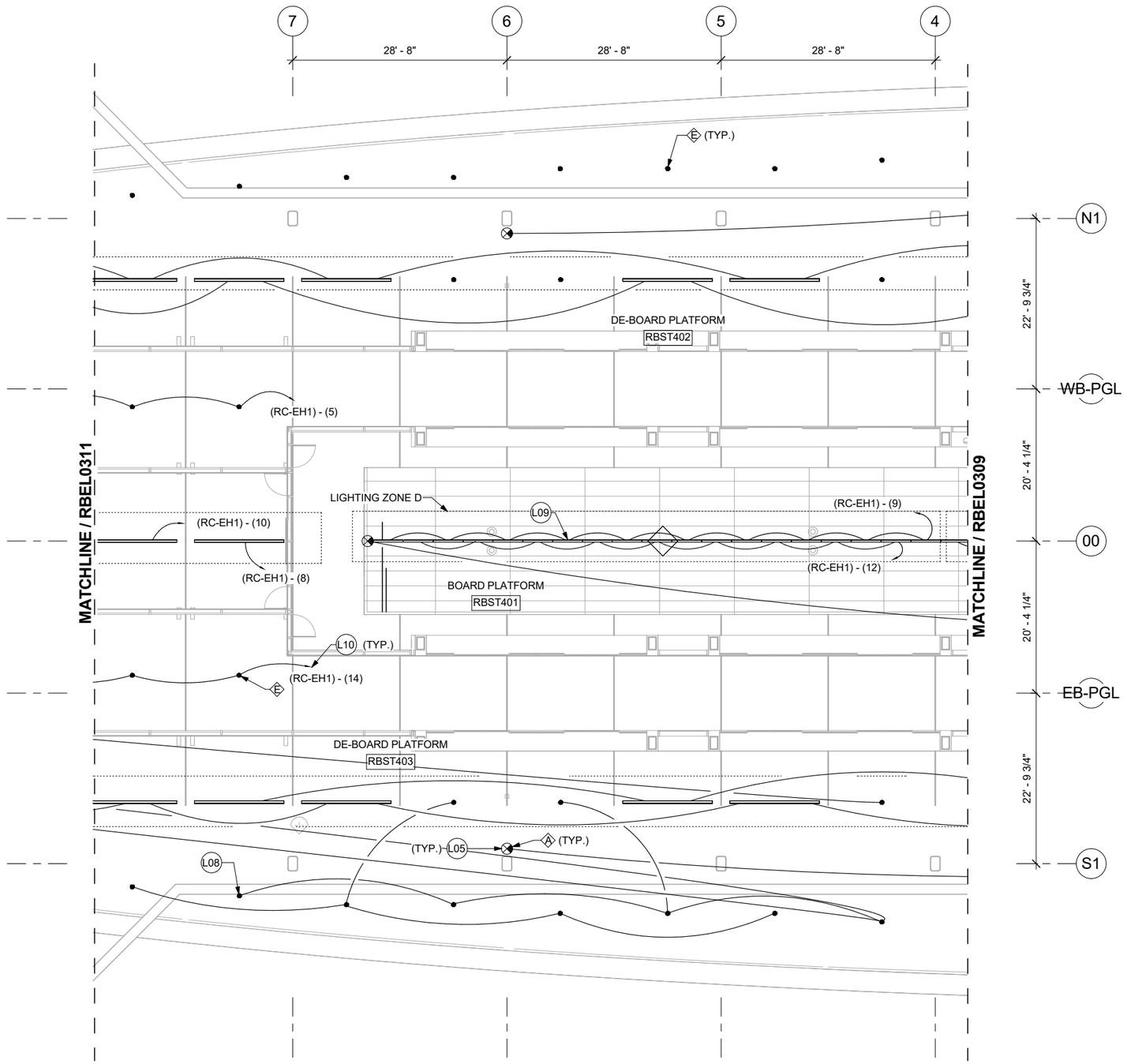
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Date:	07/13/18
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CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
PLATFORM LEVEL
AREA A

Package:
B04 - RBEL0309
V6 - 048 of 260
Sheet Reference No:

Project Number: Project Number
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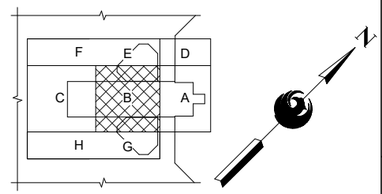


1 **LEVEL 4 - PLATFORM - AREA B**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

L05 ALL LUMINAIRES SHALL BE EMERGENCY LIGHTING.

L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).



KEY PLAN

0' 4' 8' 16'

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

Expires 12-31-2020

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

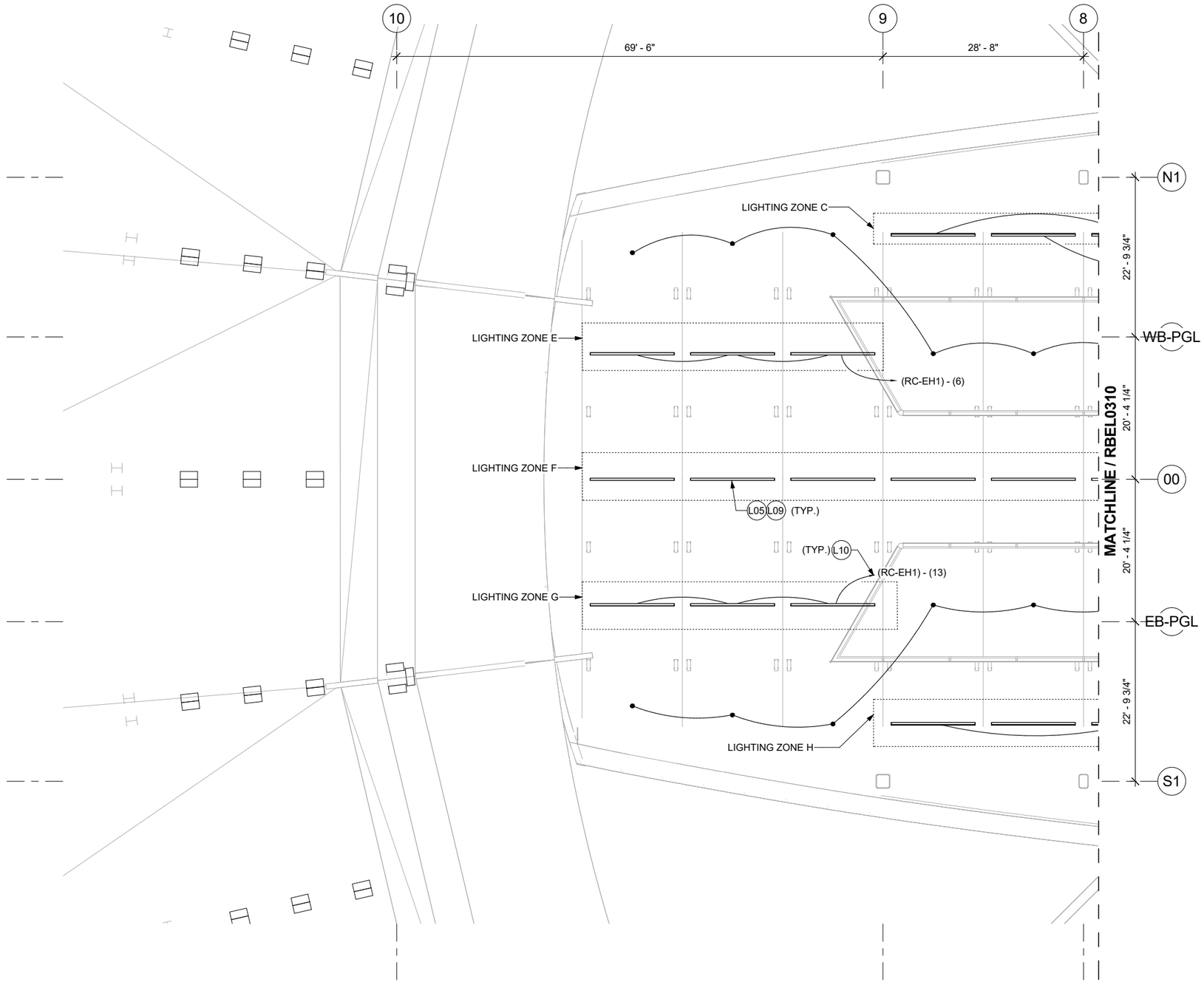
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LIGHTING FLOOR PLAN
ELECTRICAL
PLATFORM LEVEL
AREA B

Package: **B04 - RBEL0310**

Sheet Reference No:
V6 - 049 of 260

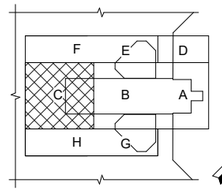
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1 **LEVEL 4 - PLATFORM - AREA C**
SCALE: 1/8" = 1'-0"

0' 4' 8' 16'



KEY PLAN

CONSTRUCTION NOTES

L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).

Project Number: Project Number
7/13/2018 5:34:30 PM

Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELX01_R17_A360.rvt

Registered Professional Engineer
49025
PETER M. SYNTAX
Electrical
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

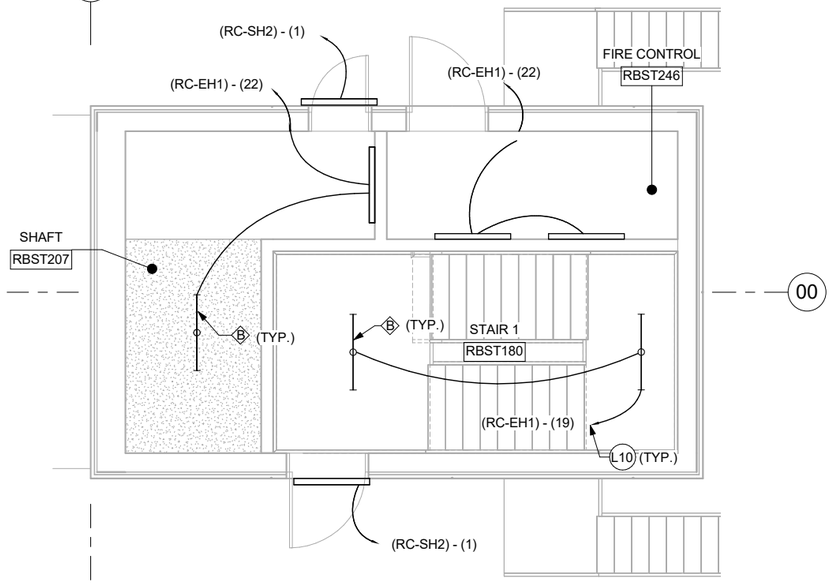
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

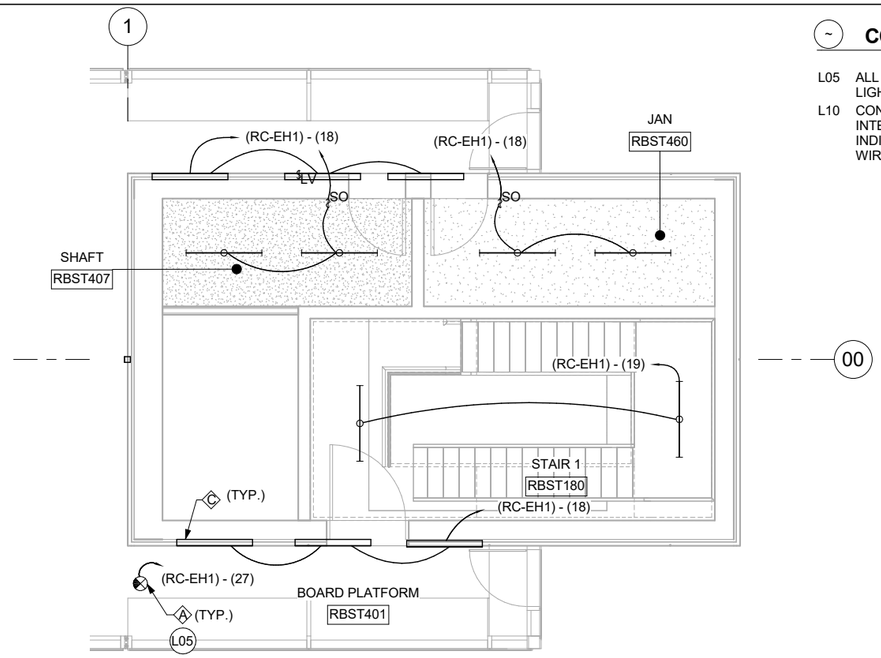
RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
PLATFORM LEVEL
AREA C

Package: B04 - RBEL0311
Sheet Reference No: V6 - 050 of 260



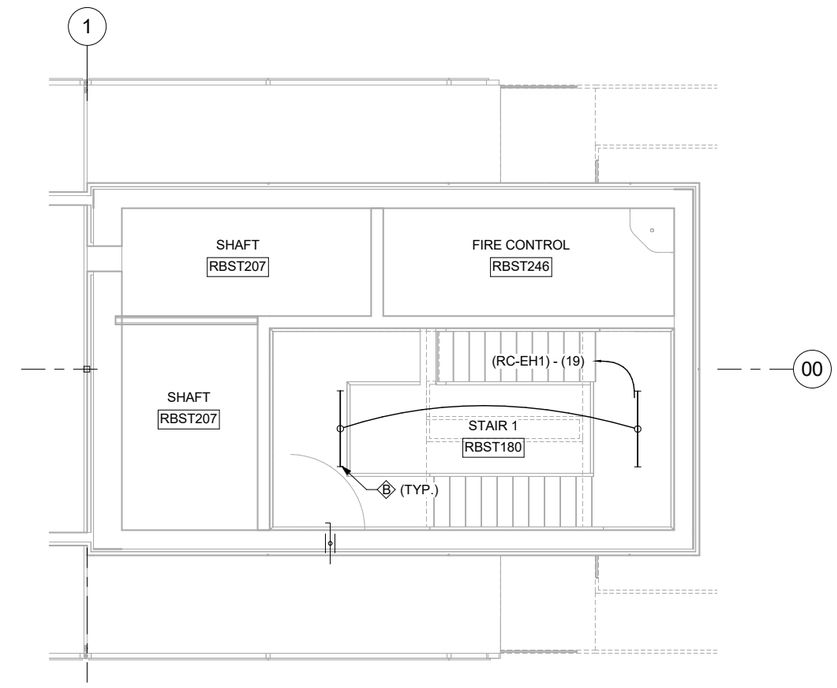
1 ENLARGED PLAN - LEVEL 2 - VERTICAL CIRCULATION CORE

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



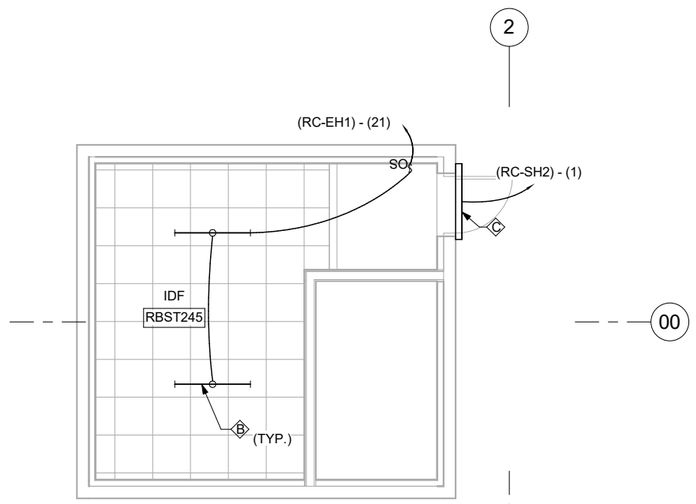
3 ENLARGED PLAN - PLATFORM LEVEL - VERTICAL CIRCULATION CORE

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



2 ENLARGED PLAN - LEVEL 3 - VERTICAL CIRCULATION CORE

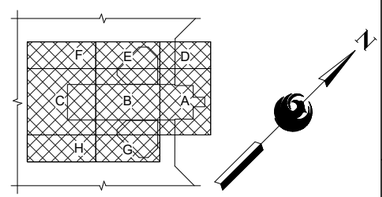
SCALE: 1/4" = 1'-0"



4 ENLARGED PLAN - LEVEL 2 - IDF ROOM

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

0' 2' 4' 8'



KEY PLAN

CONSTRUCTION NOTES

L05 ALL LUMINAIRES SHALL BE EMERGENCY LIGHTING.

L10 CONTRACTOR SHALL PROVIDE WISCAPE INTERNAL FIXTURE MODULE FOR EACH INDIVIDUAL LIGHTING CIRCUIT (MODEL NO. WIR-RMI-IO).

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	SUBMITTED FOR REVIEW	04/06/18

Designed by: PMS
Drawn by: BRB
Checked by: MAC
Date: 07/13/18
Dwg scale: 1/4" = 1'-0"
CIP No.: AV10000011
KIVA No.: 07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING FLOOR PLAN
ELECTRICAL
CORE BUILDING AND IDF ROOM

Package: B04 - RBEL0312
Sheet Reference No: V6 - 051 of 260

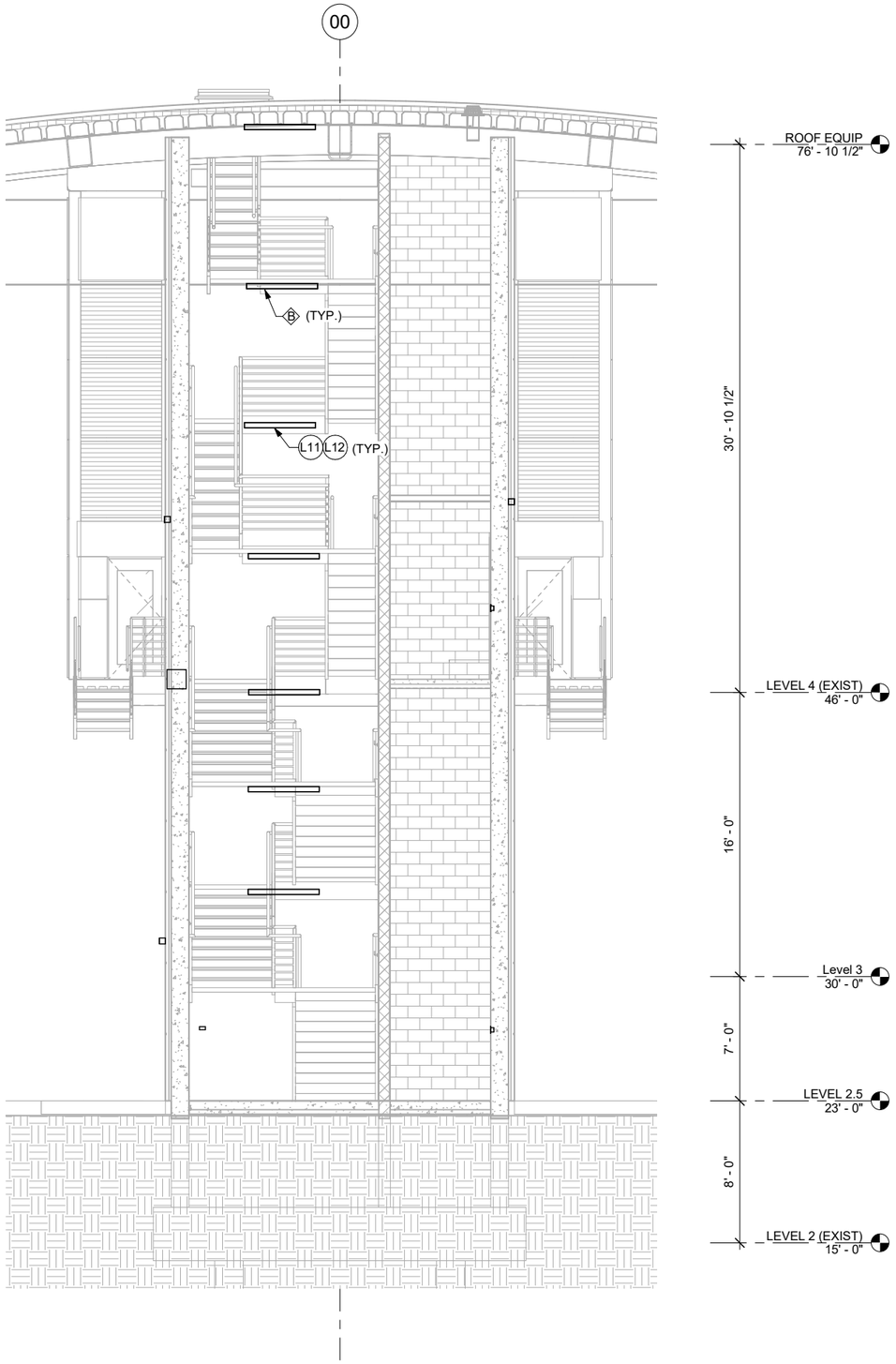
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Design Sub-Consultant: Kimley»Horn
Design Consultant: Gannett Fleming

Registered Professional Engineer - Electrical - 49025 - PETER M. SYNTAX - Expires 12-31-2020

Project Number: Project Number
7/13/2018 5:34:42 PM
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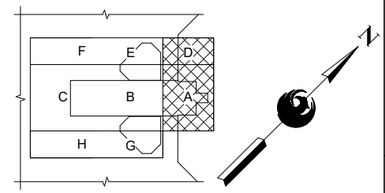


1 **STAIRCASE SECTION DETAIL**
SCALE: 1/4" = 1'-0"

CONSTRUCTION NOTES

L11 LIGHTS SHALL BE MOUNTED UNDER EACH STAIR LANDING.

L12 SEE SHEET B04-RBEL0311 FOR CIRCUITING INFORMATION.



KEY PLAN

0' 2' 4' 8'

PETER M. SYNTAX 49025 Registered Electrical Engineer Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
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KIVA No.:	07-5204

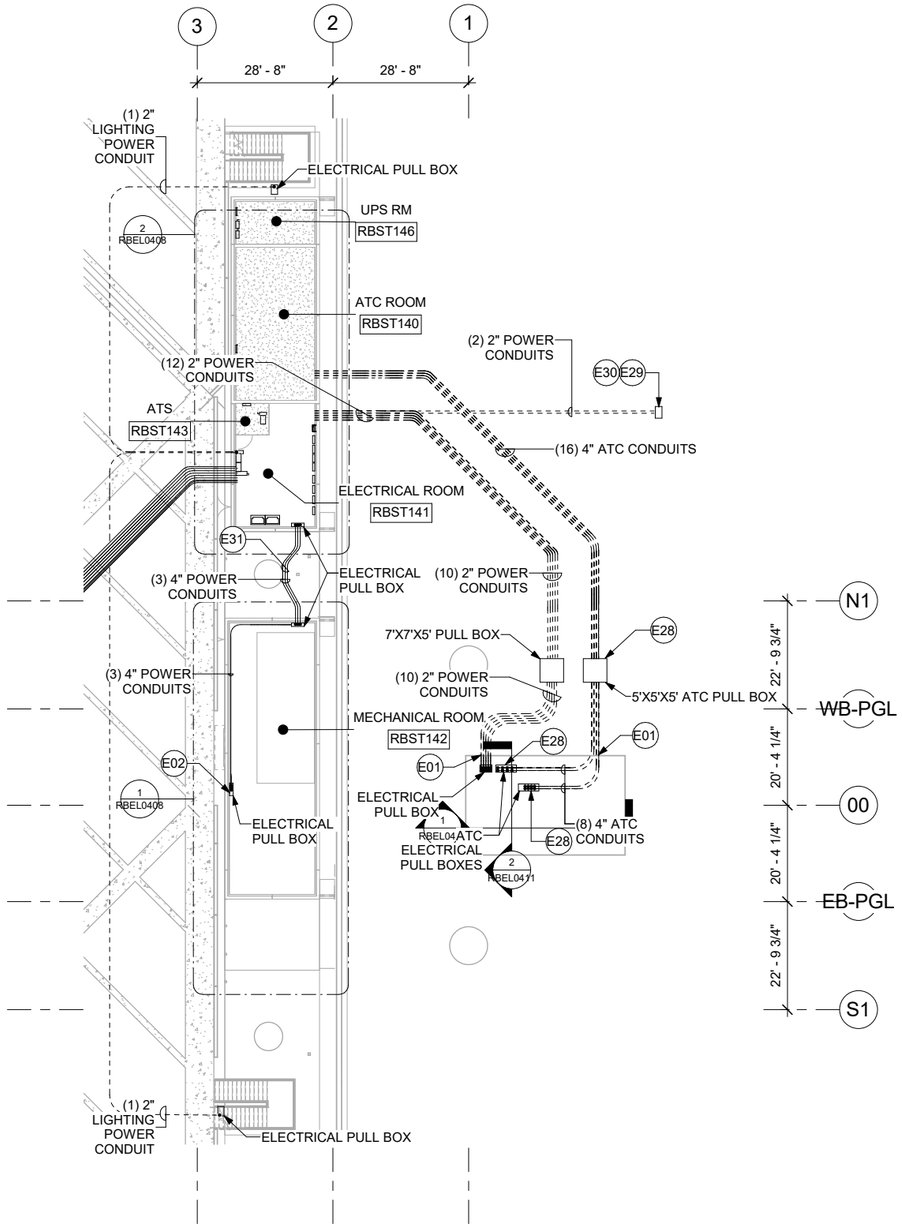
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIGHTING SECTIONS
ELECTRICAL
CORE BUILDING DETAILS

Package: **B04 - RBEL0313**

Sheet Reference No:
V6 - 052 of 260

Project Number: Project Number
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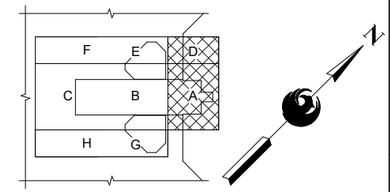


1 LEVEL 1 / GROUND - ELECTRICAL POWER PLAN - AREA A AND AREA D

SCALE: 1/16" = 1'-0"

CONSTRUCTION NOTES

- E01 REFER TO STRUCTURAL PLANS FOR CONDUIT PENETRATION INTO CHASE.
- E02 (3) 4" CONDUITS ROUTE THROUGH PULL BOX LOCATED IN MECHANICAL ROOM TO PULL BOX IN IDF ROOM ABOVE.
- E28 ADD PULL BOX DIVIDER TO SEPERATE COMMUNICATIONS AND ELECTRICAL CONDUITS AND CONDUCTORS.
- E29 INSTALL ADOT #7 PULL BOX.
- E30 ELECTRICAL ROOM CONNECTION FOR SITE LIGHTING, MONUMENT LIGHTING, LANDSCAPE LIGHTING, FLAG POLE LIGHTING, AND GATE OPERATOR POWER.SEE SHEET B04-RSEL0201 FOR CONTINUATION.
- E31 SUPPORT ELECTRICAL CONDUIT BETWEEN ELECTRICAL AND MECHANICAL ROOM FROM UNISTRUT FRAME MOUNTED ON COLUMN.



KEY PLAN

0' 8' 16' 32'

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

Registered Professional Engineer — Electrical — USA — 49025 — PIETER M. SYNTAX — Expires 12-31-2020

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/16" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
POWER SITE PLAN
ELECTRICAL
LEVEL 1 / GROUND
AREA A AND AREA D

Package: B04 - RBEL0401

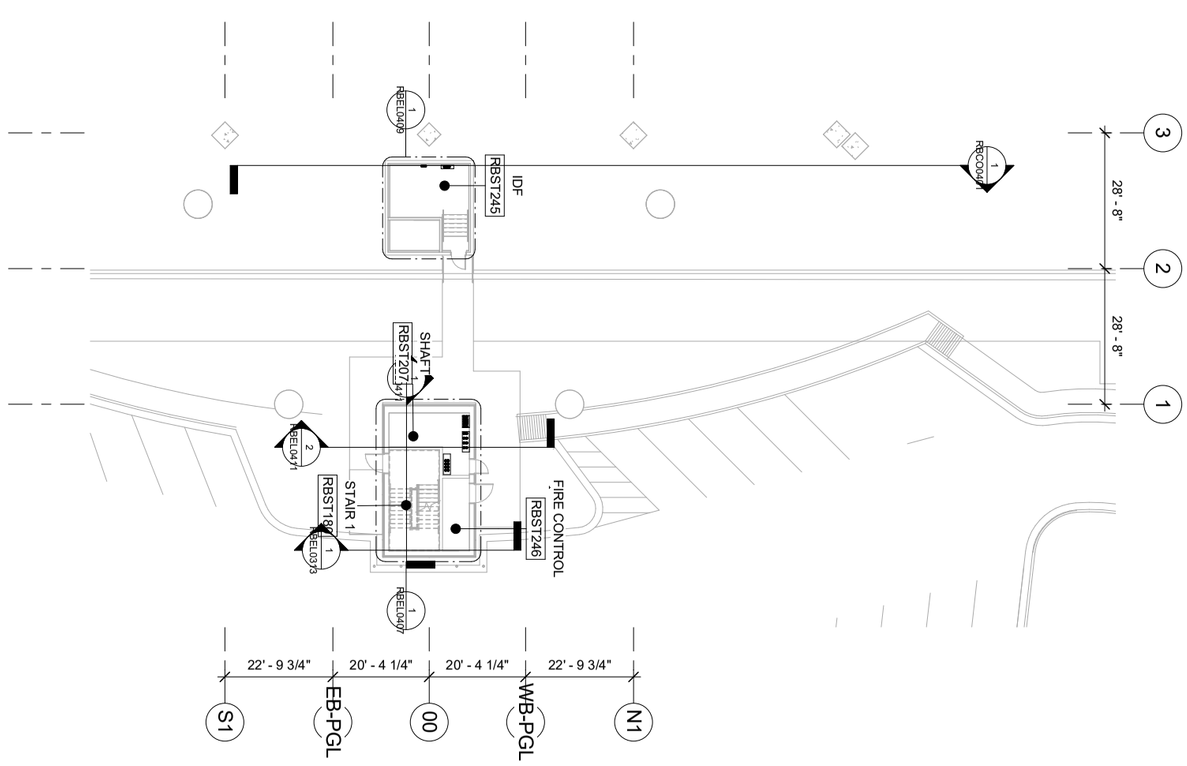
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Project Number: Project Number
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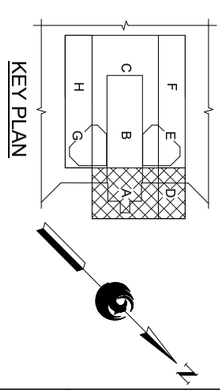
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt

1 **LEVEL 2 / LOW ROOF - ELECTRICAL POWER PLAN - AREA A AND AREA D**
SCALE: 1/16" = 1'-0"



0" 8" 16" 32"

KEY PLAN



STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
POWER SITE PLAN
ELECTRICAL
LEVEL 2 / LOW ROOF
AREA A AND AREA D

Package: **B04 - RBEL0402** Sheet Reference No:
V6 - 054 of 260

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/16" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

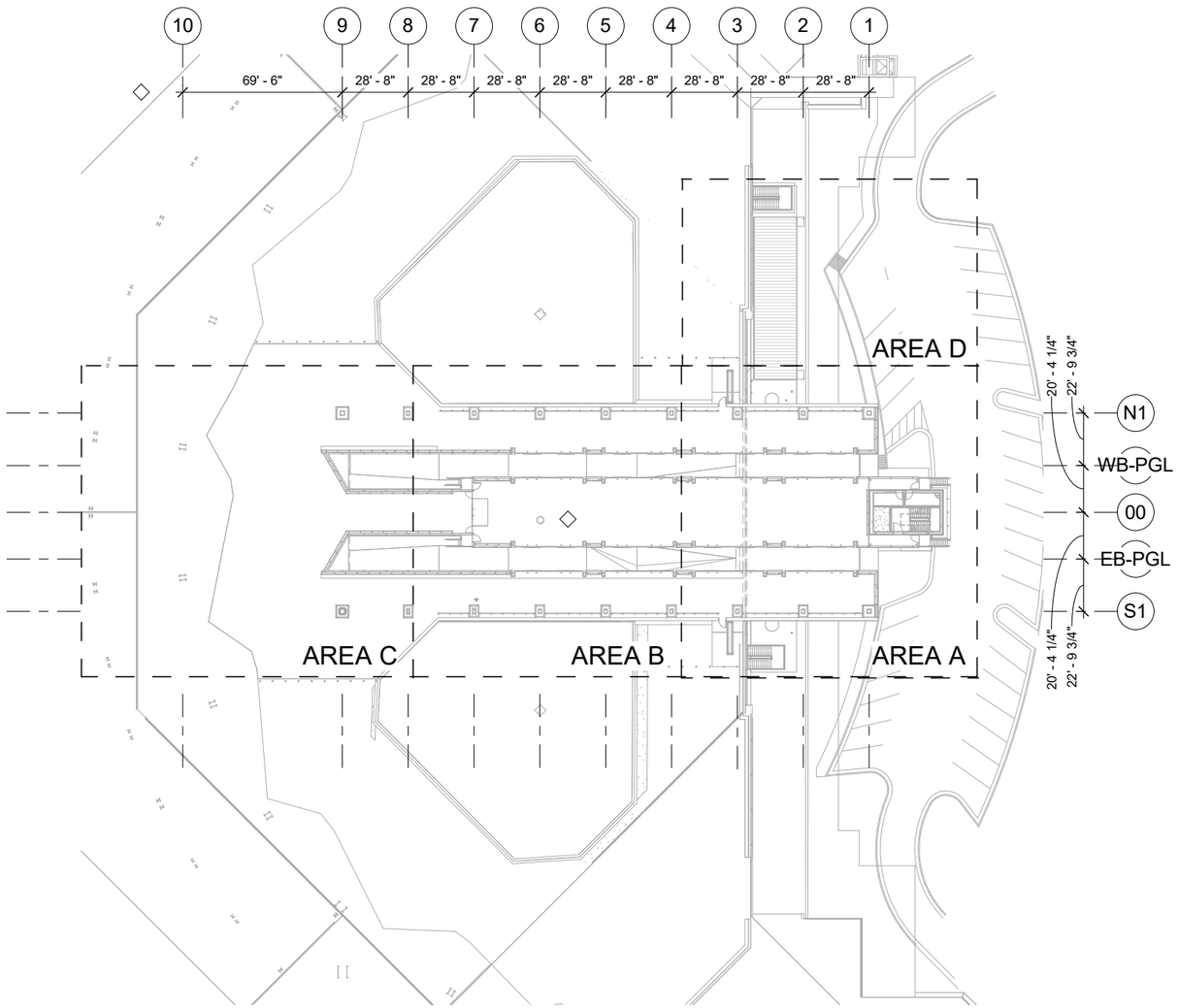
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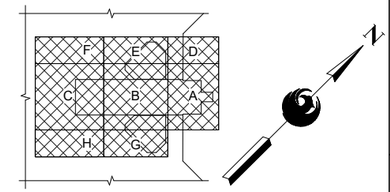
Professional Engineer
Peter Syntax
Date Signed: 07/13/18
ARIZONA, U.S.A.
49025
PETER M.
SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming



1 LEVEL 4 / PLATFORM - ELECTRICAL POWER PLAN - AREA A AND AREA D
SCALE: 1/32" = 1'-0"



KEY PLAN

0' 16' 32' 64'

N

Project Number: Project Number
7/13/2018 5:35:29 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

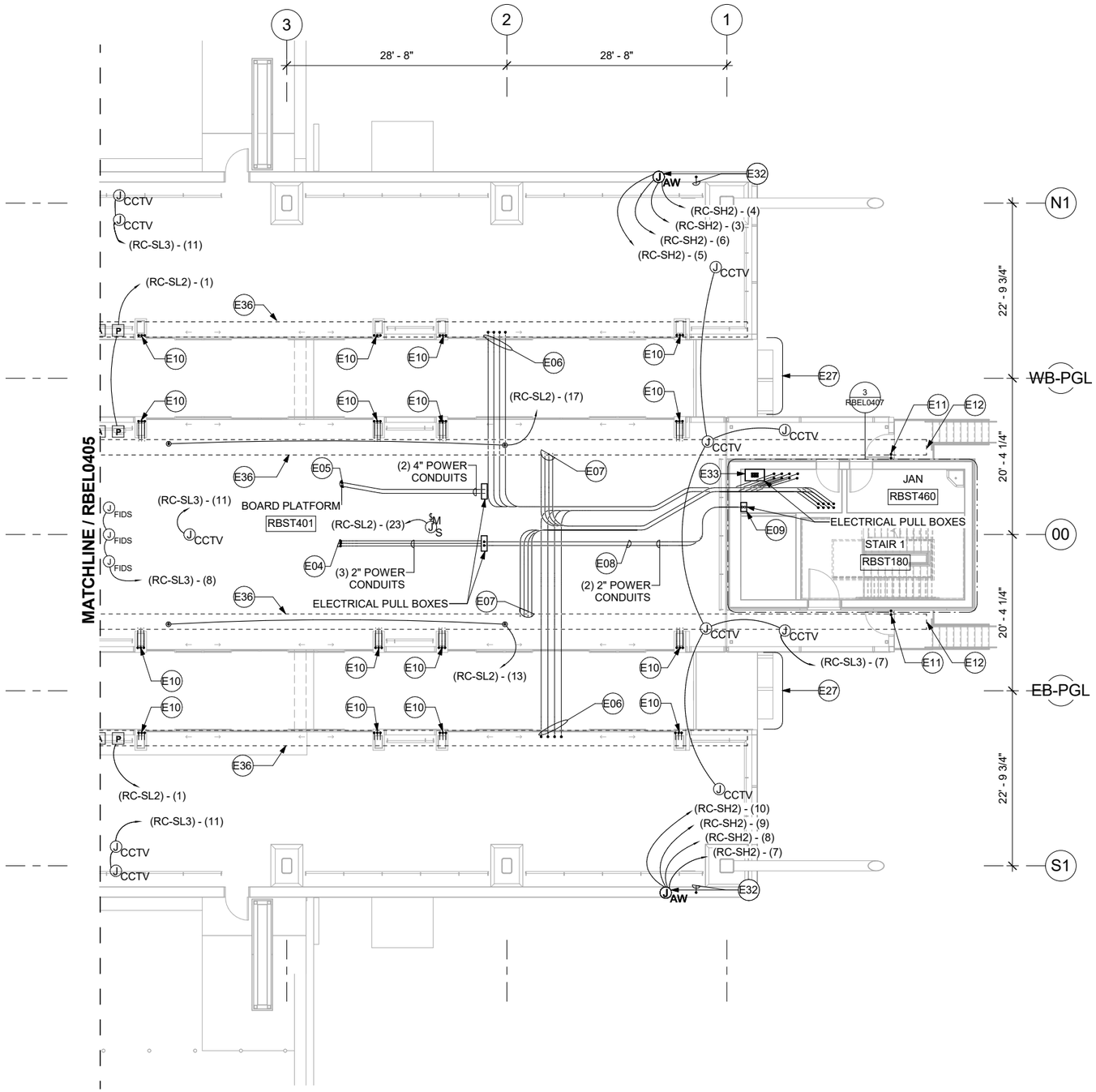
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/32" = 1'-0"
CIP No.:	AV10000011
KHA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
POWER SITE PLAN
ELECTRICAL
LEVEL 4 / PLATFORM LEVEL

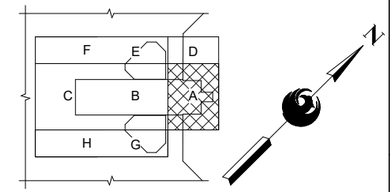
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Sheet Reference No:
V6 - 055 of 260



1 **LEVEL 4 / PLATFORM - ELECTRICAL POWER PLAN - AREA A**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

- E04 (3) 2" CONDUIT FROM IDF ROOM PANEL RC-SL3 TO BELOW PLATFORM CHASE PULL BOX FOR COMMUNICATIONS EQUIPMENT POWER.
- E05 (2) 4" CONDUIT FROM ELECTRICAL PULL BOX IN IDF ROOM TO PULL BOX IN CHASE BELOW PLATFORM. SPARE CONDUIT ROUTE FOR BELOW PLATFORM STATION POWER.
- E06 (4) 4" POWER CONDUITS TO STUB INTO CABLE TRAY AT DEBOARD PLATFORM FROM PULL BOX LOCATED IN CORE.
- E07 (4) 4" POWER CONDUITS TO CABLE TRAY AT BOARD PLATFORM FROM PULL BOX LOCATED IN CORE.
- E08 (2) 2" POWER CONDUITS FROM PULL BOX IN CHASE BELOW PLATFORM TO PULL BOX IN SHAFT FOR COMMUNICATIONS EQUIPMENT POWER.
- E09 (2) 2" POWER CONDUITS STUB INTO PULL BOX LOCATED IN SHAFT CORE.(2) 2" POWER CONDUIT EXTENDS FROM PULL BOX ON LEVEL 3 IN SHAFT TO PULL BOX BELOW ROOF IN SHAFT FOR COMMUNICATIONS EQUIPMENT POWER.
- E10 PROVIDE (3) 1 1/2"C TO DOOR HEADER FROM CABLE TRAY.
- E11 PROVIDE (1) 1" CONDUIT FROM GUIDEWAY CABLE TRAY TO DOOR HEADER.
- E12 PROVIDE CONNECTION FROM CABLE TRAY TO BOMBARDIER SUPPLIED CABLE TRAY ON GUIDEWAY. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH BOMBARDIER PRIOR TO BEGINNING WORK.
- E27 ALL CONDUIT SHALL BE ROUTED WITHIN THE GUIDEWAY DECK. CONTRACTOR TO COORDINATE ROUTING AND ACCESS POINTS WITH DECK SUPPLIER PRIOR TO ROUGH-IN.
- E32 ROUTE (1) 1" CONDUIT FOR ART WALL LIGHTING TO ELECTRICAL PULL BOX UNDER PLATFORM. COORDINATE STUBUP LOCATION WITH STRUCTURAL.
- E33 ELECTRICAL PULL BOX IN SHAFT CORE TO SERVE ELECTRICAL EQUIPMENT BELOW PLATFORM.
- E36 PROVIDE 24"X36" CABLE TRAY WITH DIVIDERS FOR TRAIN SYSTEM. COORDINATE MOUNTING WITH STRUCTURES.



KEY PLAN

0' 4' 8' 16'

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

Expires 12-31-2020

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

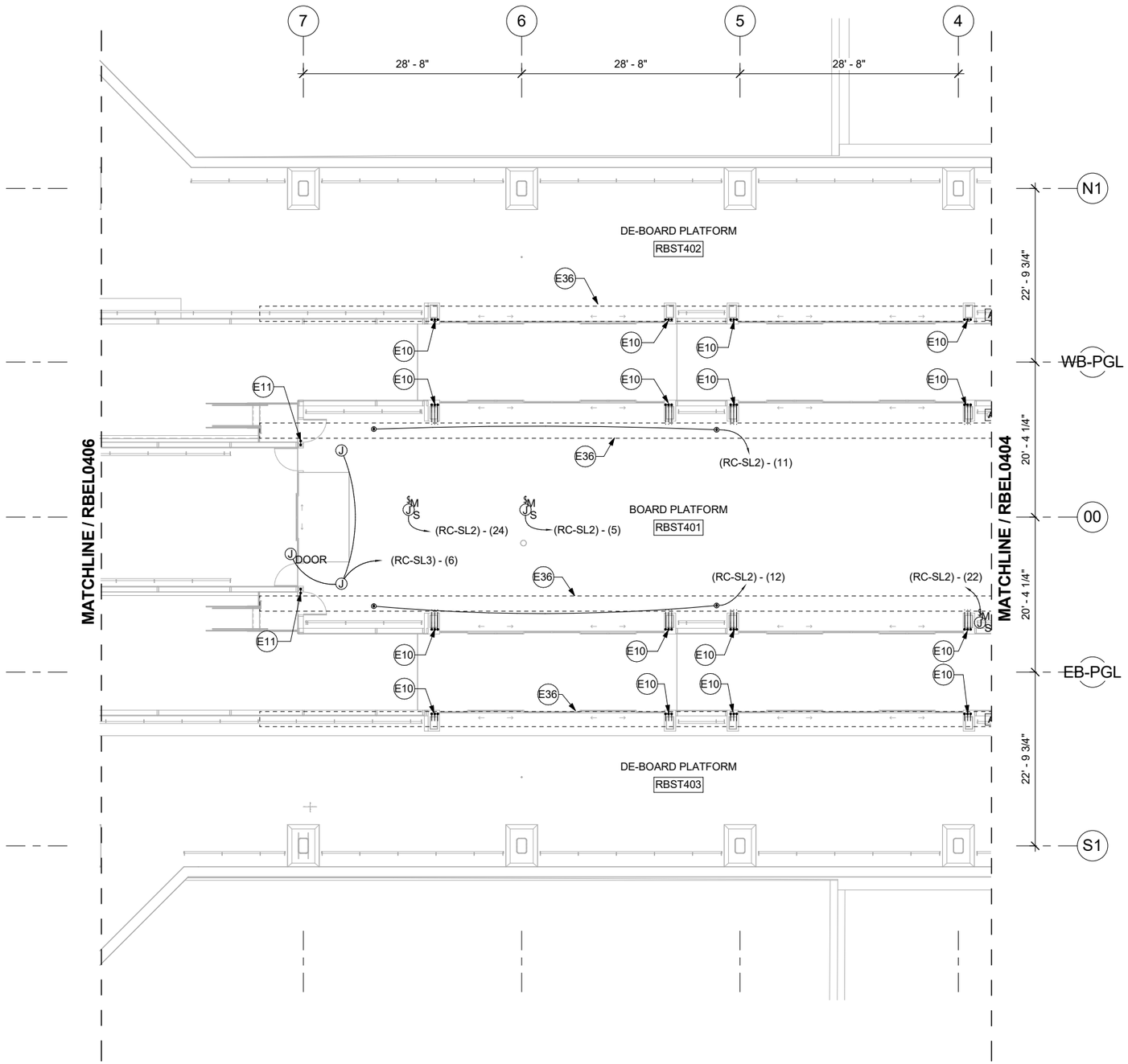
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
POWER SITE PLAN
ELECTRICAL
LEVEL 4 / PLATFORM LEVEL
AREA A

Package: B04 - RBEL0404
Sheet Reference No: V6 - 056 of 260

Project Number: Project Number
7/13/2018 5:35:39 PM

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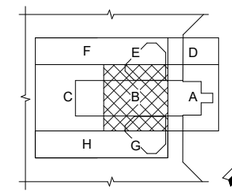
1 **LEVEL 4 / PLATFORM - ELECTRICAL POWER PLAN - AREA B**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

E10 PROVIDE (3) 1 1/2"C TO DOOR HEADER FROM CABLE TRAY.

E11 PROVIDE (1) 1" CONDUIT FROM GUIDEWAY CABLE TRAY TO DOOR HEADER.

E36 PROVIDE 24"X36" CABLE TRAY WITH DIVIDERS FOR TRAIN SYSTEM. COORDINATE MOUNTING WITH STRUCTURES.



KEY PLAN

0' 4' 8' 16'

Licensed Professional Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

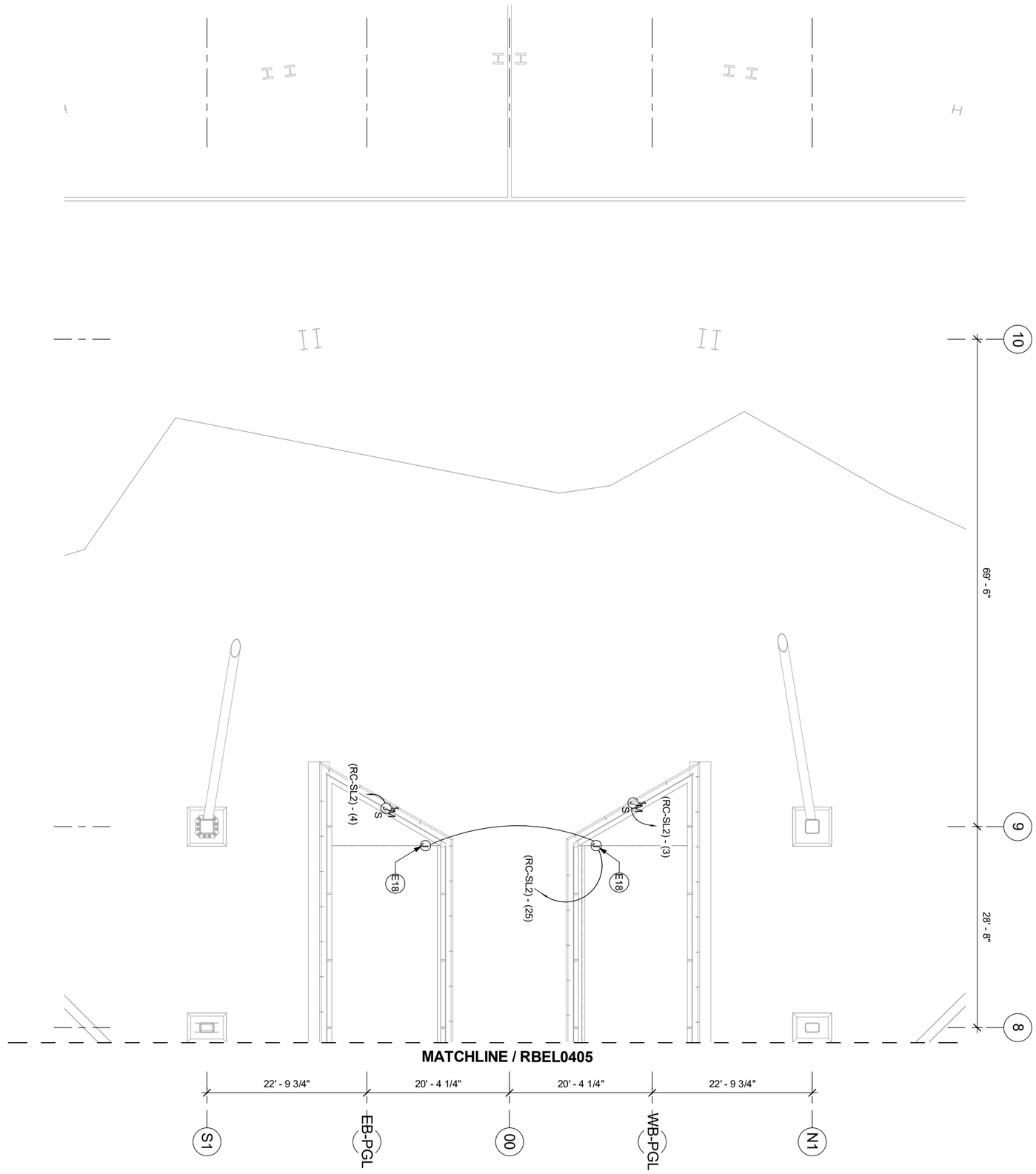
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Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
POWER SITE PLAN
ELECTRICAL
LEVEL 4 / PLATFORM LEVEL
AREA B

Package: **B04 - RBEL0405**
Sheet Reference No:
V6 - 057 of 260

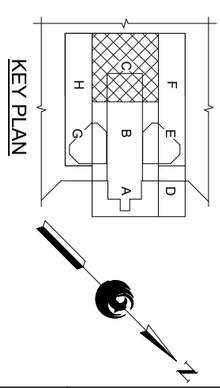
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1 **LEVEL 4 / PLATFORM - ELECTRICAL POWER PLAN - AREA C**
SCALE: 1/8" = 1'-0"

0" 4" 8" 16"

KEY PLAN



~ **CONSTRUCTION NOTES**

E18 PROVIDE JUNCTION BOX, CONDUIT, AND CIRCUIT FOR FUTURE ADVERTISING. STUB UP CONDUIT BEHIND SCREEN.

Package: **B04 - RBEL0406** Sheet Reference No: V6 - 058 of 260

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
POWER SITE PLAN
ELECTRICAL
LEVEL 4 / PLATFORM LEVEL

Designed by:	PMS
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Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

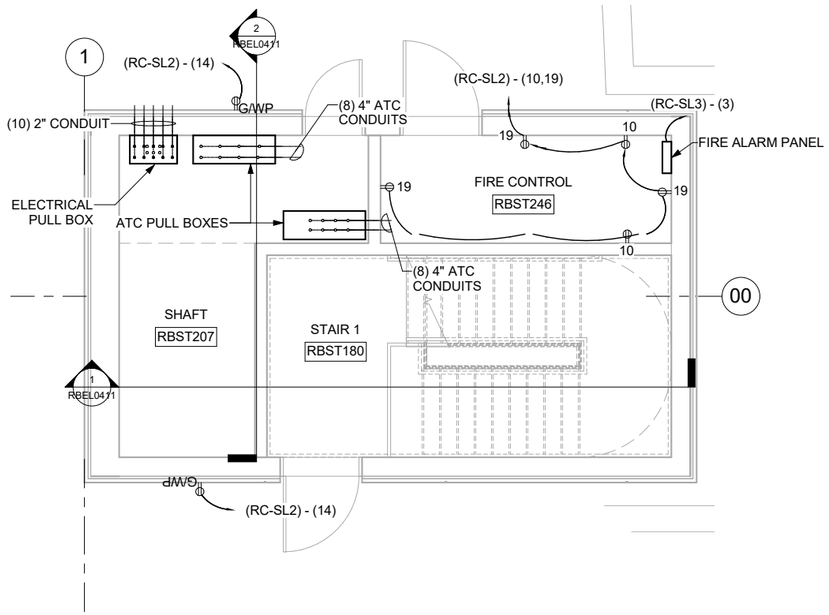
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

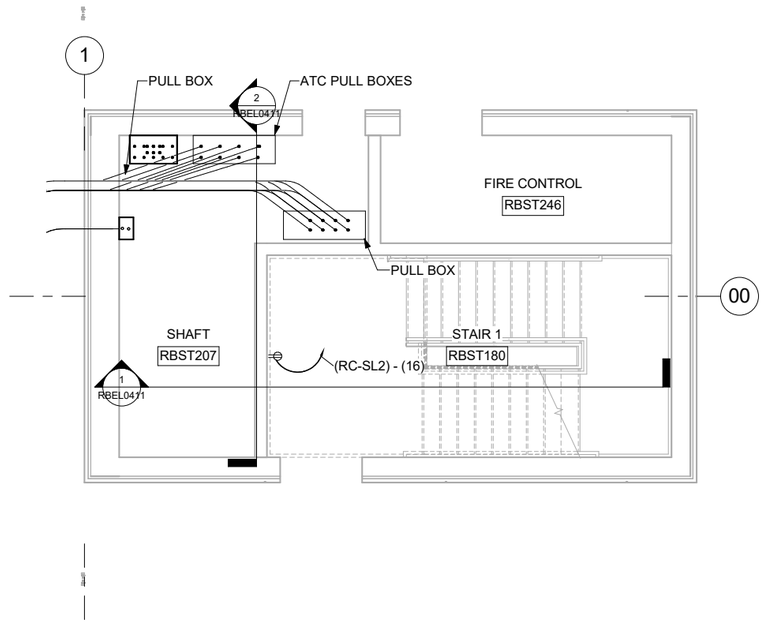
Registered Professional Engineer
49025
PETER M.
SYNTAX
Date Signed 07/13/18
ARIZONA, U.S.A.
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

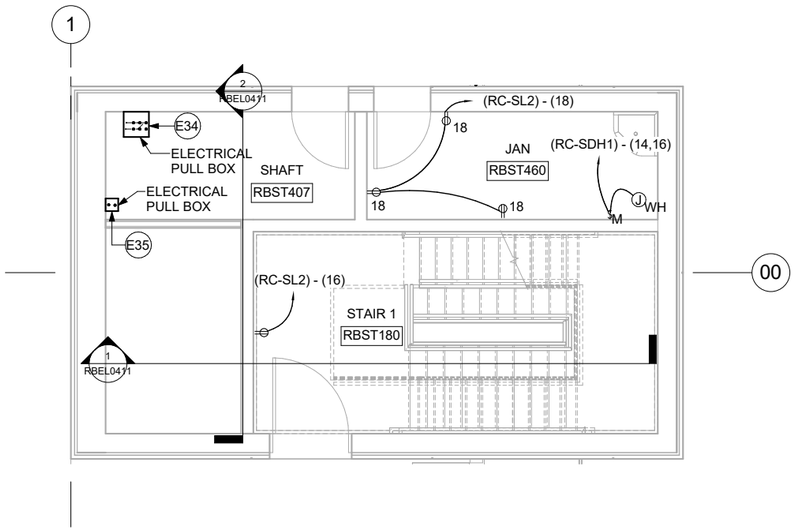
Design Consultant
Gannett Fleming



1 **ENLARGED PLAN - LEVEL 2.5 - VERTICAL CIRCULATION CORE**
SCALE: 1/4" = 1'-0"



2 **ENLARGED PLAN - LEVEL 3 - VERTICAL CIRCULATION CORE**
SCALE: 1/4" = 1'-0"

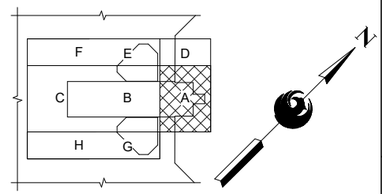


3 **ENLARGED PLAN - LEVEL 4 - VERTICAL CIRCULATION CORE**
SCALE: 1/4" = 1'-0"

CONSTRUCTION NOTES

E34 ELECTRICAL PULL BOX AT TOP OF SHAFT CORE TO SERVE ELECTRICAL EQUIPMENT ABOVE CEILING SPACE AND IN EPIDECK.

E35 ELECTRICAL PULL BOX AT TOP OF SHAFT CORE TO SERVE COMMUNICATIONS EQUIPMENT ABOVE CEILING SPACE AND IN EPIDECK.



KEY PLAN

0' 2' 4' 8'

Registered Professional Engineer - Electrical - USA
49025
PETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX DVT EYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

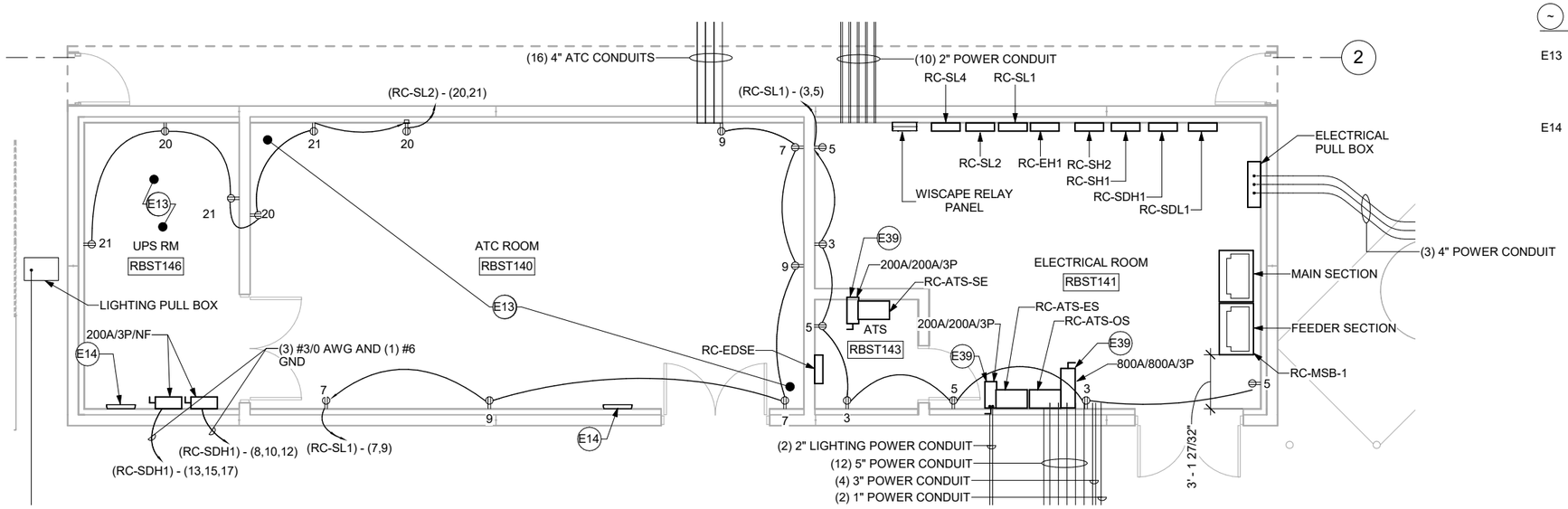
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CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

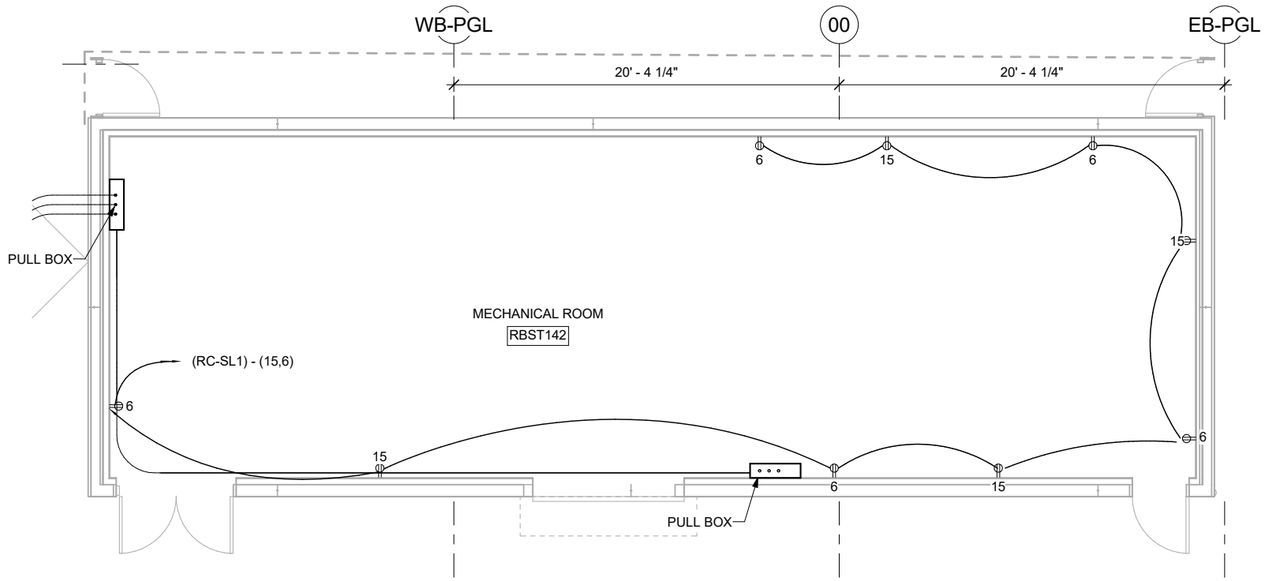
RCC STATION
POWER SITE PLAN
ELECTRICAL
VERTICAL CIRCULATION CORE AND IDF ROOM

Package: **B04 - RBEL0407**
Sheet Reference No:
V6 - 059 of 260

Project Number: Project Number
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Local File BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt



2 LEVEL 1 - ELECTRICAL AND ATC ROOMS
SCALE: 1/4" = 1'-0"

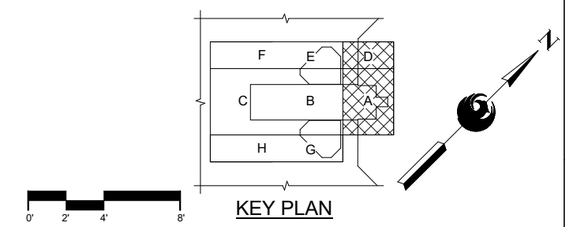


1 LEVEL 1 - MECHANICAL ROOM - AREA A
SCALE: 1/4" = 1'-0"

CONSTRUCTION NOTES

E13 PROVIDE (2) #4/0 CU GROUND PIGTAILS AT OPPOSITE CORNERS OF THE ROOM AND BOND TO BUILDING STEEL. COORDINATE EXACT LOCATION WITH BOMBARDIER PRIOR TO INSTALLATION.

E14 PROVIDE 12" COPPER GROUND BUS BAR MOUNTED ON WALL 24" AFF. EXTEND #4/0 CU GROUND WIRE TO GROUND BUS BAR IN ELECTRICAL ROOM.



KEY PLAN

Professional Engineer
49025
PIETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

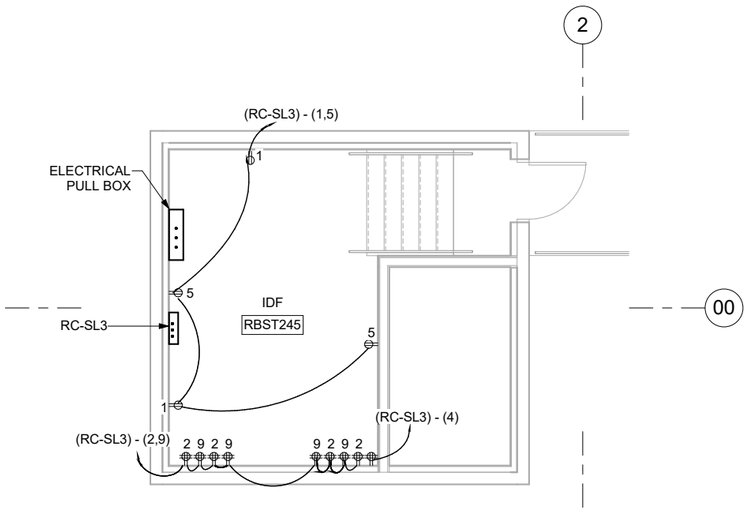
RCC STATION
POWER SITE PLAN
ELECTRICAL
BACK-OF-HOUSE DETAILS

Package: B04 - RBEL0408
Sheet Reference No: V6 - 060 of 260

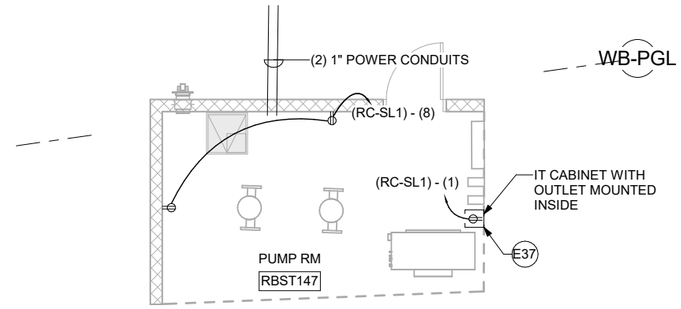
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CONSTRUCTION NOTES

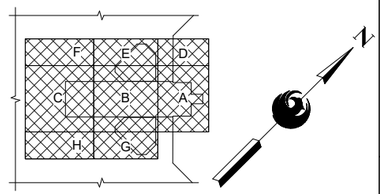
E37 PROVIDE WALL MOUNTED FIBER OPTIC CABLE TERMINAL CABINET.



1 ENLARGED PLAN - LEVEL 2 - IDF ROOM
SCALE: 1/4" = 1'-0"



2 ENLARGED PLAN - LEVEL 1 - PUMP ROOM
SCALE: 1/4" = 1'-0"



0' 2' 4' 8'

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NO.	REVISIONS / SUBMISSIONS	DATE
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	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant
Kimley»Horn
Expires 12-31-2020

Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

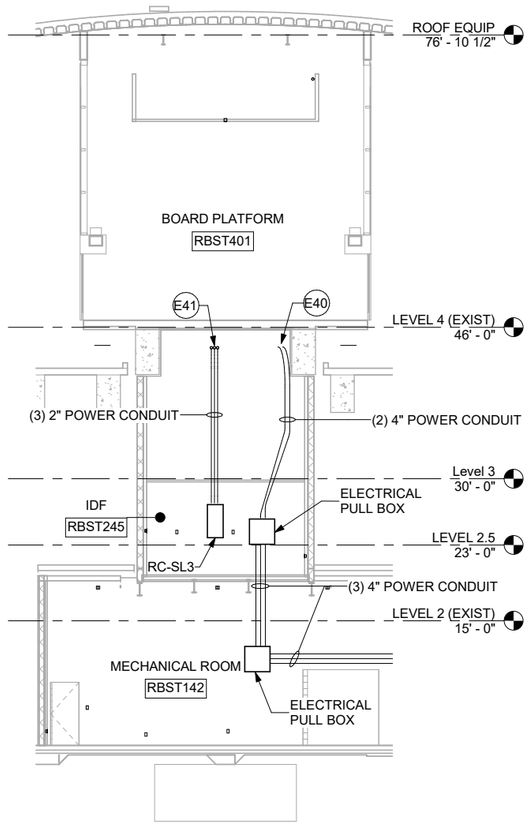
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Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
POWER SITE PLAN
IDF ROOM AND
PUMP ROOM DETAILS

Package: B04 - RBEL0409
Sheet Reference No:
V6 - 061 of 260

Project Number: Project Number
7/13/2018 5:36:13 PM
Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELX01_R17_A360.rvt



1 **IDF ROOM POWER CONDUIT ROUTING**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

E40 SPARE CONDUIT ROUTE FROM BELOW PLATFORM BACK TO ELECTRICAL ROOM RBST141.

E41 POWER CONDUIT TO FEED COMMUNICATIONS EQUIPMENT.

0' 4' 8' 16'

Licensed Professional Engineer
49025
PETER M. SYNYAK
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

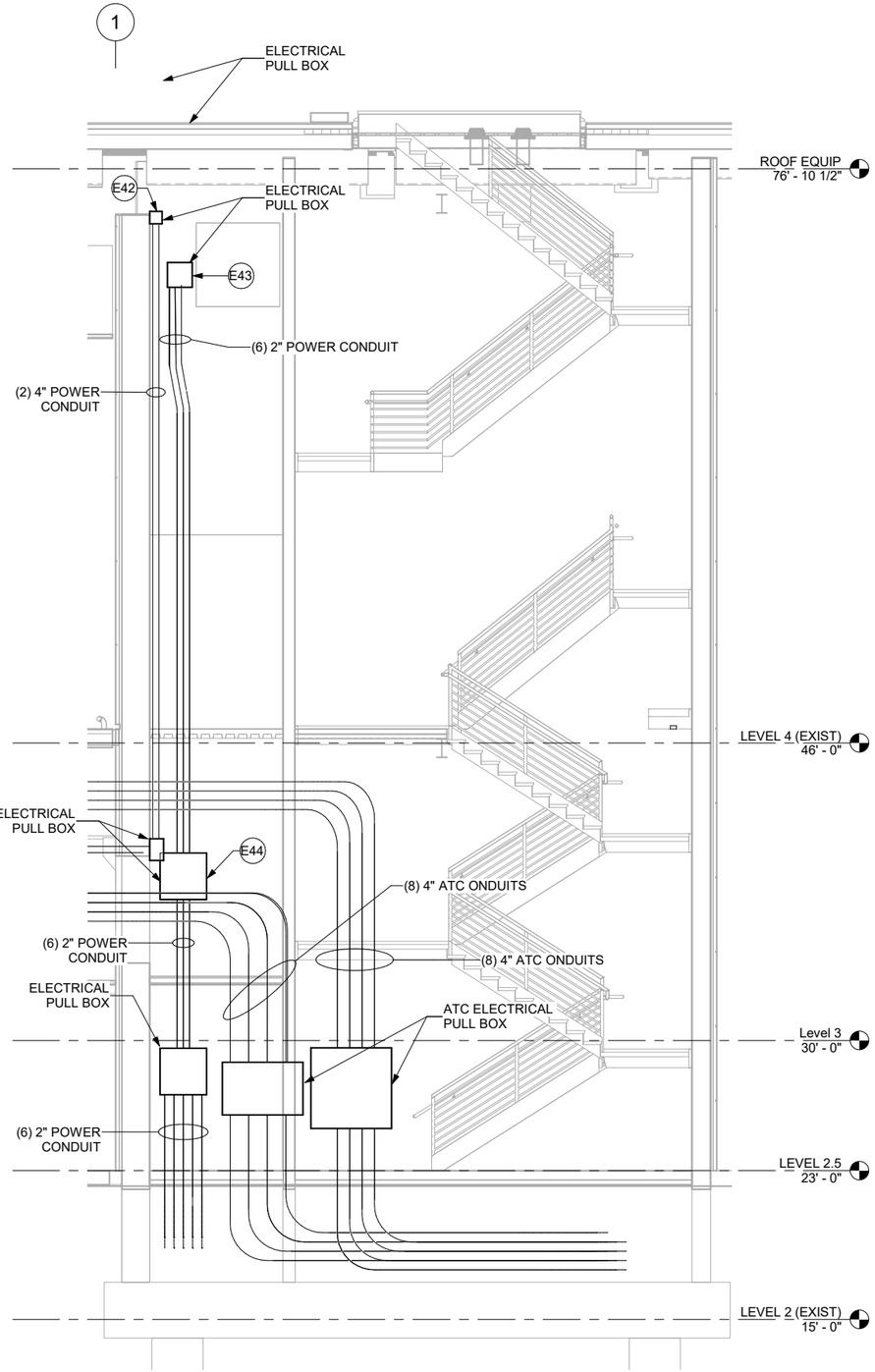
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CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

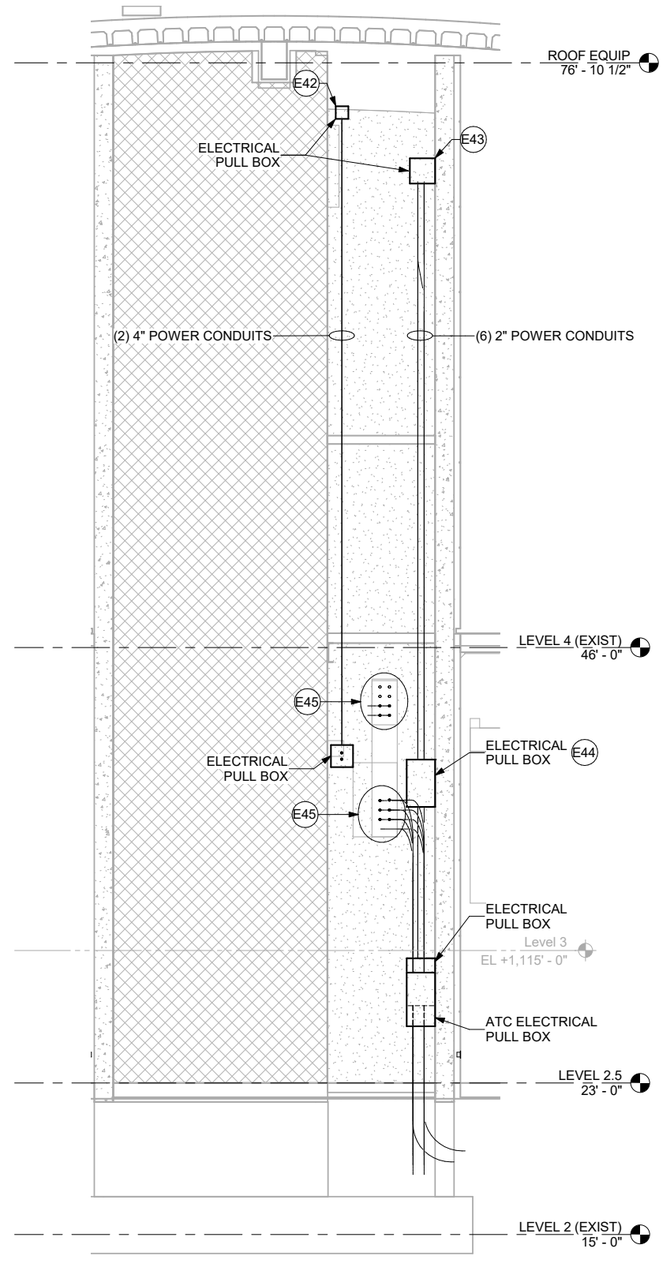
RCC STATION
POWER SECTIONS
ELECTRICAL
BACK-OF-HOUSE DETAILS

Package: B04 - RBEL0410
Sheet Reference No: V6 - 062 of 260

Project Number: Project Number
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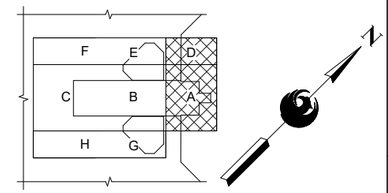


1 **CONDUIT ROUTING ELEVATION - LEVEL 2.5 TO LEVEL 5 - CORE STAIR**
SCALE: 1/4" = 1'-0"



2 **CONDUIT ROUTING ELEVATION**
SCALE: 1/4" = 1'-0"

0' 2' 4' 8'



KEY PLAN

CONSTRUCTION NOTES

- E42 ELECTRICAL PULL BOX TO COMMUNICATIONS POWER EQUIPMENT ABOVE CEILING AND IN EPIDECK.
- E43 ELECTRICAL PULL BOX TO POWER ELECTRICAL EQUIPMENT ABOVE CEILING AND IN EPIDECK.
- E44 ELECTRICAL PULL BOX TO POWER ELECTRICAL EQUIPMENT BELOW PLATFORM.
- E45 (8) ATC CONDUITS, COORDINATE SHAFT WALL PENETRATION ROUTING WITH STRUCTURAL PLANS.

Registered Professional Engineer - Electrical - USA
49025
PIETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

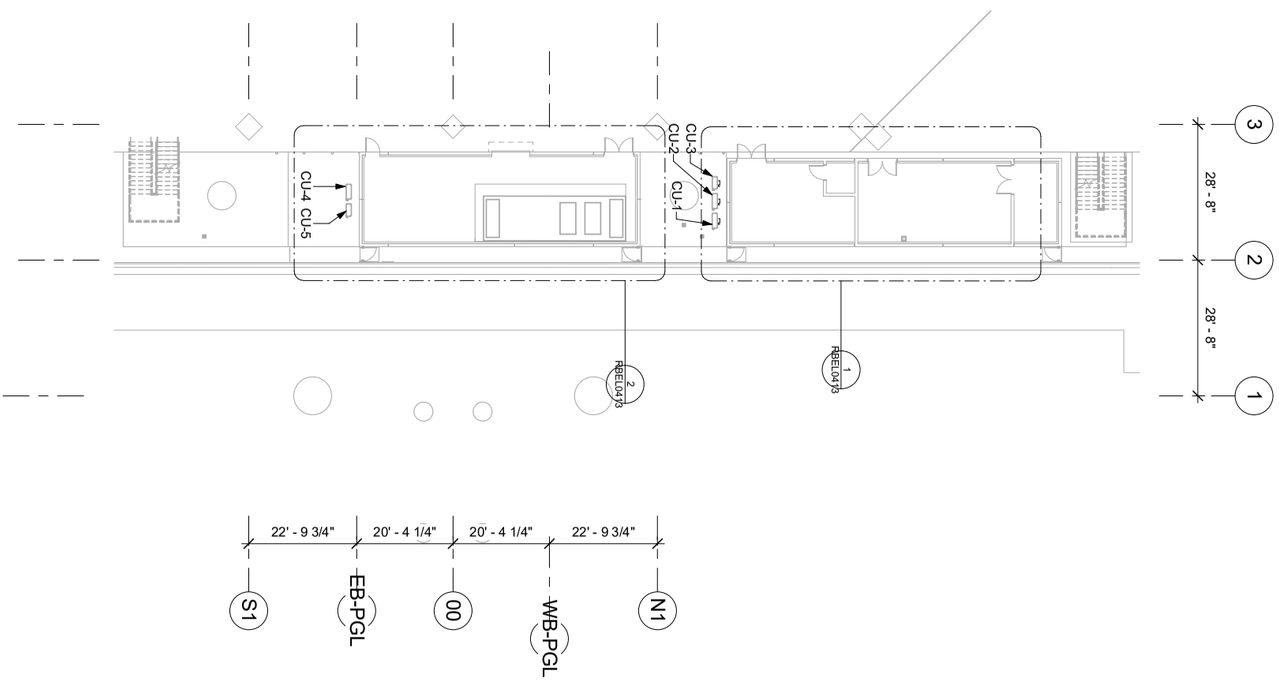
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
CONDUIT ROUTING
ELECTRICAL
ELEVATION - CORE STAIR

Package: **B04 - RBEL0411**
Sheet Reference No:
V6 - 063 of 260

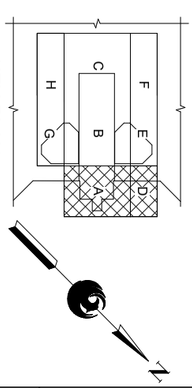
Project Number: Project Number
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1 **LEVEL 1 - MECHANICAL POWER PLAN - AREA A AND AREA D**
SCALE: 1/16" = 1'-0"



0" 8" 16" 32"

KEY PLAN



STAGE 2 - B04 DESIGN SUBMISSION

Package: **B04 - RBEL0412**
Sheet Reference No: V6 - 064 of 260

RCC STATION
MECHANICAL POWER FLOOR PLAN
MECHANICAL POWER
LEVEL 1
AREA A AND AREA D

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/16" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

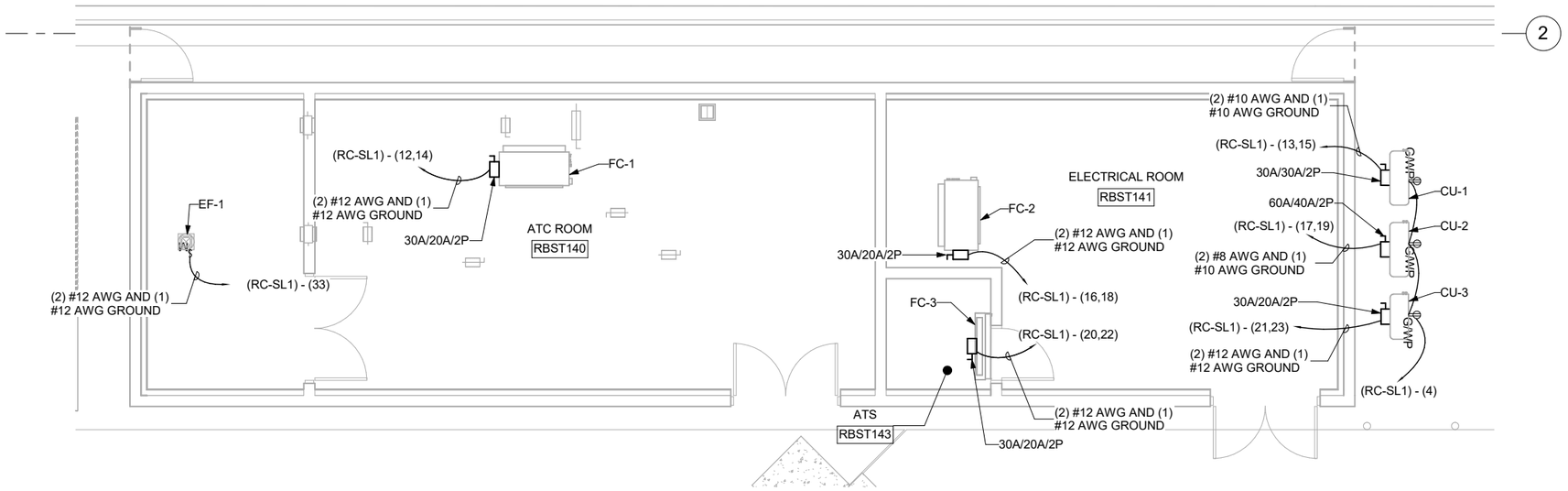
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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
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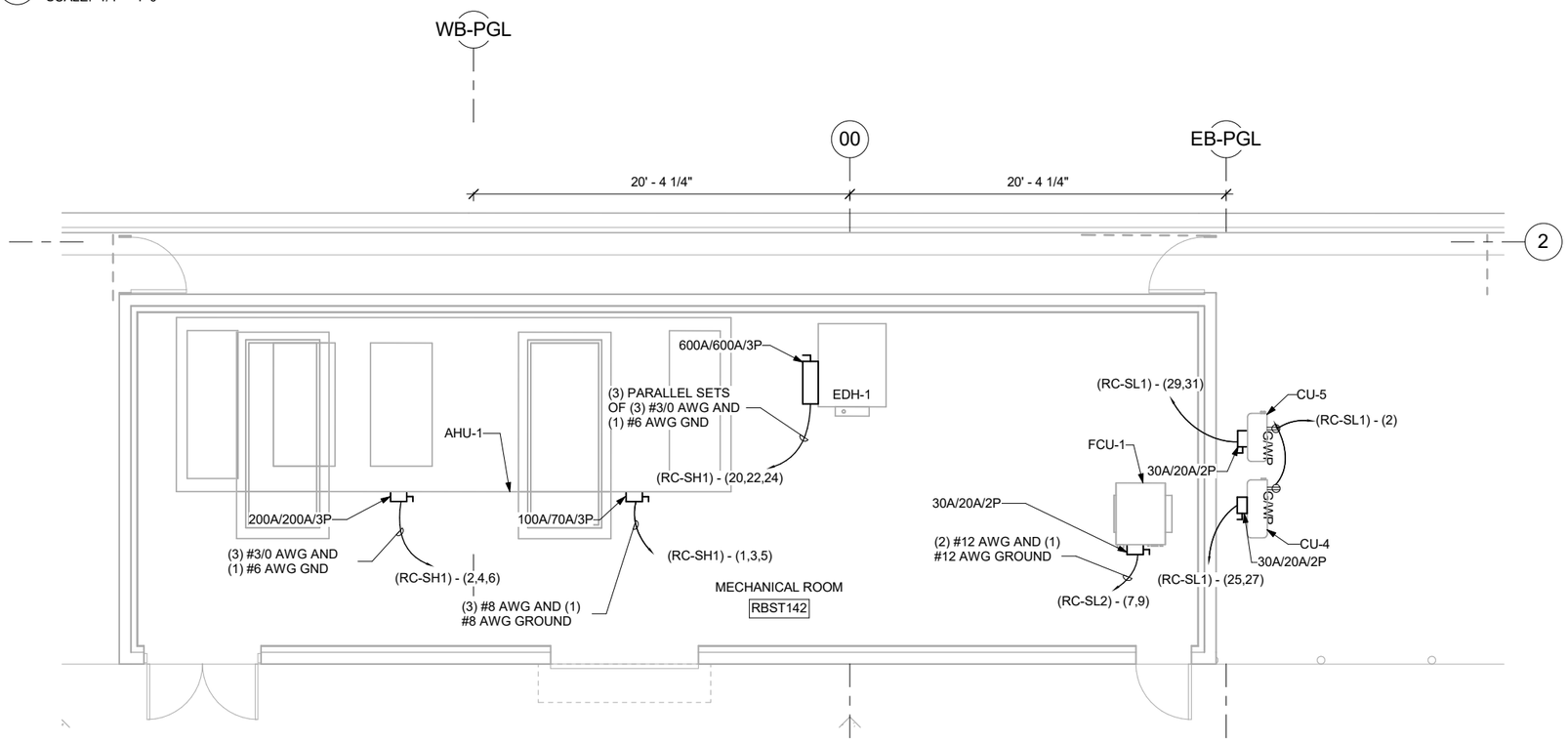
49025
PETER M.
SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

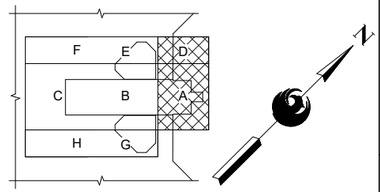


1 LEVEL 1 - MECHANICAL POWER PLAN - ELECTRICAL AND ATC ROOMS - AREA D
SCALE: 1/4" = 1'-0"



2 LEVEL 1 - MECHANICAL POWER PLAN - MECHANICAL ROOM - AREA A
SCALE: 1/4" = 1'-0"

0' 2' 4' 8'



KEY PLAN

Project Number: Project Number
7/13/2018 5:36:58 PM
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELX01_R17_A360.rvt

Licensed Professional Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020
Design Sub-Consultant
Kimley»Horn
Design Consultant
Gannett Fleming

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX DOT BYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

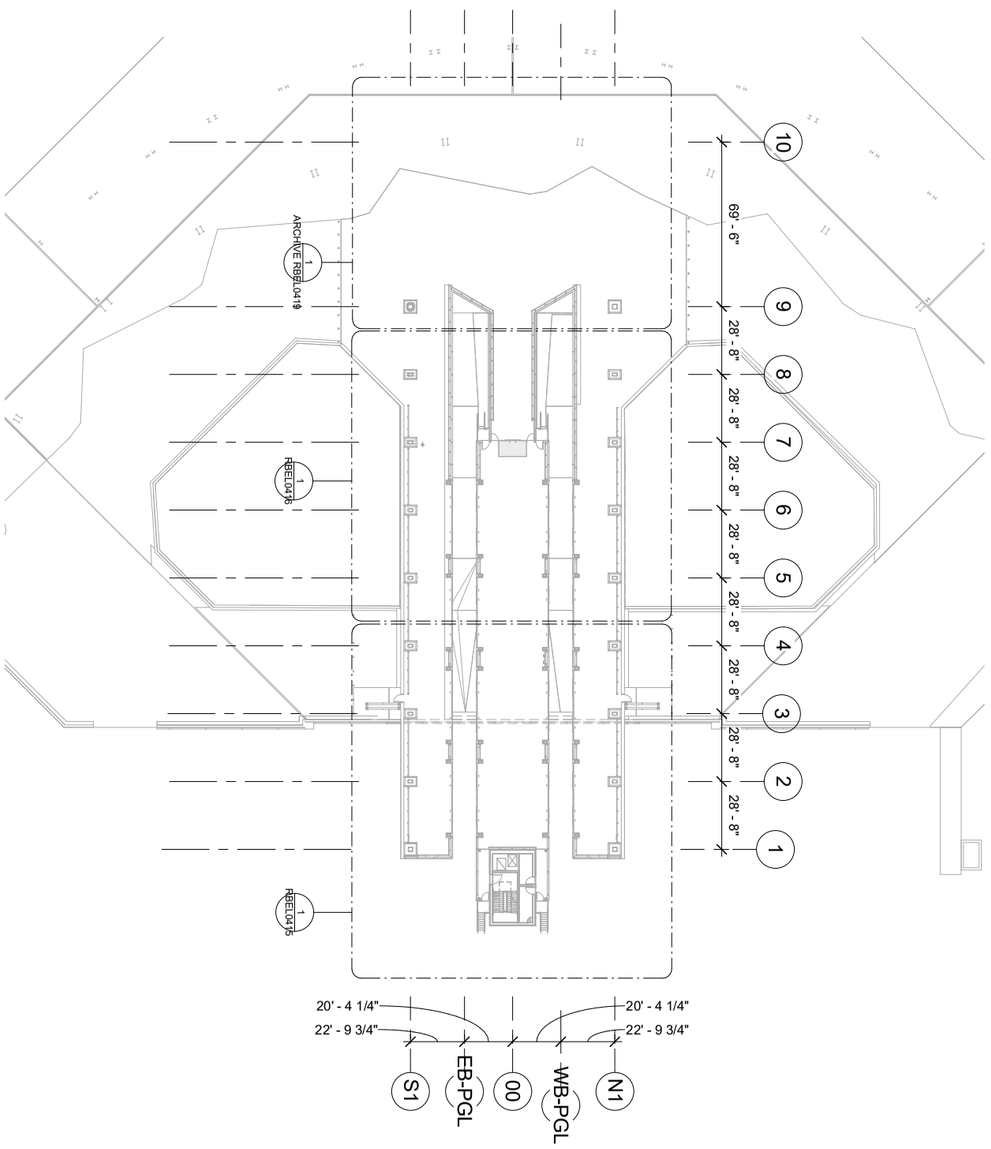
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Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL POWER FLOOR PLAN
MECHANICAL POWER
BACK-OF-HOUSE DETAILS

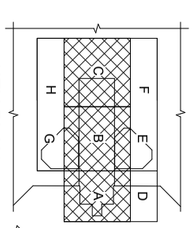
Package: B04 - RBEL0413
Sheet Reference No: V6 - 065 of 260

1 PLATFORM
SCALE: 1/32" = 1'-0"



0' 16' 32' 64'

KEY PLAN



N

STAGE 2 - B04 DESIGN SUBMISSION

Package: **B04 - RBEL0414**
Sheet Reference No: V6 - 066 of 260

RCC STATION
MECHANICAL POWER FLOOR PLAN
MECHANICAL POWER
PLATFORM LEVEL

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/32" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

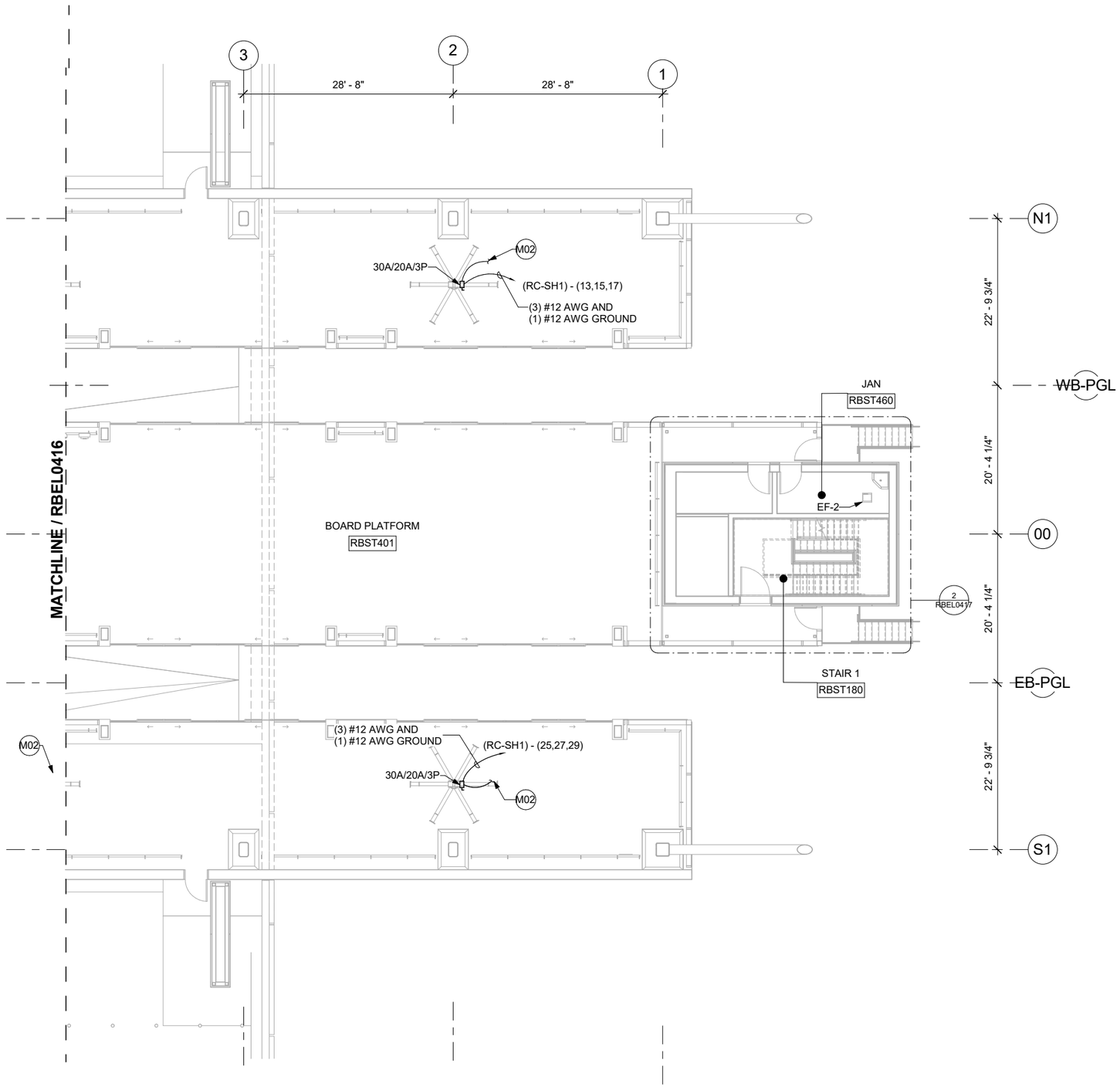
Registered Professional Engineer
49025
PETER M.
SYNTAX
Date Signed 07/13/18
ARIZONA U.S.A.
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

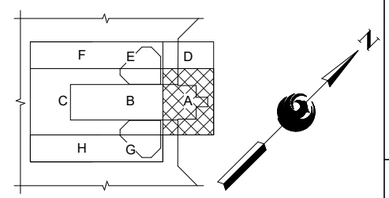
Design Consultant
Gannett Fleming

CONSTRUCTION NOTES

M02 PROVIDE (1) 1" CONDUIT TO JANITOR ROOM FOR FAN CONTROLLER. COORDINATE WITH FAN SUPPLIER FOR A COMPLETE SYSTEM.



1 LEVEL 4 - PLATFORM - AREA A
SCALE: 1/8" = 1'-0"



KEY PLAN

0' 4' 8' 16'

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Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

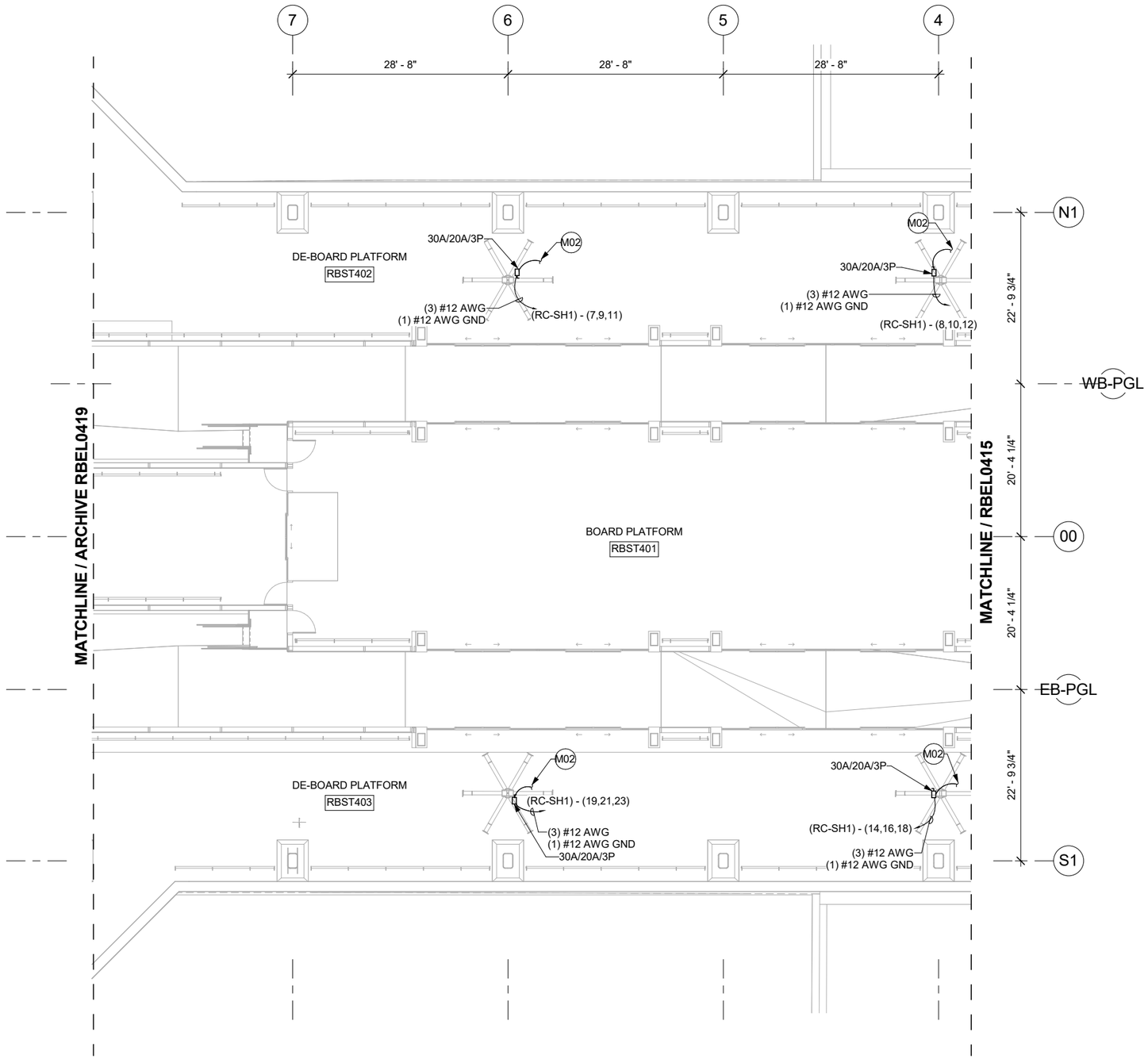
Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL POWER FLOOR PLAN
MECHANICAL POWER
PLATFORM LEVEL
AREA A

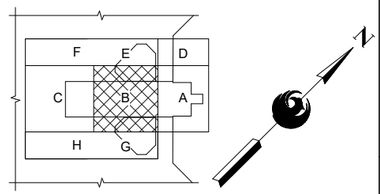
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Sheet Reference No: V6 - 067 of 260

Project Number: Project Number
7/13/2018 5:37:17 PM
Local File BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt



1 **LEVEL 4 - PLATFORM - AREA B**
SCALE: 1/8" = 1'-0"

0' 4' 8' 16'



KEY PLAN

CONSTRUCTION NOTES

M02 PROVIDE (1) 1" CONDUIT TO JANITOR ROOM FOR FAN CONTROLLER. COORDINATE WITH FAN SUPPLIER FOR A COMPLETE SYSTEM.

Registered Professional Engineer
49025
PETER M. SYNTAX
Electrical
ARIZONA
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

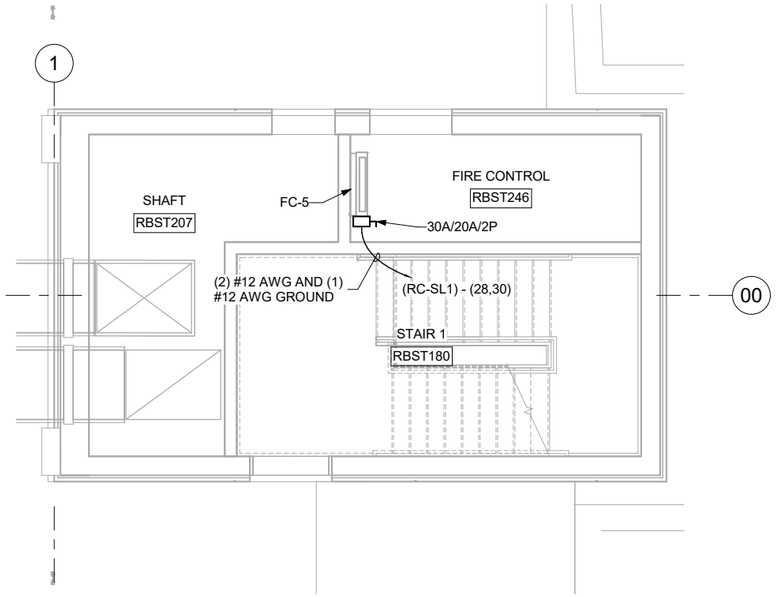
Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MECHANICAL POWER FLOOR PLAN
MECHANICAL POWER
PLATFORM LEVEL
AREA B

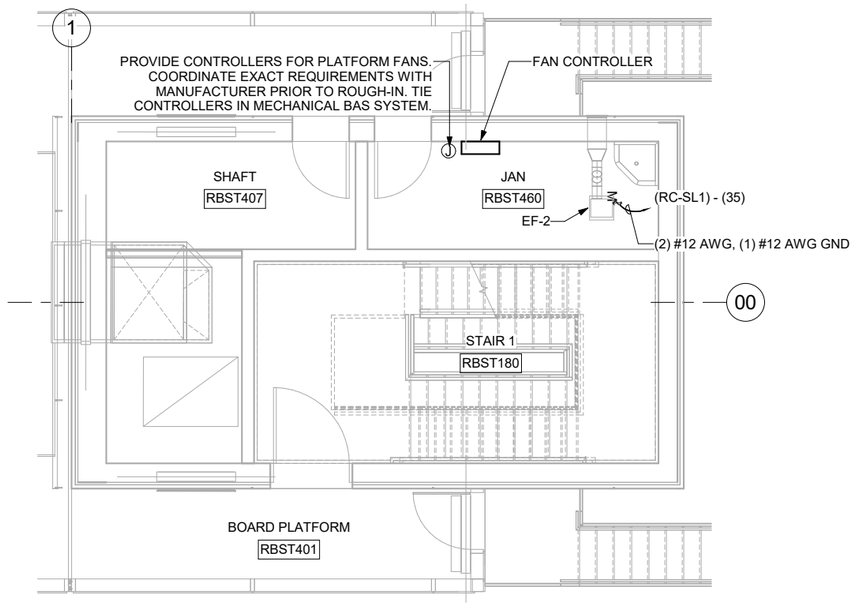
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Sheet Reference No: V6 - 068 of 260

Project Number: Project Number
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Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELX01_R17_A360.rvt



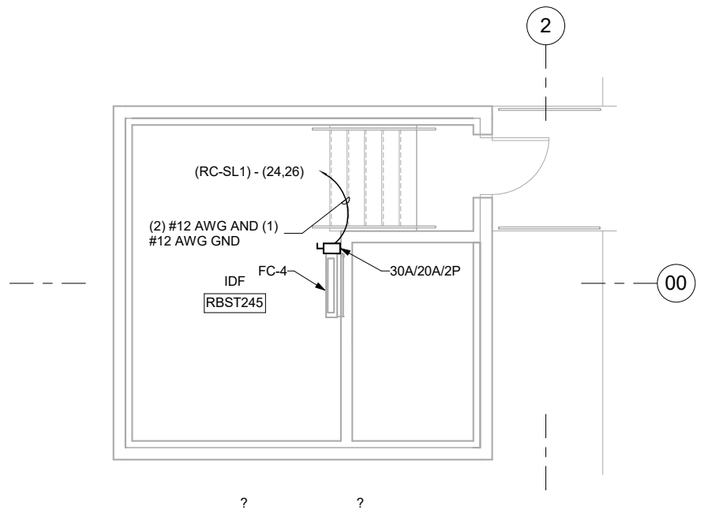
1 ENLARGED PLAN - LEVEL 3 - VERTICAL CIRCULATION CORE

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



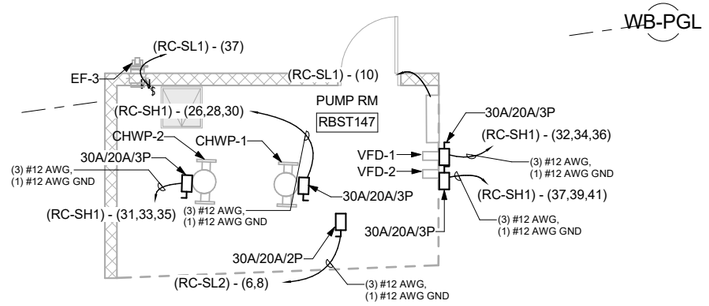
2 ENLARGED PLAN - PLATFORM LEVEL - VERTICAL CIRCULATION CORE

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



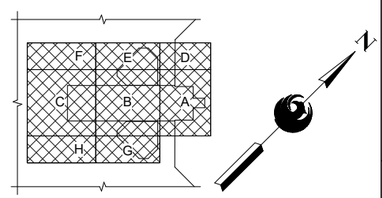
3 ENLARGED PLAN - LEVEL 2 - IDF ROOM

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



4 ENLARGED PLAN - LEVEL 1 - PUMP ROOM

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



KEY PLAN

0' 2' 4' 8'

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Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

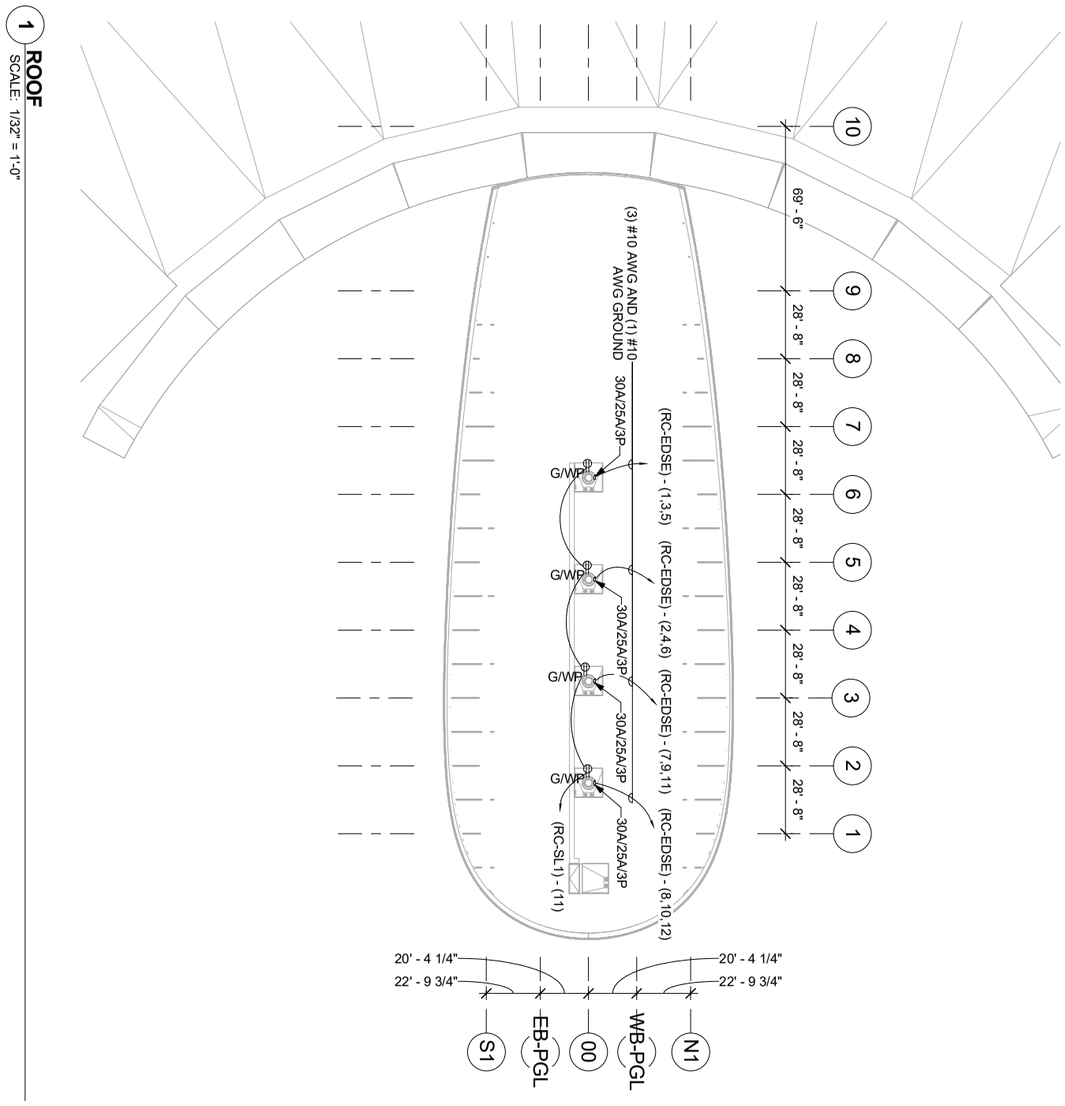
RCC STATION
MECHANICAL POWER FLOOR PLAN
MECHANICAL POWER
CORE BUILDING AND IDF ROOM AND PUMP ROOM

Package: B04 - RBEL0417

Sheet Reference No: V6 - 069 of 260

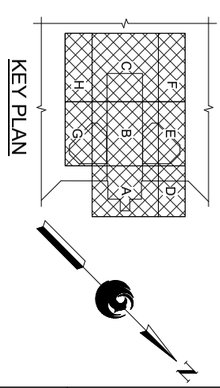
Project Number: Project Number
7/13/2018 5:37:36 PM
Local File: BIM 360://82421 - Phoenix Sky Train Project - Stage 2/AV10000011-S-2-RCELX01_R17_A360.rvt

1 ROOF
SCALE: 1/32" = 1'-0"



0' 16' 32' 64'

KEY PLAN



STAGE 2 - B04 DESIGN SUBMISSION

Package: **B04 - RBEL0418**
Sheet Reference No: V6 - 070 of 260

RCC STATION
MECHANICAL POWER FLOOR PLAN
MECHANICAL POWER
ROOF LEVEL

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/32" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

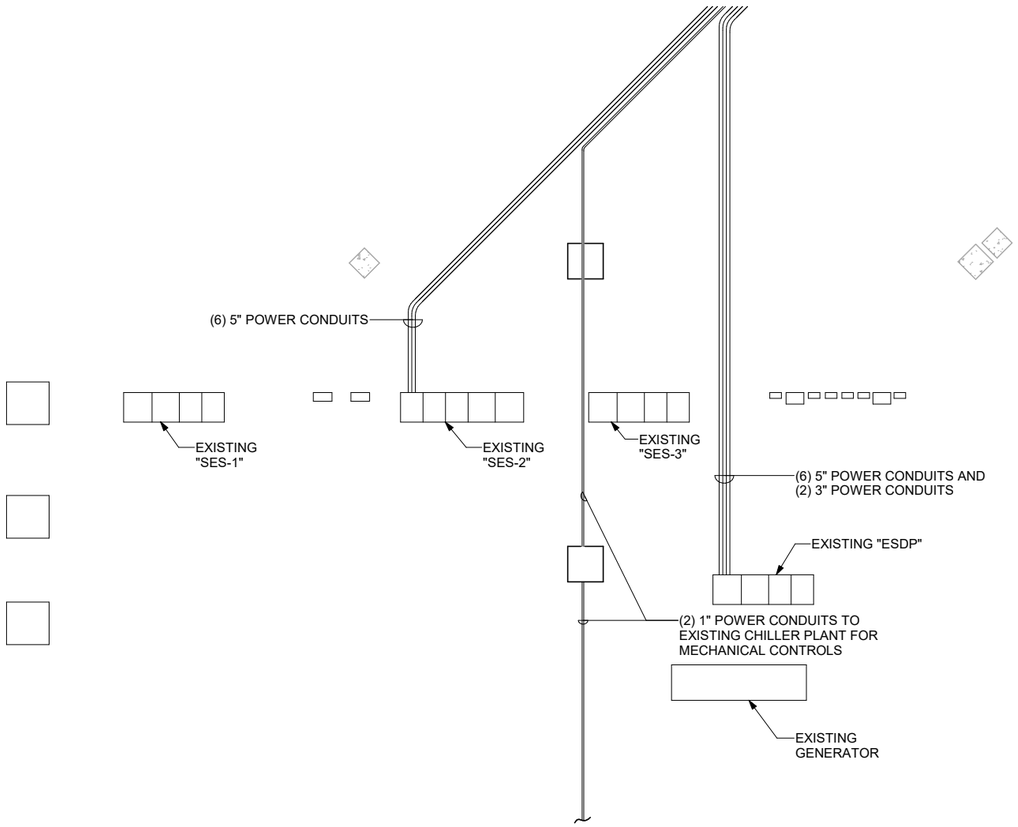
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	ISSUED FOR CONSTRUCTION	07/13/18
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Registered Professional Engineer
49025
PETER M.
SYNTAX
Date Signed 07/13/18
ARIZONA U.S.A.
Expires 12-31-2020

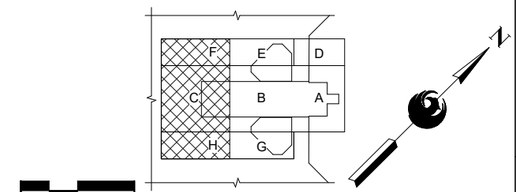
Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming



1 RENTAL CAR CENTER ELECTRICAL YARD

SCALE: 3/32" = 1'-0"



KEY PLAN

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	SUBMITTED FOR REVIEW	04/06/18

Arizona Registered Electrical Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

PHX DVT EYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	3/32" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
ELECTRICAL YARD DETAIL
ELECTRICAL

Package: B04 - RBEL0419

Sheet Reference No: V6 - 071 of 260

Project Number: Project Number
7/13/2018 5:37:54 PM
Local File BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt

SWITCHBOARD: MSB-1

LOCATION: RBST141
SUPPLY FROM: SES-2
MOUNTING: Floor
ENCLOSURE: NEMA 1

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 22000 A
MAINS TYPE: MCB
MAINS RATING: 1000 A
MCB RATING: 1000 A

NOTES:

CKT	CIRCUIT DESCRIPTION	# OF POLES	FRAME SIZE	TRIP RATING	LOAD	REMARKS
1	RC-SDH1	3	400 A	400 A	212173 VA	
2	RC-EDSE	3	200 A	200 A	36564 VA	
3	RC-SH1	3	600 A	600 A	335283 VA	
4	SPD	3	100 A	100 A	0 VA	
5	SPARE	3	200 A	200 A	0 VA	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
				TOTAL CONN. LOAD:	584020 VA	
				TOTAL AMPS:	702 A	

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
POWER	568333 VA	100.00%	568333 VA		
LIGHTING	15687 VA	125.00%	19609 VA	TOTAL CONN. LOAD:	584020 VA
				TOTAL EST. DEMAND:	587942 VA
				TOTAL CONN.:	702 A
				TOTAL EST. DEMAND:	707 A

NOTES:

MECHANICAL ELECTRICAL SCHEDULE

EQUIPMENT NAME	VOLTAGE	PHASE	HP	FLA	OCPD	WIRE SIZE (AWG)
AHU-1S	460	3	60	84	200	3/0
AHU-1R	460	3	20	30.4	70	4
SEF-1	460	3	7.5	11	25	10
SEF-2	460	3	7.5	11	25	10
SEF-3	460	3	7.5	11	25	10
SEF-4	460	3	7.5	11	25	10
CF-1	460	3	1.5	3	20	10
CF-2	460	3	1.5	3	20	10
CF-3	460	3	1.5	3	20	10
CF-4	460	3	1.5	3	20	10
CF-5	460	3	1.5	3	20	10
CF-6	460	3	1.5	3	20	10
EDH-1	480	3	268	241	400	2 SETS 3/0
FCU-1	208	1	0.25	3.2	20	10
FCU-2	208	1	1/12	0.3	20	10
EF-1	115	1	0.5	9.8	20	10
EF-2	115	1	0.12	4.4	20	10
EF-3	115	1	0.25	5.8	20	10
CHWP-1	460	3	5	7.6	20	10
CHWP-2	460	3	5	7.6	20	10
FC-1	208	1	2.8	10	20	10
FC-2	208	1	2.8	10	20	10
FC-3	208	1	2.8	10	20	10
FC-4	208	1	2.8	10	20	10
FC-5	208	1	2.8	10	20	10
CU-1	208	1	4.2	15	30	10
CU-2	208	1	4.7	16.8	40	8
CU-3	208	1	2.8	10	20	10
CU-4	208	1	2.8	10	20	10
CU-5	208	1	2.8	10	20	10
WH-1	460	1	-	10	20	10

BRANCH PANEL: RC-SDH1

LOCATION: RBST141
SUPPLY FROM: MSB-1
MOUNTING: SURFACE
ENCLOSURE: NEMA 1 INDOOR

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 22000 A
MAINS TYPE: MCB
MAINS RATING: 400 A
MCB RATING: 400 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	XFMR RC-T1	200 A	3	32093 VA	4800 VA					3	200 A	RC-SH2	2
3	--	--	--			29502 VA	9200 VA			--	--	--	4
5	--	--	--					32779 VA	4600 VA	--	--	--	6
7	RC-EH1	200 A	3	4468 VA	0 VA					3	200 A	ATC UPS DISCONNECT...	8
9	--	--	--			4179 VA	0 VA			--	--	--	10
11	--	--	--					3008 VA	0 VA	--	--	--	12
13	ATC UPS DISCONNECT	200 A	3	27700 VA	2222 VA					2	20 A	WATER HEATER	14
15	--	--	--			27700 VA	2222 VA			--	--	--	16
17	--	--	--					27700 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		71283 VA		72803 VA		68087 VA					
		TOTAL AMPS:		259 A		265 A		246 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	196486 VA	100.00%	196486 VA		
LIGHTING	15687 VA	125.00%	19609 VA	TOTAL CONN. LOAD:	212173 VA
				TOTAL EST. DEMAND:	216095 VA
				TOTAL CONN.:	255 A
				TOTAL EST. DEMAND:	260 A

NOTES:

BRANCH PANEL: RC-EDSE

LOCATION: RBST143
SUPPLY FROM: MSB-1
MOUNTING: SURFACE
ENCLOSURE: NEMA 1 INDOOR

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 10000 A
MAINS TYPE: MCB
MAINS RATING: 200 A
MCB RATING: 200 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	SEF-1 DISCONNECT (7.5 HP)	25 A	3	3047 VA	3047 VA					3	25 A	SEF-2 DISCONNECT (7.5 HP)	2
3	--	--	--			3047 VA	3047 VA			--	--	--	4
5	--	--	--					3047 VA	3047 VA	--	--	--	6
7	SEF-3 DISCONNECT (7.5 HP)	25 A	3	3047 VA	3047 VA					3	25 A	SEF-4 DISCONNECT (7.5 HP)	8
9	--	--	--			3047 VA	3047 VA			--	--	--	10
11	--	--	--					3047 VA	3047 VA	--	--	--	12
13	SPD	60 A	3	0 VA	0 VA					1	20 A	SPARE	14
15	--	--	--			0 VA	0 VA			1	20 A	SPARE	16
17	--	--	--					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		12188 VA		12188 VA		12188 VA					
		TOTAL AMPS:		44 A		44 A		44 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	36564 VA	100.00%	36564 VA		
				TOTAL CONN. LOAD:	36564 VA
				TOTAL EST. DEMAND:	36564 VA
				TOTAL CONN.:	44 A
				TOTAL EST. DEMAND:	44 A

NOTES:

Project Number: Project Number
7/13/2018 5:37:59 PM
Local File: BIM 360://82421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELX001_R17_A360.rvt

Registered Electrical Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020
Design Sub-Consultant: Kimley»Horn
Design Consultant: Gannett Fleming

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CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PANEL SCHEDULES

Package: B04 - RBEL0901
Sheet Reference No: V6 - 072 of 260

BRANCH PANEL: RC-SH1

LOCATION: RBST141 | VOLTS: 480/277 Wye | A.I.C. RATING: 22000 A
SUPPLY FROM: MSB-1 | PHASES: 3 | MAINS TYPE: MCB
MOUNTING: SURFACE | WIRES: 4 | MAINS RATING: 600 A
ENCLOSURE: NEMA 1 INDOOR | MCB RATING: 600 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	AHU-1 RETURN	70 A	3	8421 VA	23268 VA					3	200 A	AHU-1 SUPPLY	2
3	--	--	--			8421 VA	23268 VA			--	--	--	4
5	--	--	--					8421 VA	23268 VA	--	--	--	6
7	CF-1	20 A	3	831 VA	831 VA					3	20 A	CF-2	8
9	--	--	--			831 VA	831 VA			--	--	--	10
11	--	--	--					831 VA	831 VA	--	--	--	12
13	CF-3	20 A	3	831 VA	831 VA					3	20 A	CF-5	14
15	--	--	--			831 VA	831 VA			--	--	--	16
17	--	--	--					831 VA	831 VA	--	--	--	18
19	CF-4	20 A	3	831 VA	66666 VA					3	600 A	EDH-1	20
21	--	--	--			831 VA	66666 VA			--	--	--	22
23	--	--	--					831 VA	66666 VA	--	--	--	24
25	CF-6	20 A	3	831 VA	2105 VA					3	20 A	CHWP-1	26
27	--	--	--			831 VA	2105 VA			--	--	--	28
29	--	--	--					831 VA	2105 VA	--	--	--	30
31	CHWP-2	20 A	3	2105 VA	2105 VA					3	20 A	VFD-1	32
33	--	--	--			2105 VA	2105 VA			--	--	--	34
35	--	--	--					2105 VA	2105 VA	--	--	--	36
37	VFD-2	20 A	3	2105 VA	0 VA					1	20 A	SPARE	38
39	--	--	--			2105 VA	0 VA			1	20 A	SPARE	40
41	--	--	--					2105 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		111761 VA		111761 VA		111761 VA					
		TOTAL AMPS:		403 A		403 A		403 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	335283 VA	100.00%	335283 VA		
				TOTAL CONN. LOAD:	335283 VA
				TOTAL EST. DEMAND:	335283 VA
				TOTAL CONN.:	403 A
				TOTAL EST. DEMAND:	403 A

NOTES:

BRANCH PANEL: RC-SH2

LOCATION: RBST141 | VOLTS: 480/277 Wye | A.I.C. RATING: 22000 A
SUPPLY FROM: RC-SDH1 | PHASES: 3 | MAINS TYPE: MCB
MOUNTING: SURFACE | WIRES: 4 | MAINS RATING: 200 A
ENCLOSURE: NEMA 1 INDOOR | MCB RATING: 200 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	PARKING AREA A EX. LIGHTS	20 A	1	120 VA	80 VA					1	20 A	PUMP ROOM LIGHT FIXTURE	2
3	ART WALL NORTH	20 A	1			2300 VA	2300 VA			1	20 A	ART WALL NORTH	4
5	ART WALL NORTH	20 A	1					2300 VA	2300 VA	1	20 A	ART WALL NORTH	6
7	ART WALL SOUTH	20 A	1	2300 VA	2300 VA					1	20 A	ART WALL SOUTH	8
9	ART WALL SOUTH	20 A	1			2300 VA	2300 VA			1	20 A	ART WALL SOUTH	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		4800 VA		9200 VA		4600 VA					
		TOTAL AMPS:		17 A		33 A		17 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	18400 VA	100.00%	18400 VA		
LIGHTING	200 VA	125.00%	250 VA		
				TOTAL CONN. LOAD:	18600 VA
				TOTAL EST. DEMAND:	18650 VA
				TOTAL CONN.:	22 A
				TOTAL EST. DEMAND:	22 A

NOTES:

BRANCH PANEL: RC-EH1

LOCATION: RBST141 | VOLTS: 480/277 Wye | A.I.C. RATING: 22000 A
SUPPLY FROM: RC-SDH1 | PHASES: 3 | MAINS TYPE: MCB
MOUNTING: SURFACE | WIRES: 4 | MAINS RATING: 200 A
ENCLOSURE: NEMA 1 INDOOR | MCB RATING: 200 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	N. DE-BOARD PLTF ACCENT...	20 A	1	196 VA	182 VA					1	20 A	N. DE-BOARD PLTF ACCENT...	2
3	N. DE-BOARD PLTF STRIP LTS	20 A	1			555 VA	555 VA			1	20 A	N. DE-BOARD PLTF STRIP LTS	4
5	N. DE-BOARD PLTF ACCENT...	20 A	1					98 VA	333 VA	1	20 A	N. DE-BOARD PLTF STRIP LTS	6
7	BRD PLATFORM LIGHTING	20 A	1	560 VA	444 VA					1	20 A	BRD PLATFORM STRIP LIGHTS	8
9	BRD PLATFORM LIGHTING	20 A	1			400 VA	333 VA			1	20 A	BRD PLATFORM STRIP LIGHTS	10
11	BRD PLATFORM LIGHTING	20 A	1					520 VA	360 VA	1	20 A	BRD PLATFORM LIGHTS	12
13	S. DE-BOARD PLTF STRIP LTS	20 A	1	333 VA	98 VA					1	20 A	S. DE-BOARD PLTF ACCENT...	14
15	S. DE-BOARD PLTF ACCENT...	20 A	1			196 VA	200 VA			1	20 A	ELEC. RM & ATC RM EX...	16
17	RBST 140, 141, 143, 146 LTS.	20 A	1					520 VA	360 VA	1	20 A	RBST 407, 460, EX. LIGHTS	18
19	RBST 180 - STAIR LIGHTS	20 A	1	780 VA	600 VA					1	20 A	RBST 142 & EXTERIOR LIGHTS	20
21	RBST 245 LTS.	20 A	1			580 VA	160 VA			1	20 A	RBST 207, 246 LTS.	22
23	S. DE-BOARD PLTF STRIP LTS	20 A	1					555 VA	182 VA	1	20 A	S. DE-BOARD PLTF ACCENT...	24
25	S. DE-BOARD PLTF STRIP LTS	20 A	1	555 VA	720 VA					1	20 A	EXIT SIGN	26
27	EXIT SIGN	20 A	1			480 VA	720 VA			1	20 A	EXIT SIGN	28
29	N. STAIR LIGHT FIXTURE	20 A	1					40 VA	40 VA	1	20 A	S. STAIR LIGHT FIXTURE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		4468 VA		4179 VA		3008 VA					
		TOTAL AMPS:		17 A		16 A		11 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	2920 VA	100.00%	2920 VA		
LIGHTING	8735 VA	125.00%	10919 VA		
				TOTAL CONN. LOAD:	11655 VA
				TOTAL EST. DEMAND:	13839 VA
				TOTAL CONN.:	14 A
				TOTAL EST. DEMAND:	17 A

NOTES:

BRANCH PANEL: RC-SDL1

LOCATION: RBST141 | VOLTS: 120/208 Wye | A.I.C. RATING: 10000 A
SUPPLY FROM: XFMR RC-T1... | PHASES: 3 | MAINS TYPE: MCB
MOUNTING: SURFACE | WIRES: 4 | MAINS RATING: 400 A
ENCLOSURE: NEMA 1 INDOOR | MCB RATING: 400 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	RC-SL1	200 A	3	19127 VA	4350 VA					3	200 A	RC-SL2	2
3	--	--	--			16767 VA	5875 VA			--	--	--	4
5	--	--	--					18826 VA	6415 VA	--	--	--	6
7	RC-SL3	200 A	3	7300 VA	1316 VA					3	20 A	RC-SL4	8
9	--	--	--			5200 VA	1660 VA			--	--	--	10
11	--	--	--					6162 VA	1376 VA	--	--	--	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		32093 VA		29502 VA		32779 VA					
		TOTAL AMPS:		271 A		246 A		276 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	87622 VA	100.00%	87622 VA		
LIGHTING	6752 VA	125.00%	8440 VA		
				TOTAL CONN. LOAD:	94374 VA
				TOTAL EST. DEMAND:	96062 VA
				TOTAL CONN.:	262 A
				TOTAL EST. DEMAND:	267 A

NOTES:

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Kimley»Horn
Design Sub-Consultant
Gannett Fleming
Design Consultant
Expires 12-31-2020
49025
PETER M. SYNTAX
Registered Electrical Engineer
State of Arizona

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PANEL SCHEDULES

Package: B04 - RBEL0902
Sheet Reference No: V6 - 073 of 260

Project Number: Project Number
7/13/2018 5:38:04 PM
Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCELX001_R17_A360.rvt

BRANCH PANEL: RC-SL1

LOCATION: RBST141
SUPPLY FROM: RC-SDL1
MOUNTING: SURFACE
ENCLOSURE: NEMA 1 INDOOR

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 10000 A
MAINS TYPE: MCB
MAINS RATING: 200 A
MCB RATING: 200 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	IT CABINET RECEP. PUMP RM	20 A	1	180 VA	360 VA					1	20 A	RECEPS. - CU-4, CU-5	2
3	ELEC/ATC/UPS RM RECEPS.	20 A	1			540 VA	540 VA			1	20 A	RECEPS. - CU-1, CU-2, CU-3	4
5	ATS/ELEC RM. RECEPT.	20 A	1					720 VA	900 VA	1	20 A	MECH RM RECEPS.	6
7	ATC RM. RECEPT.	20 A	1	540 VA	360 VA					1	20 A	PUMP ROOM RECEPTICALS	8
9	ATC RM RECEPS.	20 A	1			540 VA	500 VA			1	20 A	CP-1 (PUMP ROOM)	10
11	SMOKE EXHAUST FAN...	20 A	1					720 VA	2080 VA	2	20 A	FC-1 DISCONNECT	12
13	CU-1 DISCONNECT	30 A	2	3120 VA	2080 VA					--	--	--	14
15	--	--	--			3120 VA	2080 VA			2	20 A	FC-2 DISCONNECT	16
17	CU-2 DISCONNECT	40 A	2					3500 VA	2080 VA	--	--	--	18
19	--	--	--	3500 VA	2080 VA					2	20 A	FC-3 DISCONNECT	20
21	CU-3 DISCONNECT	20 A	2			2080 VA	2080 VA			--	--	--	22
23	--	--	--					2080 VA	2080 VA	2	20 A	FC-4 DISCONNECT	24
25	CU-4 DISCONNECT	20 A	2	2080 VA	2080 VA					--	--	--	26
27	--	--	--			2080 VA	2080 VA			2	20 A	FC-5 DISCONNECT	28
29	CU-5 DISCONNECT	20 A	2					2080 VA	2080 VA	--	--	--	30
31	--	--	--	2080 VA	0 VA					1	20 A	SPARE	32
33	EF-1 MANUAL SWITCH	20 A	1			1127 VA	0 VA			1	20 A	SPARE	34
35	EF-2 MANUAL SWITCH	20 A	1					506 VA	0 VA	1	20 A	SPARE	36
37	EF-3 MANUAL SWITCH	20 A	1	667 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		19127 VA		16767 VA		18826 VA					
		TOTAL AMPS:		162 A		140 A		160 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	54720 VA	100.00%	54720 VA		
				TOTAL CONN. LOAD:	54720 VA
				TOTAL EST. DEMAND:	54720 VA
				TOTAL CONN.:	152 A
				TOTAL EST. DEMAND:	152 A

NOTES:

BRANCH PANEL: RC-SL2

LOCATION: RBST141
SUPPLY FROM: RC-SDL1
MOUNTING: SURFACE
ENCLOSURE: NEMA 1 INDOOR

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 10000 A
MAINS TYPE: MCB
MAINS RATING: 200 A
MCB RATING: 200 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	PLATFORM LVL 4 PEDS	20 A	1	0 VA	600 VA					1	20 A	WISCAPE RELAY PNL	2
3	RC-00-ADV SIGN	20 A	1			1200 VA	1200 VA			1	20 A	RC-00-ADV SIGN	4
5	RC-29-SDIR2	20 A	1					1200 VA	115 VA	2	20 A	FCU-2 DISCONNECT	6
7	FCU-1 DISCONNECT	20 A	2	115 VA	115 VA					--	--	--	8
9	--	--	--			115 VA	720 VA			1	20 A	FIRE CONTROL RM RECEPT.	10
11	W. BRD PLATFORM RECEPT.	20 A	1					720 VA	720 VA	1	20 A	W. BRD PLATFORM RECEPT.	12
13	E. BRD PLATFORM RECEPT.	20 A	1	720 VA	360 VA					1	20 A	CORE BUILDING EXTERIOR...	14
15	MECH RM RECEPS.	20 A	1			720 VA	180 VA			1	20 A	STAIRS RECEPT.	16
17	E. BRD PLATFORM RECEPT.	20 A	1					720 VA	540 VA	1	20 A	JANITOR RM RECEPT.	18
19	FIRE CONTROL RM RECEPT.	20 A	1	900 VA	540 VA					1	20 A	ELEC/ATC/UPS RM RECEPS.	20
21	ATC/UPS RM. RECEPT.	20 A	1			540 VA	1200 VA			1	20 A	RC-30-FSDIY SIGN	22
23	RC-35-SDIR2 SIGN	20 A	1					1200 VA	1200 VA	1	20 A	RC-22-PHXID SIGN	24
25	ADVERTISING SCREEN WALL	20 A	1	1000 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		4350 VA		5875 VA		6415 VA					
		TOTAL AMPS:		36 A		51 A		55 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	14240 VA	100.00%	14240 VA		
LIGHTING	2400 VA	125.00%	3000 VA	TOTAL CONN. LOAD:	16640 VA
				TOTAL EST. DEMAND:	17240 VA
				TOTAL CONN.:	46 A
				TOTAL EST. DEMAND:	48 A

NOTES:

BRANCH PANEL: RC-SL3

LOCATION: RBST245
SUPPLY FROM: RC-SDL1
MOUNTING: SURFACE
ENCLOSURE: NEMA 1 INDOOR

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 10000 A
MAINS TYPE: MCB
MAINS RATING: 200 A
MCB RATING: 200 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	IDF RECEPT.	20 A	1	360 VA	1440 VA					1	20 A	IDF RECEPT. COMM CABINET	2
3	FIRE ALARM PANEL	20 A	1			500 VA	1340 VA			1	20 A	ECS EQUIPMENT	4
5	IDF RM RECEPT.	20 A	1					540 VA	1500 VA	1	20 A	PLATFORM DOOR	6
7	PLATFORM CCTV	20 A	1	3000 VA	1500 VA					1	20 A	BRD PLATFORM FIDS	8
9	IDF RECEPT. COMM CABINET	20 A	1			1440 VA	1920 VA			1	20 A	1 HP GATE MOTOR	10
11	PLATFORM CCTV	20 A	1					2500 VA	1622 VA	1	50 A	AVI COMM. CABINET AC UNIT	12
13	AVI COMM. CABINET RECEPT.	20 A	1	500 VA	500 VA					1	20 A	AVI COMM. CABINET RECEPT.	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		7300 VA		5200 VA		6162 VA					
		TOTAL AMPS:		62 A		43 A		53 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
POWER	18662 VA	100.00%	18662 VA		
				TOTAL CONN. LOAD:	18662 VA
				TOTAL EST. DEMAND:	18662 VA
				TOTAL CONN.:	52 A
				TOTAL EST. DEMAND:	52 A

NOTES:

BRANCH PANEL: RC-SL4

LOCATION: RBST141
SUPPLY FROM: RC-SDL1
MOUNTING: SURFACE
ENCLOSURE: NEMA 1 INDOOR

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING: 10000 A
MAINS TYPE: MCB
MAINS RATING: 200 A
MCB RATING: 200 A

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	EXTERIOR PARKING LIGHTS	20 A	2	470 VA	470 VA					2	20 A	EXTERIOR PARKING LIGHTS	2
3	--	--	--			470 VA	470 VA			--	--	--	4
5	EXTERIOR PARKING LIGHTS	20 A	2					188 VA	188 VA	2	20 A	EXTERIOR PARKING LIGHTS	6
7	--	--	--	188 VA	188 VA					--	--	--	8
9	FLAG POLE LIGHTS	20 A	1			360 VA	360 VA			1	20 A	MONUMENT LIGHTING	10
11	LANDSCAPE LIGHTING	20 A	1					500 VA	500 VA	1	20 A	LANDSCAPE LIGHTING	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		TOTAL LOAD:		1316 VA		1660 VA		1376 VA					
		TOTAL AMPS:		11 A		14 A		12 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	EST. DEMAND	PANEL TOTALS	
LIGHTING	4352 VA	125.00%	5440 VA		
				TOTAL CONN. LOAD:	4352 VA
				TOTAL EST. DEMAND:	5440 VA
				TOTAL CONN.:	12 A
				TOTAL EST. DEMAND:	15 A

NOTES:

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Electrical Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020
Design Sub-Consultant
Kimley»Horn
Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	
CIP No.:	AVI10000011
KIVA No.:	07-5204

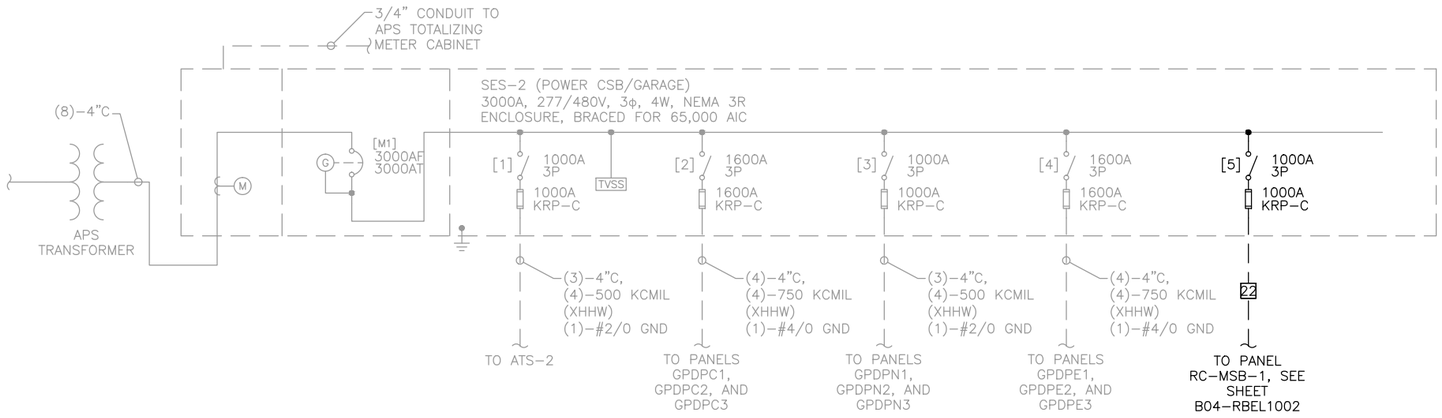
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PANEL SCHEDULES

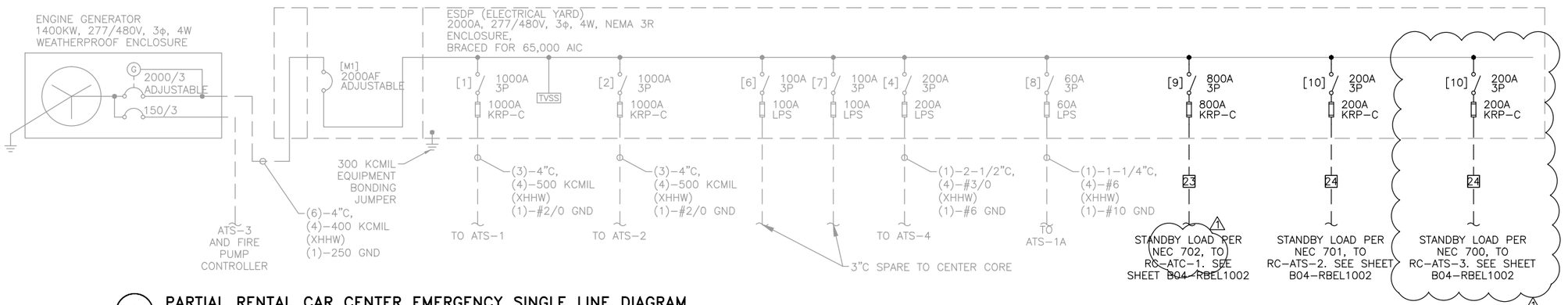
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B04 - RBEL0903

Sheet Reference No:
V6 - 074 of 260

Project Number: Project Number
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1 **PARTIAL RENTAL CAR CENTER POWER SINGLE LINE DIAGRAM**
N.T.S.



2 **PARTIAL RENTAL CAR CENTER EMERGENCY SINGLE LINE DIAGRAM**
N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ01.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant **Kimley»Horn**

Design Consultant **Gannett Fleming**

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
1	PDD COMMENTS	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

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PHX DVT BYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

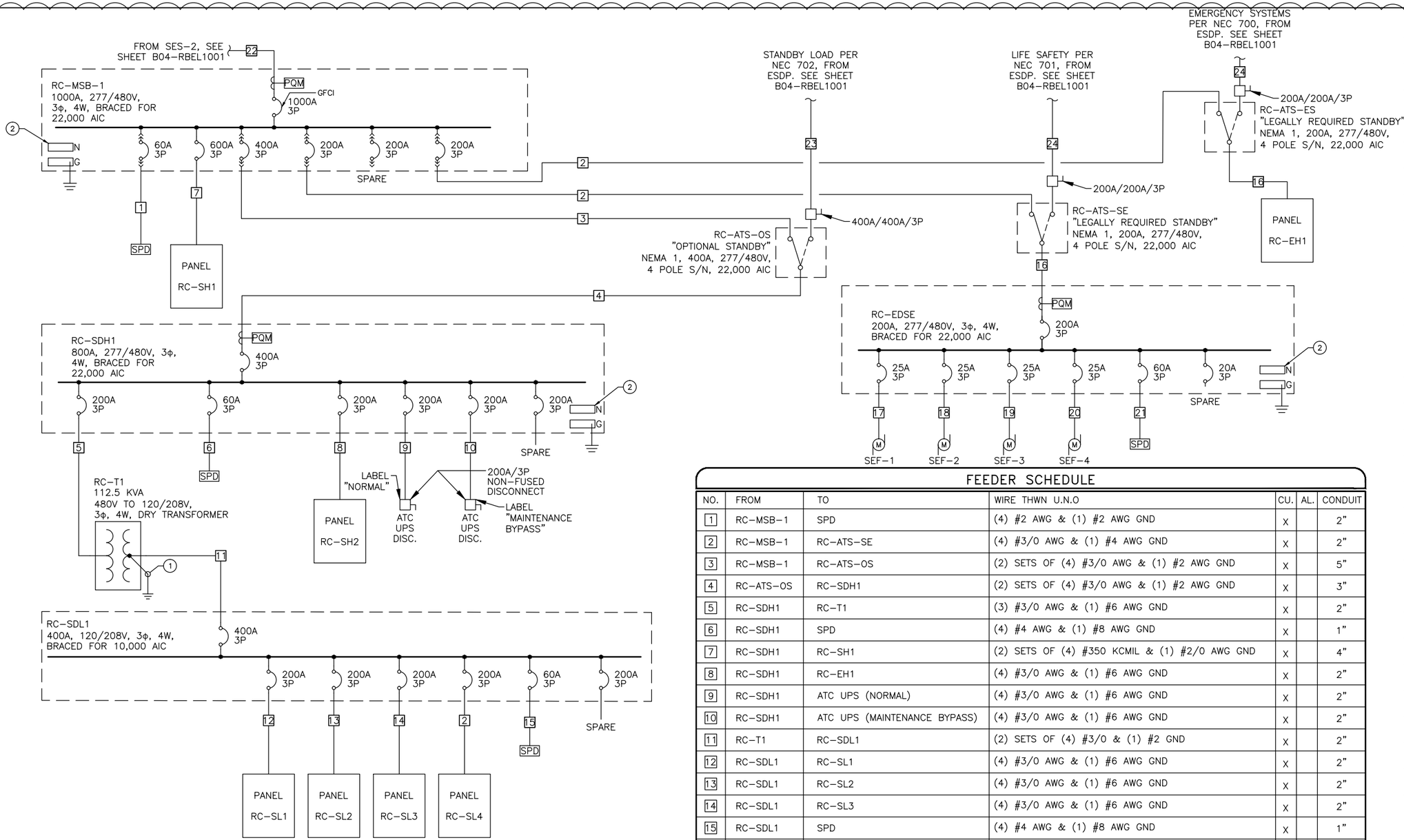
Designed by:	MLB
Drawn by:	MLB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
RCC SINGLE LINE DIAGRAM

Package: **B04 - RBEL1001** Sheet Reference No:

V6 - 075 of 260



1 RENTAL CAR STATION SINGLE LINE DIAGRAM
N.T.S.

NOTES:

1. PROVIDE MINIMUM #2 AWG GROUND. BOND THE NEUTRAL AND GROUND ON SECONDARY SIDE OF TRANSFORMER.
2. PER DETAIL 4, SHEET B04-RBEL1004.

FEEDER SCHEDULE

NO.	FROM	TO	WIRE THWN U.N.O	CU.	AL.	CONDUIT
1	RC-MSB-1	SPD	(4) #2 AWG & (1) #2 AWG GND	X		2"
2	RC-MSB-1	RC-ATS-SE	(4) #3/0 AWG & (1) #4 AWG GND	X		2"
3	RC-MSB-1	RC-ATS-OS	(2) SETS OF (4) #3/0 AWG & (1) #2 AWG GND	X		5"
4	RC-ATS-OS	RC-SDH1	(2) SETS OF (4) #3/0 AWG & (1) #2 AWG GND	X		3"
5	RC-SDH1	RC-T1	(3) #3/0 AWG & (1) #6 AWG GND	X		2"
6	RC-SDH1	SPD	(4) #4 AWG & (1) #8 AWG GND	X		1"
7	RC-SDH1	RC-SH1	(2) SETS OF (4) #350 KCMIL & (1) #2/0 AWG GND	X		4"
8	RC-SDH1	RC-EH1	(4) #3/0 AWG & (1) #6 AWG GND	X		2"
9	RC-SDH1	ATC UPS (NORMAL)	(4) #3/0 AWG & (1) #6 AWG GND	X		2"
10	RC-SDH1	ATC UPS (MAINTENANCE BYPASS)	(4) #3/0 AWG & (1) #6 AWG GND	X		2"
11	RC-T1	RC-SDL1	(2) SETS OF (4) #3/0 & (1) #2 GND	X		2"
12	RC-SDL1	RC-SL1	(4) #3/0 AWG & (1) #6 AWG GND	X		2"
13	RC-SDL1	RC-SL2	(4) #3/0 AWG & (1) #6 AWG GND	X		2"
14	RC-SDL1	RC-SL3	(4) #3/0 AWG & (1) #6 AWG GND	X		2"
15	RC-SDL1	SPD	(4) #4 AWG & (1) #8 AWG GND	X		1"
16	RC-ATS-SE	RC-EDSE	(4) #3/0 AWG & (1) #6 AWG GND	X		3"
17	RC-EDSE	SEF-1	(3) #10 AWG & (1) #10 AWG GND	X		1"
18	RC-EDSE	SEF-2	(3) #10 AWG & (1) #10 AWG GND	X		1"
19	RC-EDSE	SEF-3	(3) #10 AWG & (1) #10 AWG GND	X		1"
20	RC-EDSE	SEF-4	(3) #10 AWG & (1) #10 AWG GND	X		1"
21	RC-EDSE	SPD	(4) #4 AWG & (1) #8 AWG GND	X		2"
22	SES-2	RC-MSB-1	(5) SETS OF (4) #750 KCMIL & (1) #600 KCMIL GND	X		5"
23	ESDP	RC-ATS-OS	(5) SETS OF (4) #750 KCMIL & (1) #600 KCMIL GND	X		5"
24	ESDP	RC-ATS-SE	(2) SETS OF (4) #350 KCMIL & (1) #2/0 AWG GND	X		3"

2 RENTAL CAR CENTER FEEDER SCHEDULE
N.T.S.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA, USA
Exp. Date 12/31/20
Design Sub-Consultant: Kimley»Horn
Design Consultant: Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4398, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SUBMITTED TO OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	PDD COMMENTS	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN — CITY OF PHOENIX AVIATION DEPARTMENT

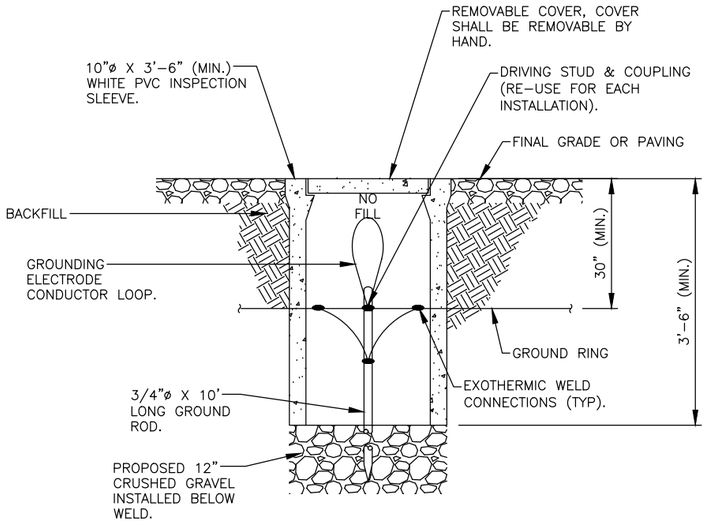
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Drawn by: GMY
Checked by: MAC
Date: 07/13/18
Dwg scale: N.T.S.
CIP No.: AV10000011
KIVA No.: 07-5204

STAGE 2 – B04 DESIGN SUBMISSION

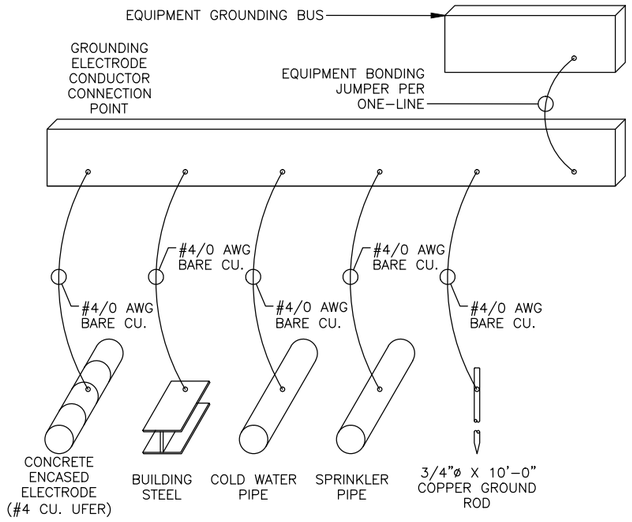
RCC STATION
SERVICE ENTRANCE
SINGLE LINE DIAGRAM

Package: B04-RBEL1002
Sheet Reference No:
V6 - 076 of 260

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ02.dwg Daniel.Thompson



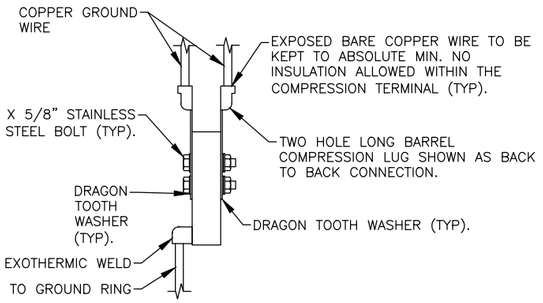
1 **GROUND WELL WITH GROUND ROD**
N.T.S.



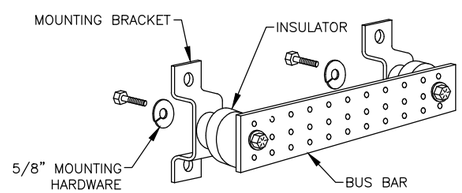
6 **BUILDING GROUNDING DETAIL**
N.T.S.

GROUNDING GENERAL NOTES

1. FOR NUMBER 8 OR LARGER GROUND WIRE SIZES, PROVIDE SOFT DRAWN COPPER, CLASS A OR CLASS B, STRANDED WIRE MEETING THE REQUIREMENTS OF ASTM B 8.
2. FOR NUMBER 10 OR SMALLER BARE GROUND WIRE SIZES, PROVIDE SOFT DRAWN SOLID COPPER WIRE MEETING THE REQUIREMENTS OF ASTM B 1.
3. USE SUITABLE FASTENERS, SECURELY ATTACH EXPOSED GROUND WIRES TO STRUCTURAL SUPPORTS AT NOT MORE THAN 4.5' INTERVALS AND WITHIN 12" OF EVERY TYPE GL LUG OR FITTING, WHERE APPLICABLE.
4. ANY CONCRETE OR LANDSCAPING THAT IS DAMAGED IN THE PROCESS OF INSTALLATION SHALL BE REPAIRED OR REPLACED BACK TO ORIGINAL CONDITION.
5. ALL EXISTING SHELVES AND WALL MOUNTED EQUIPMENT SHALL BE PROVIDED WITH INDIVIDUAL GROUND CONDUCTORS TO GROUND BUS BAR.
6. NOTIFY "CALL BEFORE YOU DIG", AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION TO LOCATE ALL EXISTING UNDERGROUND UTILITIES.



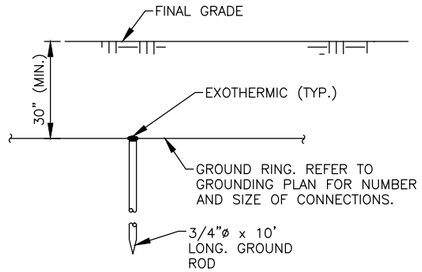
3 **TYPICAL GROUND BUS BAR CONNECTION**
N.T.S.



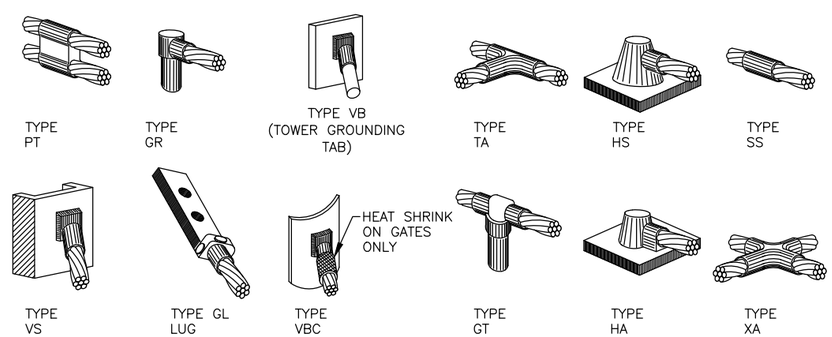
NOTES:

1. BUS BAR SHALL BE 2" X 24" X ¼" THICK, COPPER GROUND BAR TIN PLATED AFTER FABRICATION (.0003 THICK).
2. HOLES TO HAVE 1/16" COUNTERSINK ON EACH SIDE.
3. MOUNT BUS BAR 24" ABOVE FINISHED FLOOR (AFF).

4 **TYPICAL GROUND BUS BAR DETAIL**
N.T.S.



5 **GROUND ROD DETAIL**
N.T.S.



NOTES:

1. EXOTHERMIC "TYPES" SHOWN ABOVE ARE EXAMPLES. PROVIDE APPROPRIATE TYPES AS REQUIRED.

6 **TYPICAL CAD WELDS**
N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ04.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant **Kimley»Horn**

Design Consultant **Gannett Fleming**

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX DOT BYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MLB
Drawn by:	MLB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07-5204

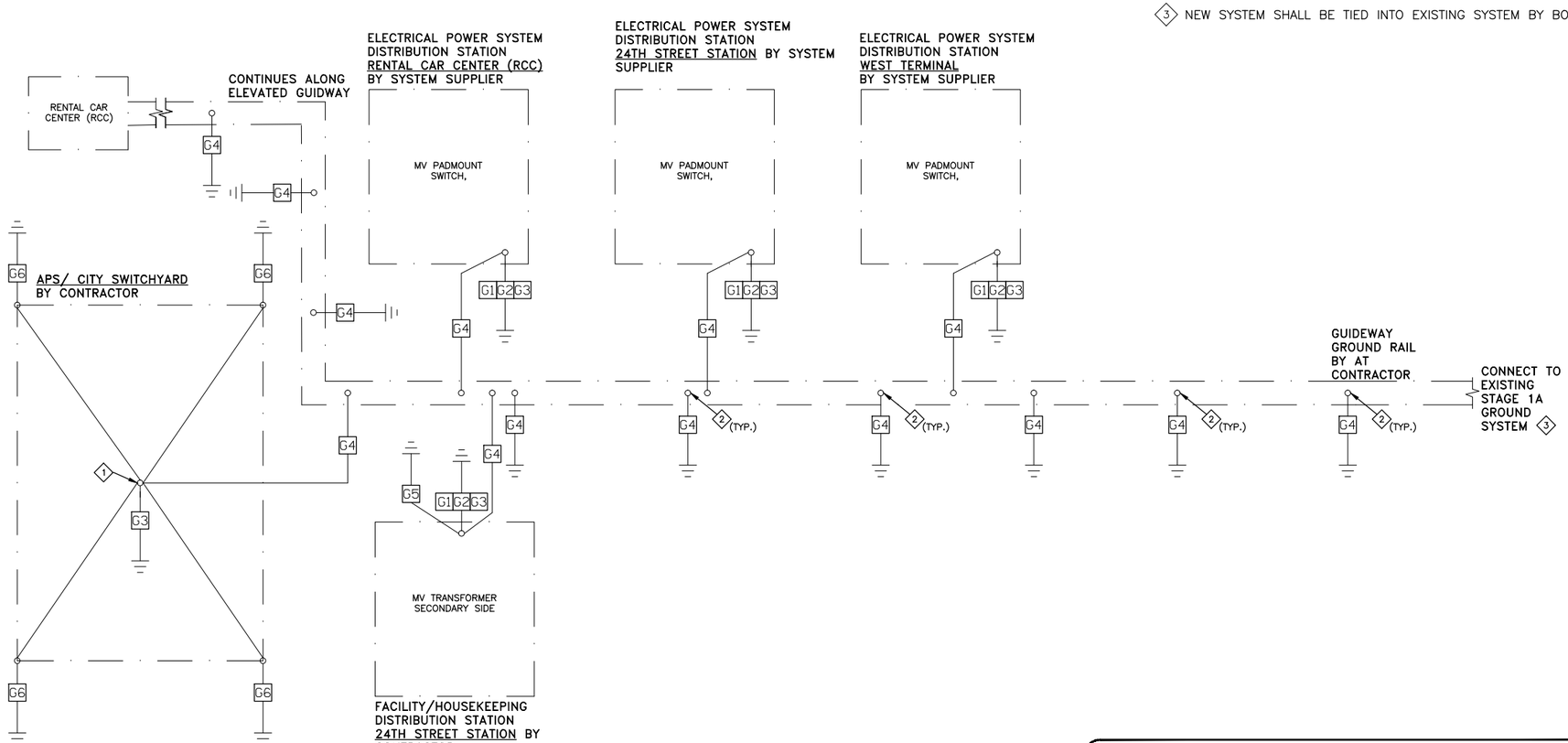
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
ELECTRICAL GROUNDING DETAILS

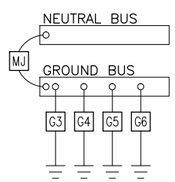
Package: **B04-RBEL1003** Sheet Reference No:
V6 - 077 of 260

GENERAL NOTES

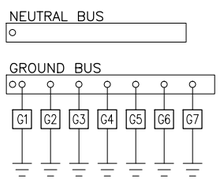
1. GROUND TIED TOGETHER AT GROUNDING BUS BAR AT SERVICE ENTRANCE FOR FACILITY. REFER TO DETAIL 4, THIS SHEET.
2. GROUNDING PROVIDED AT EVERY COLUMN. SYSTEM TIED TOGETHER AT EVERY COLUMN. SYSTEM TIED TOGETHER UTILIZING GROUND RAIL BY SYSTEM SUPPLIER, TYPICAL OF GUIDEWAY.
3. NEW SYSTEM SHALL BE TIED INTO EXISTING SYSTEM BY BOMBARDIER.



1 GROUNDING LAYOUT
N.T.S.



3 SERVICE ENTRANCE GROUND
N.T.S.



4 STATION BUILDING GROUND
N.T.S.

FEEDER SCHEDULE				
NO.	GROUNDING TO	WIRE SIZE	CU.	AL.
G1	BUILDING STEEL	4/0 BARE COPPER	X	
G2	COLD WATER PIPE	4/0 BARE COPPER	X	
G3	UFER	4/0 BARE COPPER	X	
G4	GUIDEWAY SYSTEM GROUND	4/0 BARE COPPER	X	
G5	GROUND BUS OF OTHER SERVICES	4/0 BARE COPPER	X	
G6	COUNTERPOISE (IF AVAILABLE)	4/0 BARE COPPER	X	
G7	CABLE TRAY GROUND	4/0 BARE COPPER	X	
MJ	MAIN BONDING JUMPER	500 kCM BARE COPPER	X	

NOTE: REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

2 GROUNDING SCHEDULE
N.T.S.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

NO.	DATE
1	07/13/18
	PDD COMMENTS
	SUBMITTED FOR REVIEW 04/06/18
	REVISIONS / SUBMISSIONS

ISSUED FOR CONSTRUCTION

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MLB
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CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 – 804 DESIGN SUBMISSION

RCC STATION
ELECTRICAL GROUNDING
SPECIFICATIONS, NOTES, AND LEGEND

Package: B04-RBEL1004
Sheet Reference No:
V6 - 078 of 260

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ04.dwg Daniel.Thompson

Feeder Calculations	
Solar Contribution (11x total AC solar Amps)	0
Motor Contribution (11x total motor Amps)	0

Point	Point Name	Source* Point	Source Amps	Conduit Type	Conductor Type	Wire Size/Quantity			Load (A)	Distance	Voltage	Phase	XFMR kVA	XFMR %Z	Isc	**% Vdrop
1	SES-2 (POWER CBS/GARAGE)	65000	65,000												65,000	
2	RC-MSB-1	1	65,000	NM	Copper	5	Set of	750 KCML	662	1280	480	3			20,823	2.63%
3	RC-ATS-OS	2	20,823	NM	Copper	5	Set of	750 KCML	618	50	480	3			20,285	2.73%
4	RC-SDH1	3	20,285	NM	Copper	5	Set of	750 KCML	618	50	480	3			19,774	2.82%
5	RC-T1 PRIMARY	4	19,774	NM	Copper	1	Set of	3/0	135	30	480	3			17,139	2.95%
6	RC-T1 SECONDARY	5	17,139	NM	Copper	1	Set of		312		208	3	112.5	4.225	6,227	0.00%
7	RC-SH1	4	19,774	NM	Copper	2	Set of	350 KCML	403	20	480	3			19,172	2.91%
8	RC-EH1	4	19,774	NM	Copper	1	Set of	3/0	20	50	480	3			15,740	2.85%
9	ATC UPS DISC.	4	19,774	NM	Copper	1	Set of	3/0	100	50	480	3			15,740	2.98%
10	RC-SDL1	6	6,227	NM	Copper	2	Set of	3/0	221	50	208	3			5,697	0.40%
11	RC-SL1	10	5,697	NM	Copper	1	Set of	3/0	200	50	208	3			4,868	1.14%
12	RC-SL2	10	5,697	NM	Copper	1	Set of	3/0	200	50	208	3			4,868	1.14%
13	RC-SL3	10	5,697	NM	Copper	1	Set of	3/0	200	150	208	3			3,770	2.60%

Feeder Calculations	
Solar Contribution (11x total AC solar Amps)	0
Motor Contribution (11x total motor Amps)	0

Point	Point Name	Source* Point	Source Amps	Conduit Type	Conductor Type	Wire Size/Quantity			Load (A)	Distance	Voltage	Phase	XFMR kVA	XFMR %Z	Isc	**% Vdrop
1	ESDP (ELEC. YARD)	65000	65,000												65,000	
2	RC-ATS-SE	1	65,000	NM	Copper	2	Set of	350 KCML	200	1280	480	3			8,550	2.77%
3	RC-EDSE	2	8,550	NM	Copper	1	Set of	3/0	200	30	480	3			8,017	2.96%

1 RCC FAULT CURRENT CALC

ELECTRICAL LOAD CALCULATIONS							
	LIGHTING INTERIOR	LIGHTING EXTERIOR	RECEPTS. & MISC.	HVAC	ESCALATOR EQUIP.	ELEV. EQUIP	TOTAL
MSB-1	12576		534627				547203
							0
							0
							0
							0
							0
TOTALS	12576	0	534627	0	0	0	547203
DEMAND FACTOR PER N.E.C.	125%	125%	100%	125%	100%	100%*	
DEMAND LOAD	15800	0	534700	0	0	0	550500
						550500 VA @ 480 VOLT, 3 PHASE =	670 AMPS
						25% SAFETY =	170 AMPS
						TOTAL AMPS =	840 AMPS

NOTE: CALCULATIONS BASED ON N.E.C. 220, UNLESS NOTED OTHERWISE:
* PER N.E.C. 430-22(E)

EXISTING SES-2 LOAD†	546000 VA @ 480 VOLT, 3 PHASE =	660 AMPS
25% PER NEC†	136500 VA @ 480 VOLT, 3 PHASE =	170 AMPS
EXISTING SES-2 LOAD + NEW LOAD		1670 AMPS

† LOAD DATA DERIVED FROM PEAK DEMAND BETWEEN 11/20/15 AND 1/24/17

2 RCC SES-2 LOAD SUMMARY

ELECTRICAL LOAD CALCULATIONS							
	LIGHTING INTERIOR	LIGHTING EXTERIOR	RECEPTS. & MISC.	HVAC	ESCALATOR EQUIP.	ELEV. EQUIP	TOTAL
RC-SDH1	12576		498063				510639
RC-EDSE	0		36564				36564
							0
							0
							0
							0
TOTALS	12576	0	534627	0	0	0	547203
DEMAND FACTOR PER N.E.C.	125%	125%	100%	125%	100%	100%*	
DEMAND LOAD	15800	0	534700	0	0	0	550500
						550500 VA @ 480 VOLT, 3 PHASE =	670 AMPS
						25% SAFETY =	170 AMPS
						TOTAL AMPS =	840 AMPS

NOTE: CALCULATIONS BASED ON N.E.C. 220, UNLESS NOTED OTHERWISE:
* PER N.E.C. 430-22(E)

EXISTING ESDP LOAD†	800000 VA @ 480 VOLT, 3 PHASE =	970 AMPS
EXISTING ESDP LOAD + NEW LOAD		1810 AMPS

† LOAD DATA DERIVED FROM CALCULATED ESTIMATES BY APS

3 RCC ESDP LOAD SUMMARY

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ07.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA U.S.A.

Exp. Date 12/31/20

Design Sub-Consultant Kimley»Horn

Design Consultant Gannett Fleming

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NO.	DATE
	REVISIONS / SUBMISSIONS
	SUBMITTED FOR REVIEW 04/06/18
	PDD COMMENTS 07/13/18
	ISSUED FOR CONSTRUCTION 07/13/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

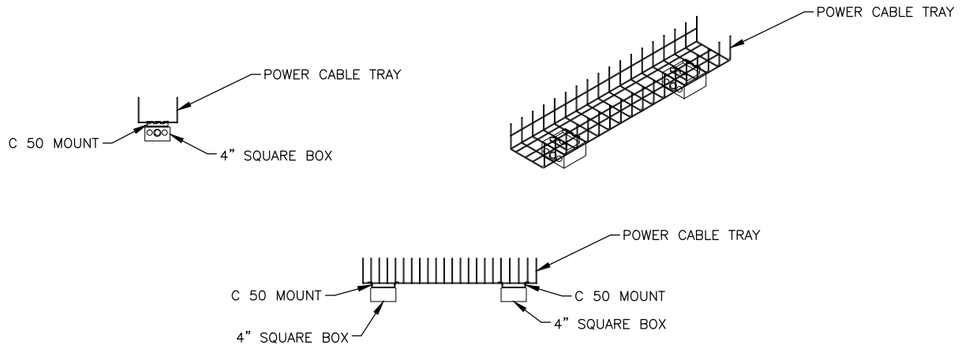
PHX SKY TRAIN CITY OF PHOENIX AVIATION DEPARTMENT

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Drawn by: MLB
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Date: 07/13/18
Dwg scale: N.T.S.
CIP No.: AV10000011
KIVA No.: 07-5204

STAGE 2 – B04 DESIGN SUBMISSION

RCC STATION
FAULT CURRENT
CLACULATIONS

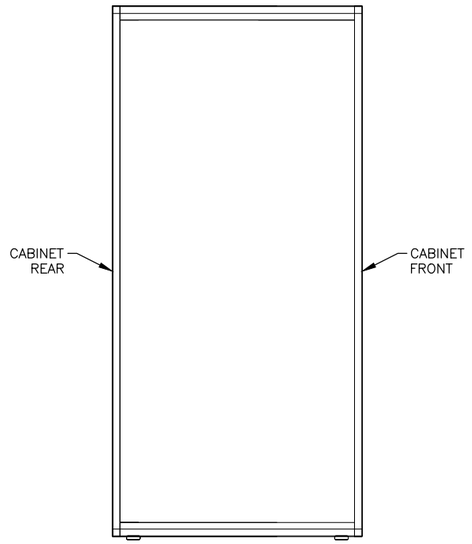
Package: B04 - RBEL1005
Sheet Reference No:
V6 - 079 of 260



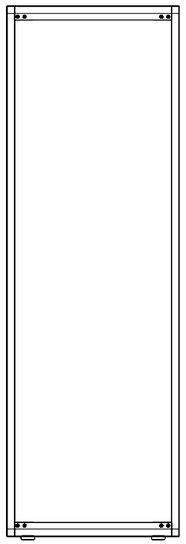
1 **POWER CABLE TRAY**
N.T.S.

GENERAL NOTES

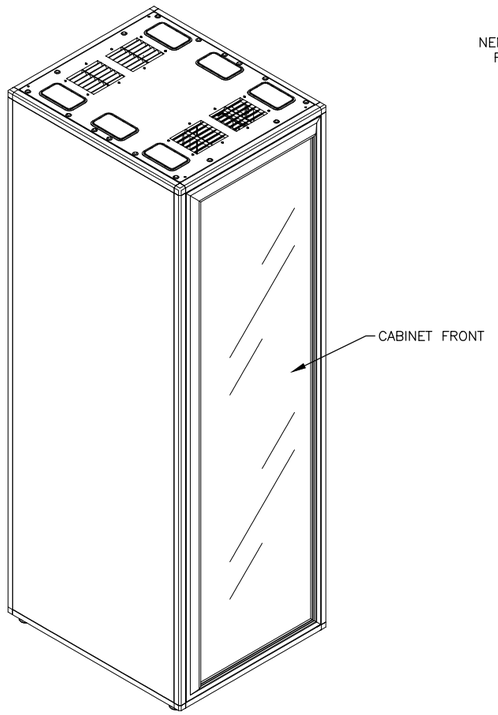
1. CONTRACTOR SHALL PROVIDE AND INSTALL ELECTRICAL BOXES AND MOUNTING ATTACHMENTS ON THE UNDERSIDE OF THE COP INFORMATION TECHNOLOGIES SERVICES (ITS) PROVIDED AND INSTALLED POWER CABLE TRAY SYSTEM. CONTRACTOR SHALL COORDINATE EXACT MOUNTING LOCATIONS WITH COP ITS.
2. ALL NEMA L5-20R RECEPTICLES TO BE ISOLATED GROUND RECEPTICLES.
3. CONTRACTOR SHALL PROVIDE AND INSTALL SEAL-TIGHT FLEX CONDUIT FROM EACH POWER PANEL TO EACH ELECTRICAL BOX. CONTRACTOR TO PROVIDE INDEPENDENT CIRCUIT (20A BREAKER) FROM EACH POWER PANEL TO EACH ELECTRICAL BOX.
4. CONTRACTOR SHALL INSTALL ALL SEAL-TIGHT FLEX CONDUITS AND BUNDLE CONDUITS TOGETHER WITH BLACK VELCRO TIES. CONTRACTOR SHALL COORDINATE VELCRO TIES WITH COP ITS. CONDUIT SHALL BE TIED INSIDE POWER CABLE TRAY.



SIDE VIEW

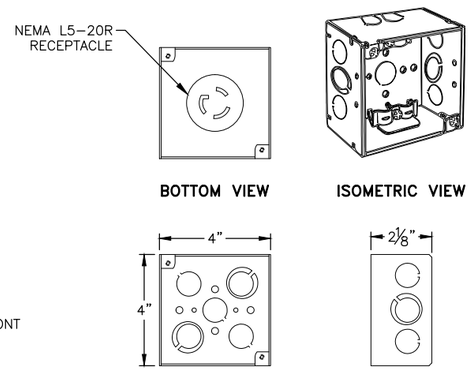


FRONT VIEW



ISOMETRIC VIEW

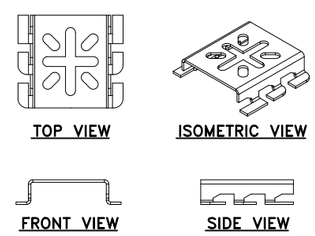
2 **POWER OUTLET MOUNTED ABOVE EQUIPMENT RACK**
N.T.S.



BOTTOM VIEW | ISOMETRIC VIEW

TOP VIEW | SIDE VIEW

3 **4" SQUARE BOX**
N.T.S.



TOP VIEW | ISOMETRIC VIEW

FRONT VIEW | SIDE VIEW

4 **CABLOFIL C 50 MOUNT ATTACHMENT**
N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ09.dwg Daniel.Thompson

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	SUBMITTED FOR REVIEW	04/06/18

PHX DVT BYR
CITY OF PHOENIX AVIATION DEPARTMENT

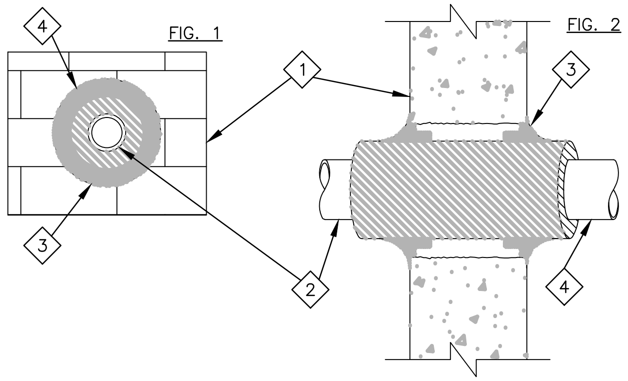
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

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CIP No.: AV10000011
KIVA No.: 07-5204

STAGE 2 – B04 DESIGN SUBMISSION

RCC STATION ELECTRICAL DETAILS

Package: B04-RBEL1006
Sheet Reference No:
V6 - 080 of 260



1. CONCRETE OR CONCRETE BLOCK WALL.
2. CONDUIT UP TO 4" TRADE SIZE.
3. SPECSEAL SERIES 100 SEALANT. INSTALL 1/4" BEAD AROUND WRAP STRIP/ CONCRETE WALL ANNULUS AFTER INSTALLATION OF WRAP STRIP(S) SHALL RANGE FROM POINT OF CONTACT TO 1/4" MAXIMUM.
4. SPECSEAL (SSW12 OR SSWRED) WRAP STRIP. WRAP PRODUCT AROUND CONDUIT, SECURE STEEL TIE WIRE, AND RECESS 1-3/4" INTO WALL CAVITY. SEE FIG. 3 FOR THE NUMBER OF LAYERS REQUIRED.

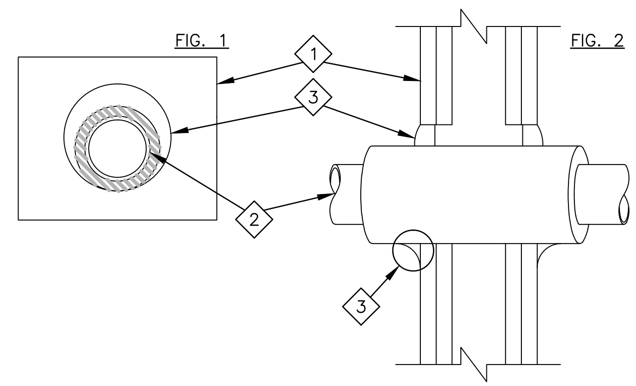
FIG. 3

LAYERS OF WRAP STRIP	1	1	1	2	2

NOTE:

THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS:
- ASTM E814 (UL1479)
- ASTM E119 (TIME/ TEMP. EXPOSURE) (COTTON WASTE IGNITION)
- ANNULAR SPACE REQUIREMENTS

1 CONDUIT THRU 2 HR RATED CONC. WALL
N.T.S.



1. RATED GYPSUM WALLBOARD ASSEMBLY.
2. INSULATED METALLIC PIPE OR TUBE. SEE FIGURE 3 FOR MORE INFORMATION.
3. SPECSEAL SERIES 100 SEALANT INSTALLED TO 5/8" DEPTH, FLUSH WITH BOTH SURFACES OF WALL. ADDITIONAL FILL MATERIAL INSTALLED SUCH THAT A MIN 1/4" CROWN IS FORMED AROUND THROUGH PENETRANT. AT POINT CONTACT, INSTALL A 1/4" THICK COVE BEAD AT THE PIPE COVERING/ WALLBOARD INTERFACE.

NOTE:

THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS:
- ASTM E814 (UL1479). REFER TO SYSTEM No.WL-5014 & WL 5054
- ASTM E119 (TIME/ TEMP. EXPOSURE) (COTTON WASTE IGNITION)
- ANNULAR SPACE REQUIREMENTS

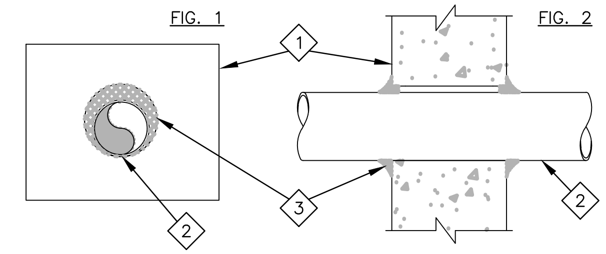
NOTE:

UL SYSTEMS WL 5014 ALLOWS FOR CONTINUOUS POINT CONTACT (360°)

FIG. 3

PENETRANT	MAX SIZE	INSULATION TYPE	INSULATION THICKNESS	ANNULUS	UL SYS. NO.	F-RATING	T-RATING
STEEL/IRON PIPE	12"	FG	2"	0" TO 1-1/4"	WL5014	1 & 2 HR	1 HR
COPPER	4"	FG	2"	0" TO 1-1/4"	WL5014	1 & 2 HR	1 HR
PIPE/TUBE STEEL, IRON OR COPPER PIPE/TUBE	4"	AB/PVC	3/4"	0" TO 7/8"	WL5054	1 & 2 HR	1 HR

2 1 OR 2 HR RATED FIRESTOP DETAIL
N.T.S.



1. 1 LAYER OF 5/8" U.L. CLASSIFIED GYPSUM WALL BOARD ASSEMBLY.
2. MAX. 12" STEEL OR IRON PIPE, 6" COPPER PIPE OR TUBE. CONDUIT, UP TO 4" EMT OR 1" FLEXIBLE. FIRESTOP SYSTEM SHALL RANGE FROM POINT CONTACT TO 1-3/4" MAX.
3. SPECSEAL LC150 SEALANT INSTALLED TO A 5/8 " DEPTH, FLUSH WITH BOTH SURFACES OF WALL. AT CONTACT POINT, INSTALL 3/8" THICK COVE BEAD OF MATERIAL AT PIPE/CONCRETE WALL INTERFACE.

NOTE:

THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS:
- ASTM E814 (UL1479). 'T' RATING = 0:00 HOURS; 'F' RATING = 2:00 HOURS
- ASTM E119 (TIME/TEMP. EXPOSURE) (COTTON WASTE IGNITION)
- ANNULAR SPACE REQUIREMENTS

3 CONDUIT THRU 1 HR. OR 2 HR. CONC. WALL
N.T.S.

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PHX SKY HARBOR — CITY OF PHOENIX AVIATION DEPARTMENT

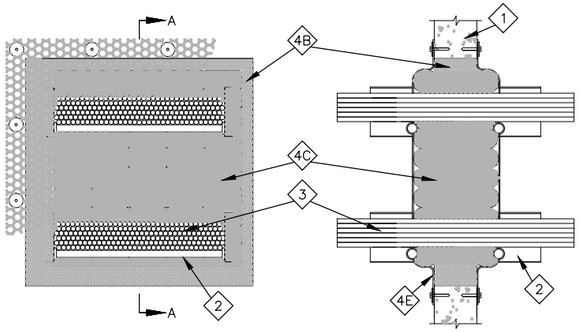
PHX SKY TRAIN
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STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION ELECTRICAL DETAILS

Package: B04- Sheet Reference No: RBEL1007



SECTION A–A

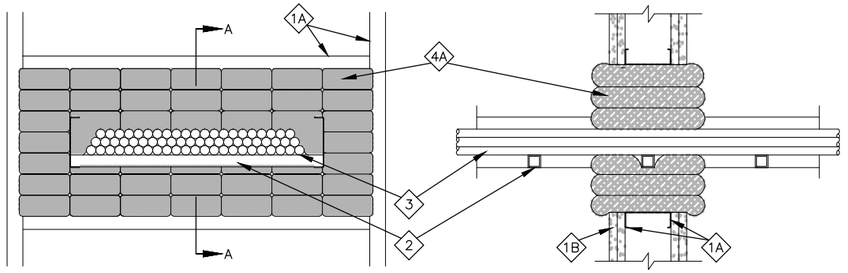
1. WALL ASSEMBLY: MIN. 4½" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF) CONCRETE WALL. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS: MAX. AREA OF OPENING IS 576 SQ. IN. WITH MAX. DIMENSIONS OF 24".

2. CABLE TRAY: MAX. 18" WIDE BY MAX. 6" DEEP OPEN LADDER CABLE TRAY WITH CHANNEL–SHAPED SIDE RAILS FORMED FROM 0.060" THICK (NO. 16 MSG) GALV STEEL WITH NOM 1"ø RUNGS SPACED 9" O.C. OR MAX 18 IN. WIDE BY MAX 6" DEEP OPEN LADDER CABLE TRAY WITH CHANNEL–SHAPED SIDE RAILS FORMED FROM 0.060" THICK ALUMINUM WITH NOM 1"ø RUNGS SPACED 9" O.C. MAX. (2) CABLE TRAYS TO BE INSTALLED IN OPENING WITH SEPARATION OF 8" BETWEEN CABLE TRAYS. ANNULAR SPACE BETWEEN CABLE TRAYS AND PERIPHERY OF OPENING SHALL BE MIN. 3" TO MAX. 16". AFTER INSTALLATION OF MORTAR FILL MATERIAL (4B), ANNULAR SPACE BETWEEN SIDE RAILS OF CABLE TRAY AND MORTAR FILL MATERIAL SHALL BE MIN. OF 0" (POINT CONTACT) TO MAX. OF 4". ANNULAR SPACE BETWEEN BACK OR FRONT OF CABLE TRAYS AND MORTAR FILL MATERIAL SHALL RANGE FROM MIN. 1½" TO MAX. OF 3". CABLE TRAYS TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

3. CABLES: AGGREGATE CROSS–SECTIONAL AREA OF CABLES IN CABLE TRAY IS DEPENDENT UPON NOM DEPTH OF CABLE TRAY. IF NOM DEPTH OF CABLE TRAY IS EQUAL TO OR LESS THAN 4" AGGREGATE CROSS–SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX. 30% OF CROSS–SECTIONAL AREA OF CABLE TRAY BASED ON MAX. 3⅞" CABLE LOADING DEPTH WITHIN CABLE TRAY. IF NOM DEPTH OF CABLE TRAY IS GREATER THAN 4", AGGREGATE CROSS–SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX. 20% OF CROSS–SECTIONAL AREA OF CABLE TRAY BASED ON MAX. 6" CABLE LOADING DEPTH WITHIN CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
   A. MAX. 1/C – 350 KCMIL CABLE WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
   B. MAX. 3/C – NO. 2 AWG CABLE WITH PVC INSULATION AND JACKET.
   C. MAX. 7/C – NO 12 AWG CABLE WITH PVC–NYLON INSULATION AND PVC JACKET.
   D. MAX. 2/C – NO. 16 AWG CABLE WITH PVC–NYLON INSULATION AND PVC JACKET.

4. FIRESTOP SYSTEM: FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
   A. FORMS (NOT SHOWN) – USED TO PREVENT LEAKAGE OF MORTAR FILL MATERIAL (ITEM 4B) DURING INSTALLATION. FORMS TO BE RIGID SHEET MATERIAL, CUT TO FIT CONTOUR OF PENETRATING ITEMS AND PERIPHERY OF OPENING. FORM FASTENED TO UNDERSIDE OF FLOOR OR BOTH SIDES OF WALL. FORMS TO BE REMOVED AFTER FILL MATERIAL HAS CURED.
   B. FILL, VOID OR CAVITY MATERIAL: MORTAR – MIN. 4½" THICKNESS OF FILL MATERIAL APPLY WITHIN ANNULUS BETWEEN CABLE TRAY AND PERIPHERY OF OPENING, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. MORTAR TO BE MIXED WITH WATER AT RATE OF 1.2 PART DRY MIXTURE TO 1.0 PART WATER BY WEIGHT IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS SUPPLIED WITH THE PRODUCT. SPECIFIED TECHNOLOGIES INC. – SPECSEAL MORTAR.
   C. FILL, VOID OR CAVITY MATERIAL: PILLOWS – MAX. 9" LONG BY 6" WIDE BY 3" THICK PLASTIC COVERED INTUMESCENT PILLOWS. IN FLOORS, PILLOWS TO BE INSTALLED LENGTHWISE INTO OPENING AND POSITIONED TO EXTEND MAX. OF 2½" BELOW BOTTOM PLANE OF FLOOR. IN WALLS, PILLOWS TO BE INSTALLED LENGTHWISE THROUGH OPENING AND POSITIONED TO EXTEND EQUALLY IN BOTH DIRECTIONS FROM PROXIMATE CENTER LINE OF WALL. PILLOWS TIGHTLY PACKED INTO OPENING TO FILL ANNULAR SPACE BETWEEN CABLES AND MORTAR, BETWEEN CABLE TRAY AND MORTAR AND BETWEEN CABLE TRAYS. SPECIFIED TECHNOLOGIES INC. – SPECSEAL FIRESTOP PILLOWS.
   D. FILL, VOID OR CAVITY MATERIAL: PUTTY (NOT SHOWN) – AFTER INSTALLATION OF PILLOWS (ITEM 4A), PUTTY APPLIED TO SEAL ANY VOIDS BETWEEN CABLES, BETWEEN CABLES AND PILLOWS AND BETWEEN CABLE TRAY AND PILLOWS ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. SPECIFIED TECHNOLOGIES INC. – SPECSEAL PUTTY.
   E. WIRE LATH: NOM 1" DIAMOND SHAPED WIRE LATH FABRICATED FROM MIN. NO. 20 AWG GALV STEEL WIRE. WIRE LATH CUT TO FIT CONTOUR OF OPENING WITH MIN. 2" LAP BEYOND PERIPHERY OF OPENING ON TO CONCRETE FLOOR OR WALL ASSEMBLY TO KEEP PILLOWS IN PLACE. WIRE LATH SECURED TO BOTH SURFACES OF FLOOR OR WALL ASSEMBLY WITH ¼"ø BY 1¾" LONG CONCRETE ANCHORS IN CONJUNCTION WITH ¼" BY ½"ø STEEL FENDER WASHERS, SPACED 4" O.C. JOINTS WITHIN WIRE LATH SHALL OVERLAP MIN. OF 2" AND BE SECURED TOGETHER BY MEANS OF NO. 20 AWG STEEL WIRE SPACED 6" O.C.

1 CONCRETE FIRE WALL CABLE TRAY PENETRATION
N.T.S.



SECTION A–A

1. WALL ASSEMBLY: 1 OR 2 HOUR FIRE–RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U200 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NORM 2 BY 4" LUMBER SPACED 16" O.C. WITH NORM 2 BY 4" LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3⅝" WIDE AND SPACED MAX. 24" O.C. ADDITIONAL FRAMING MEMBERS TO BE INSTALLED IN STUD CAVITY CONTAINING THROUGH–PENETRATING ITEM TO FORM RECTANGULAR BOX AROUND PENETRANT.
   B. GYPSUM BOARD – ⅝" THICK, 4 FOOT WIDE WITH SQUARE OR TAPERED EDGES. GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U200 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX. AREA OF OPENING IS 273 SQ INCH WITH MAX. DIMENSIONS OF 22¾" MAX. WIDTH OF OPENING IN WOOD STUD WALLS IS LIMITED TO 14½". HOURLY F RATING OF FIRESTOP SYSTEM IS EQUAL TO HOURLY FIRE RATING OF WALL ASSEMBLY IN WHICH IT IS INSTALLED.

2. CABLE TRAY: MAX. 18" WIDE BY MAX. 5" DEEP OPEN LADDER CABLE TRAY WITH CHANNEL–SHAPED SIDE RAILS FORMED FROM 0.060" THICK (NO. 16 MSG) GALV STEEL WITH NOM 1"ø RUNGS SPACED 9" O.C. OR MAX. 18" WIDE BY MAX. 5" DEEP OPEN LADDER CABLE TRAY WITH CHANNEL–SHAPED SIDE RAILS FORMED FROM 0.060" THICK ALUMINUM WITH NOM 1"ø RUNGS SPACED 9" O.C. ONE CABLE TRAY TO BE CENTERED IN OPENING. ANNULAR SPACE BETWEEN CABLE TRAY AND EACH SIDE OF OPENING SHALL BE NOM 5/16". ANNULAR SPACE BETWEEN CABLE TRAY AND TOP AND BOTTOM OF OPENING SHALL BE A NOM 3 ½". CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDE OF WALL ASSEMBLY.

3. CABLES: AGGREGATE CROSS–SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX. 30% OF CROSS–SECTIONAL AREA OF CABLE TRAY BASED ON MAX. 3⅞" CABLE LOADING DEPTH WITHIN CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
   A. MAX. 200 PAIR NO. 24 AWG (OR SMALLER) COPPER CONDUCTOR CABLE WITH POLYVINYL CHLORIDE (PVC) AND INSULATION.
   B. MAX. 1/C – 750 KCMIL (OR SMALLER) COPPER CONDUCTOR CABLE WITH XPLE OR PVC INSULATION AND XPLE OR PVC JACKET.
   C. MAX. RG59/U (OR SMALLER) COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
   D. MAX. 3/C – NO. 2 AWG CABLE WITH PVC INSULATION AND JACKET.
   E. MAX. 7/C – NO 12 AWG CABLE WITH PVC–NYLON INSULATION AND PVC JACKET.
   F. MAX. 62.5/125 MICRON FIBER OPTIC CABLE WITH PVC INSULATION AND JACKETING.
   G. MAX. (4) PAIR NO. 24 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH HYLAR INSULATION AND JACKETING.
   H. MAX. 4/C NO. 10 AWG (OR SMALLER) COPPER OR ALUMINUM CONDUCTOR ALUMINUM OR STEEL METAL–CLAD OR ARMORED–CLAD CABLE.

4. FIRESTOP SYSTEM: FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
   A. FILL, VOID OR CAVITY MATERIAL – PILLOWS – MAX. 9" LONG BY 6" WIDE BY 3" THICK PLASTIC COVERED INTUMESCENT PILLOWS. PILLOWS TO BE INSTALLED LENGTHWISE THROUGH OPENING AND POSITIONED TO EXTEND EQUALLY IN BOTH DIRECTIONS FROM APPROXIMATE CENTER LINE OF WALL. PILLOWS TIGHTLY PACKED INTO OPENING TO FILL ANNULAR SPACE BETWEEN CABLES PERIPHERY OF OPENING. SPECIFIED TECHNOLOGIES INC. – SPECSEAL FIRESTOP PILLOWS.
   B. FILL, VOID OR CAVITY MATERIAL – PUTTY (NOT SHOWN) – AFTER INSTALLATION OF PILLOWS (ITEM 4A), PUTTY APPLIED TO SEAL ANY VOIDS BETWEEN CABLES, BETWEEN CABLES AND PILLOWS AND BETWEEN CABLE TRAY AND PILLOWS ON BOTH SIDES OF WALL ASSEMBLY. SPECIFIED TECHNOLOGIES INC. – SPECSEAL PUTTY.

2 GYP–BOARD FIRE WALL CABLE TRAY PENETRATION
N.T.S.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA U.S.A.

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PHX SKY TRAIN
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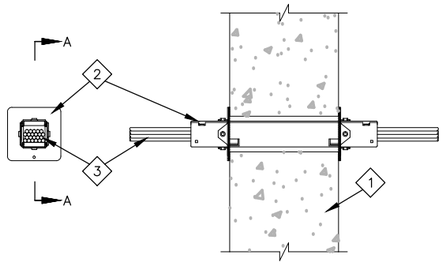
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CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – 804 DESIGN SUBMISSION

RCC STATION ELECTRICAL DETAILS

Package: B04
Sheet Reference No: RBEL1008

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ09.dwg Daniel.Thompson



SECTION A–A

1 WALL ASSEMBLY: MIN. 6" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF OR 1600–2400 KG/M3) CONCRETE WALL. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. OPENING TO BE MAX. 2"ø OR MAX. ¼" LAGER WIDTH AND HEIGHT DIMENSIONS OF FIRESTOP DEVICE.

2 FIRESTOP DEVICE: FIRESTOP DEVICE MODULE TO BE INSTALLED IN ACCORDANCE WITH ACCOMPANYING INSTALLATION INSTRUCTIONS. SPACE BETWEEN FIRESTOP DEVICE MODULE AND PERIPHERY OF OPENING SHALL BE MIN. 0" TO MAX. ⅛". FIRESTOP DEVICE MODULE(S) SECURED IN PLACE BY MEANS OF STEEL WALL PLATES INSTALLED WITH GASKETING MATERIAL SUPPLIED WITH PRODUCT. STEEL WALL PLATES INSTALLED ON BOTH SIDES OF WALL AND SECURED TO EACH DEVICE BY MEANS OF STEEL SET SCREWS PROVIDED WITH DEVICE. FIRESTOP DEVICE MODULE IS TO BE INSTALLED WITH ENDS PROJECTING EQUAL DISTANCE BEYOND EACH SURFACE OF WALL ASSEMBLY.

A. SPECIFIED TECHNOLOGIES INC. – EZ PATH MINI – ONE FIRESTOP DEVICE MODULE CONSISTING OF 1.4"x1.4" x10½" LONG GALVANIZED STEEL TUBE WITH INTUMESCENT MATERIAL LINING.

B. ONE SPECIFIED TECHNOLOGIES INC. – EZ PATH – ONE FIRESTOP DEVICE MODULE CONSISTING OF 3"x3" x10½" LONG GALVANIZED STEEL TUBE WITH INTUMESCENT MATERIAL LINING.

3 CABLES: WITHIN LOADING AREA FOR EACH FIRESTOP DEVICE MODULE, CABLES MAY REPRESENT 0 TO 100% VISUAL FILL. CABLE FILL TO BE DISTRIBUTED AT UNIFORM HEIGHT ACROSS WIDTH OF FIRESTOP DEVICE MODULE. CABLES TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. ANY COMBINATION OF THE FOLLOWING TYPES OF CABLES MAY BE USED:

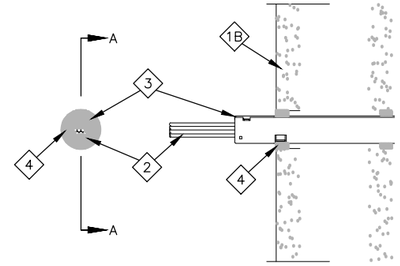
A. FOR EZ PATH MINI – ANY COMBINATION OF THE FOLLOWING TYPES OF CABLES MAY BE USED:

1. MAX. (4) NO.22 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH POLYVINYL CHLORIDE (PVC) OR PLENUM RATED JACKETING AND INSULATION.
2. MAX. RG/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
3. FIBER OPTIC CABLE WITH POLYVINYL CHLORIDE (PVC) OR POLYETHYLENE (PE) JACKET AND INSULATION HAVING A MAX. DIAMETER OF ¼".
   THE T RATING IS 1¼ HOUR WHEN CABLES ARE INSTALLED. OTHERWISE, THE T RATING IS 1¾ HR.

B. FOR EZ PATH – ANY COMBINATION OF THE FOLLOWING TYPES OF CABLES MAY BE USED:

1. MAX. (100) PAIR NO. 24 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH POLYVINYL CHLORIDE (PVC) OR PLENUM RATED JACKETING AND INSULATION.
2. MAX. (4) PAIR NO. 22 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH POLYVINYL CHLORIDE (PVC) OR PLENUM RATED JACKETING AND INSULATION.
3. MAX. RG/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
4. FIBER OPTIC CABLE WITH POLYVINYL CHLORIDE (PVC) OR POLYETHYLENE (PE) JACKET AND INSULATION HAVING A MAX. DIAMETER OF ⅝".
5. OPTICAL FIBER RACEWAY+ – MAX. 1½"ø (OR SMALLER) OPTICAL FIBER RACEWAY ("INNERDUCT") FORMED OF EITHER POLYVINYL CHLORIDE (PVC) OR POLYVINYLIDENE FLUORIDE (PVDF) WITH OPTICAL FIBER CABLE FILL. RACEWAYS INSTALLED IN ACCORDANCE WITH ARTICLE 770 OF THE NEC (NFPA 70).
   THE T RATING IS ¾ HR WHEN ITEM 2B1 IS USED. OTHERWISE THE T RATING IS 1 HR. WHEN NO CABLES ARE INSTALLED T RATING IS 1½ HR.

1 CONCRETE FIRE WALL CABLE THRU
N.T.S.



1 WALL ASSEMBLY: 1 OR 2 HR FIRE–RATED GYPSUM BOARD/ STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED WITHIN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCORPORATE THE FOLLOWING CONSTRUCTION FEATURES:

A. STUDS – WALL FRAMING SHALL CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2x4" LUMBER SPACED MAX. 16" O.C. STEEL STUDS TO BE MIN. 3½" WIDE AND SPACED MAX. 24" O.C.

B. GYPSUM BOARD – THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. OPENING IN GYPSUM BOARD TO ACCOMMODATE FIRESTOP DEVICE TO BE DEPENDING ON SIZE OF FIRESTOP AS FOLLOWS:
   EZ PATH MINI – MAX. 3" WIDE BY 2½" HIGH OR NOM 2"ø.
   EZ PATH – MAX. 4" BY 3½" OR NOM 4"ø.
   THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY RATING OF THE WALL IN WHICH IT IS INSTALLED.

2 CABLES: WITHIN LOADING AREA FOR EACH FIRESTOP DEVICE MODULE CABLES MAY REPRESENT 0 TO 100% VISUAL FILL. CABLE FILL TO BE DISTRIBUTED AT UNIFORM HEIGHT ACROSS WIDTH OF FIRESTOP DEVICE MODULE. CABLES TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. CABLES AMOUNTS DEPEND ON SIZE OF FIRESTOP DEVICE.

A. FOR THE EZ PATH MINI – ANY COMBINATION OF THE FOLLOWING TYPES OF CABLES MAY BE USED:
   1. MAX. (4) NO.22 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH POLYVINYL CHLORIDE (PVC) OR PLENUM RATED JACKETING AND INSULATION.
   2. MAX. RG/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
   3. FIBER OPTIC CABLE WITH POLYVINYL CHLORIDE (PVC) OR POLYETHYLENE (PE) JACKET AND INSULATION HAVING A MAX. DIAMETER OF ¼".

THE T RATING IS 1 HR AND 1¾ HR IN 1 AND 2 HR RATED WALLS, RESPECTIVELY, WHEN NO CABLES ARE INSTALLED IN FIRESTOP DEVICE. THE T RATING IS 1 HR AND 1¼ HR IN 1 AND 2 HR WALLS, RESPECTIVELY, WHEN CABLES ARE INSTALLED IN FIRESTOP DEVICES.

B. FOR THE EZ PATH – ANY COMBINATION OF THE FOLLOWING TYPES OF CABLES MAY BE USED:
   1. MAX. (100) PAIR NO. 24 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH POLYVINYL CHLORIDE (PVC) OR PLENUM RATED JACKETING AND INSULATION.
   2. MAX. (4) PAIR NO. 22 AWG (OR SMALLER) COPPER CONDUCTOR DATA CABLE WITH POLYVINYL CHLORIDE (PVC) OR PLENUM RATED JACKETING AND INSULATION.
   3. MAX. RG/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
   4. FIBER OPTIC CABLE WITH POLYVINYL CHLORIDE (PVC) OR POLYETHYLENE (PE) JACKET AND INSULATION HAVING A MAX. DIAMETER OF ⅝".
   5. OPTICAL FIBER RACEWAY+ – MAX. 1½"ø (OR SMALLER) OPTICAL FIBER RACEWAY ("INNERDUCT") FORMED OF EITHER POLYVINYL CHLORIDE (PVC) OR POLYVINYLIDENE FLUORIDE (PVDF) WITH OPTICAL FIBER CABLE FILL. RACEWAYS INSTALLED IN ACCORDANCE WITH ARTICLE 770 OF THE NEC (NFPA 70)

THE T RATING IS ¾ HR IN 1 HR RATED WALLS. THE T RATING IS ¾ HR IN 2 HR WALLS. THE T RATING IS ¾ HR IN 2 HR WALLS, WHEN ITEM 2B1 IS USED. OTHERWISE THE T RATING IS 1 HR.

3 FIRESTOP DEVICE: FIRESTOP DEVICE MODULE TO BE INSTALLED IN ACCORDANCE WITH THE ACCOMPANYING INSTALLATION INSTRUCTIONS. SPACE BETWEEN FIRESTOP DEVICE AND MODULE(S) AND PERIPHERY OF THE OPENING SHALL BE MIN. 0" TO MAX. ½". FIRESTOP DEVICE MODULE(S) SECURED IN PLACE BY MEANS OF CIRCULAR STEEL WALL PLATES INSTALLED WITH GASKETING MATERIALS SUPPLIED WITH PRODUCT. CIRCULAR STEEL WALL PLATES INSTALLED ON BOTH SIDES OF WALL AND SECURED TO EACH DEVICE BY MEANS OF STEEL SET SCREWS PROVIDED WITH DEVICE. FIRE STOP DEVICE MODULE IS TO BE INSTALLED WITH ENDS PROJECTING EQUAL DISTANCE BEYOND EACH SURFACE OF THE WALL ASSEMBLY.

A. SPECIFIED TECHNOLOGIES INC. – EZ PATH MINI – ONE FIRESTOP DEVICE MODULE CONSISTING OF 1.4"x1.4 x10½" LONG GALVANIZED STEEL TUBE WITH INTUMESCENT MATERIAL LINING.

B. SPECIFIED TECHNOLOGIES INC – EZ PATH – ONE FIRESTOP DEVICE MODULE CONSISTING OF 3"x3" x 10½" LONG GALVANIZED STEEL TUBE WITH INTUMESCENT MATERIAL LINING.

4 FILL, VOID OR CAVITY MATERIAL: SEALANT – MIN. ⅝" THICKNESS OF SEALANT TO BE APPLIED IN ANNULAR SPACE BETWEEN FIRESTOP DEVICE AND PERIPHERY OF OPENING ON EACH SIDE OF WALL ASSEMBLY. NOM ⅜"ø BEAD FILL MATERIAL APPLIED AT POINT OF CONTACT LOCATION BETWEEN FIRESTOP DEVICE AND GYPSUM BOARD WALL ON BOTH SIDES OF WALL ASSEMBLY.
SPECIFIED TECHNOLOGIES INC. – SPECSEAL 100, 101, 102, 105, 120 OR 129 SEALANT, SPECSEAL LCI SEALANT, SPECSEAL LC150 SEALANT OR PENCIL 300 SILICONE SEALANT.

2 GYP–BOARD FIRE WALL CABLE THRU
N.T.S.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA, USA

Exp. Date 12/31/20

Design Sub–Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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PHX DVT BYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MLB
Drawn by:	MLB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – B04 DESIGN SUBMISSION

RCC STATION ELECTRICAL DETAILS

Package: B04
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V6 - 083 of 260

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LIGHTING CONTROL SYSTEM

1. THE LIGHTING CONTROL SYSTEM SHALL CONSIST OF ANY OF THE FOLLOWING COMPONENTS: RELAY PANELS, DATALINE WIRING, FRONT END EQUIPMENT, SWITCHES, SENSORS, AND REMOTE OVERRIDE DEVICES. ALL EQUIPMENT TO BE UL/CUL CERTIFIED TO MEET UL 916, AND MANUFACTURED BY A ISO 9001 FACILITY.

2. THE RELAY PANELS SHALL BE SUITABLE FOR MOUNTING IN ELECTRICAL CLOSETS AND MOUNTED IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES. THE RELAYS WILL CONTROL INDIVIDUAL CIRCUITS OR BRANCH CIRCUITS AS INDICATED IN THE RELAY PANEL SCHEDULES. ALL POWER WIRING WILL BE IDENTIFIED AT THE RELAY BY ITS CONTROLLING CIRCUIT BREAKER AND BRANCH LETTER.

3. LOW VOLTAGE SWITCHES, OCCUPANCY SENSORS, AND/OR PHOTOCELLS SHALL BE MOUNTED IN THE SPACES AS REQUIRED BY MANUFACTURER TO MEET SEQUENCE OF OPERATION. LOW VOLTAGE WIRING FROM THE SWITCHES AND SENSORS TO THE RELAY PANEL SHALL BE CLASS 2 OR CLASS 2P (PLENUM RATED) AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AND LOCAL STANDARDS. USE ONLY PROPERLY COLOR-CODED, STRANDED #20 AWG (OR LARGER) WIRE AS INDICATED ON THE DRAWINGS.

4. PANEL COMPONENTS TO INCLUDE: ENCLOSURE AND COVER, POWER SUPPLY, AND PANEL INTERIOR ASSEMBLY WITH MOTHERBOARD, AND CONTROL ELECTRONICS. PANELS ARE TO BE SHIPPED FULLY ASSEMBLED YET DESIGNED FOR DISASSEMBLY FOR MOUNTING THE ENCLOSURE FIRST, AND REASSEMBLY AFTER CONDUIT ROUGH-IN. THE PANEL SHALL INCLUDE VISUAL LED STATUS AND MANUAL OVERRIDE FOR EACH RELAY, TERMINALS FOR EACH RELAY FOR DIRECT-WIRED DEVICES SUCH AS SENSORS AND SWITCHES, SYSTEM DATALINE TERMINALS, AND PROGRAMMABLE SYSTEM SWITCHES.

5. EACH RELAY PANEL SHALL USE 30A BALLAST RATED, 120/277VAC, MECHANICALLY LATCHING RELAYS AS REQUIRED. RELAYS SHALL BE CONTROLLED VIA 24VDC PULSES. PANELS SHALL BE SIZED TO MAXIMUM 8, 24, OR 48 RELAYS. EACH RELAY SHALL PROVIDE PILOT OUTPUT CONTACTS, RATED AT 1AMPS AC/DC.

6. PANEL INTELLIGENCE CARD FOR AUTOMATION FUNCTIONS SHALL BE PROVIDED VIA A PLUG-IN CARD SLOT ON THE PANEL MOTHERBOARD. THE INTELLIGENCE BOARD SHALL BE A DISTRIBUTED INTELLIGENCE COMPONENT, CAPABLE OF EXECUTING ALL SCHEDULES, PROGRAMMABLE SWITCHES, AND TENANT OVERRIDES WITHOUT RELYING ON ANY OTHER COMPONENT IN THE SYSTEM.

7. AUTOMATION INTELLIGENCE CARD SHALL SUPPORT A DATALINE COMMUNICATIONS PORTS FOR CONNECTION TO DIGITAL SIGNALING DATALINE SWITCHES. THE DATALINE SHALL ALLOW FOR CONNECTING UP TO 63 DATALINE SWITCHES PER PANEL.

8. PANEL INTELLIGENCE CARD FOR COMPUTER COMMUNICATIONS AND CONTROL SHALL BE PROVIDED VIA A PLUG-IN CARD SLOT ON THE PANEL MOTHERBOARD.

9. THE COMPUTER COMPLETE CONTROL CARD SHALL SUPPORT A DATALINE COMMUNICATIONS PORT FOR PROGRAMMING, MONITORING, AND CONTROL VIA COMPUTER SOFTWARE PROVIDED BY THE MANUFACTURER. THE DATALINE SHALL ALLOW COMMUNICATIONS OVER SHIELDED TWISTED PAIR WIRING FOR NETWORKING UP TO 500 PANELS, AND DISTANCES UP TO 400 FEET BETWEEN PANELS.

10. THE COMPUTER COMPLETE CONTROL CARD SHALL PROVIDE CONNECTION TO A SINGLE 18/2 TWISTED PAIR, SHIELDED, DATALINE WIRE (2 CONDUCTOR) TO NETWORK ALL RELAY PANELS TOGETHER, PROVIDING A ROBUST, HIGH SPEED COMMUNICATIONS PATH. DATALINE CAN BE RUN IN ANY CONVENIENT TOPOLOGY SERIES AS BENEFITS THE INSTALLATION; I.E. T-TAP, STAR, OR LOOP.

11. ALL COMPONENTS SHALL BE SUPPLIED AS NECESSARY TO ENSURE THE OVERALL OPERATION OF THE SYSTEM. COMPONENTS MAY INCLUDE COMPUTER, NETWORKING DEVICES, DATALINE POWER SUPPLY, DATALINE INTERFACE PORTAL, AND SYSTEM SOFTWARE.

12. A WEB BASED INTERFACE TO THE LIGHTING CONTROL SYSTEM SHALL BE PROVIDED THAT ALLOWS PASSWORD PROTECTED ACCESS TO SYSTEM STATUS, AND CHANGES TO TIME OF DAY SCHEDULING VIA A STANDARD WEB BROWSER FROM ANYWHERE ON CORPORATE LAN. SYSTEM SHALL PROVIDE ADMINISTRATOR CONTROL TO MANUAL OVERRIDES VIA WEB BROWSER. WEB INTERFACE SHALL CONNECT TO CORPORATE LAN USING STANDARD ETHERNET CONNECTIVITY.

13. COLOR GRAPHIC SOFTWARE SHALL BE PROVIDED THAT PROVIDES SYSTEM STATUS AND CONTROL CAPABILITIES FROM A REFLECTED CEILING PLAN REPRESENTATION OF THE BUILDING. STATUS OF INDIVIDUAL RELAYS SHALL BE USED TO INDICATE LIGHT FIXTURES STATE ON SCREEN.

14. A BACNET INTERFACE CAPABILITY SHALL BE PROVIDED THAT WILL ALLOW THE BAS VENDOR TO INTERFACE TO THE LIGHTING CONTROL SYSTEM, OFFERING INDIVIDUAL RELAY STATUS AND CONTROL, AS WELL AS GROUP CONTROL.

15. MANUFACTURER SHALL PROVIDE A FACTORY AUTHORIZED TECHNICIAN TO CONFIRM PROPER INSTALLATION AND OPERATION OF ALL SYSTEM COMPONENTS.

16. MANUFACTURER SHALL PROVIDE FACTORY AUTHORIZED APPLICATION ENGINEER TO TRAIN OWNER PERSONNEL IN THE OPERATION AND PROGRAMMING OF THE LIGHTING CONTROL SYSTEM.

17. MANUFACTURER SHALL PROVIDE SYSTEM DOCUMENTATION INCLUDING: A) SYSTEM 1-LINE SHOWING ALL PANELS, NUMBER AND TYPE OF SWITCHES AND SENSORS, DATALINE, PROGRAMMABLE SYSTEM SWITCHES, FRONT END MATERIAL, B) DRAWINGS FOR EACH PANEL SHOWING HARDWARE CONFIGURATION AND NUMBERING, C) PANEL WIRING SCHEDULES, AND D) TYPICAL WIRING DIAGRAMS FOR EACH COMPONENT.

18. SPACE LIGHTING CONTROL SEQUENCES:

- ALL NON PUBLIC SPACES SHALL BE PROVIDED WITH LINE VOLTAGE WALL SWITCH MOTION SENSOR DIMMER – AUTO ON TO 50% – MANUAL ON/OFF AND DIMMING CONTROL FROM THE WALL SWITCH – WITH AUTO OFF AFTER 10 MINUTES OF VACANCY. SHALL BE CENTRALLY CONTORTED THROUGH RELAY PANEL.
- BACK OF HOUSE CORRIDORS SHALL BE PROVIDED WITH CEILING MOUNTED MOTION SENSORS FOR AUTOMATIC ON/ AUTOMATIC OFF CONTROL OF THESE SPACES. SHALL BE CENTRALLY MONITORED THROUGH RELAY PANEL.
- STAIRWELLS SHALL BE PROVIDED WITH INTEGRALLY MOTION SENSED FIXTURES STEP DOWN FROM 100% TO 50% WHEN NO ONE IS IN THE STAIRWELL. STAIRWELL LIGHTS NEVER GO BELLOW 50% INTENSITY. SHALL BE CENTRALLY MONITORED THROUGH RELAY PANEL.
- ALL LIGHTING IN PUBLIC SPACES SHELL BE PROVIDED WITH THE ABILITY FOR DAYLIGHT HARVESTING. ALL DEVICES TO MAXIMUM DAYLIGHTING SHALL BE COORDINATED WITH MANUFACTURER PRIOR TO ROUGH-IN FOR CORRECT LOCATIONS.
- ALL PUBLIC SPACES SHELL BE PROVIDED WITH 0-10V DIMMING AND CENTRALLY MONITORED AND CONTROLLED THROUGH RELAY PANEL. ALL RELAY PANELS SHELL MEET UL924 AND BE PROVIDED WITH EMERGENCY INPUTS ALLOWING AUTOMATIC FULL OUTPUT OF ALL LIGHTS IN THE EVENT OF AN EMERGENCY.

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Registered Professional Engineer (Electrical)
CERTIFICATE NO.
49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA USA
Exp. Date 12/31/20
Design Sub-Consultant
Kimley»Horn
Design Consultant
Gannett Fleming

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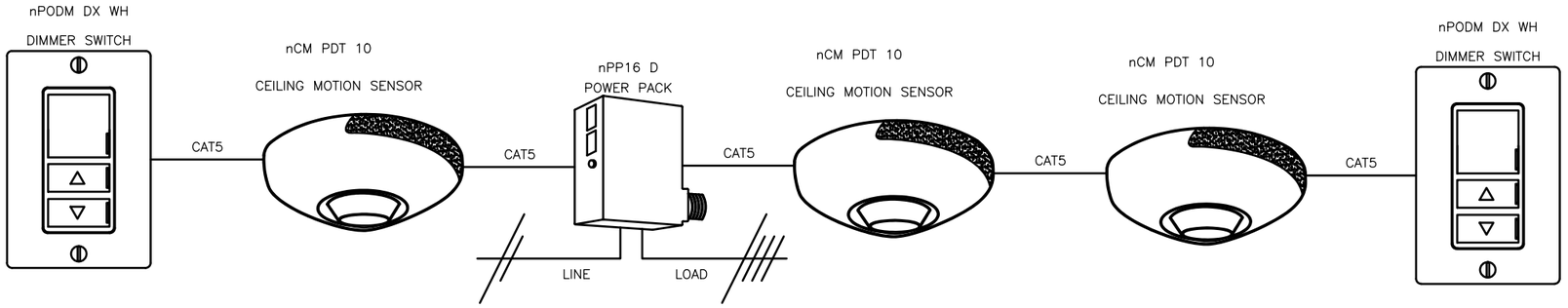
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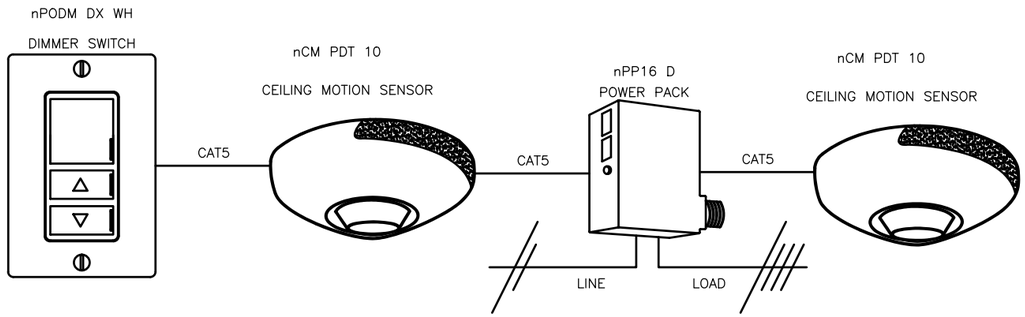
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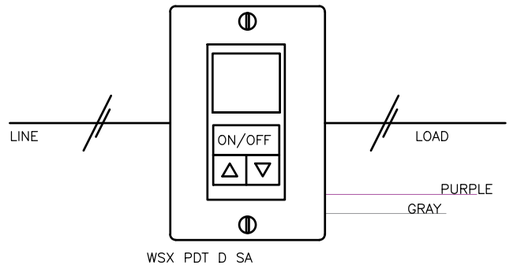
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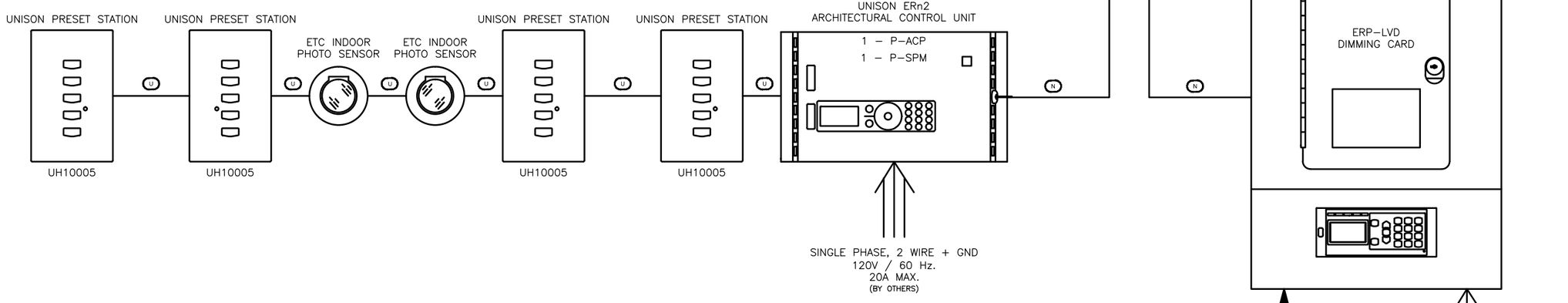
1 **LIGHTING MECH ROOM LEVEL 1**
N.T.S.



2 **LIGHTING COMBINED ROOMS LEVEL 1**
N.T.S.



3 **SMALL BOH ROOMS**
N.T.S.



CONTROL WIRING LEGEND		
SYMBOL	WIRE TYPE(S)	SIGNAL
N	(1) CAT6	ETHERNET
U	(1) BELDEN 8471 (1) #14 AWG. STRANDED WIRE	LINKCONNECT

NOTES:

1) ALL CONTROL WIRING SHALL BE PROVIDED BY CONTRACTOR.
2) TOTAL LENGTH OF UNISON WIRING RUNS SHALL NOT EXCEEED 1640 FEET (500M).
3) TOTAL LENGTH OF NETWORK WIRING RUNS SHALL NOT EXCEEED 320 FEET (100M).

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA, USA

Exp. Date 12/31/20

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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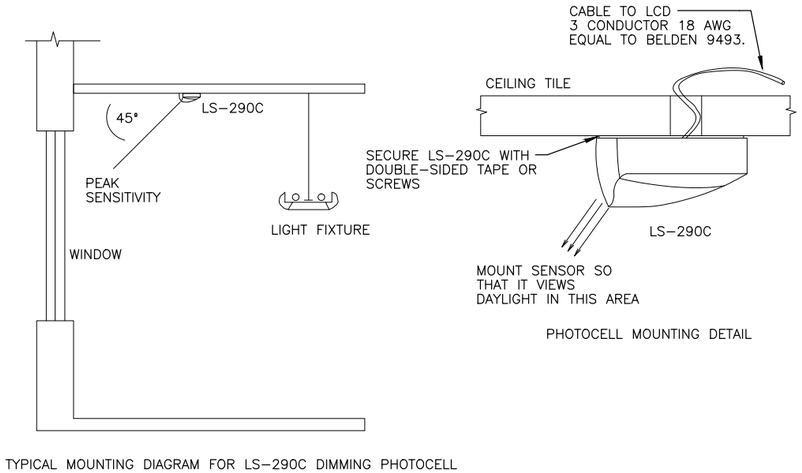
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PHOTOCELL MOUNTING DETAIL

TYPICAL MOUNTING DIAGRAM FOR LS-290C DIMMING PHOTOCELL

1 DAYLIGHT SENSOR MOUNTING DETAIL
N.T.S.

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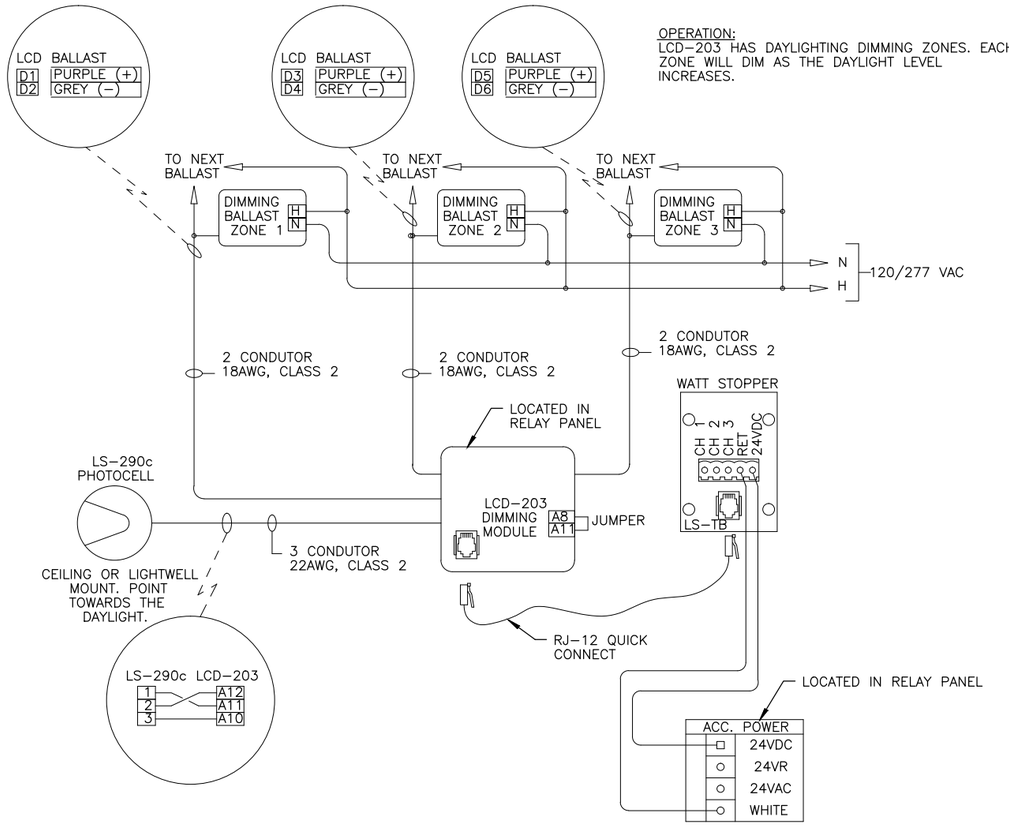
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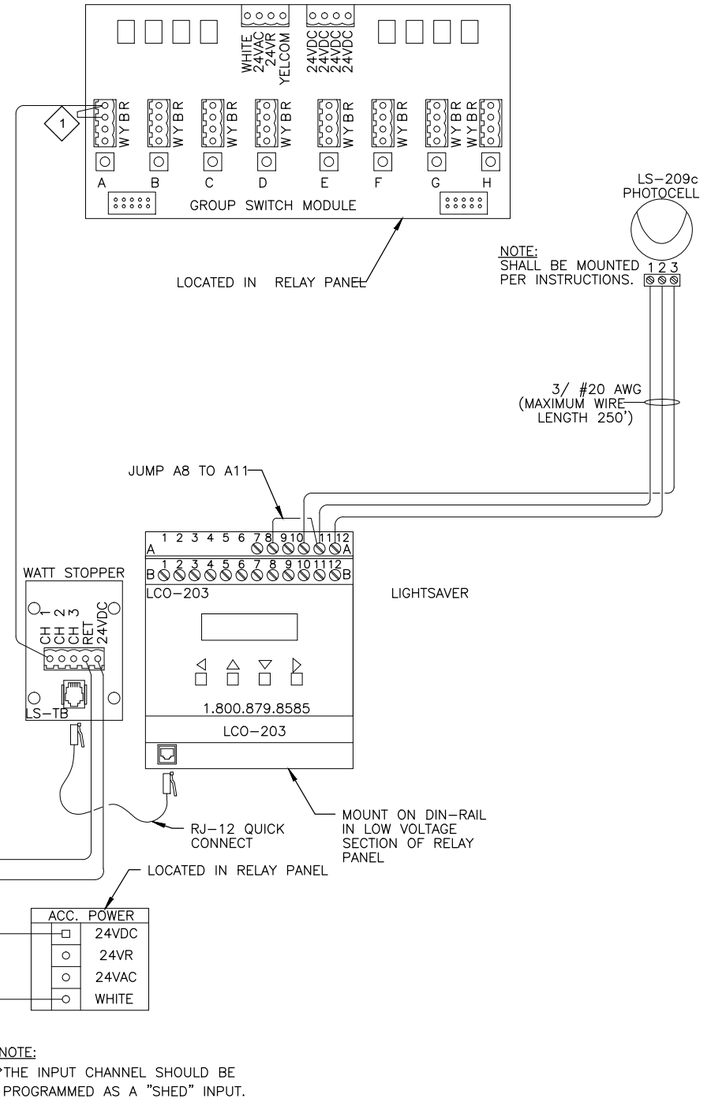
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NOTES
1. A JUMPER IS REQUIRED BETWEEN A8 AND A11 IF OCCUPANCY SENSOR IS NOT USED.
2. MAXIMUM OF 50 BALLASTS PER DIMMING CHANNEL.
3. MAXIMUM OF 620W PER POWER PACK RELAY.
4. ALL LOW VOLTAGE WIRING MUST BE ISOLATED FROM LINE VOLTAGE WIRING.

1 DAYLIGHT DIMMING DETAIL
N.T.S.



NOTE:
1 THE INPUT CHANNEL SHOULD BE PROGRAMMED AS A "SHED" INPUT.

2 DAYLIGHT DIMMING DETAIL
N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ09.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA
Exp. Date 12/31/20

Design Sub–Consultant: Kimley»Horn
Design Consultant: Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OPTIONAL USE ONLY AND WILL NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: MLB	Drawn by: MLB	Checked by: MAC	Date: 07/13/18	Dwg scale: N.T.S.	CIP No.: AV10000011	KIVA No.: 07–5204

STAGE 2 – B04 DESIGN SUBMISSION

RCC STATION ELECTRICAL DETAILS

Package: B04 Sheet Reference No: RBEL1013
V6 - 087 of 260

GENERAL NOTES

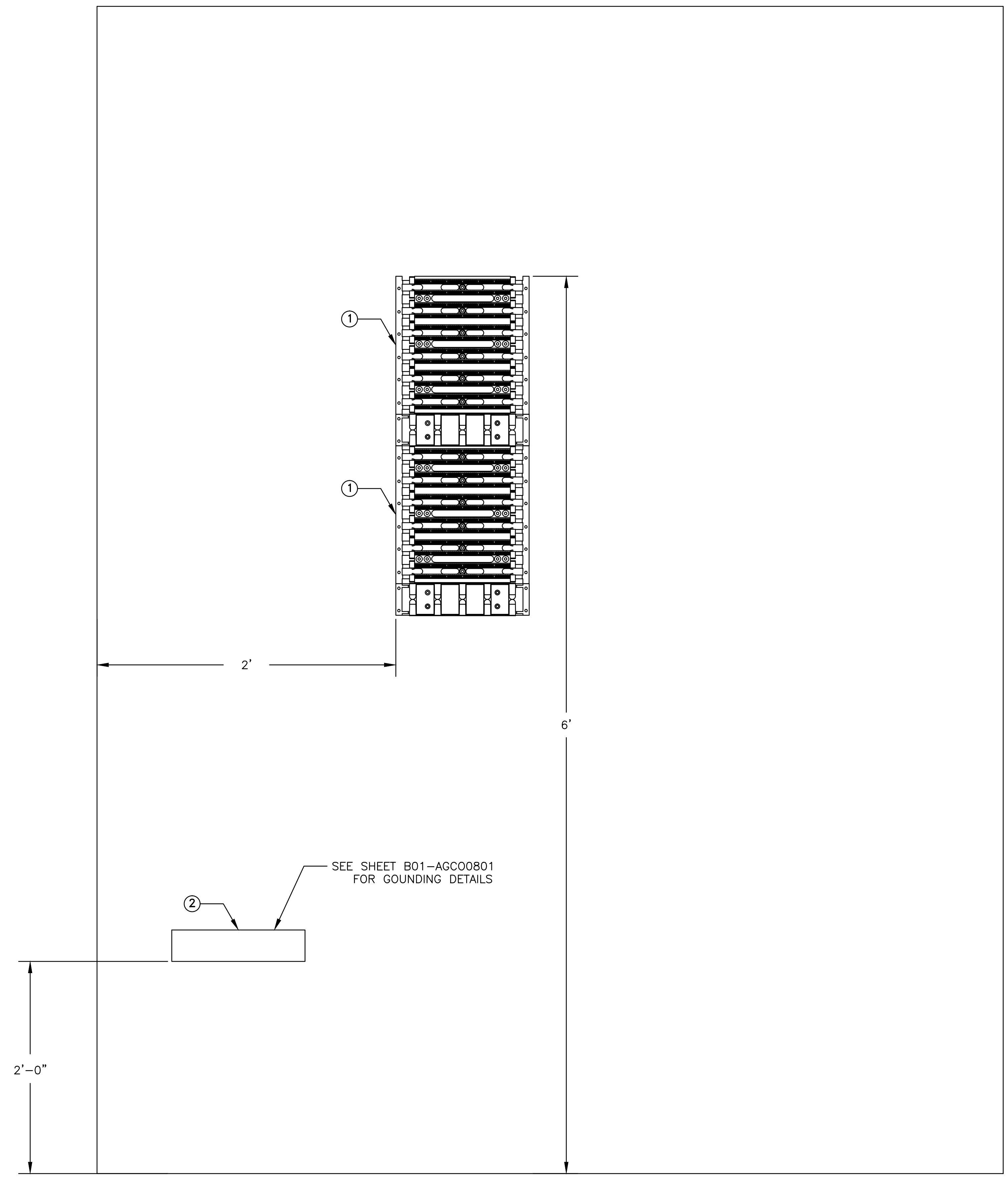
1. REFER TO SHEETS B01–AGC0301 FOR GT STAGING BUILDING'S COMMUNICATION PLANS.
2. ALL COMMUNICATION CABLING FIBER AND COPPER TO BE PROVIDED AND INSTALLED BY THE CITY OF PHOENIX.
3. BOND ALL COMMUNICATIONS CABLE TRAY, EQUIPMENT CABINETS, AND COMMUNICATIONS EQUIPMENT ENCLOSURES TO TGB.

CONSTRUCTION NOTES

1 300–PAIR 110–BLOCK TO BE PROVIDED AND INSTALLED BY THE CITY OF PHOENIX
2 INSTALL TELECOMMUNICATIONS GROUNDING BUSBAR (TGB) AT 24" ABOVE FINISHED FLOOR

LEGEND

TGB = TELECOMMUNICATIONS GROUND BUSBAR



1 TYPICAL COMMUNICATIONS ROOM (IDF) COPPER WALL FIELD
N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RCEL10EZ09.dwg Daniel.Thompson

Design Sub–Consultant: Kimley»Horn
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NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
	ISSUED FOR CONSTRUCTION	07/13/18

PHX DVT GYR — CITY OF PHOENIX AVIATION DEPARTMENT

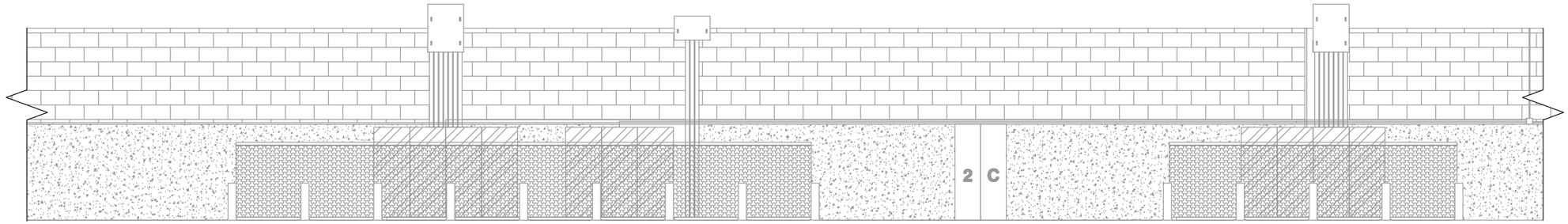
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: MLB
Drawn by: MLB
Checked by: MAC
Date: 07/13/18
Dwg scale: N.T.S.
CIP No.: AV10000011
KIVA No.: 07–5204

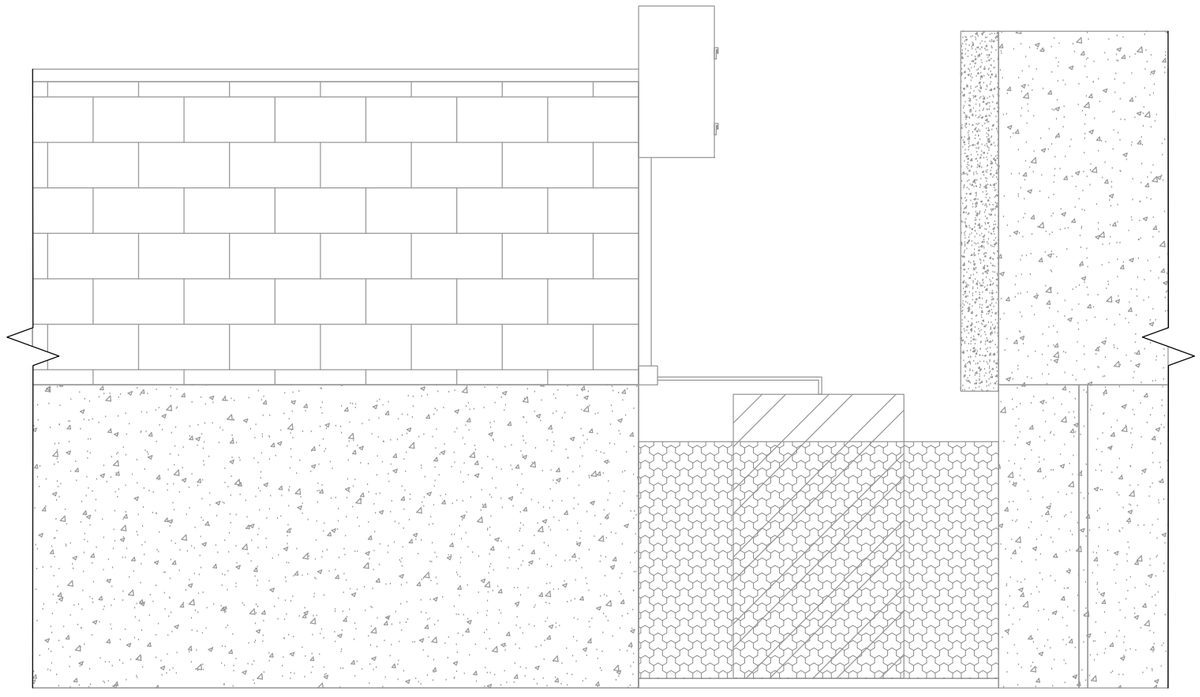
STAGE 2 – B04 DESIGN SUBMISSION

RCC STATION
ELECTRICAL
DETAILS

Package: Sheet Reference No:
B04- RBEL1014
V6 - 088 of 260



1 RENTAL CAR STATION SOUTHWEST VIEW
SCALE 1" = 5'



2 RENTAL CAR STATION SOUTHWEST VIEW
SCALE 1" = 2'

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV100000011-S-2-RCEL10EZ21.dwg Daniel.Thompson

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4398, THESE PLANS ARE FOR OPTIONAL USE ONLY AND MAY BE USED WITHOUT RESTRICTIONS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

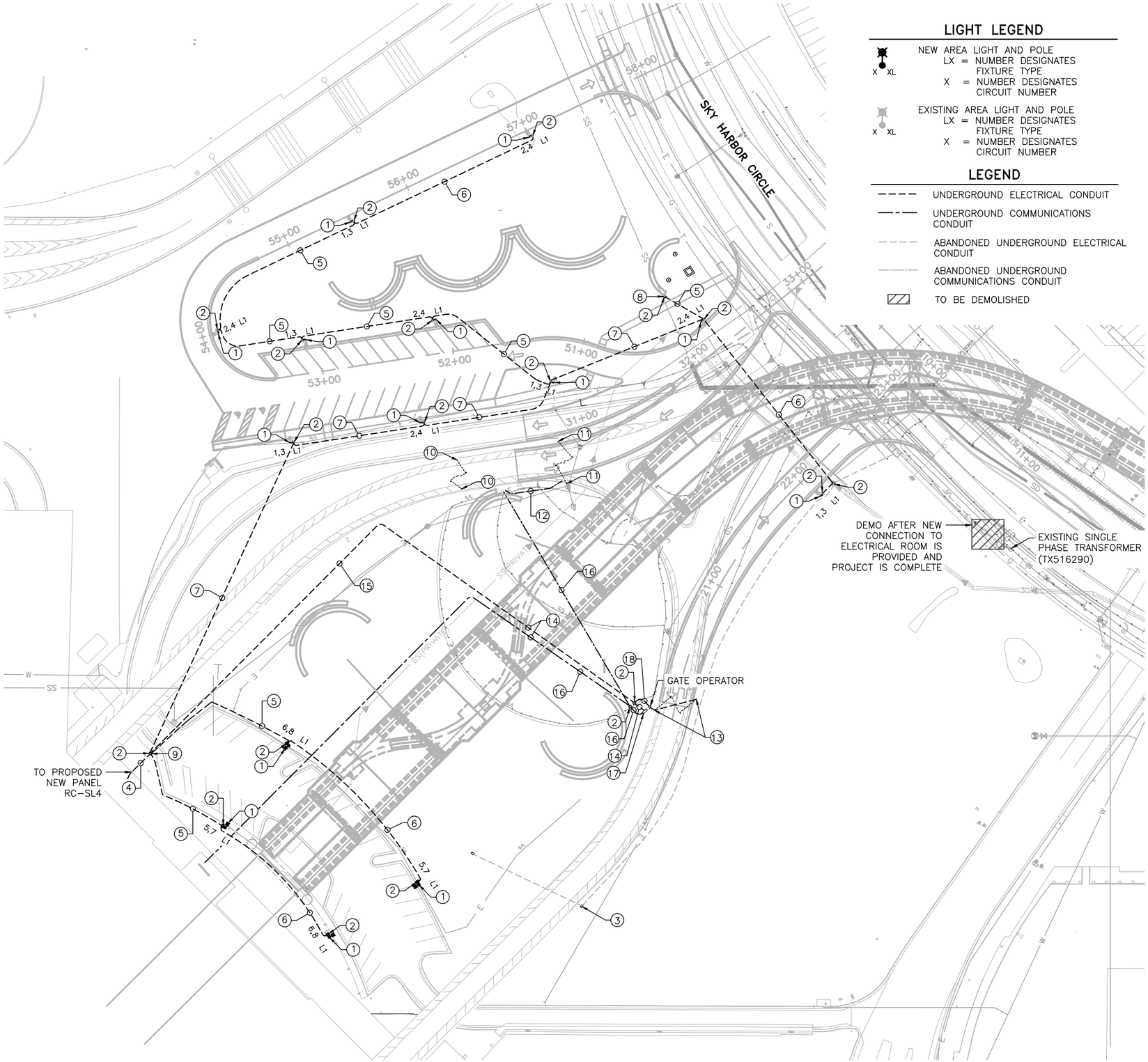
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: PMS	
Drawn by: MAB	
Checked by: MAC	
Date: 07/13/18	
Dwg scale: N.T.S.	
CIP No.: AV10000011	
KIVA No.: 07-5204	

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
ELECTRICAL YARD DETAIL
SECTION VIEWS

Package: B04 - RBEL0201
Sheet Reference No:
V6 - 089 of 260



LIGHT LEGEND

- NEW AREA LIGHT AND POLE (X XL)
  - LX = NUMBER DESIGNATES FIXTURE TYPE
  - X = NUMBER DESIGNATES CIRCUIT NUMBER
- EXISTING AREA LIGHT AND POLE (X XL)
  - LX = NUMBER DESIGNATES FIXTURE TYPE
  - X = NUMBER DESIGNATES CIRCUIT NUMBER

LEGEND

- UNDERGROUND ELECTRICAL CONDUIT
- UNDERGROUND COMMUNICATIONS CONDUIT
- ABANDONED UNDERGROUND ELECTRICAL CONDUIT
- ABANDONED UNDERGROUND COMMUNICATIONS CONDUIT
- TO BE DEMOLISHED

GENERAL NOTES

1. REFER TO SHEET B04-RBEL0903 FOR PANEL SCHEDULE.
2. RUN (1) 1" CONDUIT WITH (2) #12 AWG. AND (1) #12 GND. FROM EACH NEW LED STREET LIGHT POLE TO ADJACENT NEW ADOT #5 PULL BOX.
3. LIGHTING FOR RCC TEMPORARY PARKING LOT PREVIOUSLY POWERED BY PANEL 'RCC PANELBOARD' WILL BE RELOCATED TO PANEL 'RC-SL4' IN RCC ELECTRICAL ROOM RBST141.

CONSTRUCTION NOTES

1. PROVIDE NEW LED FIXTURE WITH NEW POLE ON NEW BASE. SEE SHEET B04-RSEL1001 FOR POLE AND FIXTURE DETAILS.
2. PROVIDE NEW ADOT #7 PULL BOX.
3. ABANDON EXISTING ELECTRICAL EQUIPMENT IN PLACE.
4. (1) 2" CONDUIT WITH (16) #8 AWG AND (1) #8 GND. (1) 2" CONDUIT WITH (4) #2 AWG., (4) #8 AWG AND (1) #2 GND. (1) 2" SPARE CONDUIT.
5. (1) 1" CONDUIT WITH (4) #8 AWG AND (1) #8 GND. (1) 1" CONDUIT SPARE.
6. (1) 1" CONDUIT WITH (2) #8 AWG AND (1) #8 GND. (1) 1" CONDUIT SPARE.
7. (1) 2" CONDUIT WITH (12) #8 AWG AND (1) #8 GND. (1) 2" CONDUIT SPARE.
8. (4) #8 AWG AND (1) #8 GND COILED AND CAPPED INSIDE PULL BOX TO FEED MONUMENT AND FLAGPOLE LIGHTING.
9. (4) #8 AWG AND (1) #8 GND COILED AND CAPPED INSIDE PULL BOX TO FEED LANDSCAPE LIGHTING.
10. REMOVE GATE ARM CONTROLLER AND GATE ARM. TO BE REINSTALLED AT THE BOTTOM OF RAMP OUTSIDE CURB.
11. INSTALL GATE ARM CONROLLER AND GATE ARM.
12. PROVIDE CONDUIT AND CONNECTORS TO RELOCATE GATE TO MATCH EXISTING CONDITIONS.
13. PROVIDE NEW MOTOR, CONTROLLER, AND AVI EQUIPMENT TO OPERATE GATE ARMS.
14. (1) 2" CONDUIT WITH (2) #2 AWG., (4) #8 AWG. AND (1) #2 GND.
15. (1) 2" CONDUIT WITH (4) #2 AWG., (4) #8 AWG AND (1) #2 GND.
16. (1) 4" COMMUNICATIONS CONDUIT.
17. INSTALL COMMUNICATIONS CABINET.
18. (1) 2" CONDUIT WITH (2) #2 AWG. AND (1) #2 GND.

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)

KEYMAP
N.T.S.

N

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA, USA

Exp. Date 12/31/20

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
1	BUL-001	03/07/18
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	CRG
Checked by:	MAC
Date:	07/13/18
Dwg scale:	
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION - SITE
ELECTRICAL
RCC PERMANENT LIGHTING PLAN

Package: B04 - RSEL0201
Sheet Reference No:
V6 - 090 of 260

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-RSEL02LT03.dwg Daniel.Thompson

ABBREVIATIONS

@	AT
AB	ABOVE
AD	AREA DRAIN, ACCESS DOOR
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
AST	ABOVEGROUND STORAGE TANK
AVG	AVERAGE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BDD	BACKDRAFT DAMPER, BOILER BLOWDOWN
BLW	BELOW
BTM	BOTTOM
C	COMMON
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CL	CENTER LINE
CLNG	CEILING
CM	COFFEE MAKER
CO	CLEANOUT
COL	COLUMN
COMP	COMPARTMENT
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUATION
CONT'D	CONTINUED
CP	CONDENSATE PUMP
CPVC	CHLORINATED POLYVINYL CHLORIDE
CTWS	COOLING TOWER MAKE-UP SUPPLY
CTWR	COOLING TOWER MAKE-UP RETURN
CV	CONTROL VOLUME, CHECK VALVE
CW	COLD WATER
Cx	COMMISSIONING
(D)	DEMOLISH, REMOVE
D	DRAIN
DB	DRY BULB TEMPERATURE, DECIBELS
DCW	DOMESTIC COLD WATER
DDC	DIRECT DIGITAL CONTROL
DEG, °	DEGREES
DESG	DESIGNATION
DF	DRINKING FOUNTAIN
DFU	DRAINAGE FIXTURE UNITS
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RECIRC
DIA, ø	DIAMETER
DISC	DISCONNECT
DN	DOWN
DS	DOWNSPOUT
DTW	DOMESTIC TEMPERED WATER
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
(E), EX	EXISTING
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION, ELEVATOR
(ER)	EXISTING RELOCATED
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXT	EXTERIOR
°F	DEGREES FAHRENHEIT
(F)	FUTURE
F	FIRE PROTECTION SUPPLY
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDV	FIRE DRAIN VALVE
FF	FINISHED FLOOR
FG	FUEL GAS
FHC	FIRE HOSE CABINET
FL, FLR	FLOOR
FLA	FULL LOAD AMPS
FO	FUEL OIL
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOW SWITCH
FSK	FLOOR SINK
FSP	FIRE STANDPIPE
FT, '	FOOT, FEET
FU	FIXTURE UNITS
G	GAS, GAS LINE
GA	GAUGE
GAL	GALLON, GALLONS
GDL	GUIDEWAY DRAIN LEADER
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GWH	GAS WATER HEATER
H	HEIGHT, HIGH
H2O	WATER
HB	HOSE BIB
HED	HOSE END DRAIN VALVE
HW	HOT WATER
HWH	HOT WATER HEATER
HWR	HOT WATER RECIRC
HWMV	HT WATER MIXING VALVE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HX	HEAT EXCHANGER
HZ	HERTZ (CYCLES PER SECOND)
ID	INSIDE DIAMETER
IM	ICE MAKER
IN, "	INCH, INCHES
IN WG	INCHES OF WATER GAUGE
INFO	INFORMATION
INT	INTERIOR
INV	INVERT ELEVATION
JC	JANITORS CLOSET
KW	KILOWATTS
LAV	LAVATORY
L	LEADER, LENGTH, LONG
LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
M	METER
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR, MFGR	MANUFACTURER
MIN	MINIMUM
MO	MOTOR OIL
MOD	MOTOR OPERATED DAMPER, MODULATING
MR	MOP RECEPTOR
MTD	MOUNTED
MTG	MOUNTING
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION AGENCY
NFWH	NON-FREEZE WALL HYDRANT
NG	NATURAL GAS
NIC	NOT IN CONTRACT
No	NUMBER
NO	NORMALLY OPENED
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OVERFLOW DRAIN
ODL	OVERFLOW DRAIN LEADER
OI	OIL INTERCEPTOR
OS&Y	OUTSIDE STEM & YOKE VALVE
OWS	OIL WATER SEPARATOR
P, PRESS	PRESSURE
PD	PRESSURE DROP
PLBG	PLUMBING
PNEU	PNEUMATIC
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
RDL	ROOF DRAIN LEADER
REQ'D	REQUIRED
RL	RAIN LEADER
RLA	RATED LOAD AMPS
RPZ	REDUCED PRESSURE ZONE
REF	REFRIGERATOR
RPM	REVOLUTIONS PER MINUTE
RT	RUNNING TRAP
RW	RECLAIMED WATER
RX	REMOVE EXISTING
S	SOIL
SA, SHK	SHOCK ARRESTOR
SAN	SANITARY, SOIL, WASTE
SANB	SANITARY BELOW SLAB
SD	STORM DRAIN
SF	SQUARE FEET
SH	SHOWER
SHT	SHEET
SK	SINK
SL	STORM LEADER
SP	SUMP PUMP
SQ	SQUARE
SQ FT	SQUARE FOOT, SQUARE FEET
SS	SERVICE SINK
S/S	STAINLESS STEEL
ST	STORM
STD	STANDARD
SW	STORM WATER
ΔT	TEMPERATURE DIFFERENTIAL
T, TEMP	TEMPERATURE
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TPL	TRAP PRIMING LINE
TPP	TRAP PRIMER PANEL
TW	TEMPERED WATER
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UR	URINAL
USF	UNDERGROUND SANDFILTER
V	VOLTS, VENT
VB	VACUUM BREAKER
VCO	VERTICAL CLEANOUT
VERT	VERTICAL
VTR	VENT THROUGH ROOF
W	WASTE LINE, WIDTH, WIDE
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET, WATER COLUMN
WCO	WALL CLEANOUT
WG	WATER GAUGE
WH	WATER HEATER, WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
WSFU	WATER SUPPLY FIXTURE UNITS
WT	WEIGHT
WW	WELL WATER
ZN	ZONE

PIPING, FITTINGS, AND VALVES

SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RECIRC/RETURN
—TW—	DOMESTIC TEMPERED WATER
—SAN—	SANITARY
	VENT
—D—	DRAIN
—CA—	COMPRESSED AIR
—CD—	CONDENSATE DRAIN
—RW—	RECLAIMED WATER
—WW—	WELL WATER
—IW—	INDUSTRIAL WASTE
—IDW—	INDIRECT WASTE
—G—	GAS
—FG—	FUEL GAS
—NG—	NATURAL GAS
—ST—	STORM WATER
—STO—	STORM WATER OVERFLOW
—F—	FIRE PROTECTION SUPPLY
—MUW—	MAKE UP WATER
—VAC—	VACUUM

SYMBOL	DESCRIPTION
	PIPING TURNING UP
	PIPING TURNING DOWN
	TEE DOWN
	PIPE BRANCH BOTTOM TAKEOFF
	PIPE BRANCH TOP TAKEOFF
	VALVE IN VERTICAL PIPE
	CAP
	FLOW DIRECTION
R/D	PIPE SLOPE RISE/DROP
	PIPE RISER UP/DOWN
	CONCENTRIC REDUCER/INCREASER
	ECCENTRIC REDUCER/INCREASER (FOB)
	UNION
	PIPE CONTINUATION
W H	EXPANSION LOOP (WxH)
	PIPE ANCHOR
	FLEXIBLE PIPE CONNECTOR
EJ	EXPANSION JOINT
	PIPE GUIDE
BFP	REDUCED PRESSURE ZONE BACKFLOW PREVENTOR
	HOSEBIB
	WALL HYDRANT
	WATER HAMMER ARRESTOR
	ROOF DRAIN
	ROOF DRAIN WITH OVERFLOW
	FLOOR DRAIN
	FLOOR CLEANOUT
CO	WALL CLEANOUT
M	WATER METER
MG	GAS METER

SYMBOL	DESCRIPTION
	SHUTOFF VALVE (BALL, GATE, BUTTERFLY)
	GATE VALVE
	GLOBE VALVE
	OUTSIDE STEM & YOKE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GAS COCK
	PRESSURE REDUCING VALVE
	CALIBRATED BALANCING VALVE
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	THREE-WAY MANUAL VALVE
S	SOLENOID VALVE
AAV	AUTOMATIC AIR VENT (EXTEND TO DRAIN)
MAV	MANUAL AIR VENT
	RELIEF/SAFETY VALVE
	STRAINER
	STRAINER WITH DRAIN VALVE AND CAP
	PRESSURE/TEMPERATURE TEST PORT
	AQUASTAT
	PRESSURE GAUGE WITH COCK
	THERMOMETER
T	TEMPERATURE SENSOR
P	PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE TRANSDUCER
FS	FLOW SWITCH
FM	FLOW METER
WH	WATER HAMMER ARRESTOR
	PUMP

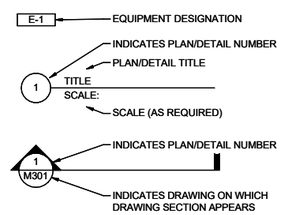
PLUMBING SYSTEM REQUIREMENTS

DESCRIPTION	REQUIRED	PROVIDED
TOILETS	0	0
URINALS	0	0
LAVATORIES	0	0
DRINKING FOUNTAINS	0	0
SERVICE SINKS	1	1

1

LINES AND REFERENCE SYMBOLS

SYMBOL	DESCRIPTION
	NEW WORK LINEWEIGHT
	DEMOLITION LINEWEIGHT
	EXISTING LINEWEIGHT
	FUTURE LINEWEIGHT
	CONNECTION OF NEW TO EXISTING
	TERMINATION POINT OF DEMOLITION
X	SHEET KEYED NOTE
1	DRAWING REVISION NUMBER



GENERAL NOTES

1. NOT ALL ABBREVIATIONS, LINE TYPES, OR SYMBOLS MAY APPEAR ON THESE CONTRACT DOCUMENTS.
2. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE PERFORMED. THE DRAWINGS ARE NOT INTENDED TO SHOW EXACT LOCATIONS OR TO SHOW EVERY PIPE, FITTING, VALVE OR APPURTENANCE REQUIRED FOR A COMPLETE INSTALLATION. DO NOT SCALE DIMENSIONS FROM THESE DRAWINGS.
3. PROVIDE ALL LABOR AND MATERIALS REQUIRED FOR COMPLETE AND PROPERLY OPERATING PLUMBING SYSTEMS.
4. ALL MATERIALS, EQUIPMENT AND DEVICES, AS A MINIMUM, MEET THE REQUIREMENTS OF UL WHERE UL REQUIREMENTS ARE ESTABLISHED FOR THOSE ITEMS. ALL ITEMS SHALL BE CLASSIFIED BY UL AS SUITABLE FOR THE PURPOSE INTENDED.
5. CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE. PROVIDE ALL NECESSARY OFFSETS AND FITTINGS FOR A COMPLETE INSTALLATION.
6. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS.
7. COORDINATE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES. REWORK DUE TO THE LACK OF COORDINATION IS THE RESPONSIBILITY OF THE CONTRACTORS.
8. ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES, UNLESS NOTED OTHERWISE.
9. CONNECT WATER, WASTE AND VENT PIPING TO FIXTURES IN ACCORDANCE WITH SIZES INDICATED ON FIXTURE SCHEDULE.
10. RUN 2" MINIMUM SIZE WASTE PIPING BELOW GROUND INSIDE BUILDING REGARDLESS OF SIZE NOTED ON FIXTURE SCHEDULE.
11. SLOPE ALL SOIL, WASTE AND STORM WATER LINES 2 1/2" AND SMALLER AT 1/4 - INCH PER FOOT.
12. SLOPE ALL SOIL, WASTE AND STORM WATER LINES 3" AND LARGER AT 1/8 - INCH PER FOOT.
13. RUN PIPING CONCEALED, EXCEPT IN MECHANICAL ROOMS OR WHERE OTHERWISE INDICATED.
14. RUN CONCEALED PIPING, IN AREAS OF FREEZING, ON ROOM SIDE OF BUILDING INSULATION, UNLESS NOTED OTHERWISE.
15. WHERE PIPING IS RUN IN EXTERIOR WALLS OR AREAS OF POTENTIAL FREEZING PROVIDE AN ADDITIONAL 1" OF INSULATION.
16. FURNISH AND INSTALL ACCESS PANELS, WHETHER INDICATED OR NOT FOR ACCESS TO CONCEALED VALVES, TRAPS OR EQUIPMENT WHERE NO OTHER MEANS OF ACCESS IS PROVIDED. PAINT ACCESS PANELS TO MATCH WALL COVERING. PANEL SHALL BE OF TYPE TO MAINTAIN FIRE RATING OF STRUCTURE AND SIZED FOR CLEAR SERVICE ACCESS.
17. MOTOR OPERATED EQUIPMENT SHALL BE ISOLATED FROM THE BUILDING STRUCTURE BY THE INSTALLATION OF APPROVED VIBRATION HANGERS AND SUPPORTS.
18. APPROVED FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT PIPING CONNECTIONS TO MOTOR OPERATED EQUIPMENT.
19. PROVIDE EXPANSION JOINTS WHERE PIPES CROSS BUILDING EXPANSION OR SEISMIC JOINTS.
20. PROVIDE ONE PIECE PIPE ESCUTCHEONS AT ALL EXPOSED PENETRATIONS OF FLOOR, WALLS AND CEILINGS.
21. ALL EXPOSED HANGER RODS AND MISCELLANEOUS SUPPORTS SHALL BE GALVANIZED STEEL OR PLATED, INCLUDING CRAWL SPACE AND EXTERIOR INSTALLATIONS, UNLESS NOTED OTHERWISE.
22. INSTALL ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS, LOCAL, STATE AND FEDERAL.
23. UNLESS OTHERWISE NOTED, CONSTRUCTION MATERIALS AND EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF OFF THE SITE.
24. EXISTING EQUIPMENT AND MATERIALS SHALL REMAIN, UNLESS OTHERWISE NOTED.
25. COORDINATE WORK WITH EXISTING STRUCTURAL AND ARCHITECTURAL FEATURES AND PROVIDE OFFSETS AND FITTINGS AS REQUIRED.
26. PATCH ALL OPENINGS IN BUILDING CONSTRUCTION WHERE PIPING, ETC. IS REMOVED. PATCHING SHALL BE SAME MATERIAL AS SURROUNDING CONSTRUCTION. FINISH TO MATCH EXISTING TO THE EXTENT POSSIBLE.
27. WHERE EQUIPMENT, PIPING, CONDUIT, ETC. TO REMAIN IS SUPPORTED FROM EQUIPMENT AND/OR PIPING BEING REMOVED, EXTEND EXISTING HANGERS OR PROVIDE NEW HANGERS AND SUPPORTS AS REQUIRED TO RE-SUPPORT ITEMS FROM BUILDING STRUCTURE.
28. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES AND PIPING BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT OCCUR BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY UNDERGROUND UTILITIES.
29. SEAL ALL WALL AND FLOOR PENETRATIONS. SEAL ALL PENETRATIONS IN FIRE RATED WALLS AND FLOORS IN ACCORDANCE WITH UL LISTED ASSEMBLIES.
30. BUILDING SEWER PIPE SHALL CONFORM TO IPC TABLE 702.3. BUILDING DRAIN PIPE SHALL CONFORM TO IPC TABLE 702.2. PIPE FITTINGS SHALL CONFORM TO TABLE 702.4 TO POINT OF PUBLIC SEWER CONNECTION. MAXIMUM WATER VELOCITY IN PIPE TO BE 8 FT/SEC.
31. WATER SERVICE PIPE SHALL CONFORM TO NSF 61 AND SHALL CONFORM TO ONE OF LISTED STANDARDS IN IPC TABLE 605.3. WATER DISTRIBUTION PIPE SHALL CONFORM TO NSF 61 AND SHALL CONFORM TO ONE OF LISTED STANDARDS IN IPC TABLE 605.4. PIPE FITTINGS SHALL CONFORM TO NSF 61 AND SHALL CONFORM TO TABLE IPC TABLE 605.5.
32. FOR 6" PIPE AND SMALLER, PROVIDE CLEANOUTS IN BUILDING SEWER PIPING WITHIN EVERY 100' OF STRAIGHT PIPE AND CHANGE OF DIRECTION, IPC 708.3.
33. PROVIDE MIFAB R-1900-NH NEOPRENE EXPANSION JOINTS IN ALL VERTICAL STACKS FOR DRAIN, VENT, AND STORM SYSTEMS.

1

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR USE ON THIS PROJECT AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
1	PDD COMMENTS	07/13/18
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Consultant: Gannett Fleming

Design Sub-Consultant

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN — AVIATION DEPARTMENT — CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	12" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

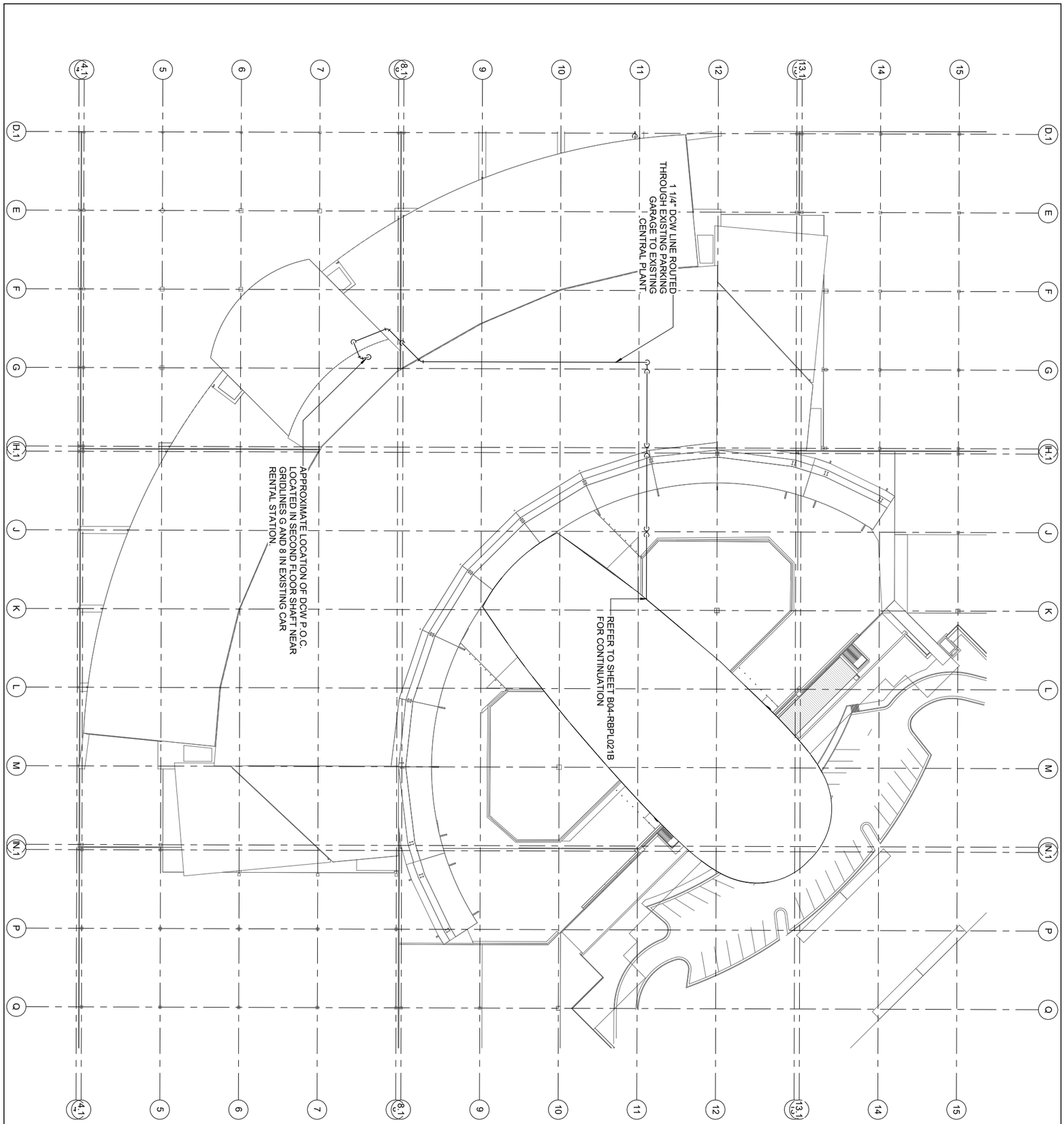
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PLUMBING
SYMBOL LIST AND GENERAL NOTES

Package: B04 - RBPL0001

Sheet Reference No:

V6 - 091 of 260

Project Number: ######
7/11/2018 8:38:56 AM
Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCPLX001_R17_A360.rvt



1 **SITE PLAN**
SCALE: 1" = 40'-0"

N

SHEET NOTES

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
PLUMBING SITE PLAN

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1" = 40'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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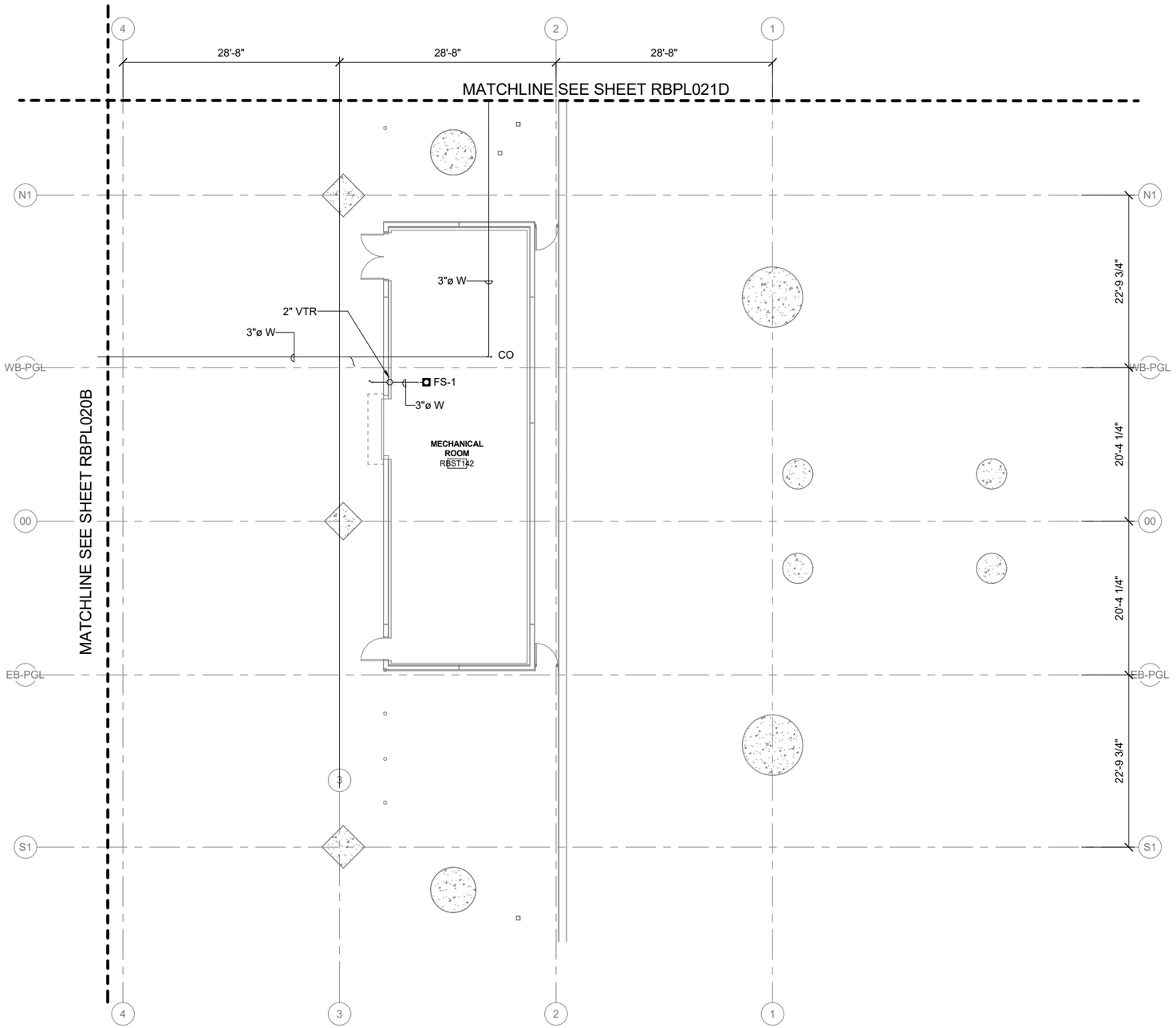
NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
	ISSUED FOR CONSTRUCTION	07/13/18

Registered Professional Engineer
66328
HITEN SHETH
EXPIRES: JULY 31, 20

Design Sub-Consultant

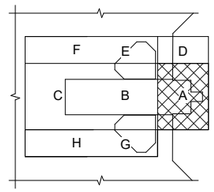
Design Consultant
Gannett Fleming

Package: **B04 - RBPL0010** Sheet Reference No:
V6 - 092 of 260



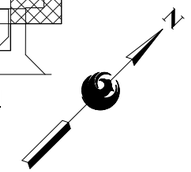
1 **FLOOR PLAN - LEVEL 1 - AREA A - BELOW SLAB**
SCALE: 1/8" = 1'-0"

SHEET NOTES



KEY PLAN

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



PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR ONE-TIME USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	DATE
ISSUED FOR CONSTRUCTION	07/13/18
SUBMITTED FOR REVIEW	04/06/18
REVISIONS / SUBMISSIONS	

Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

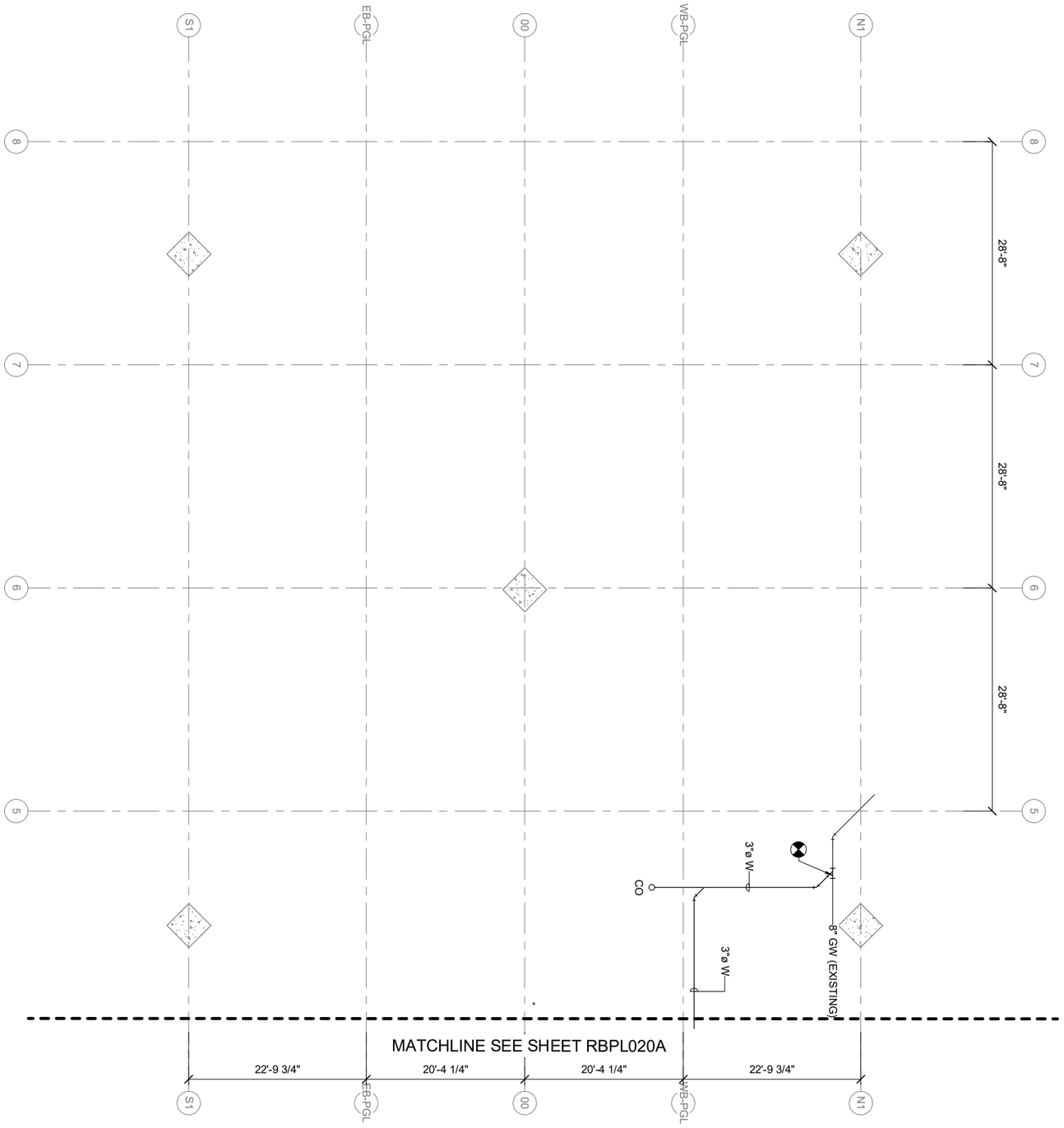
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PLUMBING
BELOW SLAB - FLOOR PLAN - LEVEL 1 - AREA A

Package: B04 - RBPL020A
Sheet Reference No:
V6 - 093 of 260

Project Number: ######
7/11/2018 8:39:10 AM

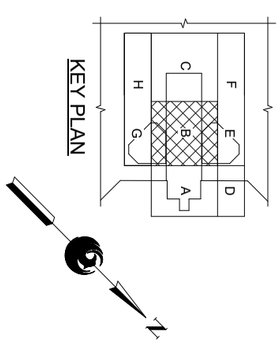
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1 FLOOR PLAN - LEVEL 1 - AREA B - BELOW SLAB
SCALE: 1/8" = 1'-0"



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

KEY PLAN



SHEET NOTES

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
BELOW SLAB - FLOOR PLAN -
LEVEL 1 - AREA B

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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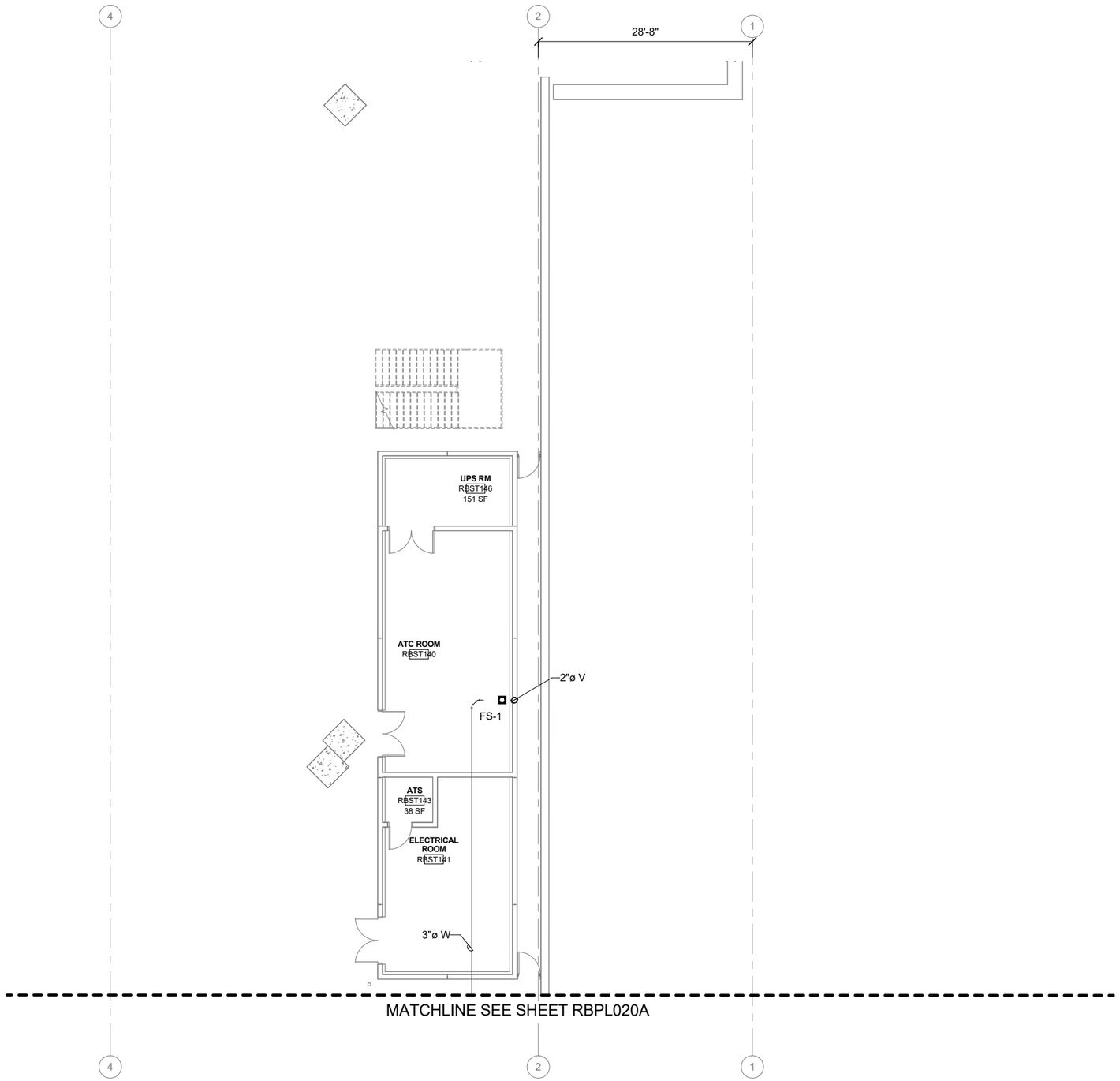
NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer
66328
HITEN SHETH
EXPIRES: JUN 31/20

Design Sub-Consultant

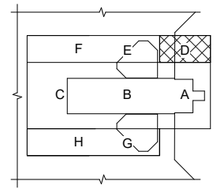
Design Consultant
Gannett Fleming

Package: **B04 - RBPL020B**
Sheet Reference No:
V6 - 094 of 260



1 **FLOOR PLAN - LEVEL 1 - AREA D - BELOW SLAB**
SCALE: 1/8" = 1'-0"

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



KEY PLAN

SHEET NOTES

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NO.	DATE
	ISSUED FOR CONSTRUCTION 07/13/18
	SUBMITTED FOR REVIEW 04/06/18
	REVISIONS / SUBMISSIONS

Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

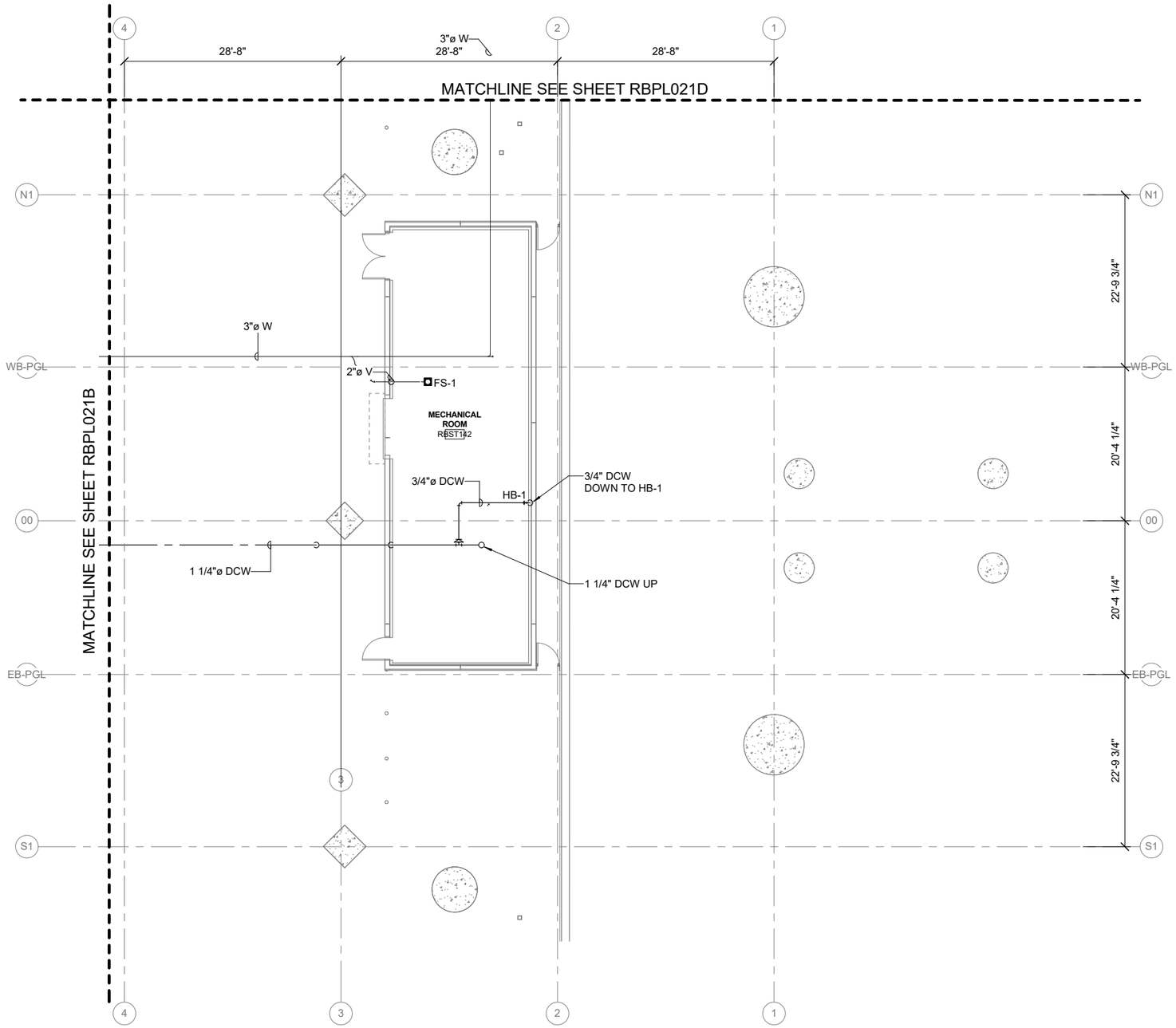
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RCC STATION
PLUMBING
BELOW SLAB - FLOOR PLAN - LEVEL 1 - AREA D

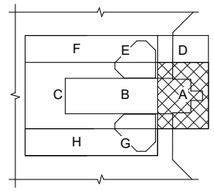
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Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
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CIP No.:	AV100000011
KIVA No.:	07-5204

Package: B04 - RBPL020D
Sheet Reference No:
V6 - 095 of 260

Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCPLX001_R17_A360.rvt
Project Number: #####
7/11/2018 8:39:12 AM



1 **FLOOR PLAN - LEVEL 1 - AREA A**
SCALE: 1/8" = 1'-0"



KEY PLAN

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

SHEET NOTES

Design Consultant
Gannett Fleming

Design Sub-Consultant

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR ONE-TIME USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 1 - AREA A

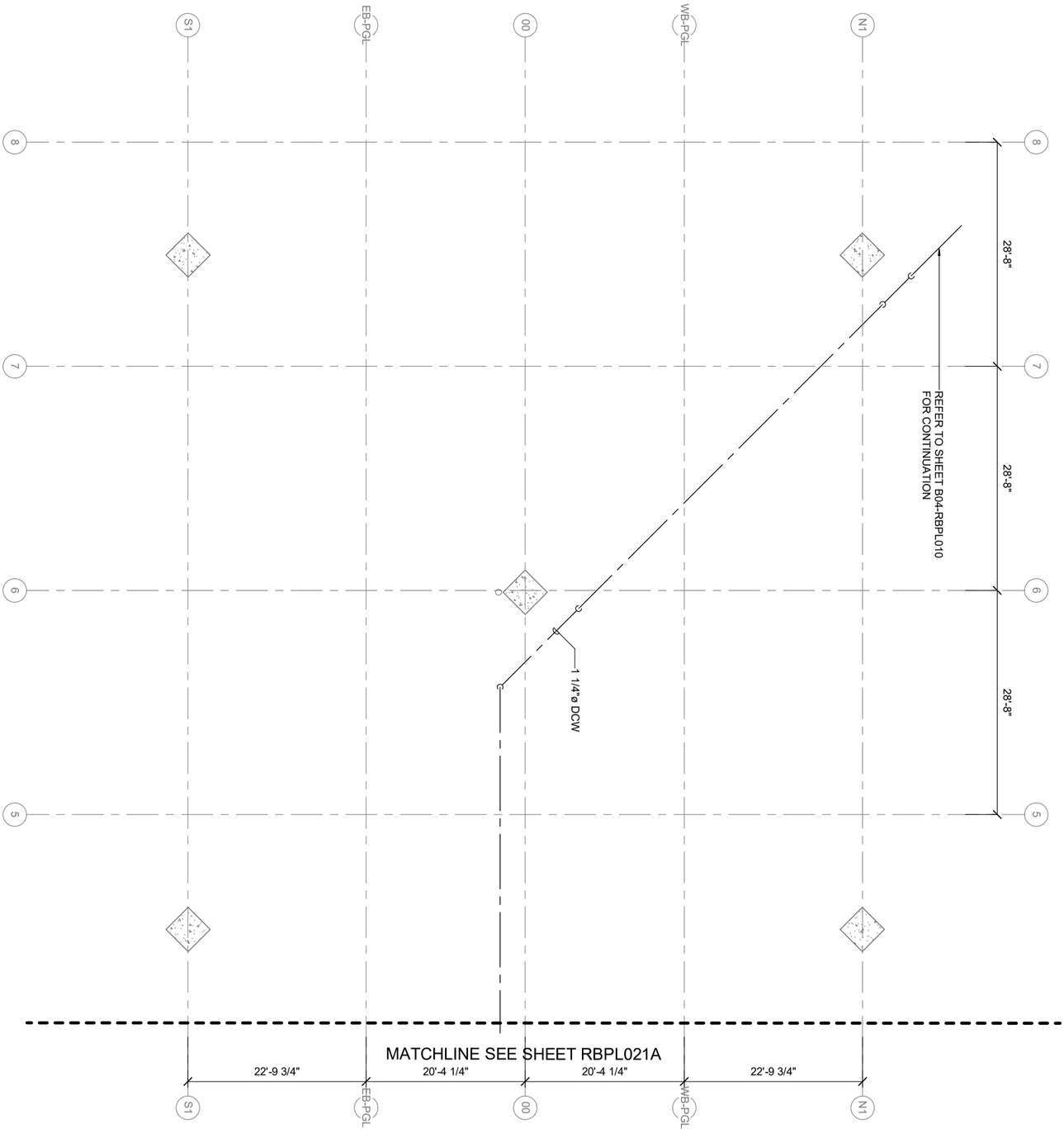
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Sheet Reference No:
V6 - 096 of 260

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Project Number: #####
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2
RBPL021B

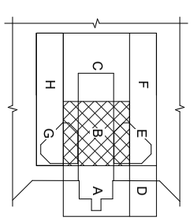
FLOOR PLAN - LEVEL 1 - AREA B

SCALE: 1/8" = 1'-0"



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

KEY PLAN



N

SHEET NOTES

Package: **B04 - RBPL021B** Sheet Reference No:
V6 - 097 of 260

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 1 - AREA B

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

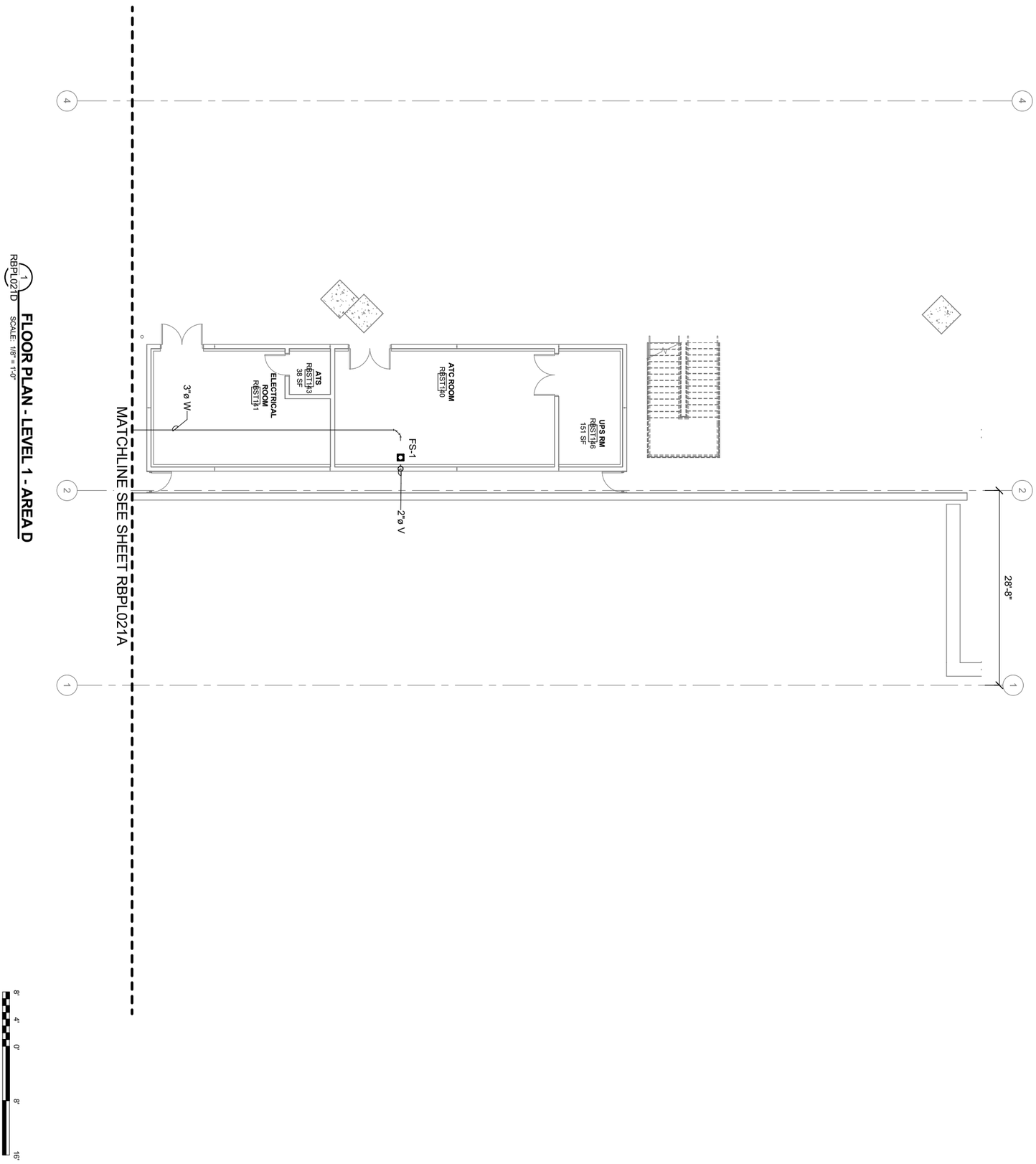
PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

HITEN SHETH
66328
EXPIRES: JULY 31, 20
Design Sub-Consultant
Design Consultant
Gannett Fleming



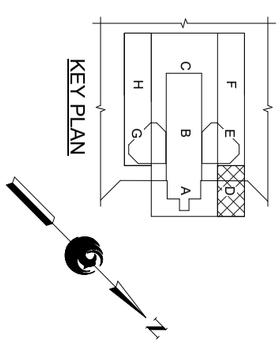
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FLOOR PLAN - LEVEL 1 - AREA D

SCALE: 1/8" = 1'-0"

8' 4' 0' 8' 16'

1/8" = 1'-0"



SHEET NOTES

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 1 - AREA D

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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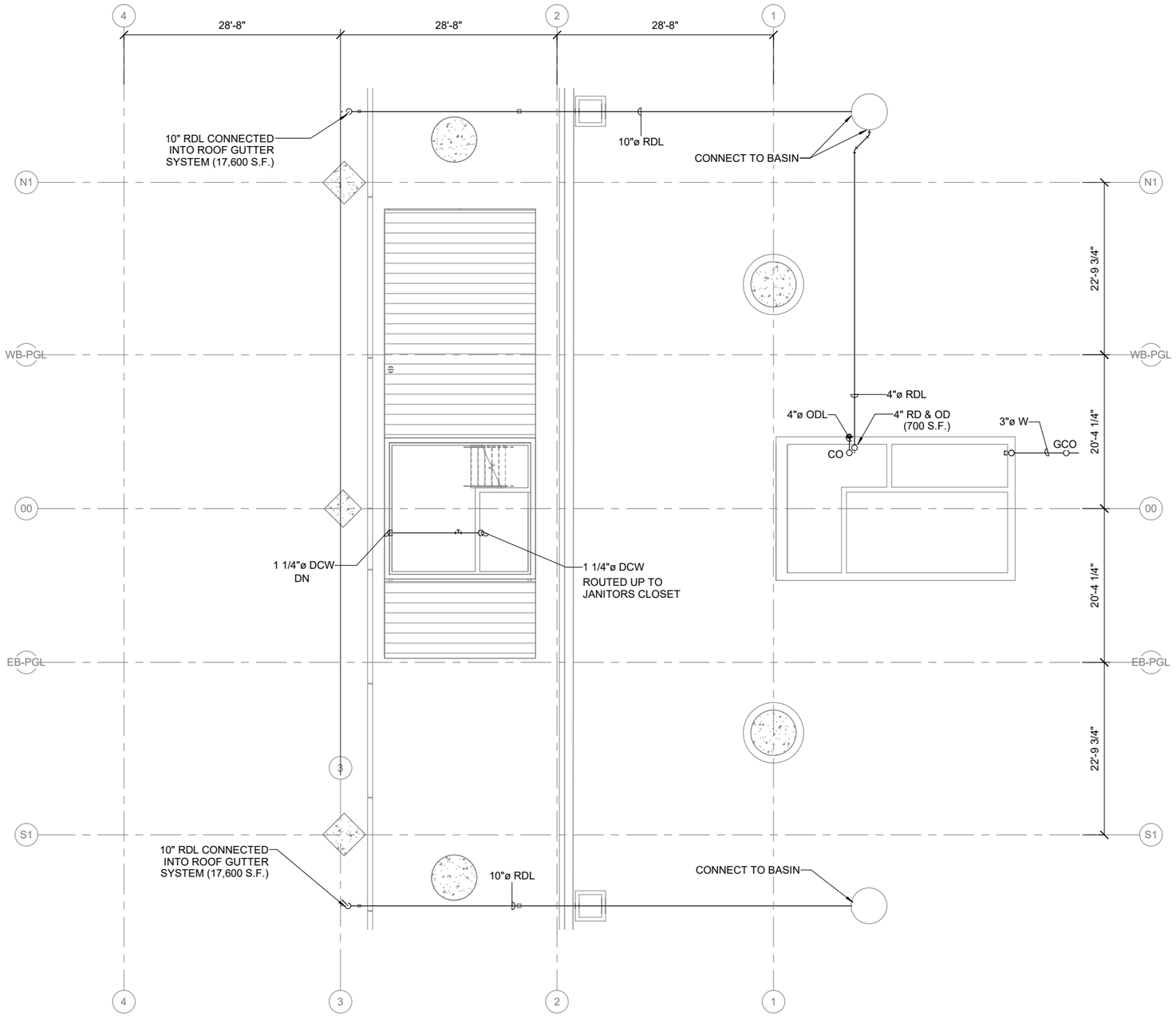
NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant

Design Consultant

Gannett Fleming

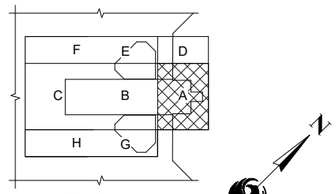
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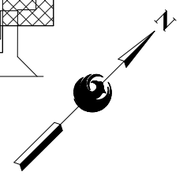
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SCALE: 1/8" = 1'-0"

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

SHEET NOTES



KEY PLAN



Design Consultant
Gannett Fleming

Design Sub-Consultant

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NO	DATE
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REVISIONS / SUBMISSIONS	

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

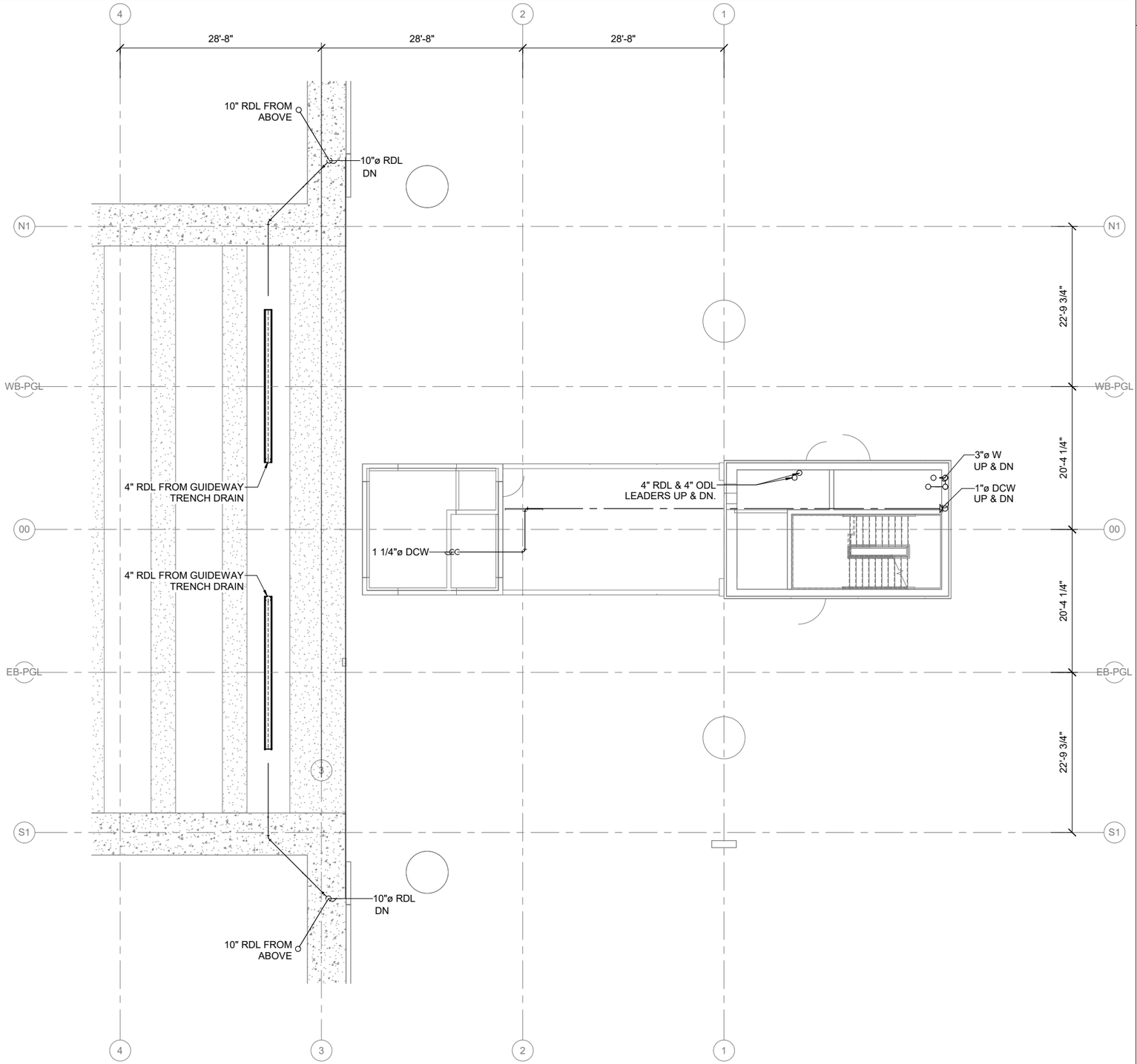
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 2 - AREA A

Package: **B04 - RBPL022A**
Sheet Reference No:
V6 - 099 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCPLXX01_R17_A360.rvt

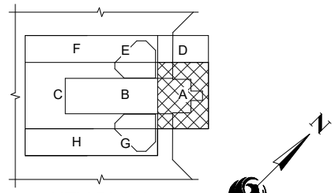
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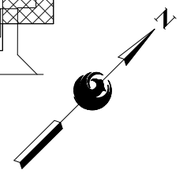
1 RBPL023A **FLOOR PLAN - LEVEL 3 - AREA A**
SCALE: 1/8" = 1'-0"

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

SHEET NOTES



KEY PLAN



Design Consultant
Gannett Fleming

Design Sub-Consultant

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

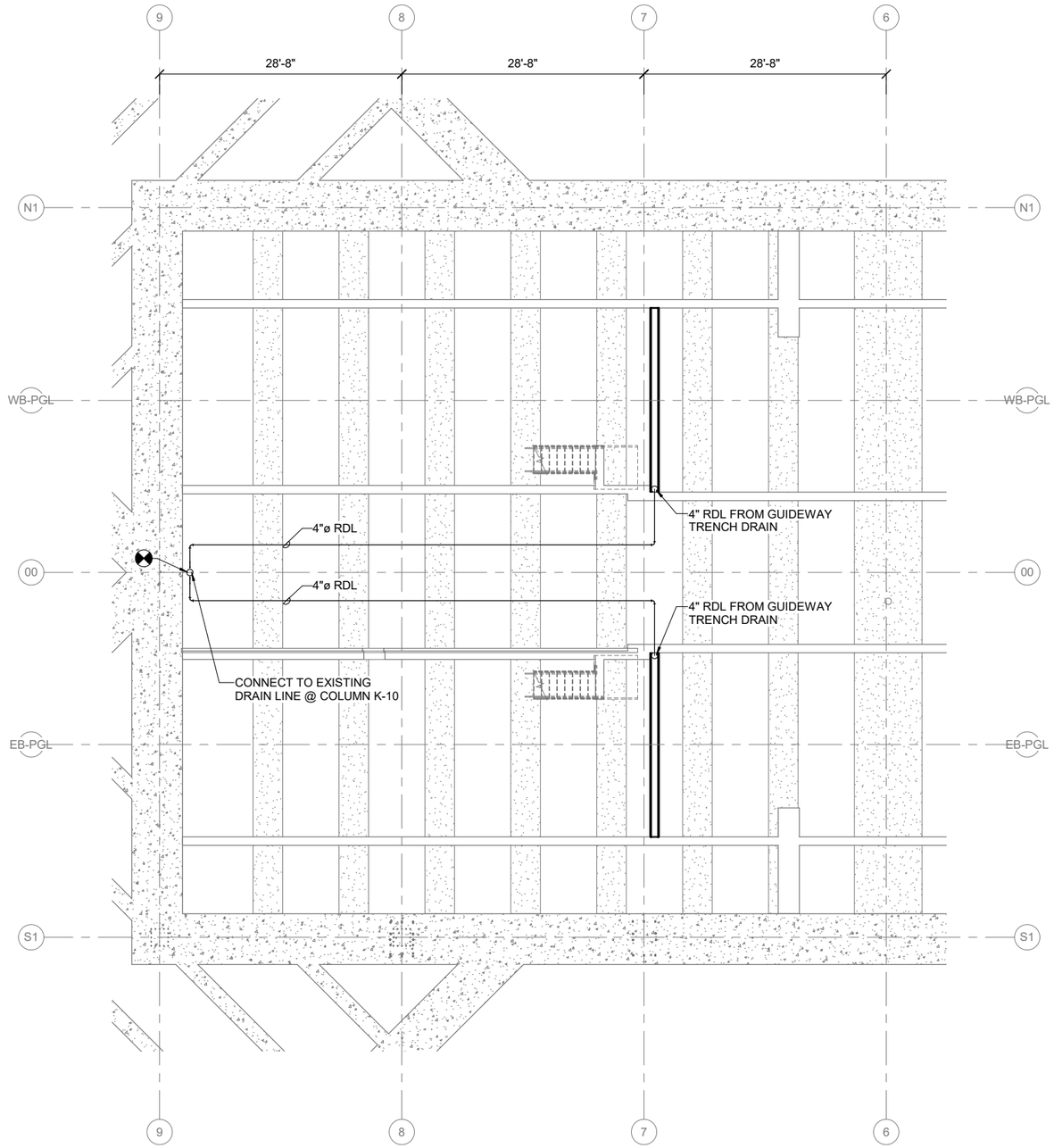
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Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 3 - AREA A

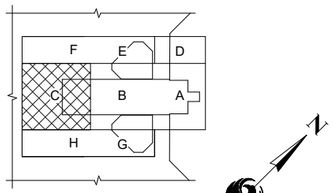
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Sheet Reference No:
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Project Number: #####
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Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCPLX001_R17_A360.rvt



1 RBPL023C **FLOOR PLAN - LEVEL 3 - AREA C**
SCALE: 1/8" = 1'-0"

SHEET NOTES



KEY PLAN

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

PER CITY OF PHOENIX ORDINANCE G-4396
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MAY NOT BE SHARED WITH OTHRES EXCEPT AS
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YOUR CONTRACT WITH THE CITY OF PHOENIX

NO	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

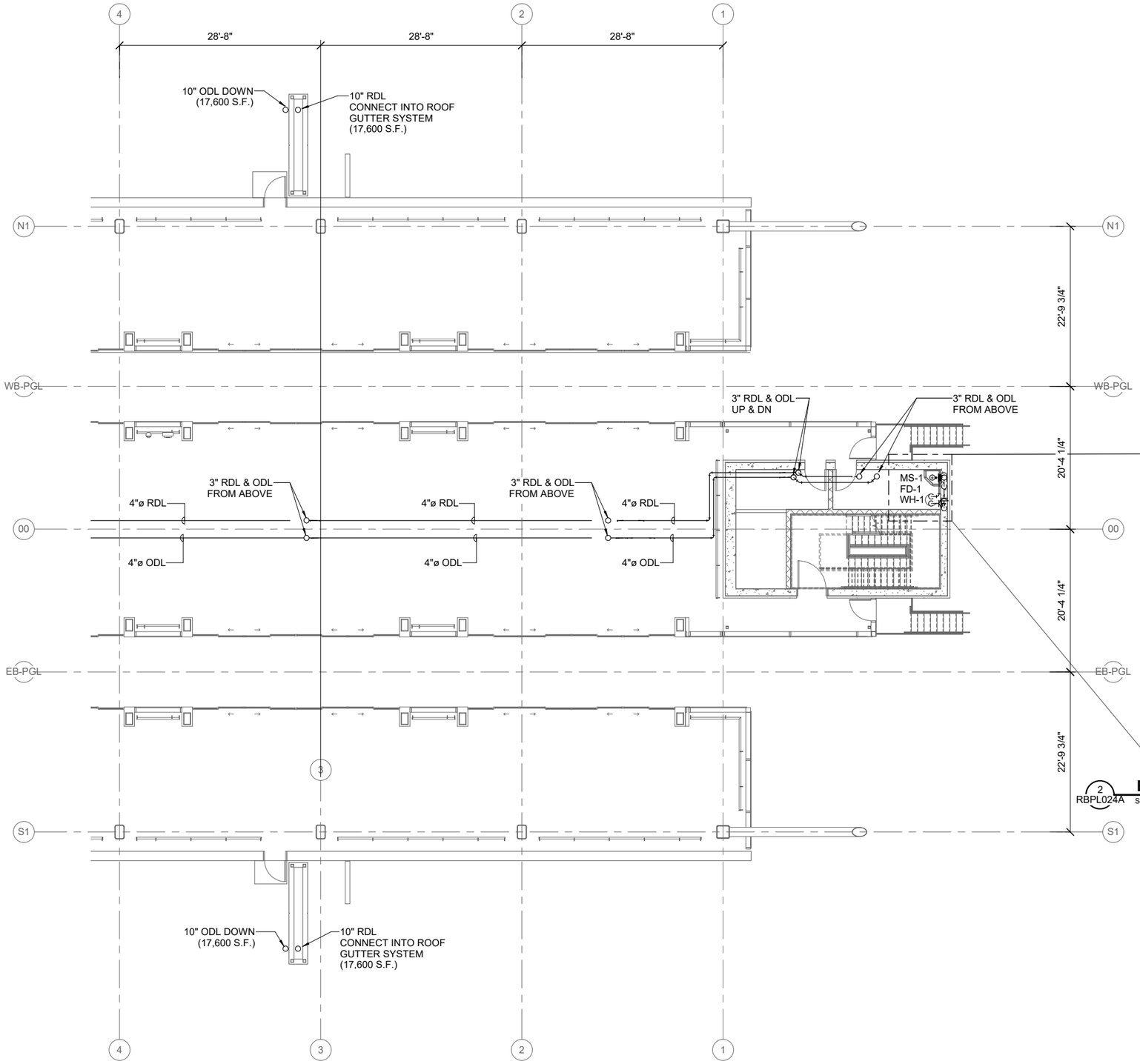
Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 3 AREA C

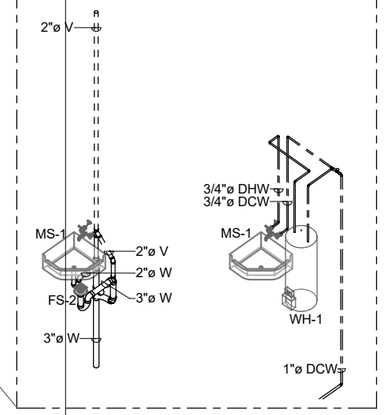
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Sheet Reference No:
V6 - 101 of 260

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Project Number: #####
7/11/2018 8:39:17 AM



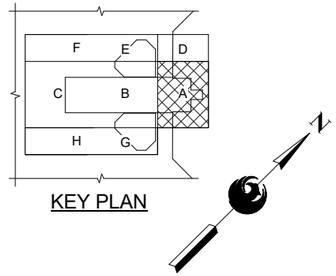
1 RBPL024A **FLOOR PLAN - LEVEL 4 - AREA A**
SCALE: 1/8" = 1'-0"

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



2 RBPL024A **ENLARGED PLUMBING JANITOR CLOSET - 3D**
SCALE: NTS

SHEET NOTES



KEY PLAN

PER CITY OF PHOENIX ORDINANCE G-4396
THESE PLANS ARE FOR CITY USE ONLY AND
MAY NOT BE SHARED WITH OTHRES EXCEPT AS
REQUIRED TO FULFILL THE OBLIGATION OF
YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Consultant
Gannett Fleming

Design Sub-Consultant

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

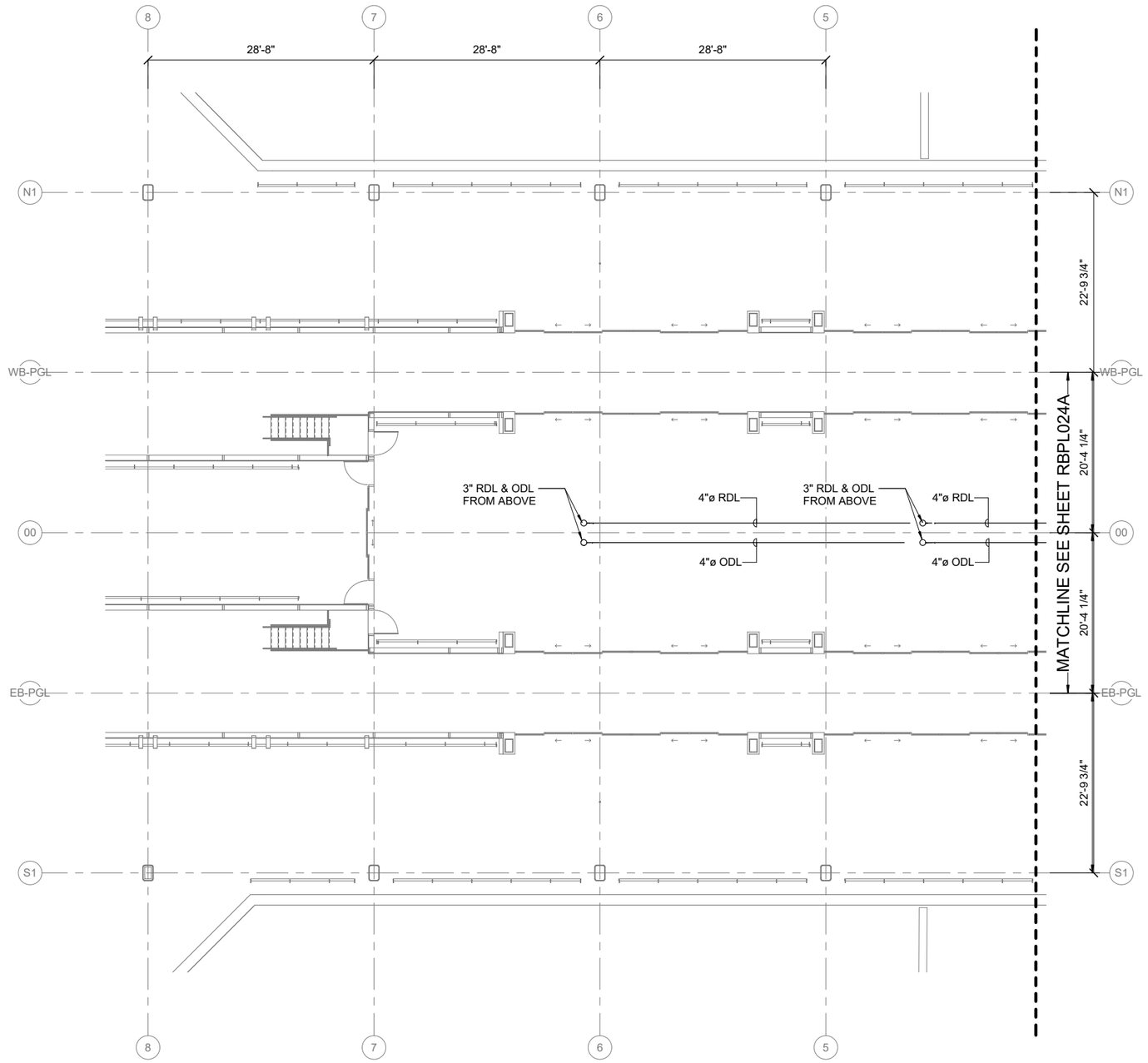
Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 4 - AREA A

Package: B04 - RBPL024A
Sheet Reference No:
V6 - 102 of 260

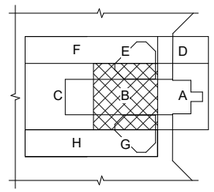
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7/11/2018 8:39:21 AM
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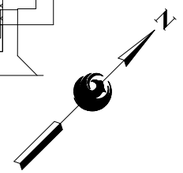
1 RBPL024B **FLOOR PLAN - LEVEL 4 - AREA B**
SCALE: 1/8" = 1'-0"

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

SHEET NOTES



KEY PLAN



Design Consultant
Gannett Fleming

Design Sub-Consultant

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

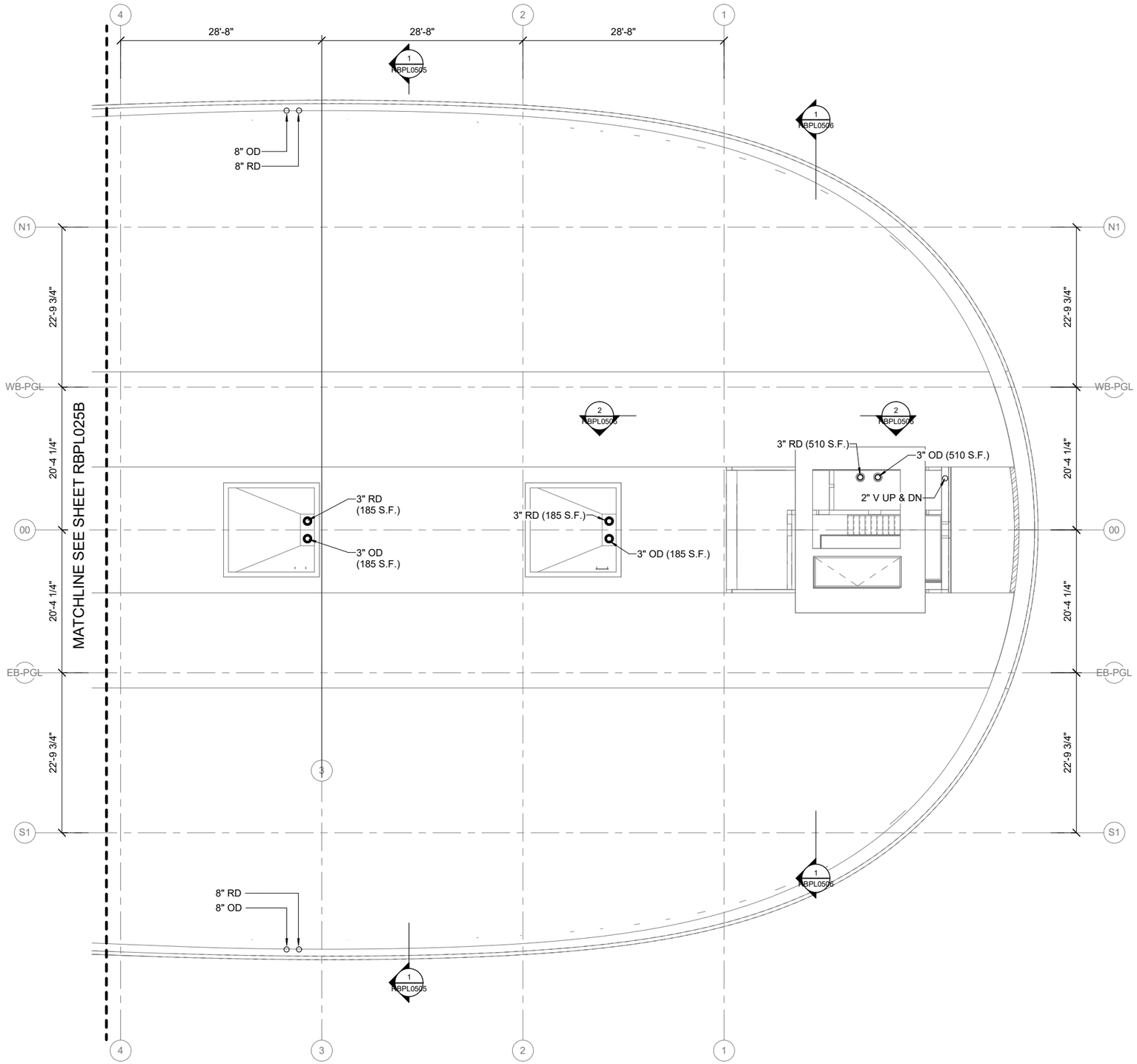
Designed by:	SDH
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Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - LEVEL 4 - AREA B

Package: **B04 - RBPL024B**
Sheet Reference No:
V6 - 103 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCPLXX01_R17_A360.rvt
Project Number: ######
7/11/2018 8:39:22 AM



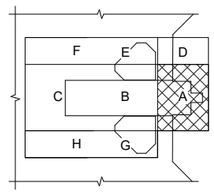
1 RBPL025A **FLOOR PLAN - ROOF LEVEL - AREA A**
SCALE: 1/8" = 1'-0"

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

SHEET NOTES

GENERAL NOTES:

1. ALL STORM DRAIN PIPE SIZING ARE BASED ON 4"/HR RAIN INTENSITY



KEY PLAN

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

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	SUBMITTED FOR REVIEW	04/06/18

Design Consultant
Gannett Fleming

Design Sub-Consultant

CITY OF PHOENIX
46,328
HITEN
SHETH
EXPIRES 03/31/20

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

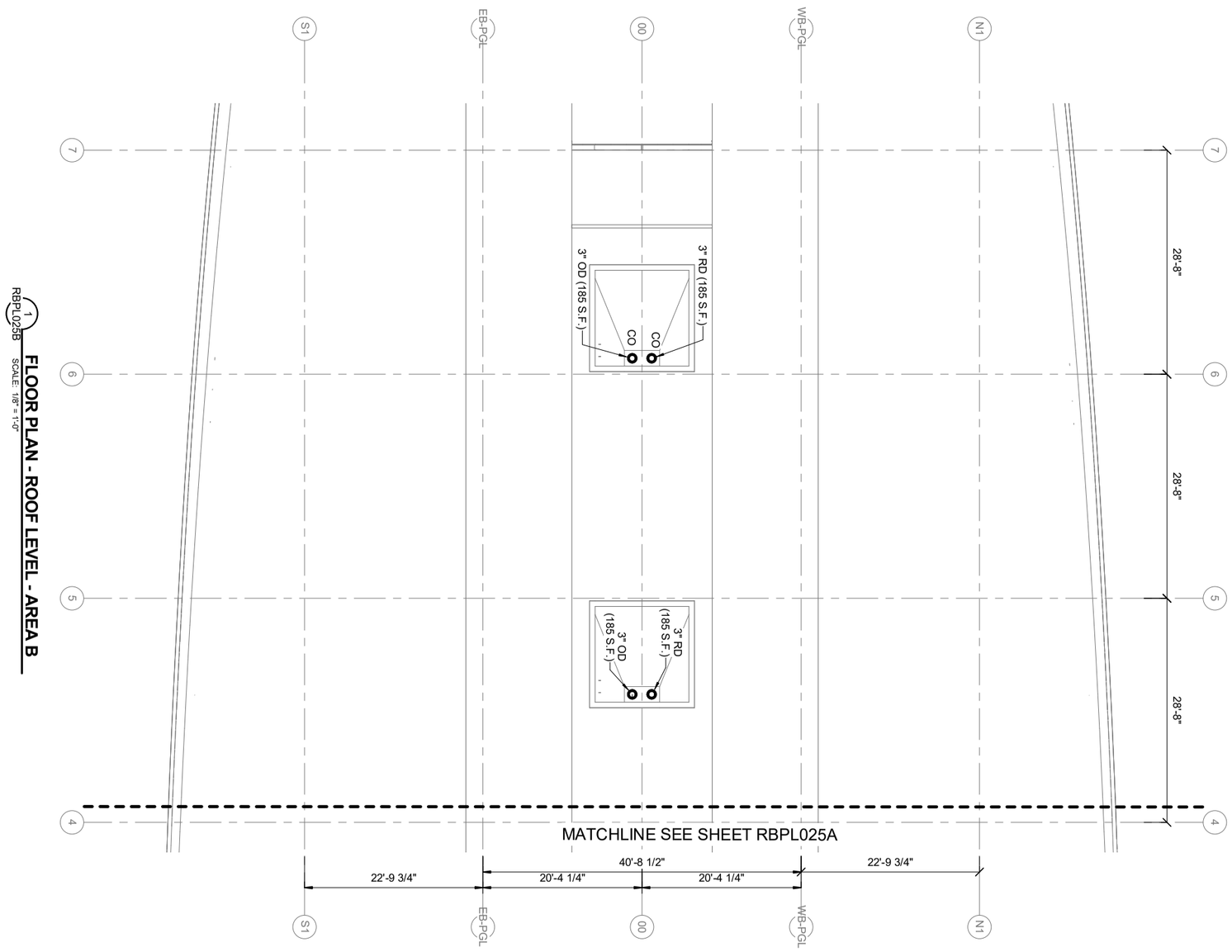
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Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - ROOF LEVEL - AREA A

Package: **B04 - RBPL025A**
Sheet Reference No:
V6 - 104 of 260

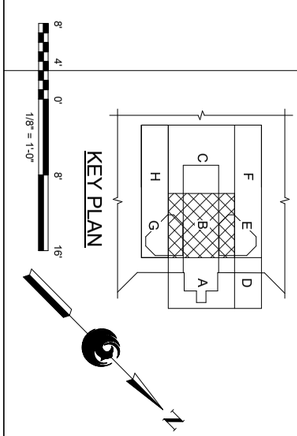
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7/11/2018 8:39:24 AM
Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCPLX001_R17_A360.rvt



1 RBPL025B

FLOOR PLAN - ROOF LEVEL - AREA B

SCALE: 1/8" = 1'-0"



SHEET NOTES

GENERAL NOTES:

1. ALL STORM DRAIN PIPE SIZING ARE BASED ON 4"/HR RAIN INTENSITY

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
FLOOR PLAN - ROOF LEVEL - AREA B

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

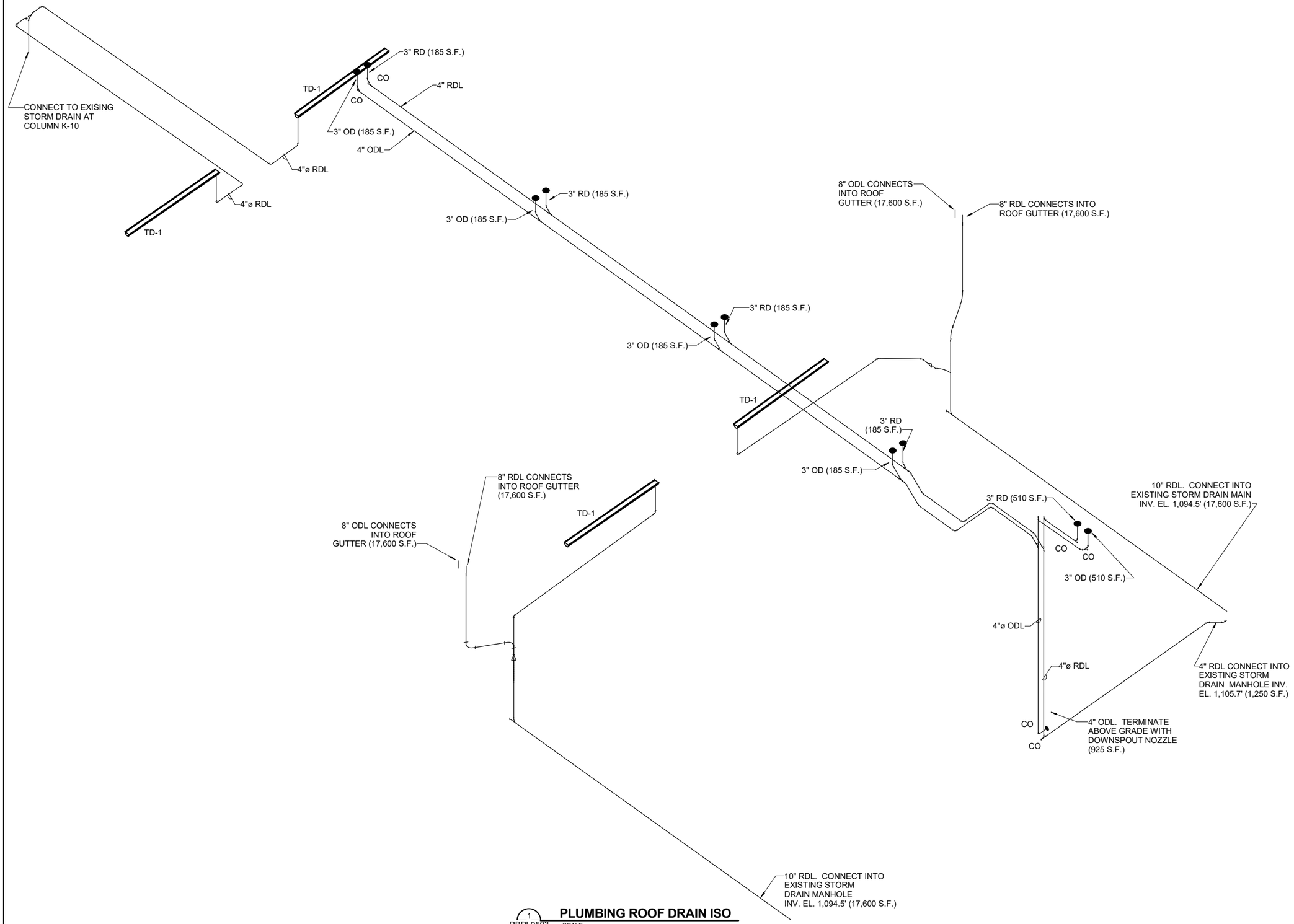
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
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	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant

Design Consultant
Gannett Fleming

Package: **B04 - RBPL025B**
Sheet Reference No:
V6 - 105 of 260



1 RBPL0503 **PLUMBING ROOF DRAIN ISO**
SCALE:

Project Number: ######
7/11/2018 8:39:25 AM

Local File: BIM 360://62421 - Phoenix Sky Train Project - Stage 2/AV10000011-S-2-RCPLX001_R17_A360.rvt

Design Consultant
Gannett Fleming

Design Sub-Consultant

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NO	DATE
	ISSUED FOR CONSTRUCTION 07/13/18
	SUBMITTED FOR REVIEW 04/06/18
	REVISIONS / SUBMISSIONS

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

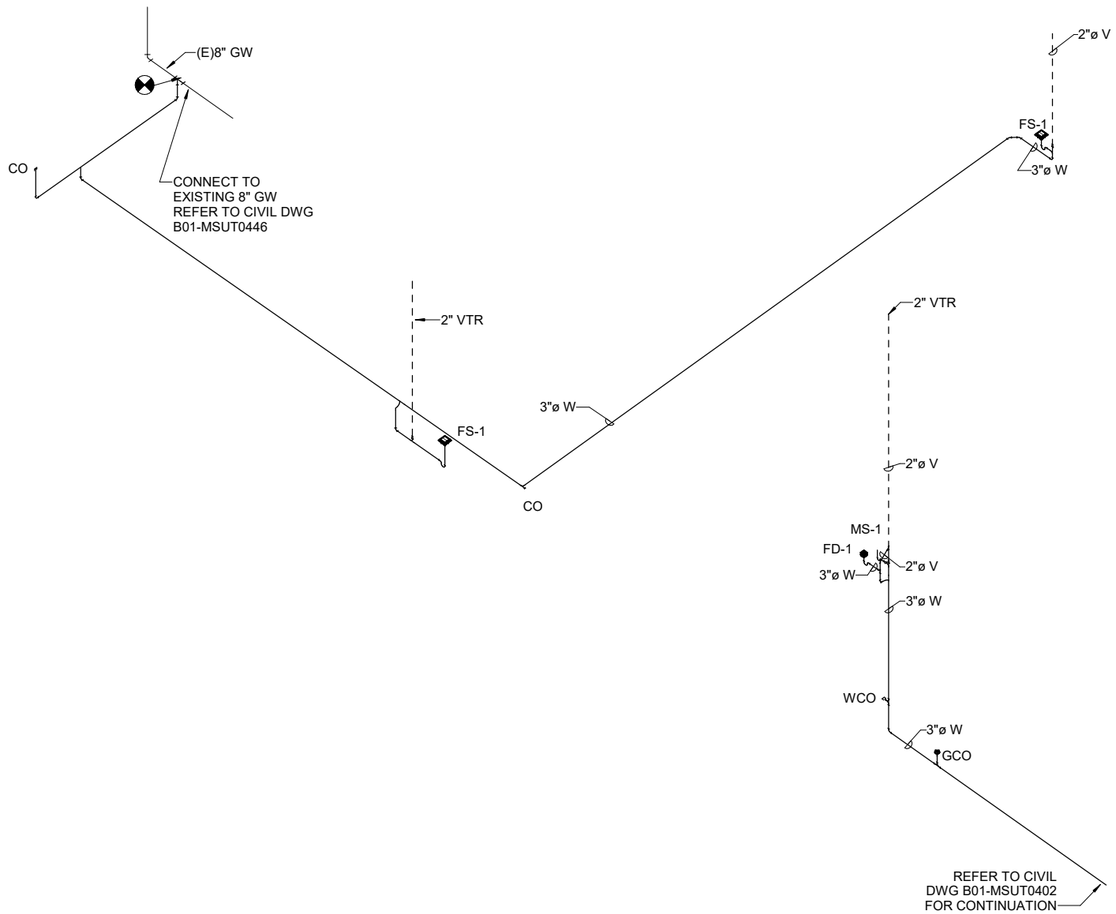
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

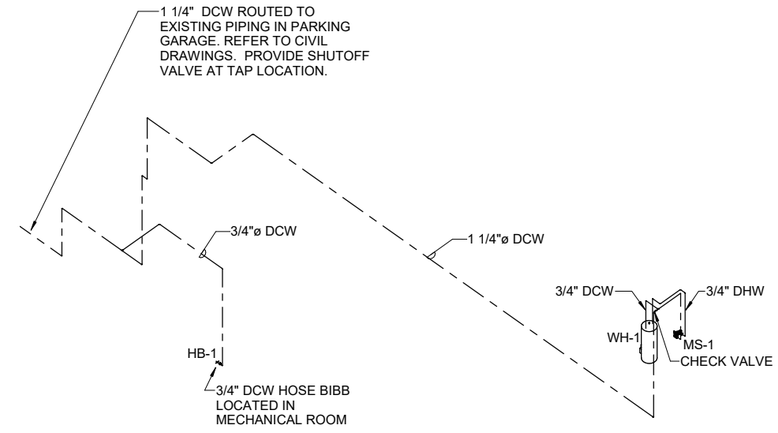
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION PLUMBING ISOMETRICS

Package: **B04 - RBPL0503**
Sheet Reference No:
V6 - 106 of 260



1 **PLUMBING WASTE & VENT ISO**
SCALE:



2 **PLUMBING DCW & DHW ISO**
SCALE:

SPECIFICATIONS:
WATER HEATER (WH-1):
LOCHINVAR ESV040FD, 40 GALLON LIGHT COMERCIAL DUAL SIMULTANEOUS 460/1 PHASE, 2KW HEATING ELEMENTS. PROVIDE WITH T&P RELIEF VALVE AND ROUTE TO MOP SINK. PROVIDE WITH HEAT TRAPS AND SHUTOFF VALVE PER DETAIL. 3/4" CW, HW.

HOSE-BIBB (HB-1):
WOODFORD MODEL 24 ANTI-SIPHON PROTECTED WALL FAUCET. EPDM PACKING, LOOSE TEE KEY, ¾" CW

SERVICE SINK (MS-1):
FLORESTONE MODEL 96, NEO ANGLE DROP FRONT TERRAZZO MOP RECEPTOR, MANUFACTURED OF TAN AND WHITE MARBLE STONE CHIPS CAST IN WHITE PORTLAND CEMENT, STAINLESS STEEL CAP ON DROP FRONT; CHICAGO FAUCETS 897-CCP, WALL MOUNTED 8" BODY, ADJUSTABLE ARMS 7-5/8" – 8-3/8", 2-3/8" VANDAL PROOF LEVER HANDLE, CERMIC ¼ TURN OPERATING CARTRIDGE, ½" NPT ADJUSTABLE FEMALE UNION NUT SUPPLY ARMS W/ CHECK VALVES, ¾" MALE HOSE THREAD OUTLET, ROUND WALL ESCUTCHEONS, INTERGRAL CHECK VALVES, VACUUM BREAKER SPOUT WITH PAIL HOOK AND WALL BRACE ½"CW, HW, 3" WASTE

FLOOR SINK (FS-1):
ZURN MODEL Z1900, SANIFLOR RECEPTOR. 12"X12"X6" DEEP CAST IRON BOX WITH WHITE ACID RESISTANT PORCELIN. PROVIDE WITH 3/4 HEELPROOF GRATE AND DEEP SEAL TRAP.

TRENCH DRAIN (TD-1):
ZURN MODEL Z886 6" WIDE PRE-SLOPED TRENCH DRAINAGE SYSTEM. HIGH DENSITY POLYETHYLENE STRUCTURAL COMPOSITE DRAIN CHANNEL WITH .75% BOTTOM SLOPE. MODULAR LENGTHS WITH INTEGRAL TOP FRAME, INTER-LOCKING ENDS AND RADIUSED BOTTOM. COMBINATION TIE-DOWN/LEVELING DEVICES AT 20-INCH INTERVALS. FURNISHED WITH HEAVY-DUTY DURA-COATED CAST IRON GRATE.

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
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Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX PTY
City of Phoenix Aviation Department

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

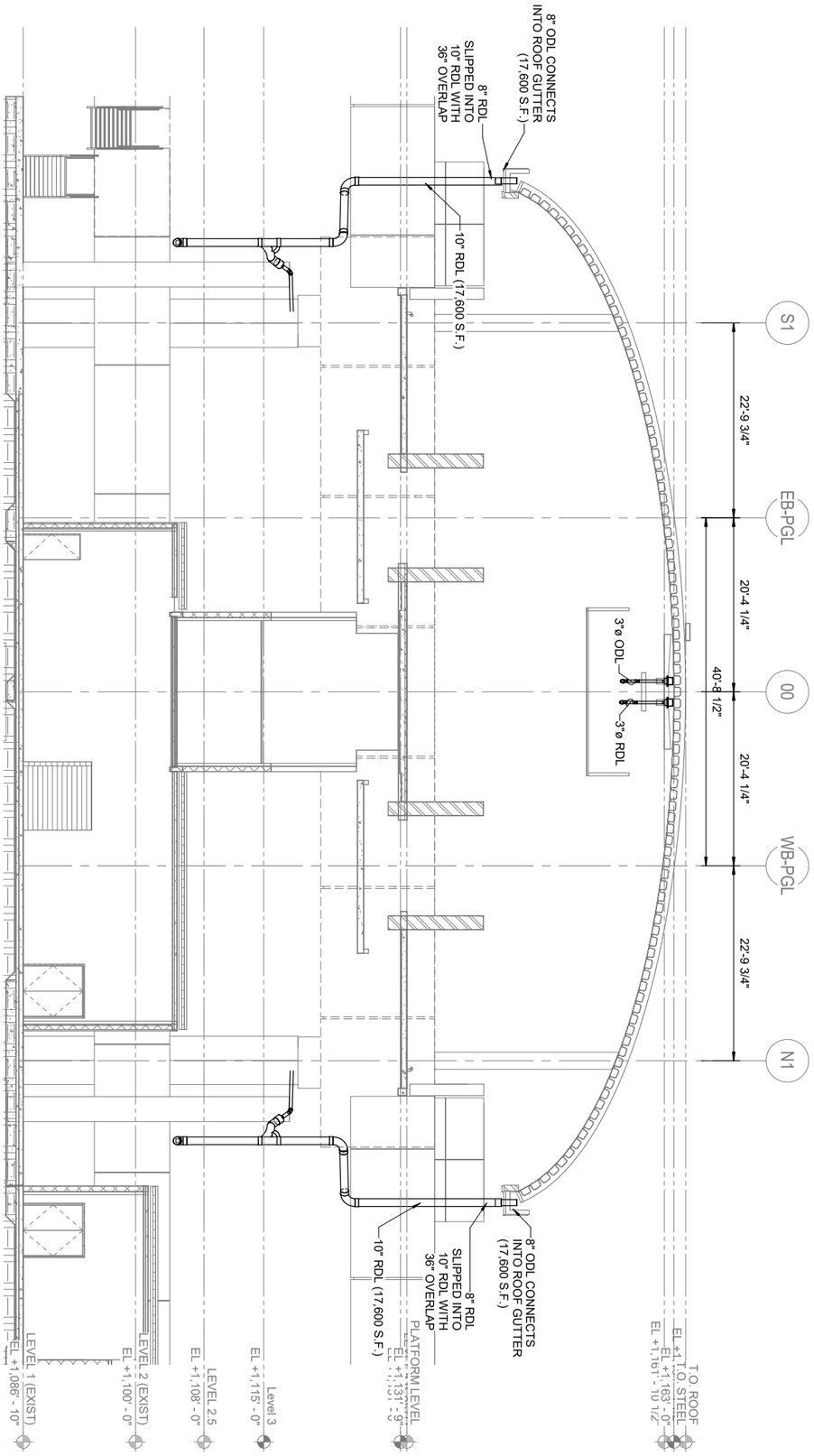
RCC STATION
PLUMBING
ISOMETRICS

Package: B04 - RBPL0504
Sheet Reference No:
V6 - 107 of 260

Project Number: ######
7/11/2018 8:39:26 AM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCPLXX01_R17_A360.rvt

1 RBPL0505 **SECTION 1**
SCALE: 1/8" = 1'-0"



STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION PLUMBING SECTIONS

Package: **B04 - RBPL0505** Sheet Reference No:
V6 - 108 of 260

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN STAGE 2 DESIGN 500 S 24TH STREET PHOENIX, AZ 85034

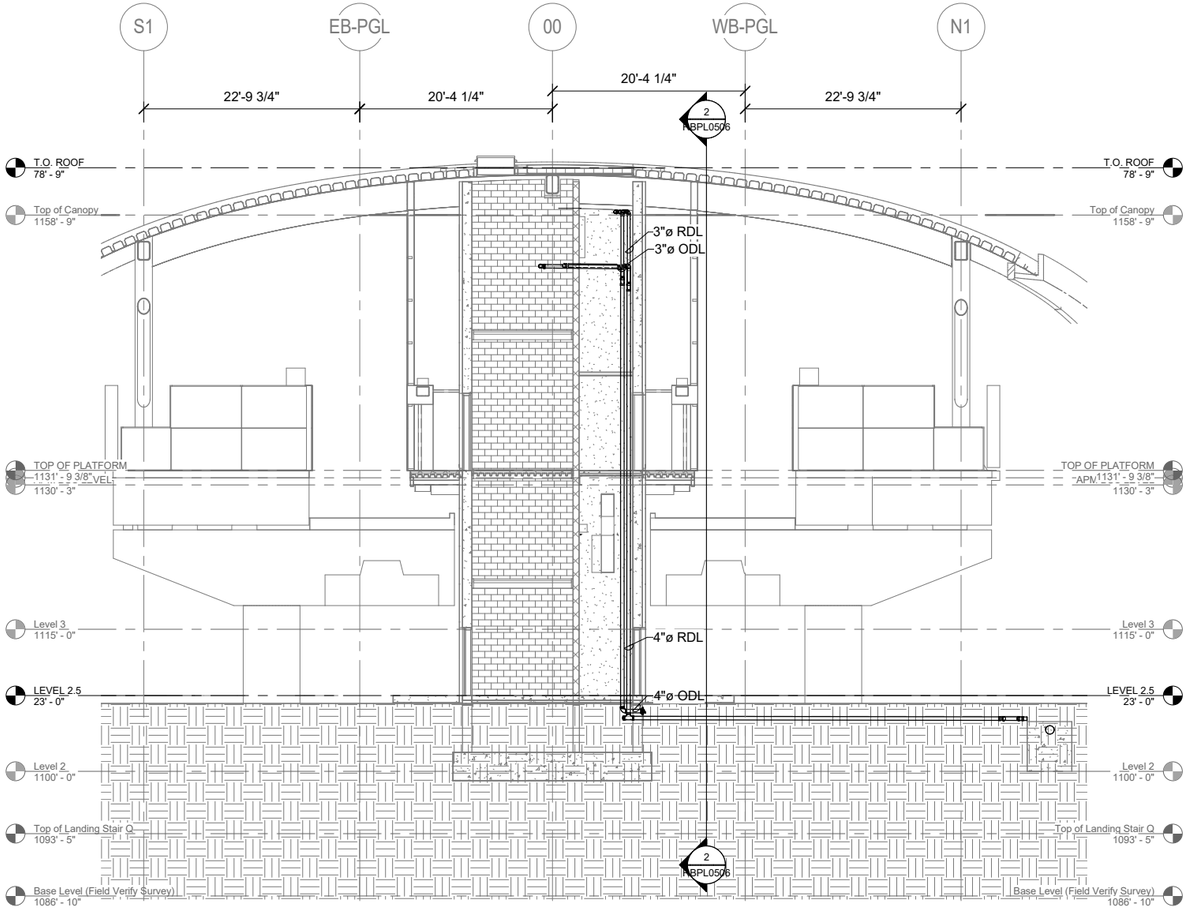
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
	ISSUED FOR CONSTRUCTION	07/13/18

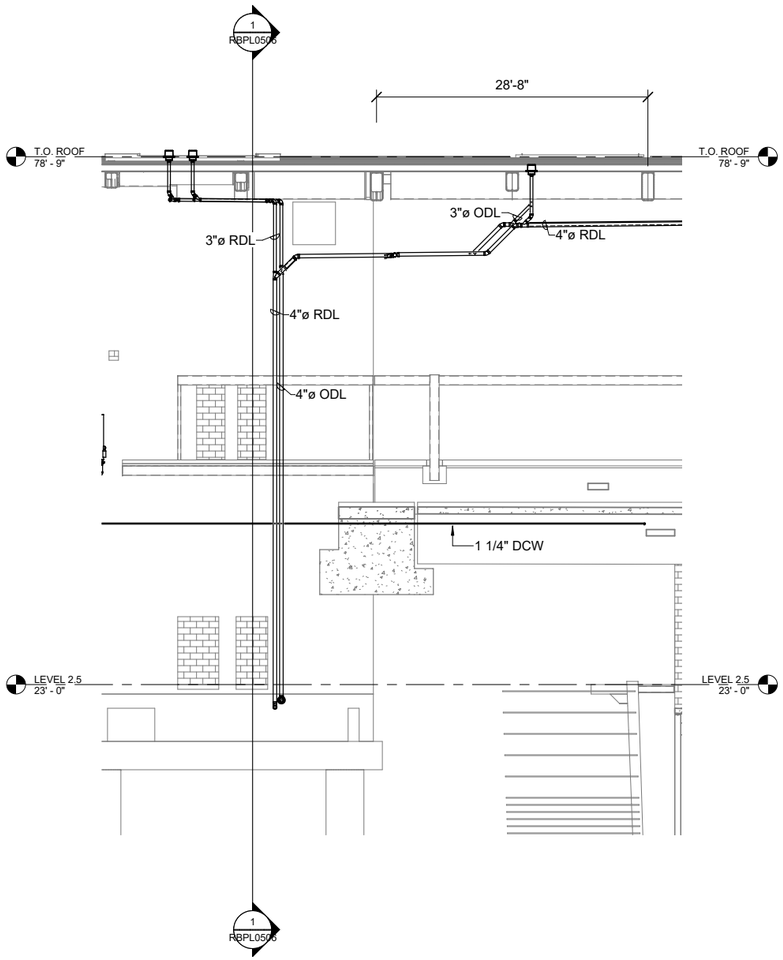
REGISTERED PROFESSIONAL ENGINEER 66328 HITEN SHETH
EXPIRES: JULY 31, 20

Design Sub-Consultant

Design Consultant
Gannett Fleming



1 **SECTION 18**
SCALE: 1/8" = 1'-0"



2 RBPL0506 **SECTION 3**
SCALE: 1/8" = 1'-0"

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Design Consultant
Gannett Fleming

Design Sub-Consultant

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	SDH
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Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
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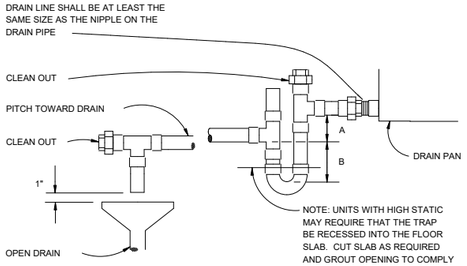
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION PLUMBING SECTIONS

Package: B04 - RBPL0506
Sheet Reference No: V6 - 109 of 260

Project Number: ######
7/11/2018 8:39:42 AM

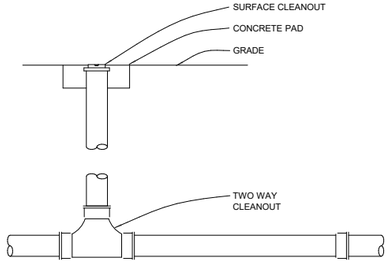
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCPLXX01_R17_A360.rvt



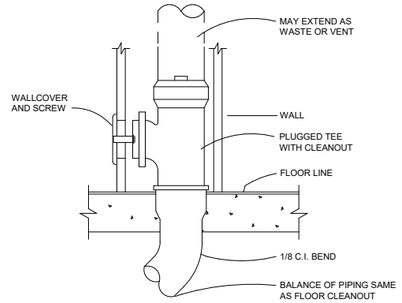
UNIT TYPE	A	B
DRAW THRU	X + 1"	1.5 + X
BLOW THRU	1" MIN.	2.0 + X

WHERE X = STATIC PRESSURE IN PAN

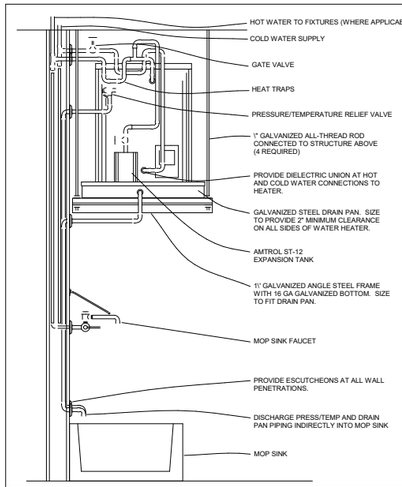
1 AIR HANDLING UNIT CONDENSATE TRAP



2 2-WAY GRADE CLEANOUT DETAIL



3 WALL CLEANOUT DETAIL



4 WATER HEATER DETAIL

WATER CALCULATIONS

WATER PRESSURE

WATER PRESSURE (SUMMER LOW)			= 50	PSI*
TOTAL FIXTURE UNITS	=	3 F.U. + 5GPM (HB)	= 11.5	GPM***
WATER METER SIZE	=	1"	= 0**	PSI LOSS
VERTICAL PIPE SIZE	=	36 FT. X 0.43 PSI/FT	= 15.4	PSI LOSS
BACKFLOW PREVENTER	=	N/A	= 0**	PSI LOSS

PIPE LENGTH

15

PIPE LENGTH (TAP TO LAST FIXTURE)	= 1047 FT.
PIPE RISE (TAP TO HIGHEST FIXTURE)	= 36 FT.
TOTAL	= 1083 FT.
FITTING ALLOWANCE (25%)	X 1.25
TOTAL EQUIVALENT PIPE LENGTH	= 1353 FT.

PRESSURE LOSSES

TOTAL FIXTURE PRESSURE REQUIRED	= 15 PSI
VERTICAL PIPE LOSS	= 15.4 PSI
TOTAL LOSSES	= 30.4 PSI
AVAILABLE AT TAP	= 50 PSI*
DIFFERENCE	= 19.6 PSI

ALLOWABLE DESIGN LOSSES

PSI DIFFERENCE = (19.6) X 100 FT. / TOTAL EQUIVALENT LENGTH = (1353)FT. = 1.4 PSI PRESSURE DROP PER 100 FT.

NOTES

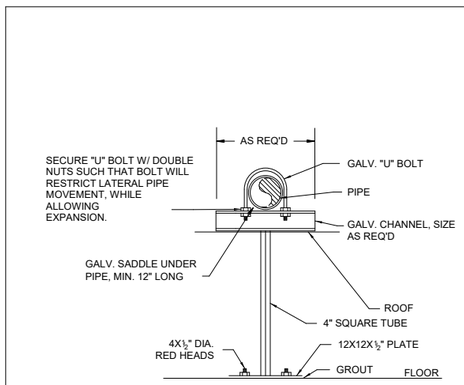
* PRESSURE AT TAP IS ASSUMED. CONTRACTOR TO CONFIRM PRESSURE AT TAP PRIOR TO INSTALLATION.

** PRESSURE MEASURED AND CALCULATED AFTER METER AND BACKFLOW PREVENTER.

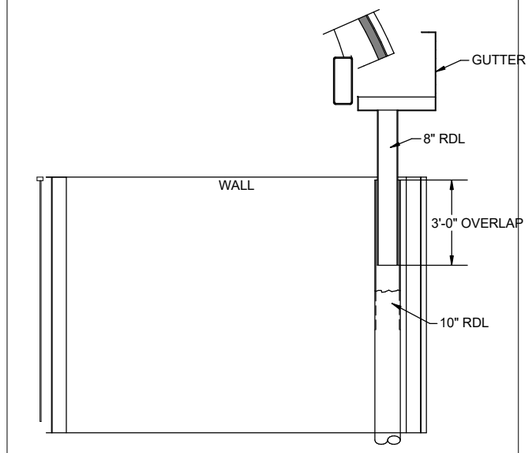
*** CONSISTS OF A SINGLE JANITOR SINK AND INCIDENTAL USE HOSE BIBBS.

FIXTURE UNITS SCHEDULE

MS-1 MOP SINK 3/4"CW 3/4"HW 3FU



5 PIPE SUPPORT DETAIL



6 DOWNSPOUT TRANSITION DETAIL

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Design Consultant
Gannett Fleming
Design Sub-Consultant

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	SDH
Drawn by:	SDH
Checked by:	DAT
Date:	07/13/2018
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
PLUMBING
PLUMBING DETAILS

Package: B04 - RBPL0507
Sheet Reference No:
V6 - 110 of 260

Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCPLXX01_R17_A360.rvt
Project Number: ######
7/11/2018 8:39:42 AM

1. BASIS OF DESIGN

1.1. BUILDING DESCRIPTION
MULTI-STORY, TYPE I-A NONCOMBUSTIBLE CONSTRUCTION. ASSEMBLY USE GROUP OCCUPANCY. SEE THE PROJECT FLSR FOR DISCUSSION ON THE CONSTRUCTION TYPE.

1.2. GOVERNING CODES, STANDARDS, AND DOCUMENTATION
THE APPLICABLE SECTIONS OF THE FOLLOWING CODES AND STANDARDS GOVERN THE DESIGN AND INSTALLATION OF THE FIRE PROTECTION SYSTEMS ARE:
- INTERNATIONAL BUILDING CODE (IBC) - 2012 WITH CITY OF PHOENIX AMENDMENTS;
- INTERNATIONAL FIRE CODE (IFC) - 2012 WITH CITY OF PHOENIX AMENDMENTS;
- NFPA 13 - 2013, INSTALLATION OF SPRINKLER SYSTEMS;
- NFPA 70 - 2011, NATIONAL ELECTRICAL CODE WITH CITY OF PHOENIX AMENDMENTS;
- NFPA 72 - 2013, NATIONAL FIRE ALARM CODE;
- NFPA 2001 - 2012, CLEAN AGENT FIRE EXTINGUISHING SYSTEMS.

IN ADDITION, THE FOLLOWING DOCUMENTS GOVERN THE DESIGN AND INSTALLATION OF THE FIRE DETECTION, COMMUNICATION, AND FIRE SUPPRESSION SYSTEMS:
- TECHNICAL SPECIFICATIONS;

1.1. DESIGN RESPONSIBILITY
JENSEN HUGHES IS PROVIDING FIRE PROTECTION ENGINEERING DESIGN SERVICES TO GANNETT FLEMING, PHOENIX, ARIZONA. THE SERVICES INCLUDE THE AUTOMATIC FIRE DETECTION, ALARM, AND SPRINKLER SYSTEMS LAYOUT CONSISTING OF INITIATING DEVICES, REMOTE ALARM ANNUNCIATORS, REMOTE TEST SWITCHES, NOTIFICATION APPLIANCES, AND ASSOCIATED CONTROL EQUIPMENT.

1.2. FEATURES USED IN THE DESIGN METHODOLOGY OF
THE FIRE PROTECTION SYSTEMS WILL COMPLY WITH THE APPLICABLE SECTIONS OF THE REFERENCED CODES AND STANDARDS IDENTIFIED HEREIN. THE AUTOMATIC FIRE DETECTION AND EMERGENCY COMMUNICATION SYSTEM IS DESIGNED TO NOTIFY THE AVIATION COMMUNICATIONS CENTER, THE PHOENIX FIRE DEPARTMENT, AND THE BUILDING OCCUPANTS OF A FIRE, SUPERVISE THE SYSTEM, AND PROVIDE LOCAL TROUBLE NOTIFICATION.

1.3. THESE DRAWINGS HAVE BEEN DEVELOPED UNDER THE REQUIREMENTS OF ARIZONA STATE LAW REGARDING REGISTRATION FOR FIRE PROTECTION ENGINEERING. THE DRAWINGS ARE NOT FOR CONSTRUCTION AND THE CONTRACTOR SHALL DEVELOP AND SUBMIT SHOP DRAWINGS FOR REVIEW AND GAIN APPROVAL IN ACCORDANCE WITH THE IFC 2012 WITH CITY OF PHOENIX AMENDMENTS, NFPA 13, NFPA 72, AND THE PROJECT SPECIFICATIONS.

2. SEQUENCE OF OPERATION

2.1. FIRE SUPPRESSION / ALARM SYSTEM
FIRE ALARM SYSTEM CONTROL UNIT
THIS PROJECT IS CONCERNED WITH INSTALLATION OF NEW HONEYWELL FIRE ALARM CONTROL UNIT (FACU) EQUIPMENT IN THE FCC. THE FACU WILL SERVE THE BUILDING AND THE PROTECTED AREAS THEREIN. THE LOCATION OF THE FACU WILL BE SHOWN ON THE DESIGN DOCUMENTS.

WHEN THE NEW FACU RECEIVES A SIGNAL FROM ANY MANUAL OR AUTOMATIC FIRE DETECTION DEVICE, THE NOTIFICATION APPLIANCES AND ALARM SIGNAL VIA ECS WILL ACTUATE THROUGHOUT THE BUILDING. ALL THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS SHALL BE TRANSMITTED TO THE CONSTANTLY ATTENDED AVIATION DEPARTMENT COMMUNICATIONS CENTER .

SMOKE DETECTORS
SPOT TYPE AND BEAM TYPE SMOKE DETECTORS WILL BE LOCATED WHERE REQUIRED BY THE IBC AND WILL BE SHOWN ON THE DESIGN DOCUMENTS. THERE ARE ALSO SMOKE DETECTORS SHOWN FOR THE CLEAN AGENT FIRE SUPPRESSION SYSTEM. THESE DETECTORS WILL BE SHOWN ON THE CLEAN AGENT SYSTEM DRAWINGS.

ALL FIRE ALARM CONTROL UNITS HAVE A FACTORY PROGRAMMED 60 SECOND VERIFICATION CYCLE. IF AFTER THE 60 SECONDS, A SMOKE DETECTOR CONTINUES TO SENSE SMOKE ABOVE THE PROGRAMMED ALARM THRESHOLD (I.E., DETECTOR SENSITIVITY), AN REMOTE ALARM SIGNAL WILL BE INITIATED AND ACTIVATION OF THE NOTIFICATION APPLIANCES SHALL OCCUR.

SEE THE SECTION ON SPECIALIZED FIRE PROTECTION EQUIPMENT FOR THE SEQUENCE OF OPERATIONS FOR THE CLEAN AGENT SYSTEM.

PORTABLE FIRE EXTINGUISHERS
THE INTERNATIONAL FIRE CODE - 2012 WITH CITY OF PHOENIX AMENDMENTS SECTION 906 INDICATES WHERE PORTABLE FIRE EXTINGUISHERS ARE REQUIRED. PORTABLE FIRE EXTINGUISHERS ARE REQUIRED IN THE ROOMS PROTECTED BY CLEAN AGENT SYSTEM, ELECTRICAL ROOMS, IT ROOMS, AND KITCHENS. A CODE MODIFICATION HAS BEEN APPLIED FOR TO EXEMPT THE ASSEMBLIES SPACES FROM THIS REQUIREMENT.

DUCT SMOKE DETECTORS
DUCT SMOKE DETECTORS ARE REQUIRED IN AIR HANDLING SYSTEMS THAT HAVE A CAPACITY AT OR GREATER THAN 2,000 CFM. FOR THOSE AREAS THAT ARE PROTECTED BY AREA SMOKE DETECTION, DUCT SMOKE DETECTORS ARE PERMITTED TO BE OMITTED.

SPRINKLER SYSTEM WATERFLOW AND CONTROL VALVE SUPERVISORY SWITCHES THE FIRE DETECTION SYSTEM DRAWINGS WILL SHOW THE CONCEPTUAL LOCATION OF THE SPRINKLER WATERFLOW AND CONTROL VALVE SUPERVISORY SWITCHES. WHEN A SPRINKLER WATERFLOW SWITCH IS ACTUATED, AN ALARM SIGNAL IS SENT TO THE FACU, WHICH WILL START THE GENERAL ALARM SEQUENCE THROUGHOUT THE BUILDING. THE ALARM SIGNAL SHALL LOCK AT THE FACU UNTIL ACKNOWLEDGEMENT AND SYSTEM RESET FUNCTIONS ARE USED. THERE IS NO VERIFICATION CYCLE ON A WATERFLOW SWITCH ACTUATION.

WHEN A SPRINKLER SUPERVISORY SWITCH IS ACTUATED, A SUPERVISORY SIGNAL IS SENT TO THE FACU. THE VALVE SUPERVISORY SWITCH SHALL ACTUATE BETWEEN 1/4 AND 1/2 TURN OF A CONTROL VALVE. THE SUPERVISORY SYSTEM SHALL RESET UPON VALVE RESTORATION. EACH TENANT SPACE WILL HAVE A DEDICATED TAMPER AND FLOW SWITCH THAT IS SUPERVISED.

SPRINKLER SYSTEM NOTES

THE ENTIRE STRUCTURE WILL BE 100% SPRINKLERED IN ACCORDANCE WITH NFPA13-2013. OPENINGS WILL USE CLOSELY SPACED SPRINKLERS. THE BOTTOM ESCALATOR PITS DO NOT REQUIRE SPRINKLERS. THE TOPS OF ELEVATOR SHAFTS DO NOT REQUIRE SPRINKLERS. ELEVATOR PITS DO NOT REQUIRE SPRINKLERS. ELEVATOR MACHINE ROOMS REQUIRE SPRINKLERS.

ALL IDF ROOMS SHALL BE PROTECTED WITH DOUBLE INTERLOCK PRE-ACTION SPRINKLER SYSTEMS.

THE FIRE ALARM AND FIRE SPRINKLER CONTRACTORS SHALL COORDINATE THE LOCATION OF THE WATER FLOW AND TAMPER SWITCHES AND PLUMBING/DRAIN CONNECTIONS.

NOTIFICATION APPLIANCES
THE VISUAL NOTIFICATION APPLIANCES ARE LOCATED THROUGHOUT THE COMMON AREAS OF THE BUILDING. THE NOTIFICATION APPLIANCES WILL CONSIST OF STROBE LIGHT. THE SYSTEM WILL BE ACOUSTICALLY AUGMENTED TO MEET INTELLIGIBILITY REQUIREMENTS. THE TEMPORAL CODE THREE ALARM SIGNAL SHALL BE TRANSMITTED THROUGHOUT THE COMMON AREAS OF THE BUILDING TO SIGNAL THE OCCUPANTS TO EVACUATE FOLLOWED BY THREE ROUNDS OF A VOICE EVACUATION MESSAGE.

2.1 FIRE SUPPRESSION / ALARM SYSTEM NOTES (CONT.)

FIRE ALARM SYSTEM WIRING
ALL CONDUCTORS SHALL BE INSTALLED IN ELECTRICAL METALLIC TUBING (EMT) WITH STEEL COMPRESSION STYLE FITTINGS. UNLESS OTHERWISE DIRECTED IN THE SPECIFICATIONS, THE EMT SHALL BE FACTORY PAINTED THE COLOR RED, SHALL BE A MINIMUM OF 1-INCH AND SHALL BE INDEPENDENTLY SUPPORTED. FLEXIBLE CONDUIT "WHIPS" ARE PERMITTED FOR THE CONNECTION OF NOTIFICATION APPLIANCES FROM THE MAIN EMT AT LENGTHS NOT TO EXCEED 5-FEET. THE SIGNALING LINE AND NOTIFICATION APPLIANCE CIRCUITS ARE INSTALLED AS CLASS A, STYLE 6 AND CLASS A, STYLE Z RESPECTIVELY.

THE CONTRACTOR SHALL INSTALL A MOCK-UP OF THE EMT INSTALLATION FOR APPROVAL BY THE PROJECT/PROGRAM MANAGER.

ALL EXTERIOR FIRE ALARM CONDUIT SHALL BE RIGID.

COMBINATION FIRE SMOKE DAMPERS
THE CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR THE LOCATION OF THE CONTROL MODULE FOR THE COMBINATION FIRE SMOKE DAMPERS.

2.2FIRE ALARM SYSTEM / EMERGENCY COMMUNICATION SYSTEM NOTES

COMPONENTS PROVIDED UNDER THIS PROJECT SHALL BE COMPATIBLE WITH AND CONNECTED TO THE PAGING SYSTEM LOCATED IN THE IDF ROOM.

REMOTE AMPLIFICATION ROOMS SHALL BE CONFIGURED TO MATCH THE CONSTRUCTION OF THE FIRE COMMAND CENTER. THIS WILL INCLUDE A 2-HOUR FIRE RESISTANCE RATED CONSTRUCTION.

THE VOICE PAGING SYSTEM (VPS) PROVIDES PAGING AND EMERGENCY ANNOUNCEMENTS THROUGHOUT THE BUILDING.

THE SYSTEM PROVIDES AMBIENT NOISE SENSORS AND MONITORING WHICH ALLOW AUTOMATIC LEVEL CONTROL OF INDIVIDUAL LOUDSPEAKER ZONES LOCATED IN THE PUBLIC AREAS.

THE MONITOR / TEST SYSTEM IS CAPABLE OF MONITORING AND / OR TESTING ALL AUDIO OR DC SIGNAL, SPEAKER LEVEL OUTPUTS, OR SYSTEM WIRING TO ENSURE INTEGRITY AND RELIABLE OPERATION. ALL LINE LEVEL ZONE INPUTS AND OUTPUTS; EQUALIZER INPUTS AND OUTPUTS; AND, AMPLIFIER INPUTS AND OUTPUTS MUST BE MONITORED FOR CORRECT OPERATION.

THE VPS SHALL BE INTEGRATED WITH AND SUPPLEMENT THE BUILDING FIRE ALARM SYSTEM (BFS). THE INTERFACE WITH THE BFS WILL ENABLE THE USE OF THE VPS's MESSAGE LIBRARY, POWER AMPLIFIERS, AND LOUDSPEAKER IN PUBLIC AREAS. THE TRIGGERING OF MESSAGES VIA THE BFS CONTACT CLOSURES WILL ENABLE THE VPS TO BROADCAST INCIDENT SPECIFIC MESSAGES INTO PRE-DESIGNATED AUDIO ZONES.

THE OUTPUT OF EACH AMPLIFIER MUST GO THROUGH A TERMINAL CABINET. THE NETWORK ALLOWS LOUDSPEAKER LOADS TO BE DISCONNECTED FROM THE AMPLIFIER OUTPUTS FOR MANUAL MEASUREMENT OF LOAD IMPEDANCES BY AIRPORT MAINTENANCE PERSONNEL.

ALL LOUDSPEAKERS OPERATE ON A 70 VOLT DISTRIBUTED SYSTEM. HIGHER VOLTAGE DISTRIBUTION (100 VOLT OR HIGHER) MAY BE USED TO REDUCE CONDUIT CABLE FILL AND REMAIN WITHIN THE ALLOWED 0.5 dB LINE LOSS LIMIT. THE LOUDSPEAKER SHALL BE GROUPED IN MODULAR ZONES ALLOWING MAXIMUM FLEXIBILITY FOR PAGING AREA ASSIGNMENTS.

LOCAL PA ROOMS WITHIN THE BUILDING SHALL BE INTERCONNECTED VIA FIBER OPTIC CABLE TO THE BUILDING VPS CONTROL ROOM. INSTALL SPACE FIBER-OPTIC CABLES.

2.3WATER BASED SYSTEMS

FIRE SPRINKLER
A HYDRAULICALLY DESIGNED AUTOMATIC FIRE SPRINKLER SYSTEM WILL BE PROVIDED THROUGHOUT THE ENTIRE BUILDING, DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 13 - 2013 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.

THE HAZARD CRITERIA AND SPECIFICATIONS OF THE FIRE SPRINKLER SYSTEM. THE NFPA 13 CODE CRITERION IS AS FOLLOWS:

TABLE 1 - SPRINKLER HAZARD CRITERIA

AREA DESCRIPTION	HAZARD CLASSIFICATION	MINIMUM DESIGN CRITERIA
STORAGE, UTILITY AND PLATFORM	ORDINARY (GROUP 1)	0.15 GPM/SQFT OVER 1500 SQFT*
PORTE COCHERE	ORDINARY (GROUP 2)	0.20 GPM/SQFT OVER 1500 SQFT**

* THE AREA OF SLOPED CEILINGS THAT EXCEED 2/12 SHALL BE INCREASED BY 30 PERCENT WITHOUT REVISING THE DENSITY.
** PORTE COCHERE SHALL HAVE K-8.0 OR K-11.2 SPRINKLERS (TBD)

QUICK RESPONSE SPRINKLERS SHALL BE USED THROUGHOUT.

CONTROL VALVES AND WATER-FLOW DEVICES SHALL BE PROVIDED AT THE VERTICAL CONNECTION OF THE RISER.

VALVE AND WATER-FLOW DEVICES WILL BE ELECTRONICALLY MONITORED. ALARM, SUPERVISORY AND TROUBLE SIGNALS WILL BE DISTINCTLY DIFFERENT AND WILL BE AUTOMATICALLY TRANSMITTED TO THE FIRE ALARM CONTROL UNIT.

ALL SPRINKLER ALARM AND SUPERVISION DEVICES SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM AND IDENTIFIED BY ZONE OR LOCATION AS APPROPRIATE. SPRINKLER WATERFLOW ALARM DEVICES SHALL BE ACTIVATED BY WATERFLOW EQUIVALENT TO THE FLOW OF A SINGLE SPRINKLER OF THE SMALLEST ORIFICE SIZE INSTALLED IN THE SYSTEM. ACTUATION OF THE AUTOMATIC SPRINKLER SYSTEM WILL ACTUATE THE BUILDING ECS.

MANUALLY OPERATED SPRINKLER CONTROL VALVES SHALL BE OS&Y TYPE GATE VALVES. ALLCONTROL VALVES SHALL BE SUPERVISED WITH A TAMPER SWITCH.

SYSTEM PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE AS DEFINED AND SPECIFIED BY NFPA 13. SYSTEM PIPING OUTSIDE OF ANY CONDITIONED SPACE SHALL BE A MINIMUM 2-INCH, PAINTED, AND WITH FLANGED FITTINGS UP TO THE CONNECTION ON THE INTERIOR OF THE BUILDING. SYSTEM PIPING UPSTREAM OF ANY RISER CHECK VALVE SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH FLANGED, THREADED, CUT-GROOVE OR WELDED JOINTS. PIPING UPSTREAM OF THE BACKFLOW PREVENTER SHALL BE SCHEDULE 40, PAINTED, BLACK STEEL PIPE.

2.3WATER BASED SYSTEMS (CONT.)

REDUCERS SHALL ONLY BE TAPERED TYPE FITTINGS, GROOVE REDUCING COUPLINGS ARE PROHIBITED.

SPRINKLERS SHALL BE USED IN ACCORDANCE WITH THEIR LISTED SPACING LIMITATIONS. SPRINKLERS IN HIGH-HEAT AREAS OR IN CLOSE PROXIMITY TO HEATERS SHALL HAVE A TEMPERATURE CLASSIFICATION IN ACCORDANCE WITH NFPA 13. SPRINKLERS IN NON-CONDITIONED SPACES SHALL BE INTERMEDIATE TEMPERATURE RATED UNLESS A HIGHER TEMPERATURE RATING IS REQUIRED BY NFPA 13.

THE ENTIRE SPRINKLER SYSTEM (INCLUDING ALL EQUIPMENT) SHALL BE PROTECTED IN ACCORDANCE WITH NFPA 13. REQUIREMENTS FOR PROTECTING PIPE WHERE SUBJECT TO FREEZING TEMPERATURES OR DAMAGE FROM EARTH QUAKES REGARDLESS OF SEISMIC ZONE APPLY. SWAY BRACING FOR THE RISER SHALL NOT BE ATTACHED TO AN OUTSIDE WALL.

SYSTEM ACCEPTANCE TESTING SHALL FOLLOW THE REQUIREMENTS OF NFPA 13 AND THE APPLICABLE PROJECT SPECIFICATIONS.

SPRINKLER HEAD GUARDS SHALL BE REQUIRED IN ALL ELECTRICAL AND COMMUNICATION EQUIPMENT ROOMS AND IN ALL AREAS OF THE STRUCTURE WHERE THEY ARE 6-FEET OR LESS FROM THE FINISHED FLOOR.

ALL PIPE SHALL BE CONCEALED FROM VIEW UNLESS LOCATED IN ROOMS WITHOUT CEILINGS. MARK ALL INTERIOR PIPE AT 25-FOOT INTERVALS WITH PLASTIC WRAP AROUND TYPE PIPE LABELS CONFORMING TO ASME / ANSI A13.1 "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS". LABELS ARE NOT REQUIRED ON SPRINKLER SYSTEM BRANCH LINES 2-INCHES OR LESS IN NOMINALSIZE. LABEL WET PIPE SPRINKLER PIPE "FIRE WATER".

ALL SPRINKLER PIPES CONNECTED TO SPRINKLER HEADS OUTSIDE THE BUILDING ENVELOPE WITH NO LESS THAN A 2-INCH DIAMETER.

STANDPIPE CONNECTIONS
CLASS I STANDPIPE CONNECTIONS ARE LOCATED WHERE SHOWN ON THE DRAWINGS. THE CONNECTIONS ARE 2.5-INCH CONNECTIONS FOR FIRE DEPARTMENT USE.

ADDITIONAL CLASS I HOSE CONNECTIONS SHALL BE PROVIDED WHERE THE TRAVEL DISTANCE BETWEEN HOSE CONNECTIONS IS GREATER THAN 130-FEET.

FIRE PUMP
EXISTING 1000GPM @ 100PSI. INSTALLING CONTRACTOR SHALL OBTAIN A CURRENT FLOW TEST. FOR REFERENCE - OUTDATED FLOW TEST INFORMATION IS 78 STATIC, 76 RESIDUAL @ 1340GPM.

3. SPECIALIZED FIRE PROTECTION EQUIPMENT - SEQUENCE OF OPERATIONS

3.1. DOUBLE INTERLOCK PRE-ACTION SPRINKLER SYSTEM
THE IDF ROOMS WILL BE PROTECTED BY DOUBLE INTERLOCK PRE-ACTION SPRINKLER SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL A UL LISTED FM APPROVED DOUBLE INTERLOCK PRE-ACTION VALVE ASSEMBLY. ACTIVATION OF THE VALVE TO BE ACCOMPLISHED BY THE ACTIVATION OF A HEAT DETECTOR AND THE FUSING OF A PRE-ACTION SYSTEM SPRINKLER HEAD AT THE SAME TIME.
THE OPENING OF THE DELUGE VALVE SHALL NOT BE DEPENDENT ON THE ORDER OF ACTIVATION OF THE RELEASE DEVICES, ONLY THAT BOTH DEVICES MUST ACTIVATE BEFORE THE DELUGE VALVE WILL OPEN.

4. SYSTEM TESTING

4.1. TESTING CRITERIA
THE AUTOMATIC FIRE DETECTION, ALARM, AND SUPPRESSION SYSTEMS WILL HAVE A 100% ACCEPTANCE TEST PERFORMED BY THE INSTALLING CONTRACTORS IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF NFPA 72-2013, NFPA13 - 2013, NFPA 2001 - 2012, AND NFPA 20 - 2013.

SPRINKLER SCHEDULE

Description	Count
Quick Response Concealed Pendent	459
Quick Response Pendent	15
Quick Response Recessed Horizontal Sidewall Sprinkler	1
Quick Response Upright Sprinkler	96
	571

Registered Professional Engineer — Fire Protection — 38169 — MICHAEL J. WOJCIK — Date Signed 7/11/18 — ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

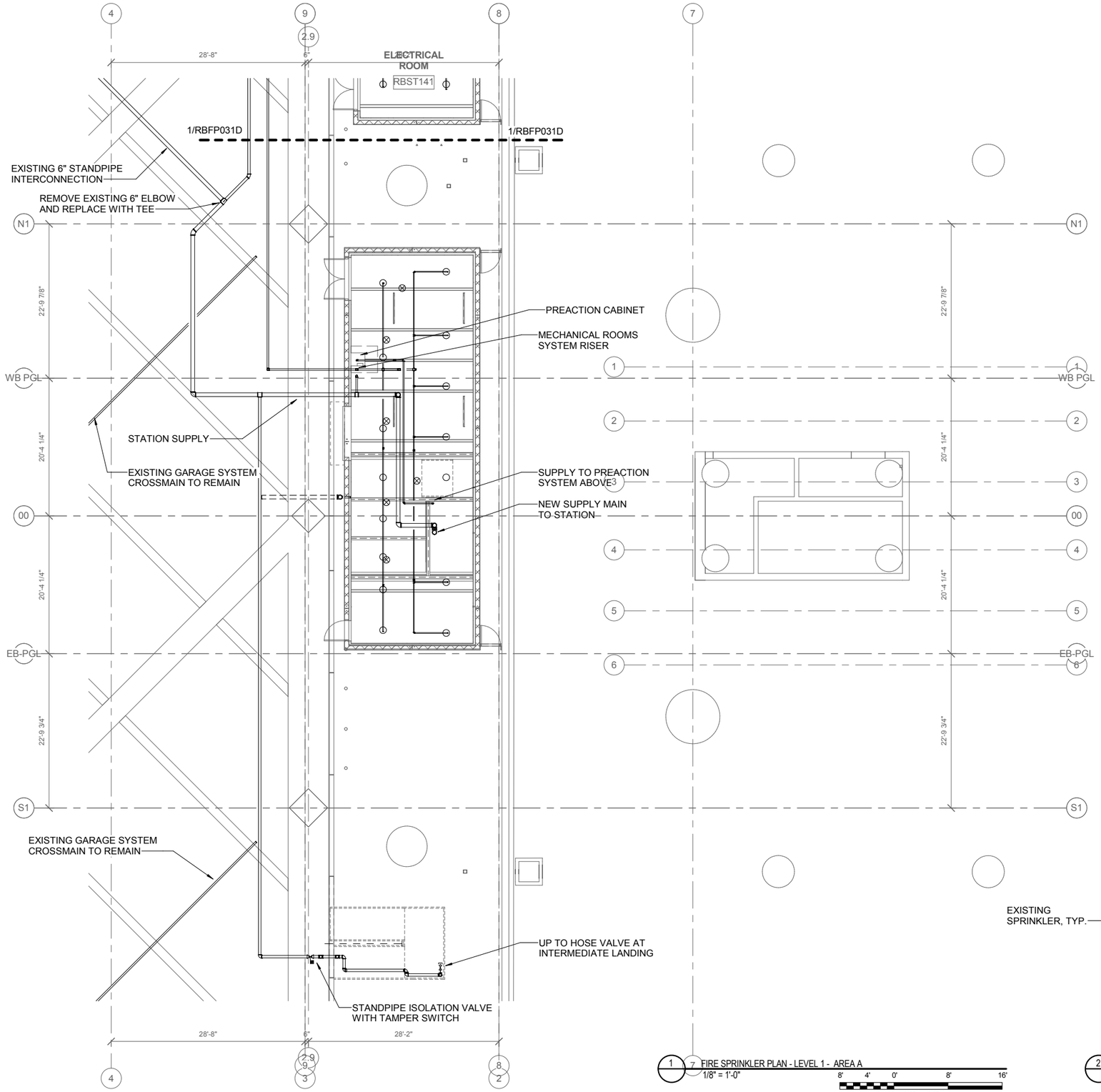
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KIVA No.: 07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
FIRE SPRINKLER PLAN
DESIGN NARRATIVE

Package: B04 - RBFP0001
Sheet Reference No:
V6 - 111 of 260

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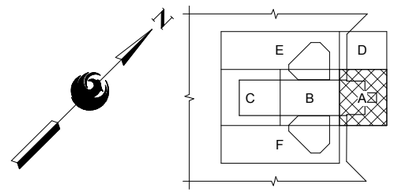
- FIRE SPRINKLER SYSTEM RISER
- PENDENT SPRINKLER
- UPRIGHT SPRINKLER
- 10" 120VAC ELECTRIC BELL (WIRING BY OTHERS)
- FIRE DEPARTMENT CONNECTION 4"x2-1/2"x2-1/2" (WITH PHOENIX HOSE THREAD)
- FCA FIRE SPRINKLER SYSTEM CONTROL VALVE ASSEMBLY
- FHV FIRE SPRINKLER SYSTEM HOSE VALVE

GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE IN ACCORDANCE WITH THE AZBTR REGULATIONS. THE SYSTEM DESIGN OUTLINED IN THESE DRAWINGS IS INTENDED TO BE USED FOR INFORMATION ONLY AND TO SHOW POTENTIAL SYSTEM ARRANGEMENT. INSTALLING CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN/INSTALLATION OF THE SYSTEM. THE SYSTEM MUST BE COORDINATED WITH OTHER TRADES IN ACCORDANCE WITH THE SPECIFICATIONS AND APPLICABLE CODES.
2. IN ORDER TO COMPLY WITH THE REQUIREMENTS OF THE NEC, FINAL LOCATION OF SPRINKLER PIPING SHALL BE COORDINATED WITH GENERAL CONTRACTOR, TRAIN SUPPLIER, AND ELECTRICAL CONTRACTOR.
3. SPRINKLER HEAD TYPE AND FINISH TO BE SPECIFIED BY ARCHITECT.
4. POINT OF CONNECTION FOR FIRE SPRINKLER CONTRACTOR SHALL BE IN LOCATED AT RCC STAND PIPE INTERCONNECTION AT LEVEL 2.
5. ADDITIONAL SPRINKLERS MAY BE REQUIRED BASED UPON THE FINAL LAYOUT OF THE MECHANICAL SYSTEMS (TYPICAL FOR ALL MECHANICAL SPACES).
6. THE SPRINKLER HEADS ARE SHOWN FOR POSITION ONLY. FURTHER DEVELOPMENT OF PIPE SUPPLY SIZE AND LOCATION IS REQUIRED.

SCOPE OF WORK

1. INSTALL A NEW AUTOMATIC WET FIRE SPRINKLER SYSTEM THROUGHOUT BUILDING.



KEY PLAN

Registered Professional Engineer
38169
MICHAEL J. WOJCIK
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
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Design Consultant
Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
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PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

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Drawn by:	ML/DS
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Date:	07/13/2018
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CIP No.:	AV100000011
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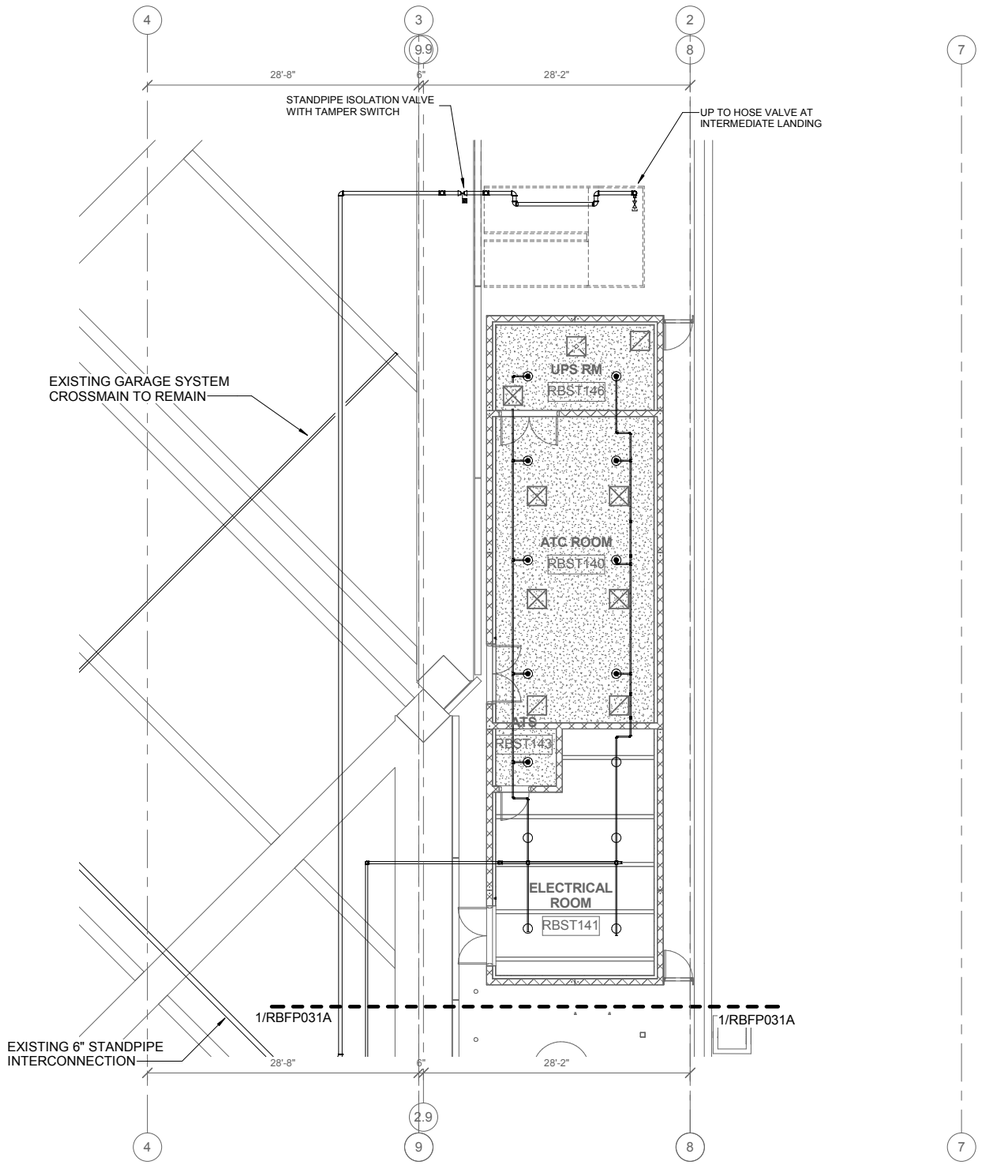
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
FIRE SPRINKLER PLAN
LEVEL 1 - AREA A

Package: **B04 - RBFP031A**

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V6 - 112 of 260

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SYMBOL LEGEND

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- ◉ PENDENT SPRINKLER
- ○ UPRIGHT SPRINKLER
- 10" 120VAC ELECTRIC BELL (WIRING BY OTHERS)
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GENERAL NOTES

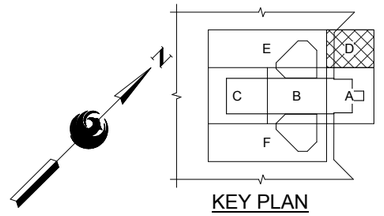
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SCOPE OF WORK

1. INSTALL A NEW AUTOMATIC WET FIRE SPRINKLER SYSTEM THROUGHOUT BUILDING.

1 FIRE SPRINKLER PLAN - LEVEL 1 - AREA D
1/8" = 1'-0"

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



KEY PLAN

Registered Professional Engineer
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
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CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
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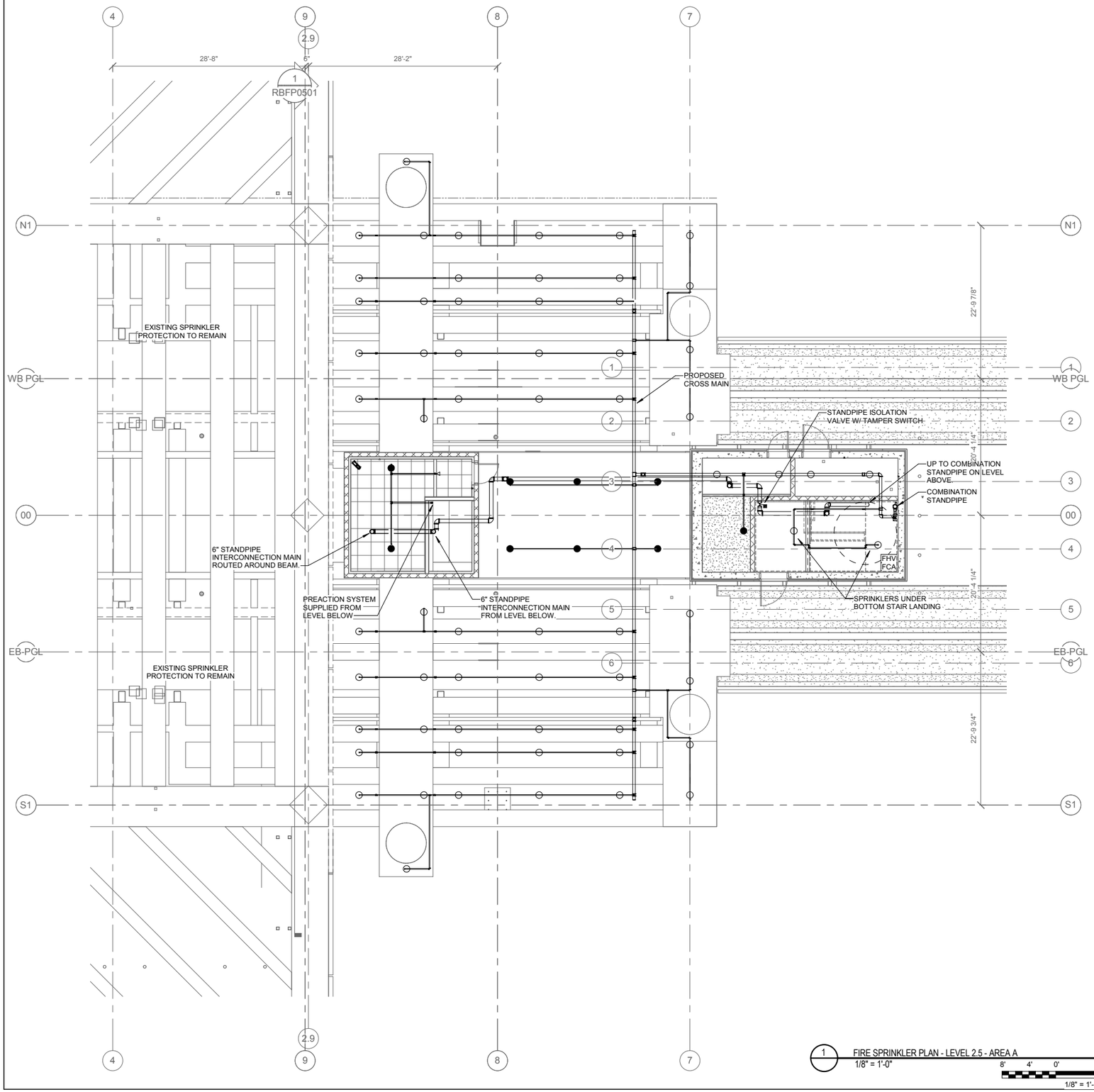
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STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
FIRE SPRINKLER PLAN
LEVEL 1 - AREA D

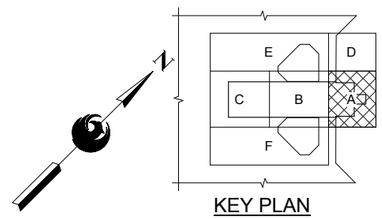
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Central File: BIM 360://62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt



1 FIRE SPRINKLER PLAN - LEVEL 2.5 - AREA A
1/8" = 1'-0"

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



KEY PLAN

SYMBOL LEGEND

- ⊗ FIRE SPRINKLER SYSTEM RISER
- ◉ PENDENT SPRINKLER
- ○ UPRIGHT SPRINKLER
- 10" 120VAC ELECTRIC BELL (WIRING BY OTHERS)
- FIRE DEPARTMENT CONNECTION 4"x2-1/2"x2-1/2" (WITH PHOENIX HOSE THREAD)
- FCA FIRE SPRINKLER SYSTEM CONTROL VALVE ASSEMBLY
- FHV FIRE SPRINKLER SYSTEM HOSE VALVE

GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE IN ACCORDANCE WITH THE AZBTR REGULATIONS. THE SYSTEM DESIGN OUTLINED IN THESE DRAWINGS IS INTENDED TO BE USED FOR INFORMATION ONLY AND TO SHOW POTENTIAL SYSTEM ARRANGEMENT. INSTALLING CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN/INSTALLATION OF THE SYSTEM. THE SYSTEM MUST BE COORDINATED WITH OTHER TRADES IN ACCORDANCE WITH THE SPECIFICATIONS AND APPLICABLE CODES.
2. IN ORDER TO COMPLY WITH THE REQUIREMENTS OF THE NEC, FINAL LOCATION OF SPRINKLER PIPING SHALL BE COORDINATED WITH GENERAL CONTRACTOR, TRAIN SUPPLIER, AND ELECTRICAL CONTRACTOR.
3. SPRINKLER HEAD TYPE AND FINISH TO BE SPECIFIED BY ARCHITECT.
4. POINT OF CONNECTION FOR FIRE SPRINKLER CONTRACTOR SHALL BE IN LOCATED AT RCC STAND PIPE INTERCONNECTION AT LEVEL 2.
5. ADDITIONAL SPRINKLERS MAY BE REQUIRED BASED UPON THE FINAL LAYOUT OF THE MECHANICAL SYSTEMS (TYPICAL FOR ALL MECHANICAL SPACES).
6. THE SPRINKLER HEADS ARE SHOWN FOR POSITION ONLY. FURTHER DEVELOPMENT OF PIPE SUPPLY SIZE AND LOCATION IS REQUIRED.

SCOPE OF WORK

1. INSTALL A NEW AUTOMATIC WET FIRE SPRINKLER SYSTEM THROUGHOUT BUILDING.

Registered Professional Engineer
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4336, THESE PLANS ARE FOR REVIEW PURPOSES ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

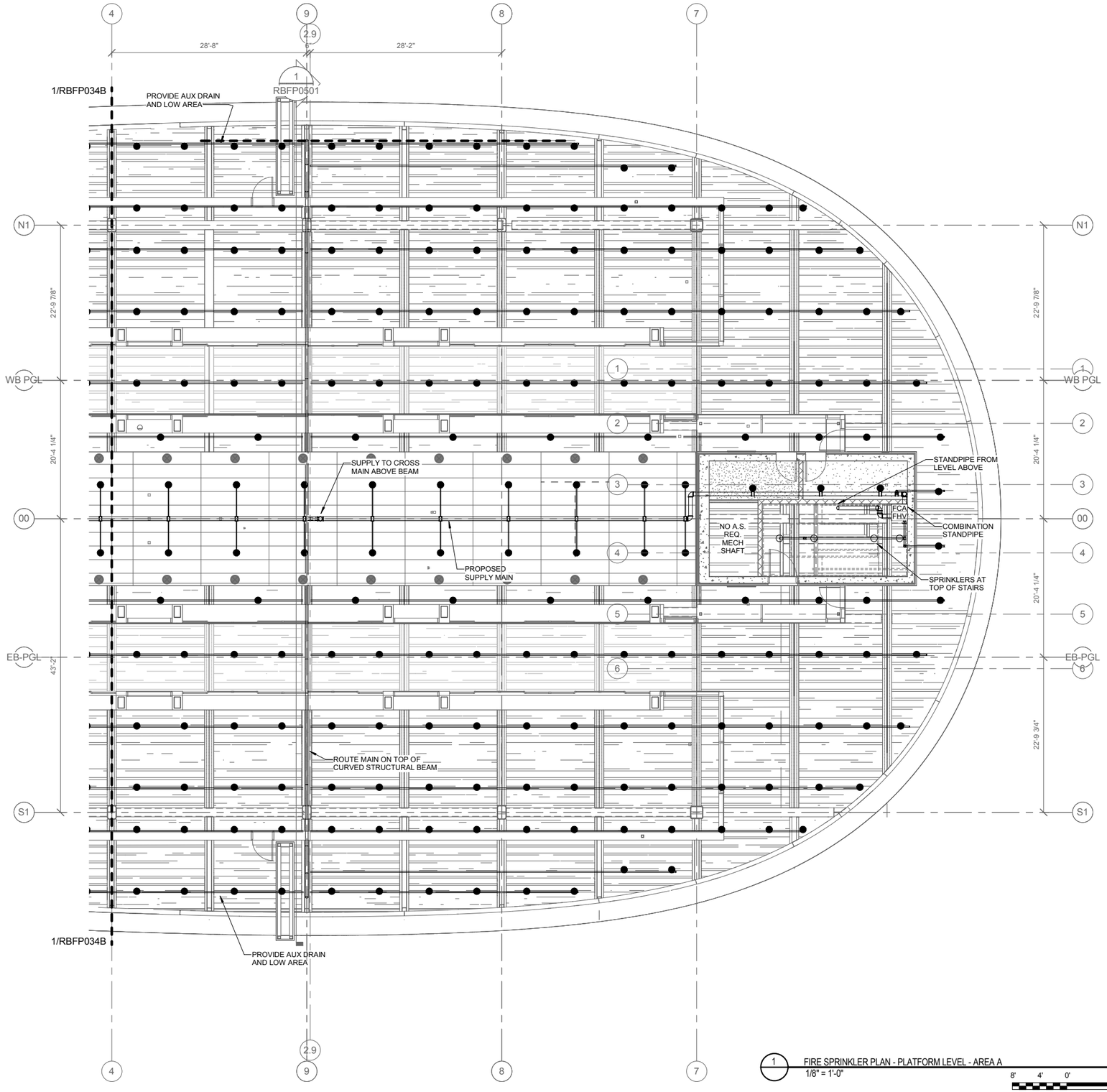
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Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
FIRE SPRINKLER PLAN
LEVEL 2.5 - AREA A

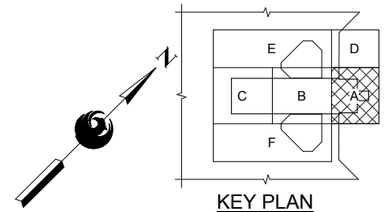
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Project Number: 62421
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1 FIRE SPRINKLER PLAN - PLATFORM LEVEL - AREA A
1/8" = 1'-0"

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



KEY PLAN

SYMBOL LEGEND

- ⊗ FIRE SPRINKLER SYSTEM RISER
- ◉ PENDENT SPRINKLER
- ○ UPRIGHT SPRINKLER
- FIRE SPRINKLER SYSTEM HOSE VALVE
- 10" 120VAC ELECTRIC BELL (WIRING BY OTHERS)
- FIRE DEPARTMENT CONNECTION 4"x2-1/2"x2-1/2" (WITH PHOENIX HOSE THREAD)
- FCA FIRE SPRINKLER SYSTEM CONTROL VALVE ASSEMBLY
- FHV FIRE SPRINKLER SYSTEM HOSE VALVE

GENERAL NOTES

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4. POINT OF CONNECTION FOR FIRE SPRINKLER CONTRACTOR SHALL BE IN LOCATED AT RCC STAND PIPE INTERCONNECTION AT LEVEL 2.
5. ADDITIONAL SPRINKLERS MAY BE REQUIRED BASED UPON THE FINAL LAYOUT OF THE MECHANICAL SYSTEMS (TYPICAL FOR ALL MECHANICAL SPACES).
6. THE SPRINKLER HEADS ARE SHOWN FOR POSITION ONLY. FURTHER DEVELOPMENT OF PIPE SUPPLY SIZE AND LOCATION IS REQUIRED.

SCOPE OF WORK

1. INSTALL A NEW AUTOMATIC WET FIRE SPRINKLER SYSTEM THROUGHOUT BUILDING.

Registered Professional Engineer
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

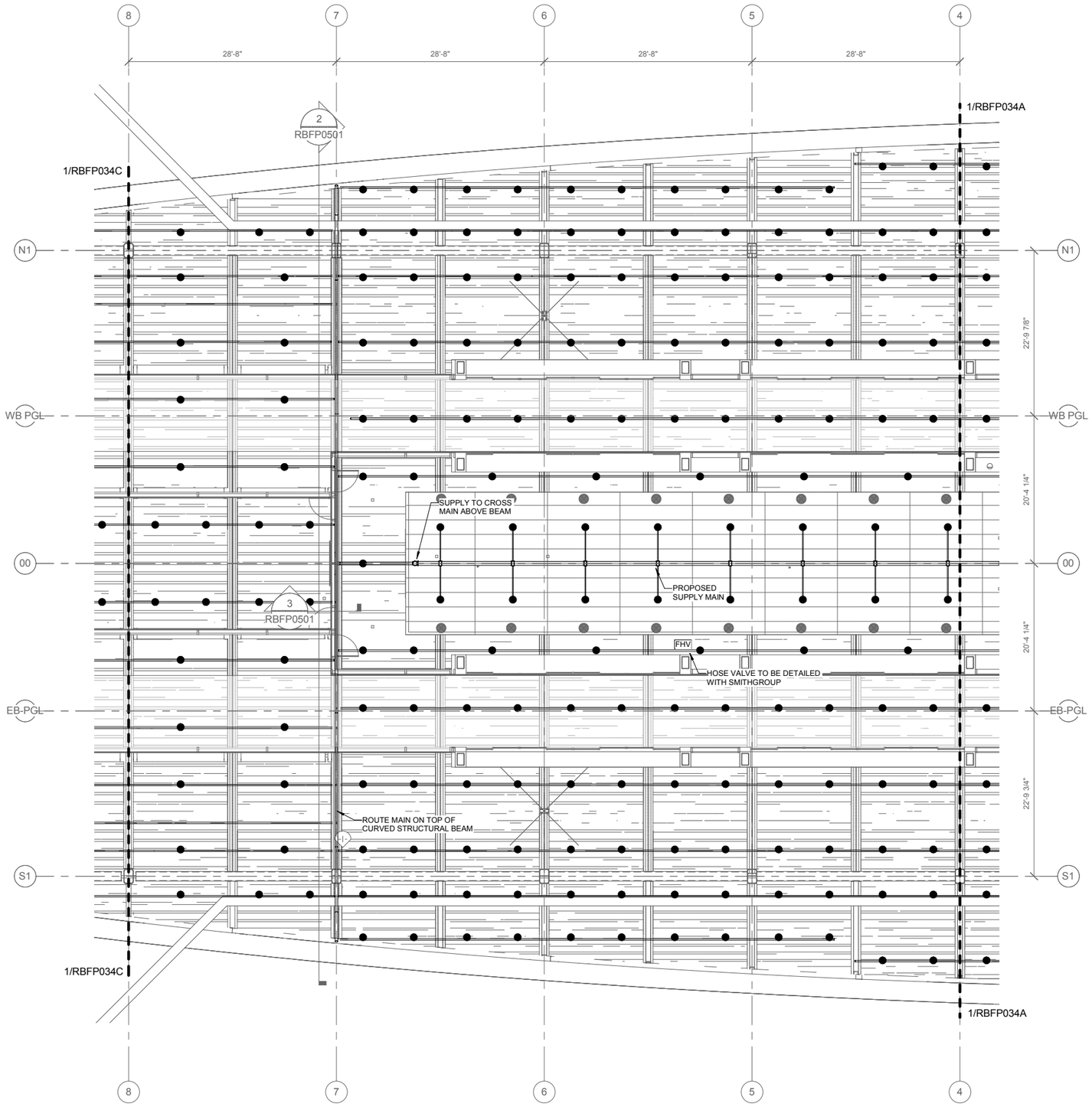
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Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
FIRE SPRINKLER PLAN
PLATFORM LEVEL - AREA A

Package: B04 - RBFP034A
Sheet Reference No: V6 - 115 of 260

Project Number: 62421
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1 FIRE SPRINKLER PLAN - PLATFORM LEVEL - AREA B
1/8" = 1'-0"

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

SYMBOL LEGEND

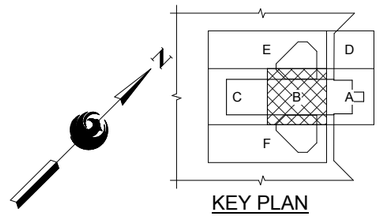
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- ◉ PENDENT SPRINKLER
- ○ UPRIGHT SPRINKLER
- BELL 10" 120VAC ELECTRIC BELL (WIRING BY OTHERS)
- FDC FIRE DEPARTMENT CONNECTION 4"x2-1/2"x2-1/2" (WITH PHOENIX HOSE THREAD)
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SCOPE OF WORK

1. INSTALL A NEW AUTOMATIC WET FIRE SPRINKLER SYSTEM THROUGHOUT BUILDING.



KEY PLAN

Registered Professional Engineer
MICHAEL J. WOJCIK
36169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

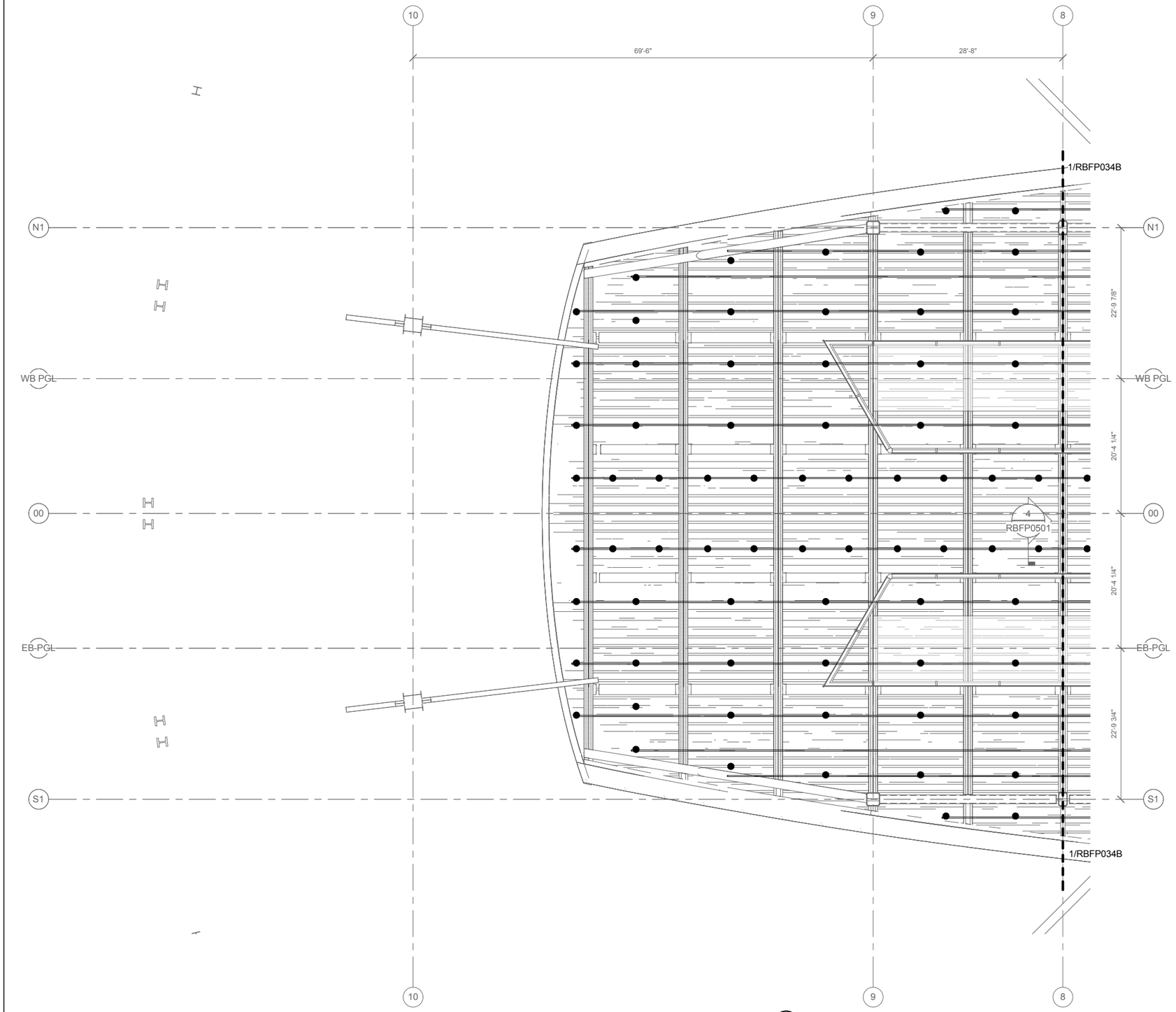
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Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
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CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
FIRE SPRINKLER PLAN
PLATFORM LEVEL - AREA B

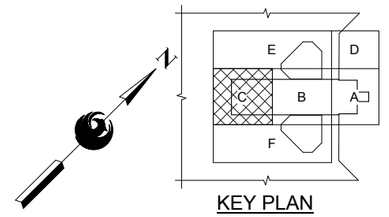
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Project Number: 62421
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1 FIRE SPRINKLER PLAN - PLATFORM LEVEL - AREA C
1/8" = 1'-0"

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



KEY PLAN

SYMBOL LEGEND

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- ◉ PENDENT SPRINKLER
- ○ UPRIGHT SPRINKLER
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SCOPE OF WORK

1. INSTALL A NEW AUTOMATIC WET FIRE SPRINKLER SYSTEM THROUGHOUT BUILDING.

Registered Professional Engineer (Fire Protection)
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ML/DS
Drawn by:	ML/DS
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Date:	07/13/2018
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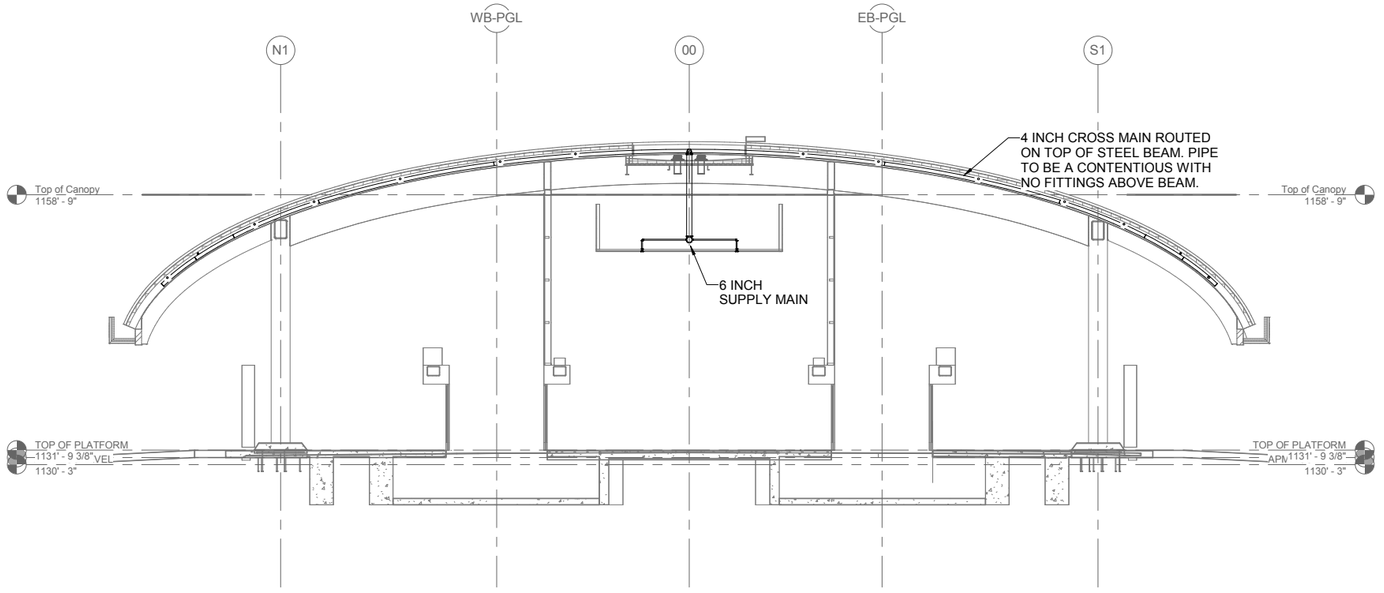
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
FIRE SPRINKLER PLAN
PLATFORM LEVEL - AREA C

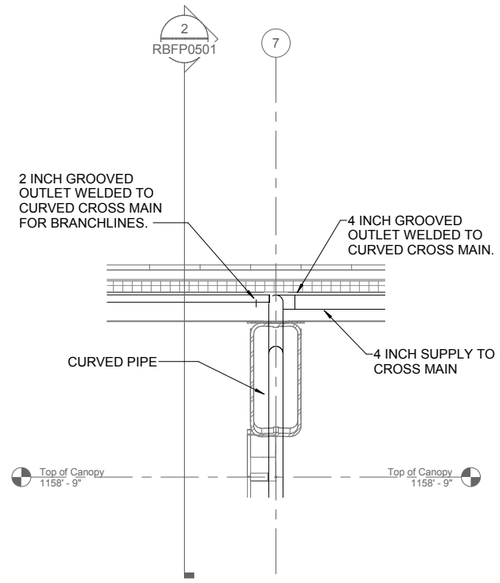
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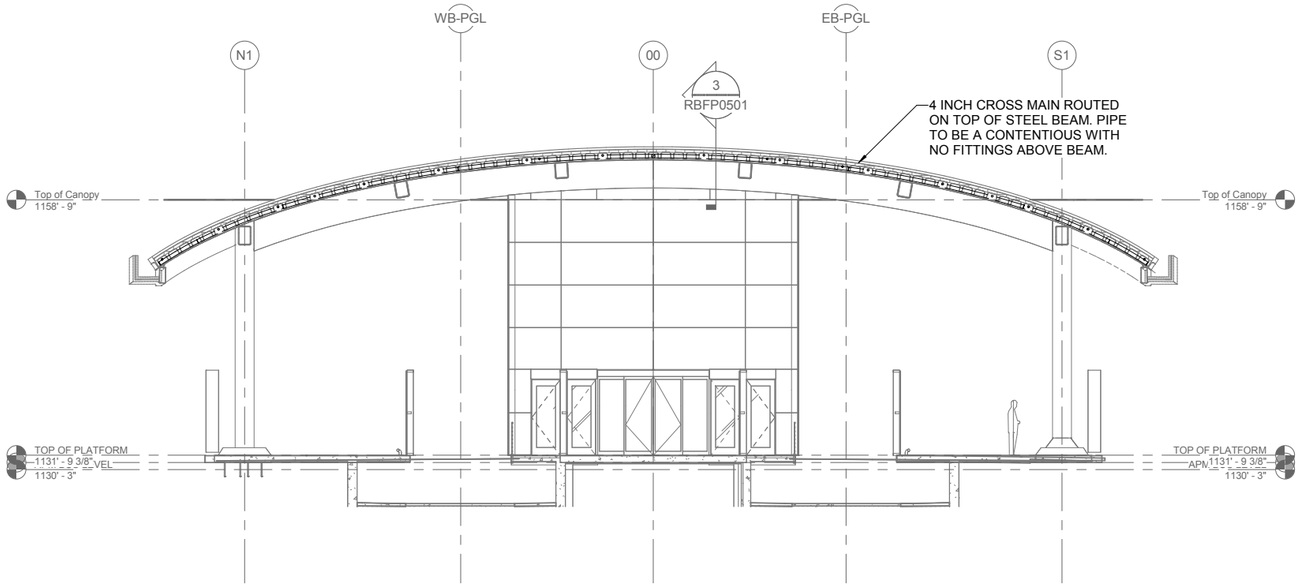
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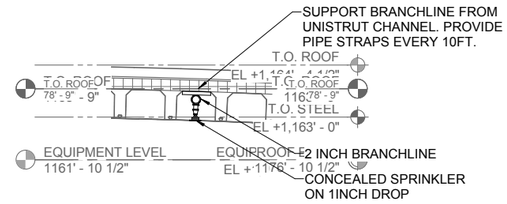
1 RBFA032A FIRE SPRINKLER MAIN @ GRID 3 1/8" = 1'-0"



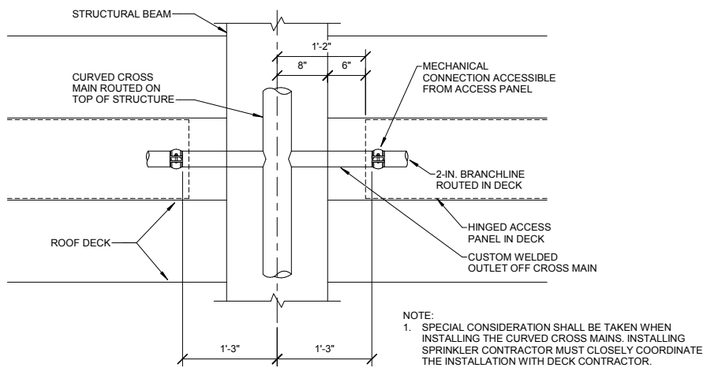
3 RBFP034B FIRE SPRINKLER MAIN SECTION 1/2" = 1'-0"



2 RBFP034B FIRE SPRINKLER MAIN @ GRID 7 1/8" = 1'-0"



4 RBFP034B FIRE SPRINKLER BRANCHLINE SECTION 1/2" = 1'-0"



NOTE:
1. SPECIAL CONSIDERATION SHALL BE TAKEN WHEN INSTALLING THE CURVED CROSS MAINS. INSTALLING SPRINKLER CONTRACTOR MUST CLOSELY COORDINATE THE INSTALLATION WITH DECK CONTRACTOR.

5 RBFP0501 **PIPING DETAIL** SCALE: 1" = 1'-0"

Registered Professional Engineer — Fire Protection — 38169 — MICHAEL J. WOJCIK — Date Signed 7/11/18 — ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE SPRINKLER
DETAILS AND SECTIONS

Package: B04 - RBFP0501
Sheet Reference No: V6 - 118 of 260

Project Number: 62421
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Central File: BIM 360/62421 - Phoenix Sky Train Project - Stage 2/06241_FR01_S_central_R17_A360.rvt

1. BASIS OF DESIGN

1.1. BUILDING DESCRIPTION
MULTI-STORY, TYPE I-A NONCOMBUSTIBLE CONSTRUCTION. ASSEMBLY USE GROUP OCCUPANCY. SEE THE PROJECT FLSR FOR DISCUSSION ON THE CONSTRUCTION TYPE.

1.2. GOVERNING CODES, STANDARDS, AND DOCUMENTATION
THE APPLICABLE SECTIONS OF THE FOLLOWING CODES AND STANDARDS GOVERN THE DESIGN AND INSTALLATION OF THE FIRE PROTECTION SYSTEMS ARE:
- INTERNATIONAL BUILDING CODE (IBC) - 2012 WITH CITY OF PHOENIX AMENDMENTS;
- INTERNATIONAL FIRE CODE (IFC) - 2012 WITH CITY OF PHOENIX AMENDMENTS;
- NFPA 13 - 2013, INSTALLATION OF SPRINKLER SYSTEMS;
- NFPA 70 - 2011, NATIONAL ELECTRICAL CODE WITH CITY OF PHOENIX AMENDMENTS;
- NFPA 72 - 2013, NATIONAL FIRE ALARM CODE;
- NFPA 2001 - 2012, CLEAN AGENT FIRE EXTINGUISHING SYSTEMS.

IN ADDITION, THE FOLLOWING DOCUMENTS GOVERN THE DESIGN AND INSTALLATION OF THE FIRE DETECTION, COMMUNICATION, AND FIRE SUPPRESSION SYSTEMS:
- TECHNICAL SPECIFICATIONS;

1.1. DESIGN RESPONSIBILITY
JENSEN HUGHES IS PROVIDING FIRE PROTECTION ENGINEERING DESIGN SERVICES TO GANNETT FLEMING, PHOENIX, ARIZONA. THE SERVICES INCLUDE THE AUTOMATIC FIRE DETECTION, ALARM, AND SPRINKLER SYSTEMS LAYOUT CONSISTING OF INITIATING DEVICES, REMOTE ALARM ANNUNCIATORS, REMOTE TEST SWITCHES, NOTIFICATION APPLIANCES, AND ASSOCIATED CONTROL EQUIPMENT.

1.2. FEATURES USED IN THE DESIGN METHODOLOGY OF
THE FIRE PROTECTION SYSTEMS WILL COMPLY WITH THE APPLICABLE SECTIONS OF THE REFERENCED CODES AND STANDARDS IDENTIFIED HEREIN. THE AUTOMATIC FIRE DETECTION AND EMERGENCY COMMUNICATION SYSTEM IS DESIGNED TO NOTIFY THE AVIATION COMMUNICATIONS CENTER, THE PHOENIX FIRE DEPARTMENT, AND THE BUILDING OCCUPANTS OF A FIRE, SUPERVISE THE SYSTEM, AND PROVIDE LOCAL TROUBLE NOTIFICATION.

1.3. THESE DRAWINGS HAVE BEEN DEVELOPED UNDER THE REQUIREMENTS OF ARIZONA STATE LAW REGARDING REGISTRATION FOR FIRE PROTECTION ENGINEERING. THE DRAWINGS ARE NOT FOR CONSTRUCTION AND THE CONTRACTOR SHALL DEVELOP AND SUBMIT SHOP DRAWINGS FOR REVIEW AND GAIN APPROVAL IN ACCORDANCE WITH THE IFC 2012 WITH CITY OF PHOENIX AMENDMENTS, NFPA 13, NFPA 72, AND THE PROJECT SPECIFICATIONS.

2. SEQUENCE OF OPERATION

2.1. FIRE SUPPRESSION / ALARM SYSTEM
FIRE ALARM SYSTEM CONTROL UNIT
THIS PROJECT IS CONCERNED WITH INSTALLATION OF NEW HONEYWELL FIRE ALARM CONTROL UNIT (FACU) EQUIPMENT IN THE FCC. THE FACU WILL SERVE THE BUILDING AND THE PROTECTED AREAS THEREIN. THE LOCATION OF THE FACU WILL BE SHOWN ON THE DESIGN DOCUMENTS.

WHEN THE NEW FACU RECEIVES A SIGNAL FROM ANY MANUAL OR AUTOMATIC FIRE DETECTION DEVICE, THE NOTIFICATION APPLIANCES AND ALARM SIGNAL VIA ECS WILL ACTUATE THROUGHOUT THE BUILDING. ALL THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS SHALL BE TRANSMITTED TO THE CONSTANTLY ATTENDED AVIATION DEPARTMENT COMMUNICATIONS CENTER .

SMOKE DETECTORS
SPOT TYPE AND BEAM TYPE SMOKE DETECTORS WILL BE LOCATED WHERE REQUIRED BY THE IBC AND WILL BE SHOWN ON THE DESIGN DOCUMENTS. THERE ARE ALSO SMOKE DETECTORS SHOWN FOR THE CLEAN AGENT FIRE SUPPRESSION SYSTEM. THESE DETECTORS WILL BE SHOWN ON THE CLEAN AGENT SYSTEM DRAWINGS.

ALL FIRE ALARM CONTROL UNITS HAVE A FACTORY PROGRAMMED 60 SECOND VERIFICATION CYCLE. IF AFTER THE 60 SECONDS, A SMOKE DETECTOR CONTINUES TO SENSE SMOKE ABOVE THE PROGRAMMED ALARM THRESHOLD (I.E., DETECTOR SENSITIVITY), AN REMOTE ALARM SIGNAL WILL BE INITIATED AND ACTIVATION OF THE NOTIFICATION APPLIANCES SHALL OCCUR.

SEE THE SECTION ON SPECIALIZED FIRE PROTECTION EQUIPMENT FOR THE SEQUENCE OF OPERATIONS FOR THE CLEAN AGENT SYSTEM.

PORTABLE FIRE EXTINGUISHERS
THE INTERNATIONAL FIRE CODE - 2012 WITH CITY OF PHOENIX AMENDMENTS SECTION 906 INDICATES WHERE PORTABLE FIRE EXTINGUISHERS ARE REQUIRED. PORTABLE FIRE EXTINGUISHERS ARE REQUIRED IN THE ROOMS PROTECTED BY CLEAN AGENT SYSTEM, ELECTRICAL ROOMS, IT ROOMS, AND KITCHENS. A CODE MODIFICATION HAS BEEN APPLIED FOR TO EXEMPT THE ASSEMBLIES SPACES FROM THIS REQUIREMENT.

DUCT SMOKE DETECTORS
DUCT SMOKE DETECTORS ARE REQUIRED IN AIR HANDLING SYSTEMS THAT HAVE A CAPACITY AT OR GREATER THAN 2,000 CFM. FOR THOSE AREAS THAT ARE PROTECTED BY AREA SMOKE DETECTION, DUCT SMOKE DETECTORS ARE PERMITTED TO BE OMITTED.

SPRINKLER SYSTEM WATERFLOW AND CONTROL VALVE SUPERVISORY SWITCHES THE FIRE DETECTION SYSTEM DRAWINGS WILL SHOW THE CONCEPTUAL LOCATION OF THE SPRINKLER WATERFLOW AND CONTROL VALVE SUPERVISORY SWITCHES. WHEN A SPRINKLER WATERFLOW SWITCH IS ACTUATED, AN ALARM SIGNAL IS SENT TO THE FACU, WHICH WILL START THE GENERAL ALARM SEQUENCE THROUGHOUT THE BUILDING. THE ALARM SIGNAL SHALL LOCK AT THE FACU UNTIL ACKNOWLEDGEMENT AND SYSTEM RESET FUNCTIONS ARE USED. THERE IS NO VERIFICATION CYCLE ON A WATERFLOW SWITCH ACTUATION.

WHEN A SPRINKLER SUPERVISORY SWITCH IS ACTUATED, A SUPERVISORY SIGNAL IS SENT TO THE FACU. THE VALVE SUPERVISORY SWITCH SHALL ACTUATE BETWEEN 1/4 AND 1/2 TURN OF A CONTROL VALVE. THE SUPERVISORY SYSTEM SHALL RESET UPON VALVE RESTORATION. EACH TENANT SPACE WILL HAVE A DEDICATED TAMPER AND FLOW SWITCH THAT IS SUPERVISED.

SPRINKLER SYSTEM NOTES

THE ENTIRE STRUCTURE WILL BE 100% SPRINKLERED IN ACCORDANCE WITH NFPA13-2013. OPENINGS WILL USE CLOSELY SPACED SPRINKLERS. THE BOTTOM ESCALATOR PITS DO NOT REQUIRE SPRINKLERS. THE TOPS OF ELEVATOR SHAFTS DO NOT REQUIRE SPRINKLERS. ELEVATOR PITS DO NOT REQUIRE SPRINKLERS. ELEVATOR MACHINE ROOMS REQUIRE SPRINKLERS.

ALL IDF ROOMS SHALL BE PROTECTED WITH DOUBLE INTERLOCK PRE-ACTION SPRINKLER SYSTEMS.

THE FIRE ALARM AND FIRE SPRINKLER CONTRACTORS SHALL COORDINATE THE LOCATION OF THE WATER FLOW AND TAMPER SWITCHES AND PLUMBING/DRAIN CONNECTIONS.

NOTIFICATION APPLIANCES
THE VISUAL NOTIFICATION APPLIANCES ARE LOCATED THROUGHOUT THE COMMON AREAS OF THE BUILDING. THE NOTIFICATION APPLIANCES WILL CONSIST OF STROBE LIGHT. THE SYSTEM WILL BE ACOUSTICALLY AUGMENTED TO MEET INTELLIGIBILITY REQUIREMENTS. THE TEMPORAL CODE THREE ALARM SIGNAL SHALL BE TRANSMITTED THROUGHOUT THE COMMON AREAS OF THE BUILDING TO SIGNAL THE OCCUPANTS TO EVACUATE FOLLOWED BY THREE ROUNDS OF A VOICE EVACUATION MESSAGE.

2.1 FIRE SUPPRESSION / ALARM SYSTEM NOTES (CONT.)

FIRE ALARM SYSTEM WIRING
ALL CONDUCTORS SHALL BE INSTALLED IN ELECTRICAL METALLIC TUBING (EMT) WITH STEEL COMPRESSION STYLE FITTINGS. UNLESS OTHERWISE DIRECTED IN THE SPECIFICATIONS, THE EMT SHALL BE FACTORY PAINTED THE COLOR RED, SHALL BE A MINIMUM OF 1-INCH AND SHALL BE INDEPENDENTLY SUPPORTED. FLEXIBLE CONDUIT "WHIPS" ARE PERMITTED FOR THE CONNECTION OF NOTIFICATION APPLIANCES FROM THE MAIN EMT AT LENGTHS NOT TO EXCEED 5-FEET. THE SIGNALING LINE AND NOTIFICATION APPLIANCE CIRCUITS ARE INSTALLED AS CLASS A, STYLE 6 AND CLASS A, STYLE Z RESPECTIVELY.

THE CONTRACTOR SHALL INSTALL A MOCK-UP OF THE EMT INSTALLATION FOR APPROVAL BY THE PROJECT/PROGRAM MANAGER.

ALL EXTERIOR FIRE ALARM CONDUIT SHALL BE RIGID.

COMBINATION FIRE SMOKE DAMPERS
THE CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR THE LOCATION OF THE CONTROL MODULE FOR THE COMBINATION FIRE SMOKE DAMPERS.

2.2 FIRE ALARM SYSTEM / EMERGENCY COMMUNICATION SYSTEM NOTES

COMPONENTS PROVIDED UNDER THIS PROJECT SHALL BE COMPATIBLE WITH AND CONNECTED TO THE PAGING SYSTEM LOCATED IN THE IDF ROOM.

REMOTE AMPLIFICATION ROOMS SHALL BE CONFIGURED TO MATCH THE CONSTRUCTION OF THE FIRE COMMAND CENTER. THIS WILL INCLUDE A 2-HOUR FIRE RESISTANCE RATED CONSTRUCTION.

THE VOICE PAGING SYSTEM (VPS) PROVIDES PAGING AND EMERGENCY ANNOUNCEMENTS THROUGHOUT THE BUILDING.

THE SYSTEM PROVIDES AMBIENT NOISE SENSORS AND MONITORING WHICH ALLOW AUTOMATIC LEVEL CONTROL OF INDIVIDUAL LOUDSPEAKER ZONES LOCATED IN THE PUBLIC AREAS.

THE MONITOR / TEST SYSTEM IS CAPABLE OF MONITORING AND / OR TESTING ALL AUDIO OR DC SIGNAL, SPEAKER LEVEL OUTPUTS, OR SYSTEM WIRING TO ENSURE INTEGRITY AND RELIABLE OPERATION. ALL LINE LEVEL ZONE INPUTS AND OUTPUTS; EQUALIZER INPUTS AND OUTPUTS; AND, AMPLIFIER INPUTS AND OUTPUTS MUST BE MONITORED FOR CORRECT OPERATION.

THE VPS SHALL BE INTEGRATED WITH AND SUPPLEMENT THE BUILDING FIRE ALARM SYSTEM (BFS). THE INTERFACE WITH THE BFS WILL ENABLE THE USE OF THE VPS's MESSAGE LIBRARY, POWER AMPLIFIERS, AND LOUDSPEAKER IN PUBLIC AREAS. THE TRIGGERING OF MESSAGES VIA THE BFS CONTACT CLOSURES WILL ENABLE THE VPS TO BROADCAST INCIDENT SPECIFIC MESSAGES INTO PRE-DESIGNATED AUDIO ZONES.

THE OUTPUT OF EACH AMPLIFIER MUST GO THROUGH A TERMINAL CABINET. THE NETWORK ALLOWS LOUDSPEAKER LOADS TO BE DISCONNECTED FROM THE AMPLIFIER OUTPUTS FOR MANUAL MEASUREMENT OF LOAD IMPEDANCES BY AIRPORT MAINTENANCE PERSONNEL.

ALL LOUDSPEAKERS OPERATE ON A 70 VOLT DISTRIBUTED SYSTEM. HIGHER VOLTAGE DISTRIBUTION (100 VOLT OR HIGHER) MAY BE USED TO REDUCE CONDUIT CABLE FILL AND REMAIN WITHIN THE ALLOWED 0.5 dB LINE LOSS LIMIT. THE LOUDSPEAKER SHALL BE GROUPED IN MODULAR ZONES ALLOWING MAXIMUM FLEXIBILITY FOR PAGING AREA ASSIGNMENTS.

LOCAL PA ROOMS WITHIN THE BUILDING SHALL BE INTERCONNECTED VIA FIBER OPTIC CABLE TO THE BUILDING VPS CONTROL ROOM. INSTALL SPACE FIBER-OPTIC CABLES.

2.3WATER BASED SYSTEMS

FIRE SPRINKLER
A HYDRAULICALLY DESIGNED AUTOMATIC FIRE SPRINKLER SYSTEM WILL BE PROVIDED THROUGHOUT THE ENTIRE BUILDING, DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 13 - 2013 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.

THE HAZARD CRITERIA AND SPECIFICATIONS OF THE FIRE SPRINKLER SYSTEM. THE NFPA 13 CODE CRITERION IS AS FOLLOWS:

TABLE 1 - SPRINKLER HAZARD CRITERIA

AREA DESCRIPTION	HAZARD CLASSIFICATION	MINIMUM DESIGN CRITERIA
STORAGE, UTILITY AND PLATFORM	ORDINARY (GROUP 1)	0.15 GPM/SQFT OVER 1500 SQFT*
PORTE COCHERE	ORDINARY (GROUP 2)	0.20 GPM/SQFT OVER 1500 SQFT**

* THE AREA OF SLOPED CEILINGS THAT EXCEED 2/12 SHALL BE INCREASED BY 30 PERCENT WITHOUT REVISING THE DENSITY.
** PORTE COCHERE SHALL HAVE K-8.0 OR K-11.2 SPRINKLERS (TBD)

QUICK RESPONSE SPRINKLERS SHALL BE USED THROUGHOUT.

CONTROL VALVES AND WATER-FLOW DEVICES SHALL BE PROVIDED AT THE VERTICAL CONNECTION OF THE RISER.

VALVE AND WATER-FLOW DEVICES WILL BE ELECTRONICALLY MONITORED. ALARM, SUPERVISORY AND TROUBLE SIGNALS WILL BE DISTINCTLY DIFFERENT AND WILL BE AUTOMATICALLY TRANSMITTED TO THE FIRE ALARM CONTROL UNIT.

ALL SPRINKLER ALARM AND SUPERVISION DEVICES SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM AND IDENTIFIED BY ZONE OR LOCATION AS APPROPRIATE. SPRINKLER WATERFLOW ALARM DEVICES SHALL BE ACTIVATED BY WATERFLOW EQUIVALENT TO THE FLOW OF A SINGLE SPRINKLER OF THE SMALLEST ORIFICE SIZE INSTALLED IN THE SYSTEM. ACTUATION OF THE AUTOMATIC SPRINKLER SYSTEM WILL ACTUATE THE BUILDING ECS.

MANUALLY OPERATED SPRINKLER CONTROL VALVES SHALL BE OS&Y TYPE GATE VALVES. ALLCONTROL VALVES SHALL BE SUPERVISED WITH A TAMPER SWITCH.

SYSTEM PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE AS DEFINED AND SPECIFIED BY NFPA 13. SYSTEM PIPING OUTSIDE OF ANY CONDITIONED SPACE SHALL BE A MINIMUM 2-INCH, PAINTED, AND WITH FLANGED FITTINGS UP TO THE CONNECTION ON THE INTERIOR OF THE BUILDING. SYSTEM PIPING UPSTREAM OF ANY RISER CHECK VALVE SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH FLANGED, THREADED, CUT-GROOVE OR WELDED JOINTS. PIPING UPSTREAM OF THE BACKFLOW PREVENTER SHALL BE SCHEDULE 40, PAINTED, BLACK STEEL PIPE.

2.3 WATER BASED SYSTEMS (CONT.)

REDUCERS SHALL ONLY BE TAPERED TYPE FITTINGS, GROOVE REDUCING COUPLINGS ARE PROHIBITED.

SPRINKLERS SHALL BE USED IN ACCORDANCE WITH THEIR LISTED SPACING LIMITATIONS. SPRINKLERS IN HIGH-HEAT AREAS OR IN CLOSE PROXIMITY TO HEATERS SHALL HAVE A TEMPERATURE CLASSIFICATION IN ACCORDANCE WITH NFPA 13. SPRINKLERS IN NON-CONDITIONED SPACES SHALL BE INTERMEDIATE TEMPERATURE RATED UNLESS A HIGHER TEMPERATURE RATING IS REQUIRED BY NFPA 13.

THE ENTIRE SPRINKLER SYSTEM (INCLUDING ALL EQUIPMENT) SHALL BE PROTECTED IN ACCORDANCE WITH NFPA 13. REQUIREMENTS FOR PROTECTING PIPE WHERE SUBJECT TO FREEZING TEMPERATURES OR DAMAGE FROM EARTH QUAKES REGARDLESS OF SEISMIC ZONE APPLY. SWAY BRACING FOR THE RISER SHALL NOT BE ATTACHED TO AN OUTSIDE WALL.

SYSTEM ACCEPTANCE TESTING SHALL FOLLOW THE REQUIREMENTS OF NFPA 13 AND THE APPLICABLE PROJECT SPECIFICATIONS.

SPRINKLER HEAD GUARDS SHALL BE REQUIRED IN ALL ELECTRICAL AND COMMUNICATION EQUIPMENT ROOMS AND IN ALL AREAS OF THE STRUCTURE WHERE THEY ARE 6-FEET OR LESS FROM THE FINISHED FLOOR.

ALL PIPE SHALL BE CONCEALED FROM VIEW UNLESS LOCATED IN ROOMS WITHOUT CEILINGS. MARK ALL INTERIOR PIPE AT 25-FOOT INTERVALS WITH PLASTIC WRAP AROUND TYPE PIPE LABELS CONFORMING TO ASME / ANSI A13.1 "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS". LABELS ARE NOT REQUIRED ON SPRINKLER SYSTEM BRANCH LINES 2-INCHES OR LESS IN NOMINALSIZE. LABEL WET PIPE SPRINKLER PIPE "FIRE WATER".

ALL SPRINKLER PIPES CONNECTED TO SPRINKLER HEADS OUTSIDE THE BUILDING ENVELOPE WITH NO LESS THAN A 2-INCH DIAMETER.

STANDPIPE CONNECTIONS
CLASS I STANDPIPE CONNECTIONS ARE LOCATED WHERE SHOWN ON THE DRAWINGS. THE CONNECTIONS ARE 2.5-INCH CONNECTIONS FOR FIRE DEPARTMENT USE.

ADDITIONAL CLASS I HOSE CONNECTIONS SHALL BE PROVIDED WHERE THE TRAVEL DISTANCE BETWEEN HOSE CONNECTIONS IS GREATER THAN 130-FEET.

FIRE PUMP
EXISTING 1000GPM @ 100PSI. INSTALLING CONTRACTOR SHALL OBTAIN A CURRENT FLOW TEST. FOR REFERENCE - OUTDATED FLOW TEST INFORMATION IS 78 STATIC, 76 RESIDUAL @ 1340GPM.

3. SPECIALIZED FIRE PROTECTION EQUIPMENT - SEQUENCE OF OPERATIONS

3.1. DOUBLE INTERLOCK PRE-ACTION SPRINKLER SYSTEM
THE IDF ROOMS WILL BE PROTECTED BY DOUBLE INTERLOCK PRE-ACTION SPRINKLER SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL A UL LISTED FM APPROVED DOUBLE INTERLOCK PRE-ACTION VALVE ASSEMBLY. ACTIVATION OF THE VALVE TO BE ACCOMPLISHED BY THE ACTIVATION OF A HEAT DETECTOR AND THE FUSING OF A PRE-ACTION SYSTEM SPRINKLER HEAD AT THE SAME TIME.
THE OPENING OF THE DELUGE VALVE SHALL NOT BE DEPENDENT ON THE ORDER OF ACTIVATION OF THE RELEASE DEVICES, ONLY THAT BOTH DEVICES MUST ACTIVATE BEFORE THE DELUGE VALVE WILL OPEN.

4. SYSTEM TESTING

4.1. TESTING CRITERIA
THE AUTOMATIC FIRE DETECTION, ALARM, AND SUPPRESSION SYSTEMS WILL HAVE A 100% ACCEPTANCE TEST PERFORMED BY THE INSTALLING CONTRACTORS IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF NFPA 72-2013, NFPA13 - 2013, NFPA 2001 - 2012, AND NFPA 20 - 2013.

FIRE ALARM SCHEDULE

Description	Count
Combination Speaker Strobe Wall	11
Control Relay Module	2
Fire Alarm Control Unit	1
Heat Detector Ceiling	1
Monitor Module	12
Notification Appliance Circuit Booster Panel	1
Pressure Switch	1
Releasing Panel	1
Smoke Control Panel	1
Smoke Detector Ceiling	7
Strobe Ceiling	5
Strobe Wall	10
Tamper Switch	7
Waterflow Switch	3

Registered Professional Engineer — Fire Protection — 38169 — MICHAEL J. WOJCIK — Date Signed 7/11/18 — ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
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Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	12" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

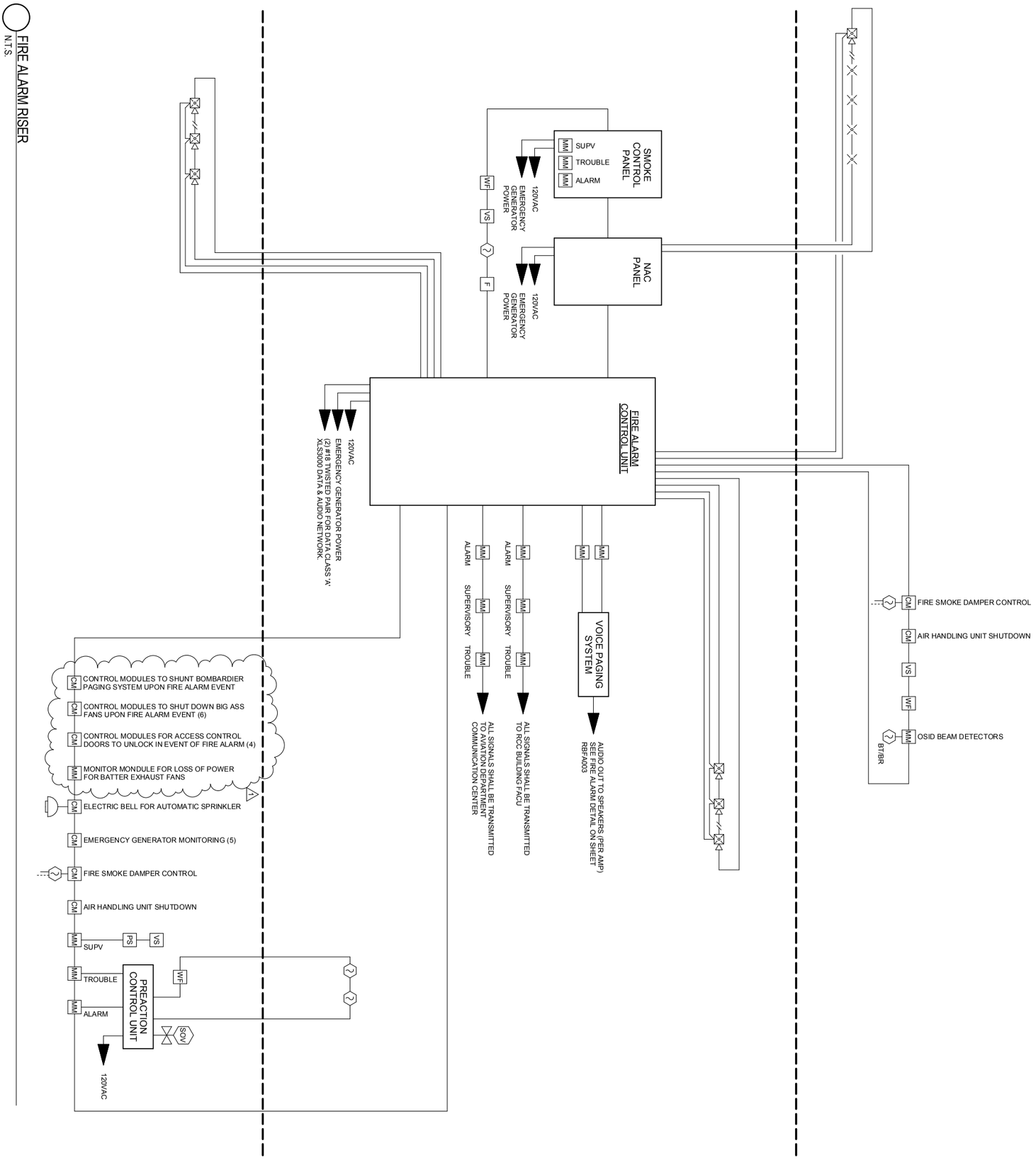
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE ALARM
FIRE ALARM PLAN
DESIGN NARRATIVE

Package: B04 - RBFA0001
Sheet Reference No: V6 - 119 of 260

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FIRE ALARM RISER
N.T.S.



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B04 - RBFA0002	**RCC STATION** **FIRE ALARM** **FIRE ALARM PLAN** **FIRE ALARM RISER**	Designed by:	ML/DS
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V6 - 120 of 260		Checked by:	MJW
		Date:	07/13/2018
		Dwg scale:	N.T.S.
		CIP No.:	AV10000011
		KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN STAGE 2 DESIGN 500 S 24TH STREET PHOENIX, AZ 85034

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NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
1	PDD COMMENTS	07/13/18
	ISSUED FOR CONSTRUCTION	07/13/18

Registered Professional Engineer — MICHAEL J. WOLCK — 38156 — Fire Protection — STATE OF ARIZONA
EXPIRES: 6/30/19

Design Sub-Consultant
JENSEN HUGHES
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PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

Effective Intensity = 135 cd			
Device Spacing = 50 ft x 50 ft		Device Elevation = 140 in	
Minimum Illumination Per NFPA 72 = 0.0375 lumens/ft2			
Horizontal Dispersion		**Vertical Dispersion**	
Calculation Point #	Illumination (lumens/ft2)	Calculation Point #	Illumination (lumens/ft2)
1	0.0540	21	0.0540
2	0.0482	22	0.0482
3	0.0471	23	0.0471
4	0.0453	24	0.0598
5	0.0429	25	0.1044
6	0.0399	26	0.1594
7	0.0405	27	0.2232
8	0.0533	28	0.2121
9	0.0669	29	0.1885
10	0.0810	30	0.1686
11	0.0697	31	0.1571
12	0.0652	32	0.1464
13	0.0648	33	0.1339
14	0.0621	34	0.1304
15	0.0668	35	0.1314
16	0.0605	36	0.1203
17	0.0628	37	0.1154
18	0.0536	38	0.1181
19	0.0540	39	0.1190
20	0.1190		

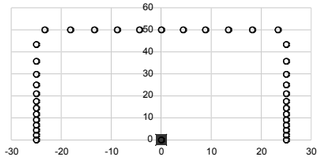
Horizontal Dispersion			
Calculation Point #	Angle	Calculation Point #	Angle
1	0	21	0
2	5	22	5
3	10	23	10
4	15	24	15
5	20	25	20
6	25	26	25
7	30	27	30
8	35	28	35
9	40	29	40
10	45	30	45
11	50	31	50
12	55	32	55
13	60	33	60
14	65	34	65
15	70	35	70
16	75	36	75
17	80	37	80
18	85	38	85
19	90	39	90
20	Compound 45		

Horizontal Dispersion			
		Reduced	
Angle	**Distance**	**Intensity**	**Illumination**
(Deg)	**(ft)**	**(cd)**	**(lumens/ft2)**
0	50.0000	135.00	0.0540
5	50.1910	121.50	0.0482
10	50.7713	121.50	0.0471
15	51.7638	121.50	0.0453
20	53.2089	121.50	0.0429
25	55.1689	121.50	0.0399
30	50.0000	101.25	0.0405
35	43.5862	101.25	0.0533
40	38.8931	101.25	0.0669
45	35.3553	101.25	0.0810
50	32.6352	74.25	0.0697
55	30.5194	60.75	0.0652
60	28.8675	54.00	0.0648
65	27.5844	47.25	0.0621
70	26.6044	47.25	0.0668
75	25.8819	40.50	0.0605
80	25.3857	40.50	0.0628
85	25.0955	33.75	0.0536
90	25.0000	33.75	0.0540

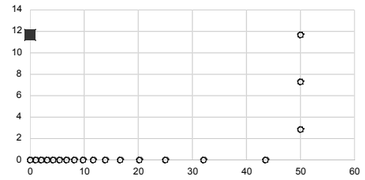
Vertical Dispersion			
		Reduced	
Angle	**Distance**	**Intensity**	**Illumination**
(Deg)	**(ft)**	**(cd)**	**(lumens/ft2)**
0	50.0000	135.00	0.0540
5	50.1910	121.50	0.0482
10	50.7713	121.50	0.0471
15	45.0765	121.50	0.0598
20	34.1111	121.50	0.1044
25	27.6057	121.50	0.1594
30	23.3333	121.50	0.2232
35	20.3402	87.75	0.2121
40	18.1501	62.10	0.1885
45	16.4992	45.90	0.1686
50	15.2298	36.45	0.1571
55	14.2424	29.70	0.1464
60	13.4715	24.30	0.1339
65	12.8727	21.60	0.1304
70	12.4154	20.25	0.1314
75	12.0782	17.55	0.1203
80	11.8466	16.20	0.1154
85	11.7112	16.20	0.1181
90	11.6667	16.20	0.1190

Compound Angles			
		Reduced	
Angle	**Distance**	**Intensity**	**Illumination**
(Deg)	**(ft)**	**(cd)**	**(lumens/ft2)**
45	16.4992	32.40	0.1190

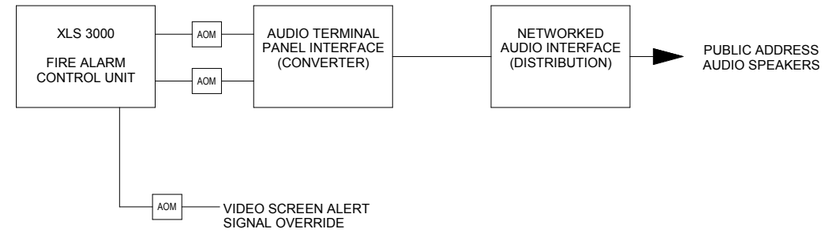
Horizontal Calculation Points



Vertical Calculation Points



FIRE ALARM VISUAL NOTIFICATION APPLIANCE PERFORMANCE BASED CALCULATIONS PER NFPA 72 SECTION 18.5.5.6
N.T.S.
FOR PASSENGER LEVEL, OUTSIDE OF STATION



ABBREVIATIONS:
AOM - ADDRESSABLE OUTPUT MODULE

FIRE ALARM DETAIL
N.T.S.

FIRE ALARM
SYSTEM OUTPUTS

FIRE ALARM
SYSTEM INPUTS

		A	B	C	D	E	F	G	H	I	J	K	L
		ACTIVATE STATION FACU ALARM BUZZER AND LED	ACTIVATE STATION FACU SUPERVISORY BUZZER AND LED	ACTIVATE STATION FACU TROUBLE BUZZER AND LED	ACTIVATE SPEAKER / STROBES THROUGHOUT THE STATION	ACTIVATE SMOKE CONTROL FANS	ACTIVATE PRE-ACTION SYSTEM SOLENOID	SHUT DOWN STATION AIR HANDLING UNIT	CLOSE FIRE SMOKE DAMPER	UNLOCK ACCESS CONTROL DOORS IN THE PATH OF EGRESS	TRANSMIT ALARM, SUPERVISORY AND TROUBLE SIGNALS TO CONSTANTLY ATTENDED AVIATION DEPARTMENT COMMUNICATION CENTER AND RCC BUILDING FACU	SHUT DOWN ALL BIG ASS FANS	SHUNT BOMBARDIER PAGING SYSTEM
MANUAL PULL STATION	1	●			●	●		●		●	●	●	●
SMOKE DETECTOR	2	●			●	●		●		●	●	●	●
OSID SMOKE DETECTOR	3	●			●	●		●		●	●	●	●
DUCT SMOKE DETECTOR AT FIRE SMOKE DAMPER	4		●						●		●		
DUCT SMOKE DETECTOR AT AIR HANDLING UNIT	5		●								●		
WATERFLOW	6	●			●	●		●		●	●	●	●
TAMPER SWITCH	7		●								●		
PRE-ACTION SMOKE DETECTOR	8	●			●	●	●	●		●	●	●	●
PRE-ACTION "ALARM"	9	●			●	●		●		●	●	●	●
PRE-ACTION "TROUBLE"	10			●							●		
PRE-ACTION "SUPERVISORY"	11		●								●		
SYSTEM / DEVICE TOUBLE / FAULT CONDITION	12			●							●		
MONITORING LOSS OF POWER TO BATTERY EXHAUST FANS	13		●								●		

FIRE ALARM MATRIX
N.T.S.

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	ISSUED FOR CONSTRUCTION	07/13/18
1	PDD COMMENTS	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Professional Engineer — Registered in Arizona — Michael J. Wojcik — 39169 — Date Signed 7/11/18 — Not Valid Without Signature and Original Seal — Arizona U.S.A.
EXPIRES: 6/30/21

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Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

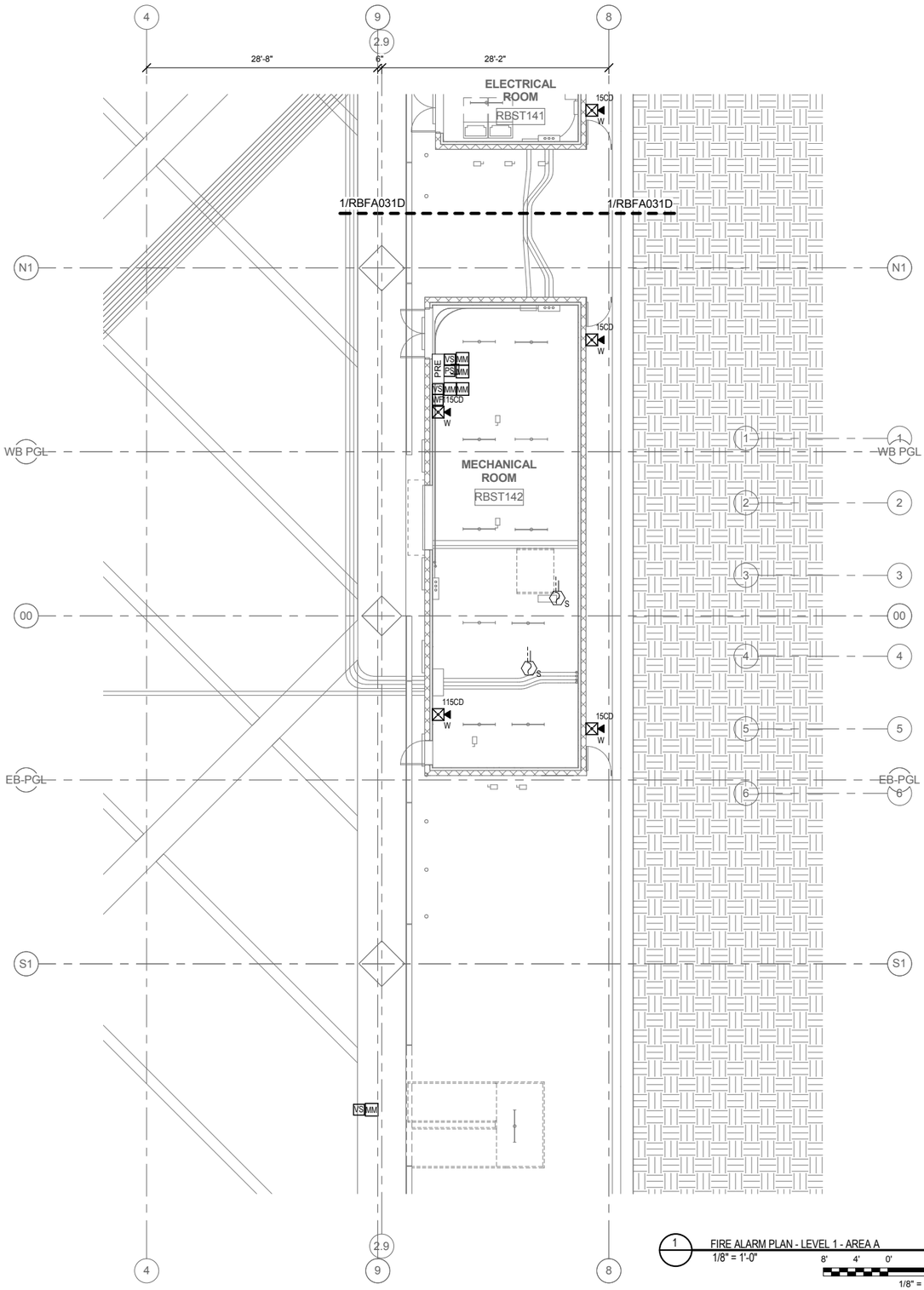
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RCC STATION
FIRE ALARM
FIRE ALARM PLAN
FIRE ALARM MATRIX

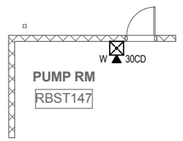
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Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

Package: **B04 - RBFA0003**
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1 FIRE ALARM PLAN - LEVEL 1 - AREA A
1/8" = 1'-0"
8' 4' 0' 8' 16'
1/8" = 1'-0"



2 FIRE ALARM PLAN - LEVEL 1 PUMP ROOM @ CENTER CORE
1/8" = 1'-0"
8' 4' 0' 8' 16'
1/8" = 1'-0"

SYMBOL LEGEND

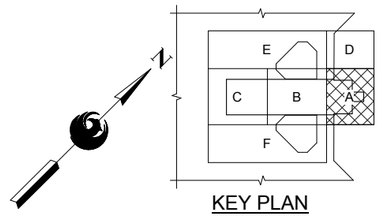
F	MANUAL PULL BOX
(7)P	SMOKE DETECTOR
	HEAT DETECTOR
(7)S	DUCT DETECTOR
(7)BT	OPEN-AREA SMOKE IMAGING DETECTOR BT - TRANSMITTER BR - RECEIVER
CD W	COMBINATION SPEAKER STROBE W - WALL MOUNTED C - CEILING MOUNTED
CD W	SPEAKER W - WALL MOUNTED C - CEILING MOUNTED
CD	STROBE CEILING MOUNTED
CD	STROBE WALL MOUNTED
CM	CONTROL RELAY MODULE
PS	PRESSURE SWITCH WITH MONITORING MODULE
VS	TAMPER SWITCH WITH MONITORING MODULE
WF	FLOW SWITCH WITH MONITORING MODULE
MM	MONITORING MODULE
FACU	FIRE ALARM CONTROL UNIT
AMP	EMERGENCY COMMUNICATION SYSTEM AMPLIFIERS
NACN	NOTIFICATION APPLIANCE CIRCUIT BOOSTER PANEL
PRE	RELEASING PANEL
	DOUBLE INTERLOCK INTERLOCK PREACTION AREA

GENERAL NOTES

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SCOPE OF WORK

1. INSTALL NEW AUTOMATIC FIRE ALARM SYSTEM THROUGHOUT BUILDING.



KEY PLAN

Registered Professional Engineer
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

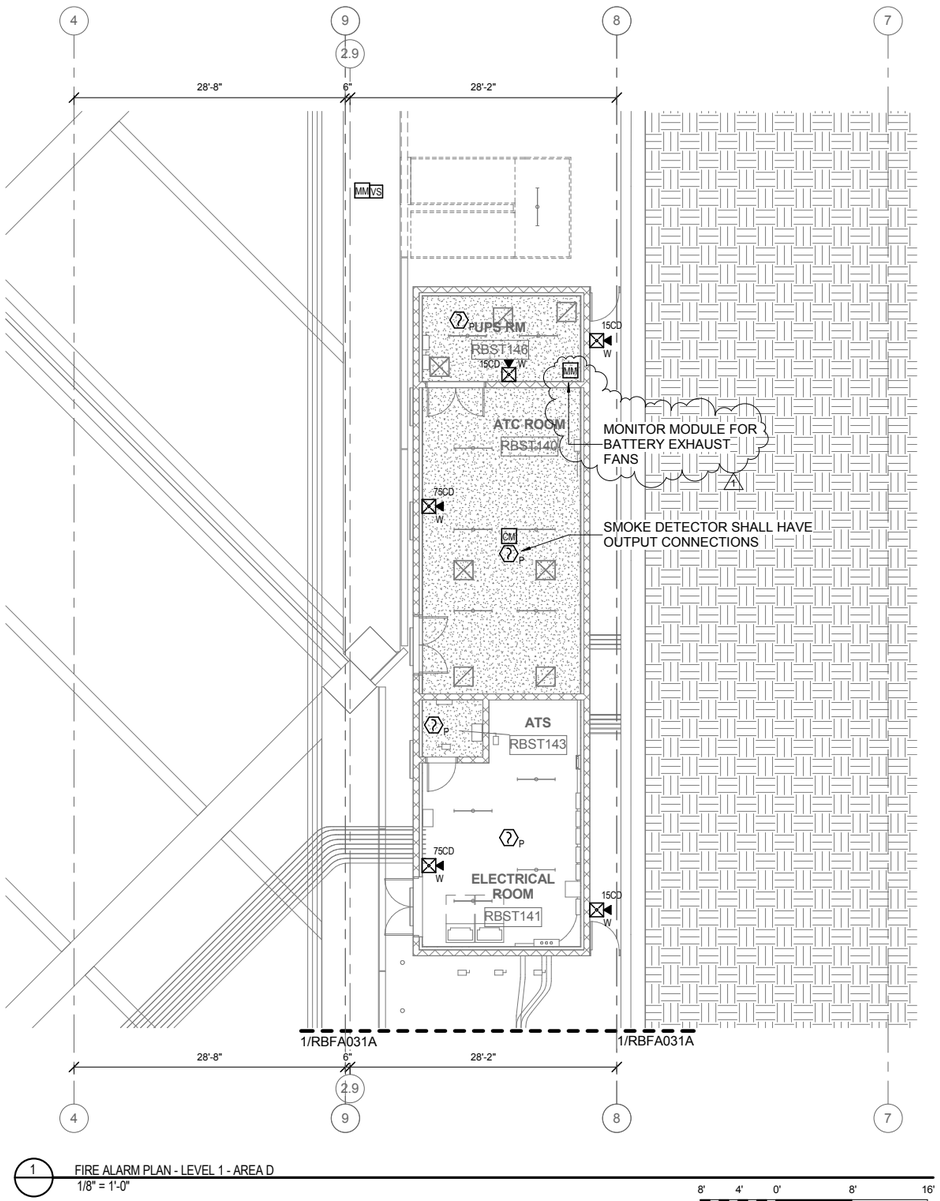
Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE ALARM
FIRE ALARM PLAN
LEVEL 1 - AREA A

Package: B04 - RBFA031A
Sheet Reference No: V6 - 122 of 260

Project Number: 62421
7/11/2018 4:12:27 PM
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Central File: BIM 360/62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt



1 FIRE ALARM PLAN - LEVEL 1 - AREA D
1/8" = 1'-0"

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

SYMBOL LEGEND

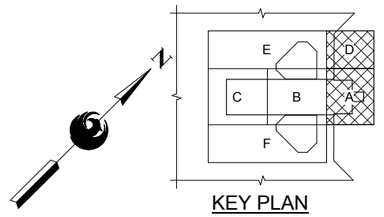
F	MANUAL PULL BOX
P	SMOKE DETECTOR
	HEAT DETECTOR
S	DUCT DETECTOR
BT	OPEN-AREA SMOKE IMAGING DETECTOR BT - TRANSMITTER BR - RECEIVER
CD W	COMBINATION SPEAKER STROBE W - WALL MOUNTED C - CEILING MOUNTED
CD W	SPEAKER W - WALL MOUNTED C - CEILING MOUNTED
CD	STROBE CEILING MOUNTED
CD	STROBE WALL MOUNTED
CM	CONTROL RELAY MODULE
PS	PRESSURE SWITCH WITH MONITORING MODULE
VS	TAMPER SWITCH WITH MONITORING MODULE
WF	FLOW SWITCH WITH MONITORING MODULE
MM	MONITORING MODULE
FACU	FIRE ALARM CONTROL UNIT
AMP	EMERGENCY COMMUNICATION SYSTEM AMPLIFIERS
NAC_N	NOTIFICATION APPLIANCE CIRCUIT BOOSTER PANEL
PRE	RELEASING PANEL
	DOUBLE INTERLOCK INTERLOCK PREACTION AREA

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Registered Professional Engineer
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
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Design Consultant
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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
1	PDD COMMENTS	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

STAGE 2 - B04 DESIGN SUBMISSION

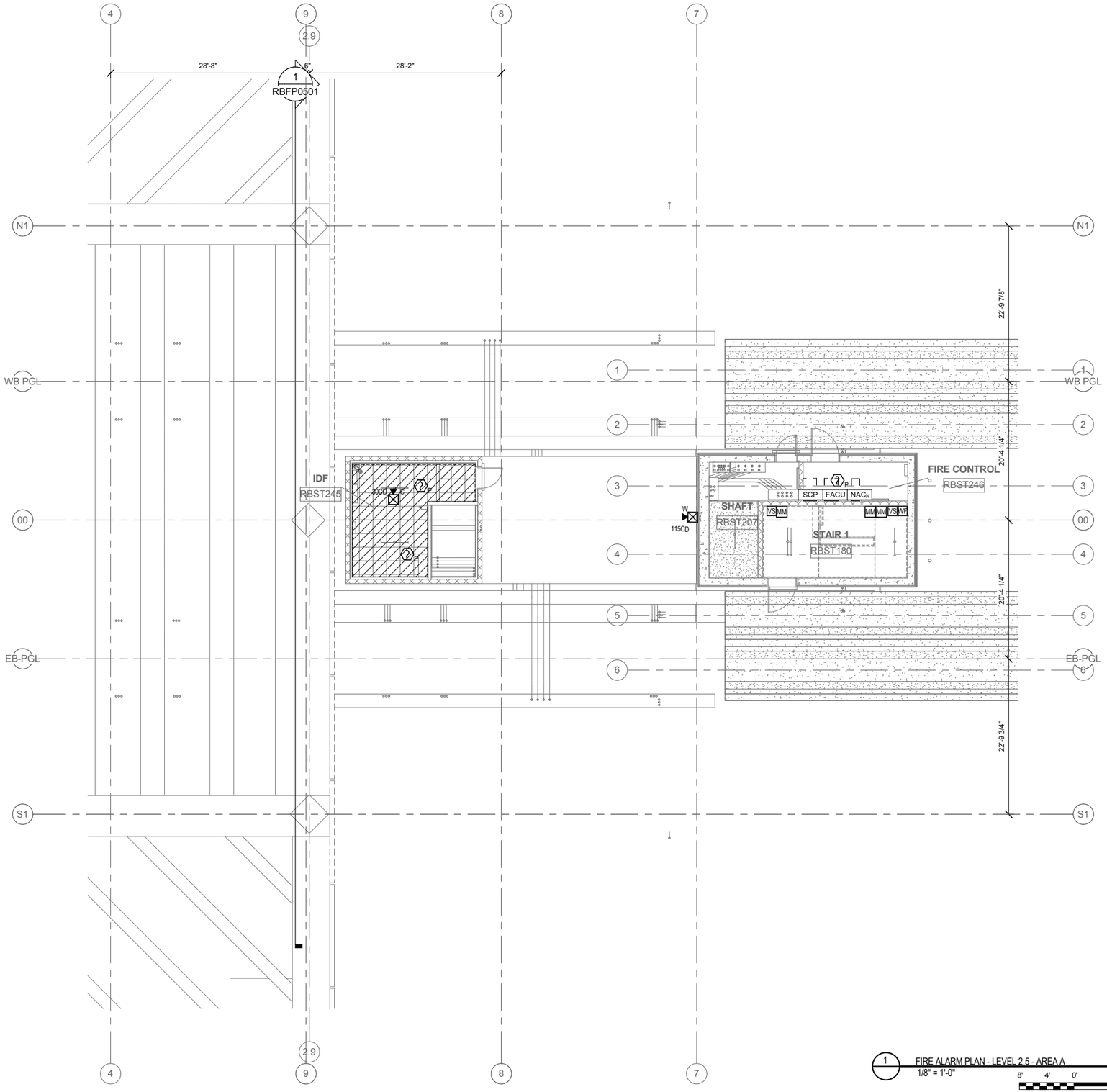
RCC STATION
FIRE ALARM
FIRE ALARM PLAN
LEVEL 1 - AREA D

Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

Package: **B04 - RBFA031D**
Sheet Reference No:
V6 - 123 of 260

Project Number: 62421
7/11/2018 4:12:28 PM

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Central File: BIM 360/62421 - Phoenix Sky Train Project - Stage 2/06241_FR01_S_central_R17_A360.rvt



1 FIRE ALARM PLAN - LEVEL 2.5 - AREA A
1/8" = 1'-0"

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

SYMBOL LEGEND

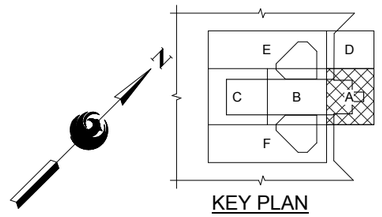
F	MANUAL PULL BOX
(?)P	SMOKE DETECTOR
	HEAT DETECTOR
(?)S	DUCT DETECTOR
(?)BT	OPEN-AREA SMOKE IMAGING DETECTOR BT - TRANSMITTER BR - RECEIVER
CD W	COMBINATION SPEAKER STROBE W - WALL MOUNTED C - CEILING MOUNTED
CD W	SPEAKER W - WALL MOUNTED C - CEILING MOUNTED
CD	STROBE CEILING MOUNTED
CD	STROBE WALL MOUNTED
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VS	TAMPER SWITCH WITH MONITORING MODULE
WF	FLOW SWITCH WITH MONITORING MODULE
MM	MONITORING MODULE
FACU	FIRE ALARM CONTROL UNIT
AMP	EMERGENCY COMMUNICATION SYSTEM AMPLIFIERS
NAC$_N$	NOTIFICATION APPLIANCE CIRCUIT BOOSTER PANEL
PRE	RELEASING PANEL
	DOUBLE INTERLOCK INTERLOCK PREACTION AREA

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KEY PLAN

Registered Professional Engineer
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

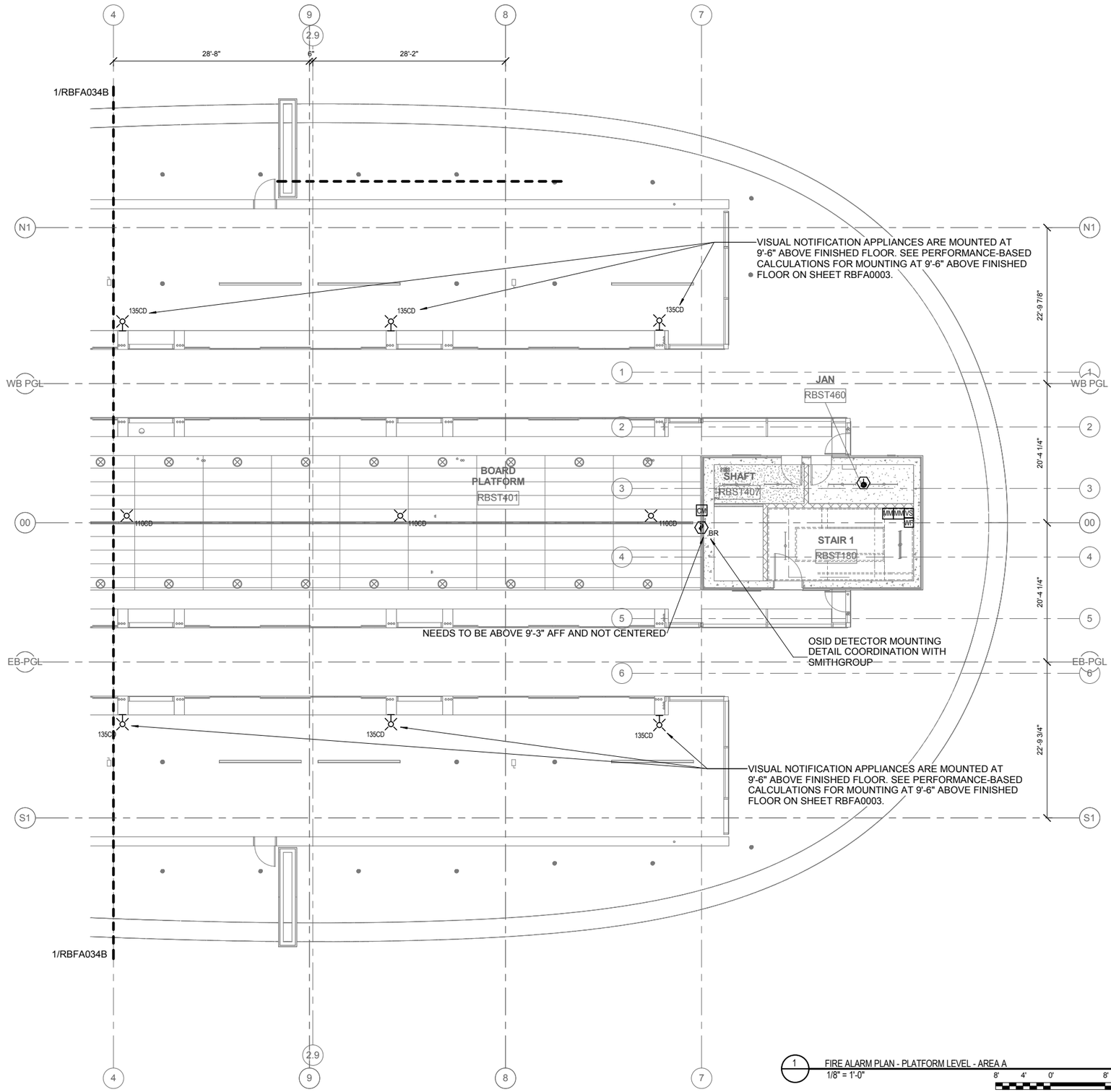
Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE ALARM
FIRE ALARM PLAN
LEVEL 2.5 - AREA A

Package: B04 - RBFA032A
Sheet Reference No: V6 - 124 of 260

Project Number: 62421
7/11/2018 4:12:26 PM
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Central File: BIM 360://62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt



1 FIRE ALARM PLAN - PLATFORM LEVEL - AREA A
1/8" = 1'-0"

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

SYMBOL LEGEND

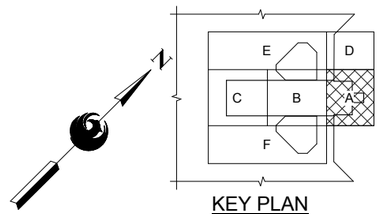
- F — MANUAL PULL BOX
- P — SMOKE DETECTOR
- HEAT DETECTOR
- S — DUCT DETECTOR
- BT — OPEN-AREA SMOKE IMAGING DETECTOR (BT - TRANSMITTER, BR - RECEIVER)
- CD W — COMBINATION SPEAKER STROBE (W - WALL MOUNTED, C - CEILING MOUNTED)
- CD W — SPEAKER (W - WALL MOUNTED, C - CEILING MOUNTED)
- CD — STROBE CEILING MOUNTED
- CD — STROBE WALL MOUNTED
- CM — CONTROL RELAY MODULE
- PS — PRESSURE SWITCH WITH MONITORING MODULE
- VS — TAMPER SWITCH WITH MONITORING MODULE
- WF — FLOW SWITCH WITH MONITORING MODULE
- MM — MONITORING MODULE
- FACU — FIRE ALARM CONTROL UNIT
- AMP — EMERGENCY COMMUNICATION SYSTEM AMPLIFIERS
- NAC_N — NOTIFICATION APPLIANCE CIRCUIT BOOSTER PANEL
- PRE — RELEASING PANEL
- DOUBLE INTERLOCK INTERLOCK PREACTION AREA

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KEY PLAN

Registered Professional Engineer — Certificate No. 39169 — MICHAEL J. WOJCIK — Date Signed 7/11/18 — ARIZONA U.S.A. — EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

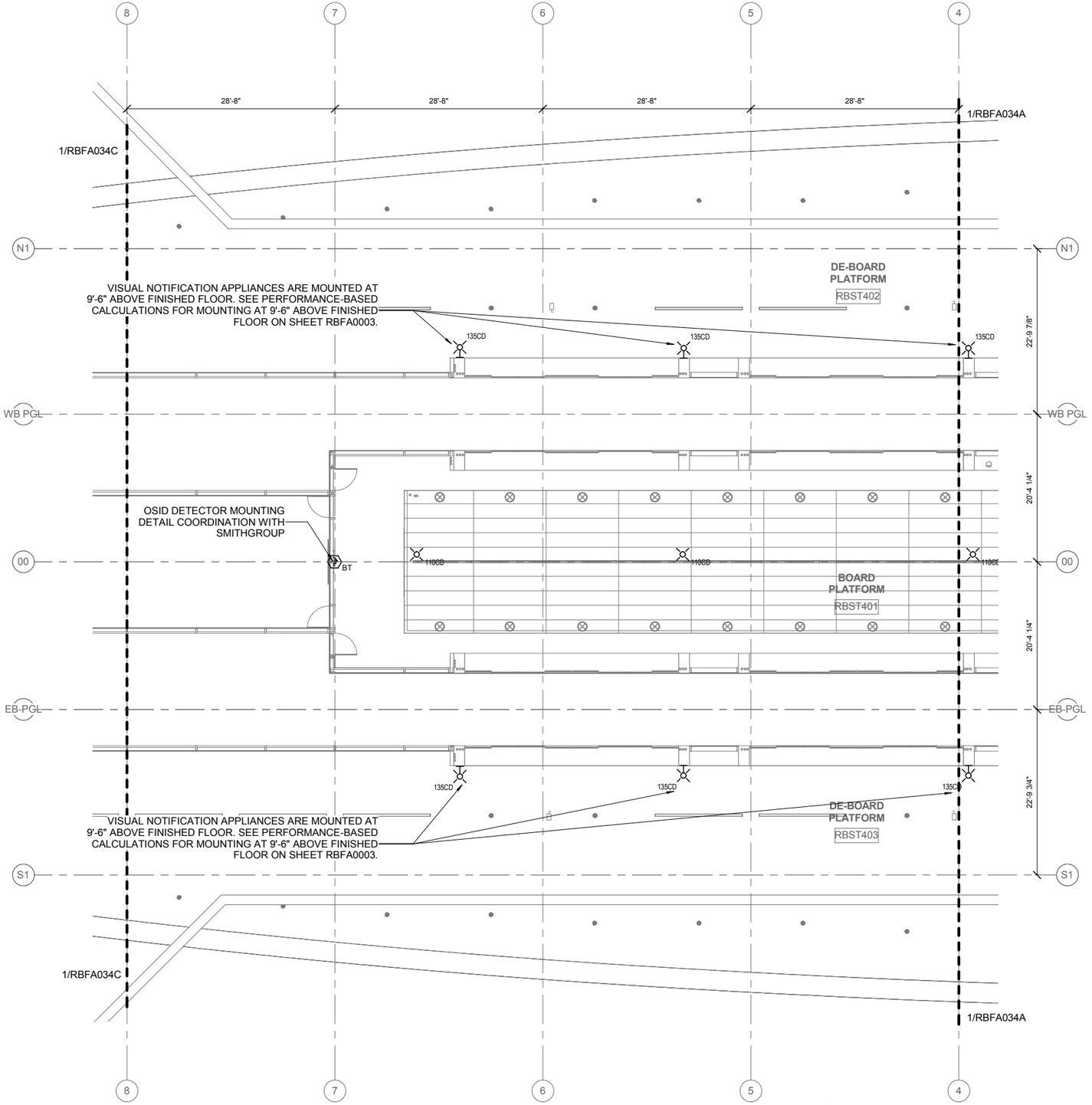
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Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE ALARM
FIRE ALARM PLAN
PLATFORM LEVEL - AREA A

Package: B04 - RBFA034A
Sheet Reference No:
V6 - 125 of 260

Project Number: 62421
7/11/2018 4:12:31 PM
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Central File: BIM 360/62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt



1 FIRE ALARM PLAN - PLATFORM LEVEL - AREA B
1/8" = 1'-0"

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

SYMBOL LEGEND

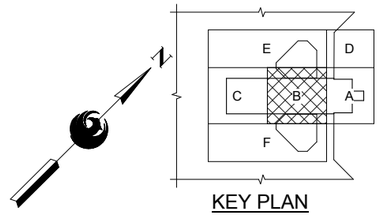
F	MANUAL PULL BOX
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S	DUCT DETECTOR
BT	OPEN-AREA SMOKE IMAGING DETECTOR BT - TRANSMITTER BR - RECEIVER
CD W	COMBINATION SPEAKER STROBE W - WALL MOUNTED C - CEILING MOUNTED
CD W	SPEAKER W - WALL MOUNTED C - CEILING MOUNTED
CD	STROBE CEILING MOUNTED
CD	STROBE WALL MOUNTED
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FACU	FIRE ALARM CONTROL UNIT
AMP	EMERGENCY COMMUNICATION SYSTEM AMPLIFIERS
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PRE	RELEASING PANEL
	DOUBLE INTERLOCK INTERLOCK PREACTION AREA

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KEY PLAN

Registered Professional Engineer (Fire Protection)
36169
MICHAEL J. WOJCIK
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
668 N. 44TH STREET, STE 204W
PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

City of Phoenix Aviation Department

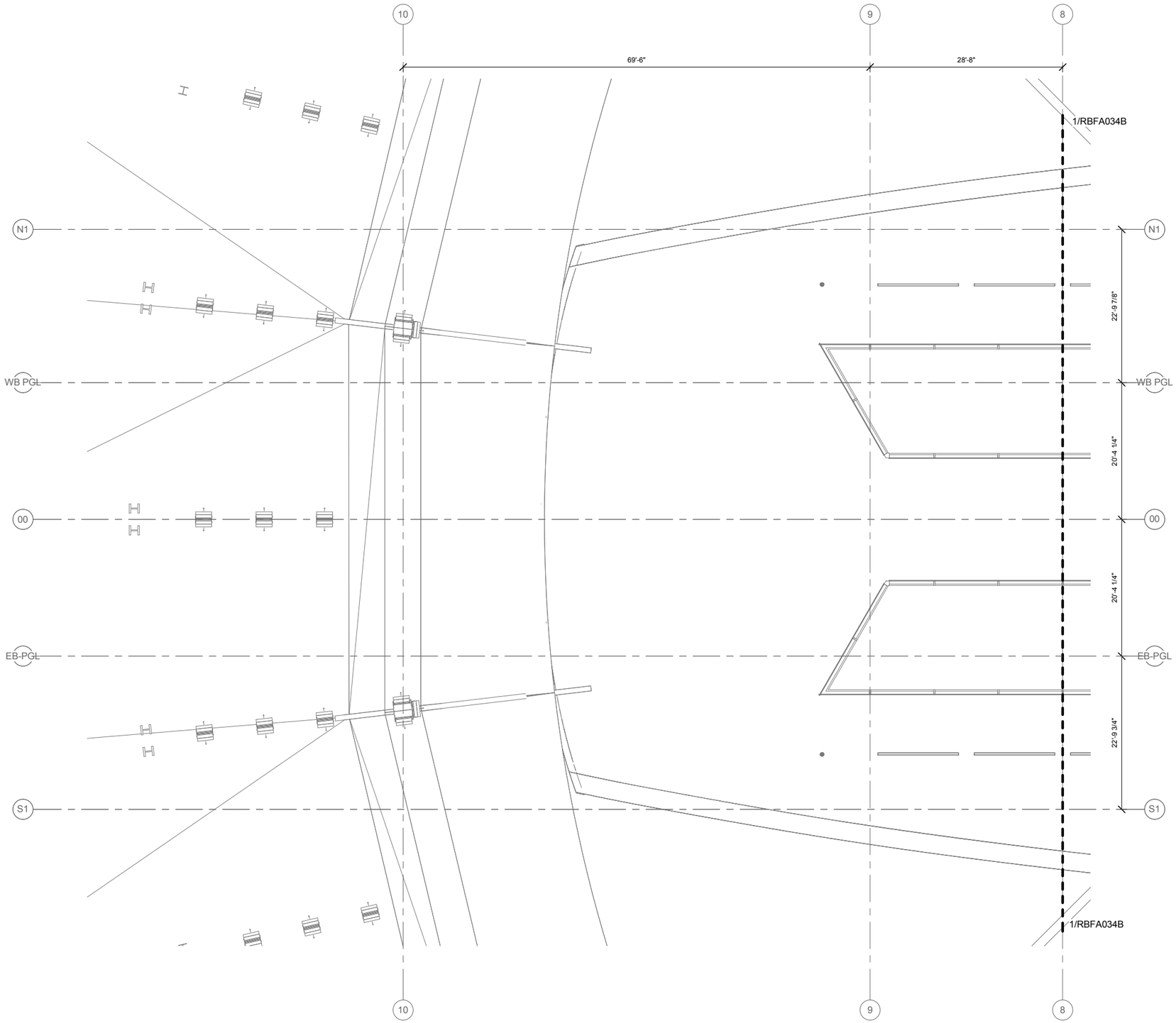
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Drawn by:	MJ/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE ALARM
FIRE ALARM PLAN
LEVEL PLATFORM - AREA B

Package: B04 - RBFA034B
Sheet Reference No: V6 - 126 of 260

Local File:A360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCFPXX01_R17_A360.rvt
Central File: BIM 360://62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt
Project Number: 62421
7/11/2018 4:12:32 PM



1 FIRE ALARM PLAN - PLATFORM LEVEL - AREA C
1/8" = 1'-0"

1/8" = 1'-0"

SYMBOL LEGEND

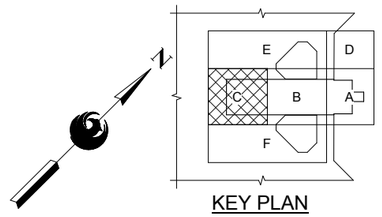
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CD W	COMBINATION SPEAKER STROBE W - WALL MOUNTED C - CEILING MOUNTED
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MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
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Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
FIRE ALARM
FIRE ALARM PLAN
PLATFORM LEVEL - AREA C

Package: B04 - RBFA034C
Sheet Reference No:
V6 - 127 of 260

Project Number: 62421
7/11/2018 4:12:34 PM
Local File:A360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCFPX01_R17_A360.rvt
Central File: BIM 360://62421 - Phoenix Sky Train Project - Stage 2/06242 1_FR01_S_central_R17_A360.rvt

RCC Station Exiting Analysis
133.3 seconds headways - 27 trains per hour

Station Occupant Load Calculations	
Occupant Load Total	
T_L=Train Load Per Headway	184.0
T_{AL}=Accumulated Load For both Headways	368.0
E_L=Entraining Load per with 10 minutes accumulation	657.0
OL_T=[sum]xSF included in the study (Total occupant load on all three platforms)	**1,025**

Calculated Exit Capacity			
Egress Element	**Egress Width (Inches)**	**Egress Width Factor (Persons/Inch-Minute)**	**Calculated Persons per Minute**
Station Platform to Base Level (Downward Travel)			
Exit Stair door (1)*	46	2.08	95
Station Platform through "Fare" Barriers			
Double Door (1)	66	2.08	137
Door (2)	68	2.08	141
Platform Exit Capacity			**373**
Platform Stair to Safe Area (Level)			
Exit Stair (1)	44	1.41	**62**
Worst case pinch point capacity			**62**

* - Using the door as limiting factor into the stairs.

Walking Time for Longest Egress Route			
Area Traversed	**Longest Travel Distance (Feet)**	**Rate (Feet/Minute)**	**Travel Time (Minutes)**
Platform to Safe Area (Considered to be RCC building)			
On Station Platform through double doors, T_1	109	124	0.88
Double doors to Safe Area (RCC building) T_2	155.5	124	1.26
Total walking time, $T = T_1 + T_2$			**2.14**

EXIT CAPACITY VALIDATION TEST

T = Total walking travel time for longest exit route
T_X = Walking travel time for xth segment of exit route
F_P = Platform exit flow time
W_P = Waiting time at platform
CPL = Center Platform Load = E_L

Test No 1: Platform exits have the capacity to evacuate the platform in 4 minutes or less.

F_P = Center Platform Load (CPL) / Platform exit capacity **1.77**
PASSES

Test No 2: Evacuate platform occupant load from most remote point on platform to a point of safety within 6 minutes or less.

Total Exit Time = $T + W_P$

All occupants exit the platform via escalators or stairs and then proceed across a pedestrian walkway, which is

$W_P = F_P - T_1$, (If $W_P < 0$, then 0 waiting time is assumed) **0.89**

Total Exit Time = $T + W_P$ **3.03**
PASSES

THE INTERNATIONAL BUILDING CODE (IBC) AS ADOPTED AND AMENDED BY THE CITY OF PHOENIX DOES NOT ADDRESS THESE TRANSITORY OCCUPANT LOADS, HOWEVER, NFPA 130 DOES. EXITING REQUIREMENTS FOR THE STATION ARE THEREFORE BASED ON SECTION 5.3 OF NFPA 130. THE CALCULATION BELOW SHOWS THE EGRESS TIMES PER NFPA 130.

RCC Station Exiting Analysis
133.3 seconds headways - 27 trains per hour
Fire Scenario 1 Blocking Double Doors and One Exit Door

Station Occupant Load Calculations	
Occupant Load Total	
T_L=Train Load Per Headway	184.0
T_{AL}=Accumulated Load For both Headways	368.0
E_L=Entraining Load per with 10 minutes accumulation	657.0
OL_T=[sum]xSF included in the study (Total occupant load on all three platforms)	**1,025**

Calculated Exit Capacity			
Egress Element	**Egress Width (Inches)**	**Egress Width Factor (Persons/Inch-Minute)**	**Calculated Persons per Minute**
Station Platform to Base Level (Downward Travel)			
Exit Stair door (1)*	46	2.08	95
Station Platform through "Fare" Barriers			
Double Door (1)**	0	2.08	0
Door (2)	34	2.08	70
Platform Exit Capacity			**165**
Platform Stair to Safe Area (Level)			
Exit Stair (1)	44	1.41	**62**
Worst case pinch point capacity			**62**

* - Using the door as limiting factor into the stairs.

**-Double doors blocked by fire

Walking Time for Longest Egress Route			
Area Traversed	**Longest Travel Distance (Feet)**	**Rate (Feet/Minute)**	**Travel Time (Minutes)**
Platform to Safe Area (Down the Enclosed Stairs to Publicway)			
On Station Platform through Enclosed Stairwell, T_1	214	124	1.73
Stairwell Travel Time to Base Level (Publicway) T_2	26.5	14.6	1.82
Total walking time, $T = T_1 + T_2$			**3.55**

EXIT CAPACITY VALIDATION TEST

T = Total walking travel time for longest exit route
T_X = Walking travel time for xth segment of exit route
F_P = Platform exit flow time
W_P = Waiting time at platform
CPL = Center Platform Load = E_L

Test No 1: Platform exits have the capacity to evacuate the platform in 4 minutes or less.

F_P = Center Platform Load (CPL) / Platform exit capacity **3.99**
PASSES

Test No 2: Evacuate platform occupant load from most remote point on platform to a point of safety within 6

Total Exit Time = $T + W_P$

All occupants exit the platform via escalators or stairs and then proceed across a pedestrian walkway, which is

$W_P = F_P - T_1$, (If $W_P < 0$, then 0 waiting time is assumed) **2.26**

Total Exit Time = $T + W_P$ **5.81**
PASSES

RCC Station Exiting Analysis
133.3 seconds headways - 27 trains per hour
Fire Scenario 2 Blocking Stairwell

Station Occupant Load Calculations	
Occupant Load Total	
T_L=Train Load Per Headway	184.0
T_{AL}=Accumulated Load For both Headways	368.0
E_L=Entraining Load per with 10 minutes accumulation	657.0
OL_T=[sum]xSF included in the study (Total occupant load on all three platforms)	**1,025**

Calculated Exit Capacity			
Egress Element	**Egress Width (Inches)**	**Egress Width Factor (Persons/Inch-Minute)**	**Calculated Persons per Minute**
Station Platform to Base Level (Downward Travel)			
Exit Stair door (1)*	0	2.08	0
Station Platform through "Fare" Barriers			
Double Door (1)	66	2.08	137
Door (2)	68	2.08	141
Platform Exit Capacity			**278**
Platform Stair to Safe Area (Level)			
Exit Stair (1)	0	1.41	**0**
Worst case pinch point capacity			**0**

* - Using the door as limiting factor into the stairs

Walking Time for Longest Egress Route			
Area Traversed	**Longest Travel Distance (Feet)**	**Rate (Feet/Minute)**	**Travel Time (Minutes)**
Platform to Safe Area (Considered to be RCC building)			
On Station Platform through double doors, T_1	109	124	0.88
Double doors to Safe Area (RCC building) T_2	155.5	124	1.26
Total walking time, $T = T_1 + T_2$			**2.14**

EXIT CAPACITY VALIDATION TEST

T = Total walking travel time for longest exit route
T_X = Walking travel time for xth segment of exit route
F_P = Platform exit flow time
W_P = Waiting time at platform
CPL = Center Platform Load = E_L

Test No 1: Platform exits have the capacity to evacuate the platform in 4 minutes or less.

F_P = Center Platform Load (CPL) / Platform exit capacity **2.37**
PASSES

Test No 2: Evacuate platform occupant load from most remote point on platform to a point of safety within 6

Total Exit Time = $T + W_P$

All occupants exit the platform via escalators or stairs and then proceed across a pedestrian walkway, which is

$W_P = F_P - T_1$, (If $W_P < 0$, then 0 waiting time is assumed) **1.49**

Total Exit Time = $T + W_P$ **3.63**
PASSES

FIRE RESISTANCE RATING REQUIREMENTS FOR TYPE I-A CONSTRUCTION ARE AS FOLLOWS:

- EXTERIOR WALLS

a. BEARING - 3-HOUR
b. NONBEARING - NON-RATED

- INTERIOR WALLS

a. BEARING - 3-HOURS, 2-HOUR WHERE SUPPORTING ROOF ONLY
b. NONBEARING - NON-RATED

- STRUCTURAL FRAME - 3-HOUR, 2-HOUR WHERE SUPPORTING ROOF ONLY (THE STRUCTURAL FRAME INCLUDES THE COLUMNS AND BRACING MEMBERS DESIGNED TO CARRY GRAVITY LOADS).
- COLUMNS - 3-HOUR
- SHAFTS

a. EXIST STAIRS - 2-HOUR, SUCH THAT THE FIRE RESISTANCE RATING IS NOT LESS THAN THAT OF THE FLOOR ASSEMBLY PENETRATED (SECTION 1022.2 & 713.4).
b. OTHER SHAFTS - 2-HOUR, SUCH THAT THE FIRE RESISTANCE RATING IS NOT LESS THAN THAT OF THE FLOOR ASSEMBLY PENETRATED (SECTION 713.4).

- ROOF INCLUDING SUPPORT BEAMS AND JOISTS - 1 1/2-HOUR, NON-RATED WHERE EVERY PART OF THE ROOF STRUCTURE IS 20 FEET OR MORE ABOVE ANY FLOOR IMMEDIATELY BELOW
- FLOOR INCLUDING SUPPORT BEAMS AND JOISTS - 2-HOUR

AREA USE OCCUPANCY SEPARATION IN HOURS OF FIRE RESISTANCE RATING:

POWER SUBSTATIONS: 3-HOUR

ELECTRICAL CONTROL ROOMS, AUXILIARY ELECTRICAL ROOMS, AND TRASH ROOMS: 1-HOUR

TRAIN CONTROL ROOMS, AND ASSOCIATED BATTERY ROOMS: 2-HOUR

PUBLIC/NON-PUBLIC AREA SEPARATION: 2-HOUR

STATION PUBLIC AREAS AND NON-TRANSIT AREAS: 3-HOUR

MEANS OF EGRESS CALCULATIONS FOR TENABILITY

- THE TIME OF TENABILITY CRITERIA FOR SMOKE EXHAUST SYSTEM WILL BE DETERMINED BY USING THE MEANS OF EGRESS CALCULATIONS.
- PER NFPA 130 SECTION 7.2.6.6 TIME OF TENABILITY SHALL BE GREATER THAN THE CALCULATED EGRESS TIME USED TO ESTABLISH EGRESS CAPACITY IN SECTION 5.3.3 OF NFPA 130.
- SECTION 909.4.6 STATES THAT ALL PORTIONS OF ACTIVE OR PASSIVE SMOKE CONTROL SYSTEMS SHALL BE CAPABLE OF CONTINUED OPERATION AFTER DETECTION OF THE FIRE EVENT FOR A PERIOD OF NOT LESS THAN EITHER 20 MINUTES OR 1.5 TIMES THE CALCULATED EGRESS TIME, WHICHEVER IS LESS.
- TWO ADDITIONAL SENSITIVITY EXERCISES WERE CONDUCTED TAKING INTO ACCOUNT THAT A FIRE WILL PROHIBIT THE USE TO THE EGRESS COMPONENTS ON EITHER SIDE OF THE PLATFORM. THESE SENSITIVITY TEST WILL MODEL THE LONGEST EGRESS TIME FORESEEN IN A CASE OF A FIRE. THE PLATFORM EGRESS TIME IS 3.99 MINUTES AND THE TOTAL EGRESS TRAVEL TIME TO THE POINT OF SAFETY IS 5.81 MINUTES. BOTH TIMES ARE LESS THAN THE MAXIMUM ALLOWABLE TIME PER NFPA 130.
- THE SENSITIVITY TESTS DEMONSTRATE THAT WITH HALF THE EGRESS COMPONENTS NOT BEING USED DUE TO A FIRE SCENARIO THE EGRESS TIME STILL COMPLIES WITH THE NFPA 130 REQUIREMENTS. IT IS PROPOSED TO USE THE MAXIMUM EGRESS TIME UNDER THIS SENSITIVITY TEST OF 5.81 MINUTES. THIS EVACUATION TIME WILL BE ADDED TO THE IGNITION, DETECTION, AND PRE-MOVEMENT TIME TO DETERMINE THE REQUIRED SAFE EGRESS TIME (RSET).
- THE FIRE SCENARIOS AND TENABILITY CRITERIA FOR THE SMOKE EXHAUST SYSTEM IS FURTHER DESCRIBE IN DETAIL IN THE SMOKE CONTROL DESIGN REPORT.
- THE EGRESS CALCULATION WITH THE FIRE SCENARIO SPREAD SHEET IS PROVIDED ON THE RIGHT SIDE.

Registered Professional Engineer
MICHAEL J. WOJCIK
No. 39169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
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Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4336, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

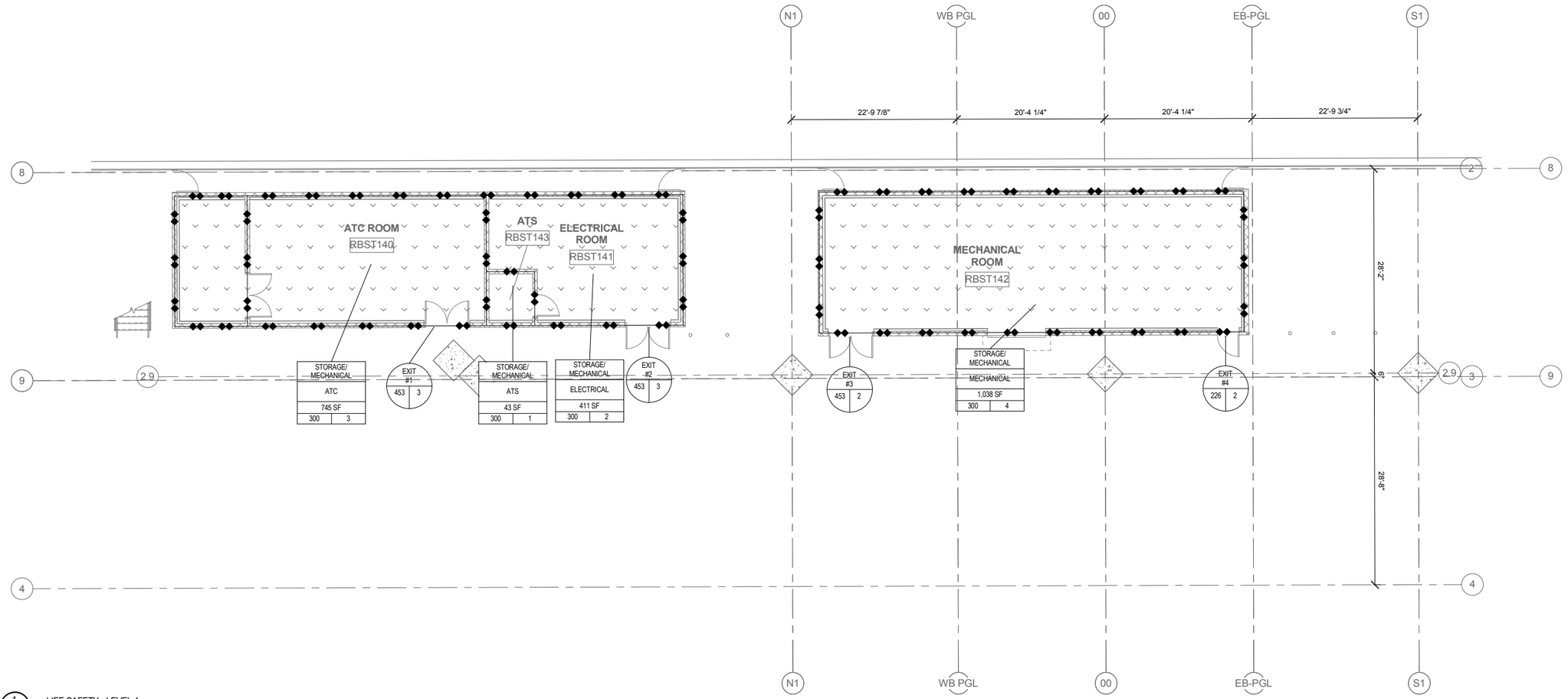
Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIFE SAFETY
LIFE SAFETY PLAN
CODE SUMMARY

Package: **B04 - RBLS0001**
Sheet Reference No: V6 - 128 of 260

Project Number: 62421
7/11/2018 3:06:29 PM
Local File: A360://62421 - Phoenix Sky Train Project - Stage 2/AV10000011-S-2-RCFPX01_R17_A360.rvt
Central File: BIM 360/62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt



1 LIFE SAFETY - LEVEL 1
1/8" = 1'-0"

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

IDENTIFIER	FUNCTION OF SPACE	OCCUPANT LOAD FACTOR
	ASSEMBLY - STANDING SPACE	5 NET
	BUSINESS AREA	100 GROSS
	MECH/STORAGE	300 GROSS

* OCCUPANCY LOAD FACTORS ARE FROM TABLE 1004.1.2 OF THE IBC.

WALL TYPE LEGEND:

1HR FIRE BARRIER
2HR FIRE BARRIER
3HR FIRE BARRIER

EGRESS CAPACITY TAG LEGEND

XXXX
XX
###
EXIT DESIGNATION
ACTUAL USE
EXIT CAPACITY

OCCUPANT LOAD TAG LEGEND

XXXX
XXXX
####
###
OCCUPANCY USE GROUP
NAME IDENTIFIER
ROOM AREA
OCCUPANT LOAD
OCCUPANT LOAD FACTOR

TRAVEL DISTANCE LEGEND

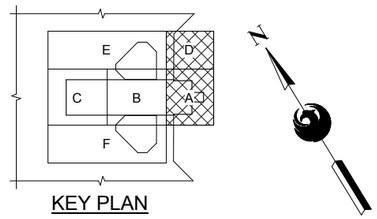
'
TRAVEL DISTANCE
'
DEAD END

Exit Table - Level 1

STAIR/EXIT	DOOR WIDTH	DOOR WIDTH FACTOR	DOOR CAPACITY	STAIR WIDTH	STAIR WIDTH FACTOR	STAIR CAPACITY	EXIT CAPACITY	ACTUAL USE
EXIT #1	68	.15	453	N/A	N/A	N/A	453	3
EXIT #2	68	.15	453	N/A	N/A	N/A	453	3
EXIT #3	68	.15	453	N/A	N/A	N/A	453	2
EXIT #4	34	.15	226	N/A	N/A	N/A	226	2
TOTALS							1585	10

Occupant Load Table - Level 1

OCCUPANCY USE	NAME/IDENTIFIER	AREA	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
STORAGE/ MECHANICAL	ATC	745 SF	300	3
STORAGE/ MECHANICAL	MECHANICAL	1,038 SF	300	4
STORAGE/ MECHANICAL	ELECTRICAL	411 SF	300	2
STORAGE/ MECHANICAL	ATS	43 SF	300	1
TOTALS		2,237 SF		10



KEY PLAN

Registered Professional Engineer
MICHAEL J. WOJCIK
38169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
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Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

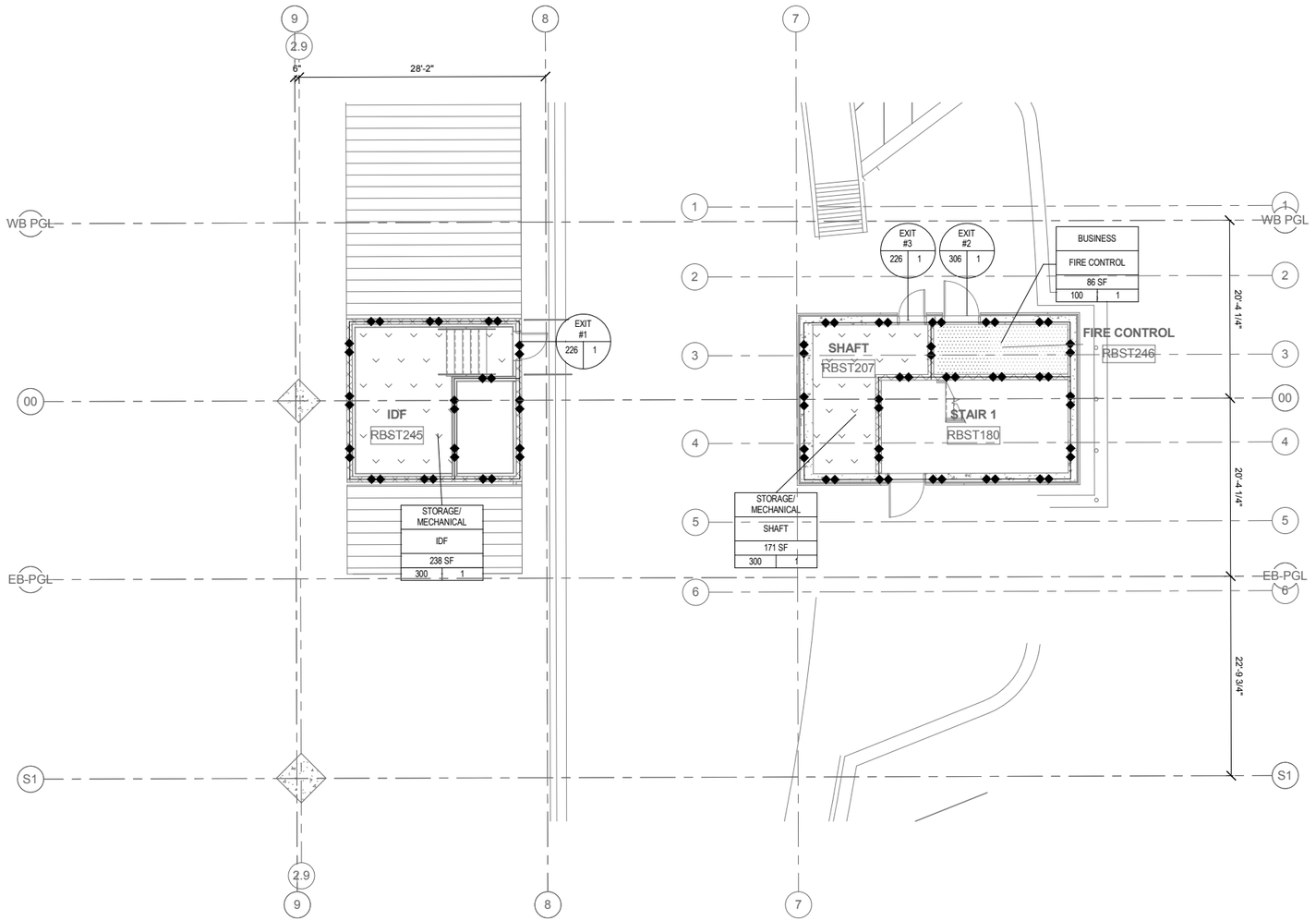
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIFE SAFETY
LIFE SAFETY PLAN
LEVEL 1 - OVERALL

Package: B04 - RBLS0031
Sheet Reference No: V6 - 129 of 260

Project Number: 62421
7/11/2018 3:06:30 PM

Local File: A360://62421 - Phoenix Sky Train Project - Stage 2/AV10000011-S-2-RCFPX01_R17_A360.rvt
Central File: BIM 360/62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt



1 LIFE SAFETY - LEVEL 2.5
1/8" = 1'-0"

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

IDENTIFIER	FUNCTION OF SPACE	OCCUPANT LOAD FACTOR
	ASSEMBLY - STANDING SPACE	5 NET
	BUSINESS AREA	100 GROSS
	MECH/STORAGE	300 GROSS

* OCCUPANCY LOAD FACTORS ARE FROM TABLE 1004.1.2 OF THE IBC.

WALL TYPE LEGEND:

1HR FIRE BARRIER
2HR FIRE BARRIER
3HR FIRE BARRIER

EGRESS CAPACITY TAG LEGEND

XXXX
XX
###
EXIT DESIGNATION
ACTUAL USE
EXIT CAPACITY

OCCUPANT LOAD TAG LEGEND

XXXX
XXXX
####
###
OCCUPANCY USE GROUP
NAME IDENTIFIER
ROOM AREA
OCCUPANT LOAD
OCCUPANT LOAD FACTOR

TRAVEL DISTANCE LEGEND

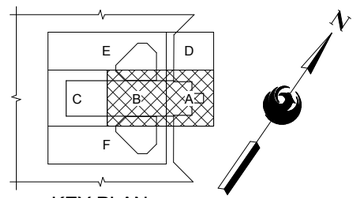
'
TRAVEL DISTANCE
'
DEAD END

Exit Table - Level 2.5

STAIR/EXIT	DOOR WIDTH	DOOR WIDTH FACTOR	DOOR CAPACITY	STAIR WIDTH	STAIR WIDTH FACTOR	STAIR CAPACITY	EXIT CAPACITY	ACTUAL USE
EXIT #1	34"	0.15	226	N/A	N/A	N/A	226	1
EXIT #2	46"	0.15	306	N/A	N/A	N/A	306	1
EXIT #3	34"	0.15	226	N/A	N/A	N/A	226	1
EXIT #A	34"	0.15	226	54"	0.20	270	226	0
EXIT #A	34"	0.15	226	54"	0.20	270	226	0
TOTALS							1210	3

Occupant Load Table - Level 2.5

OCCUPANCY USE	NAME/IDENTIFIER	AREA	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
STORAGE/ MECHANICAL	IDF	238 SF	300	1
BUSINESS	FIRE CONTROL	86 SF	100	1
STORAGE/ MECHANICAL	SHAFT	171 SF	300	1
TOTALS		495 SF		3



KEY PLAN

Local File: A360://62421 - Phoenix Sky Train Project - Stage 2/AV10000011-S-2-RCFPX01_R17_A360.rvt
Central File: BIM 360/62421 - Phoenix Sky Train Project - Stage 2/06241_FR01_S_central_R17_A360.rvt
Project Number: 62421
7/11/2018 3:06:31 PM

Registered Professional Engineer
62421
MICHAEL J. WOJCIK
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

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Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

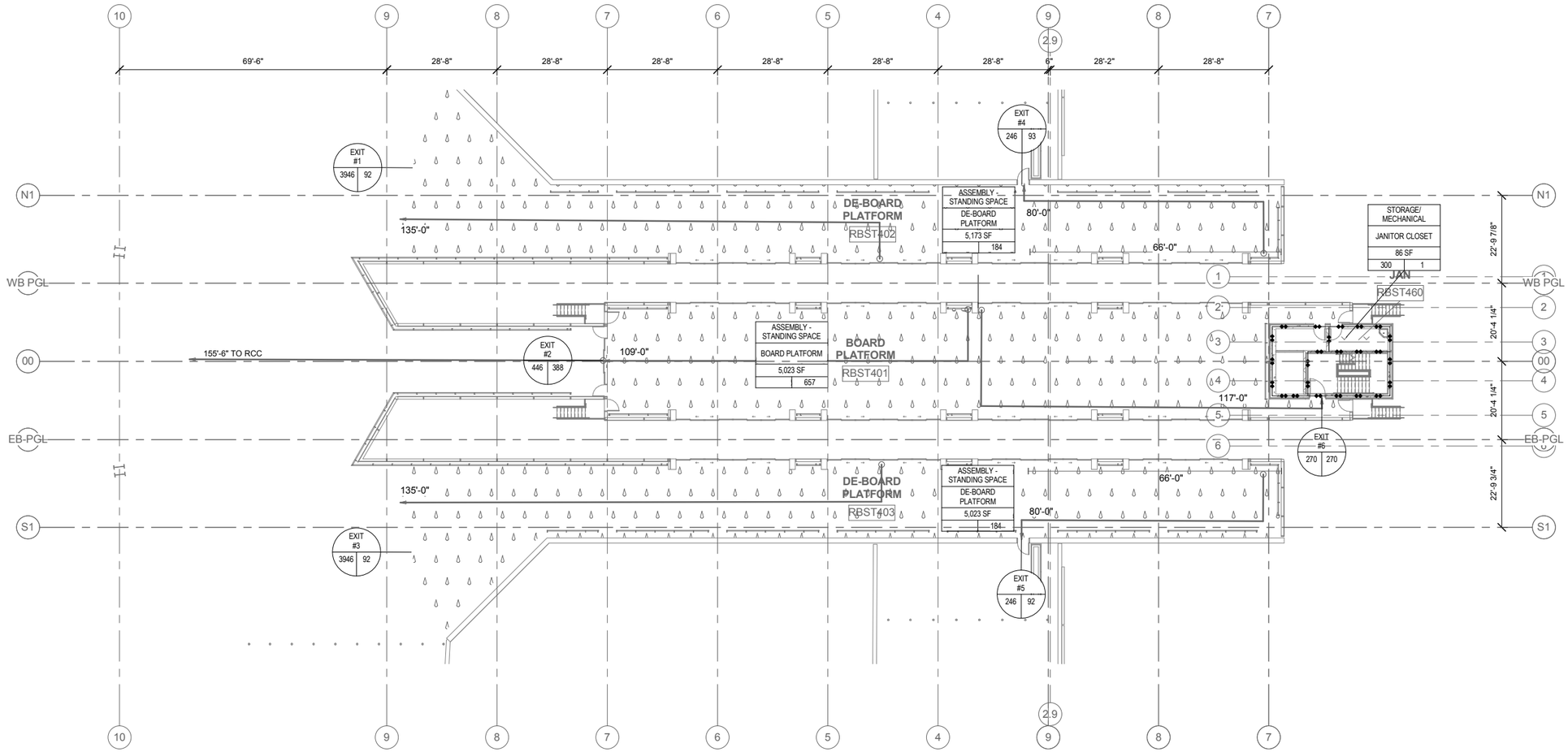
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
LIFE SAFETY
LIFE SAFETY PLAN
LEVEL 2.5 - OVERALL

Package: **B04 - RBLS0032**
Sheet Reference No:
V6 - 130 of 260



1 LIFE SAFETY - PLATFORM LEVEL
1/16" = 1'-0"

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

IDENTIFIER	FUNCTION OF SPACE	OCCUPANT LOAD FACTOR
	ASSEMBLY - STANDING SPACE	5 NET
	BUSINESS AREA	100 GROSS
	MECH/STORAGE	300 GROSS

* OCCUPANCY LOAD FACTORS ARE FROM TABLE 1004.1.2 OF THE IBC.

WALL TYPE LEGEND:

- 1HR FIRE BARRIER
- 2HR FIRE BARRIER
- 3HR FIRE BARRIER

EGRESS CAPACITY TAG LEGEND

XXXX
XX
###

- EXIT DESIGNATION
- ACTUAL USE
- EXIT CAPACITY

OCCUPANT LOAD TAG LEGEND

XXXX
XXXX
####
###

- OCCUPANCY USE GROUP
- NAME IDENTIFIER
- ROOM AREA
- OCCUPANT LOAD
- OCCUPANT LOAD FACTOR

TRAVEL DISTANCE LEGEND

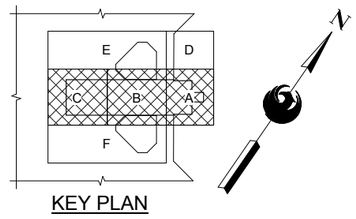
- ## ' TRAVEL DISTANCE
- ## ' DEAD END

Exit Table - Platform

STAIR/EXIT	DOOR WIDTH	DOOR WIDTH FACTOR	DOOR CAPACITY	STAIR WIDTH	STAIR WIDTH FACTOR	STAIR CAPACITY	EXIT CAPACITY	ACTUAL USE
EXIT #1	592	0.15	3946	N/A	N/A	N/A	3946	92
EXIT #2	67	0.15	446	N/A	N/A	N/A	446	388
EXIT #3	592	0.15	3946	N/A	N/A	N/A	3946	92
EXIT #4	37	0.15	246	N/A	N/A	N/A	246	93
EXIT #5	37	0.15	246	N/A	N/A	N/A	246	92
EXIT #6	46"	0.15	306	54	0.20	270	270	270
TOTALS							9100	1027

Occupant Load Table - Platform

OCCUPANCY USE	NAME/IDENTIFIER	AREA	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
ASSEMBLY - STANDING SPACE	BOARD PLATFORM	5,023 SF	SEE CODE SUMMARY	657
ASSEMBLY - STANDING SPACE	DE-BOARD PLATFORM	5,173 SF	SEE CODE SUMMARY	184
ASSEMBLY - STANDING SPACE	DE-BOARD PLATFORM	5,023 SF	SEE CODE SUMMARY	184
STORAGE/ MECHANICAL	JANITOR CLOSET	86 SF	300	1
STORAGE/ MECHANICAL	SHAFT	173 SF	300	1
TOTALS		15,478 SF		1027



KEY PLAN

Registered Professional Engineer
MICHAEL J. WOJCIK
36169
Date Signed 7/11/18
ARIZONA U.S.A.
EXPIRES: 6/30/21

Design Sub-Consultant
JENSEN HUGHES
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PHOENIX, ARIZONA 85008

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ML/DS
Drawn by:	ML/DS
Checked by:	MJW
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

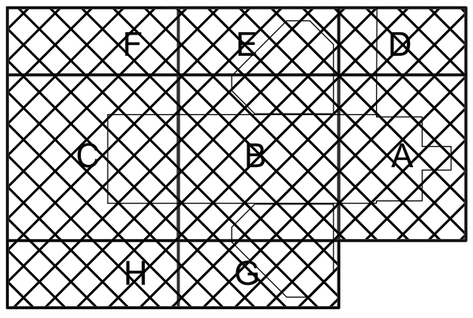
RCC STATION
LIFE SAFETY
LIFE SAFETY PLAN
PLATFORM LEVEL - OVERALL

Package: **B04 - RBLS0034**
Sheet Reference No: V6 - 131 of 260

Local File:A360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-RCFPXX01_R17_A360.rvt
Central File: BIM 360//62421 - Phoenix Sky Train Project - Stage 2/062421_FR01_S_central_R17_A360.rvt
Project Number: 62421
7/11/2018 3:06:33 PM

GENERAL NOTES:

1. DUE TO THE REQUIREMENTS TO INTERFACE WITH EXISTING FACILITIES AND UTILITIES. IT IS RECOMMENDED THAT THE CONTRACTOR VISIT THE SITE TO DETERMINE EXISTING CONDITIONS PRIOR TO BID.
2. VERIFY THE EXACT LOCATION AND ELEVATION OF ALL ELECTRICAL EQUIPMENT PRIOR TO ROUGH-IN. FINAL CONNECTIONS OF EQUIPMENT SHALL BE PER MANUFACTURERS APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
3. ORDER AND/OR RELEASE ORDERED MATERIALS PROMPTLY AFTER SUBMITTAL APPROVAL. NO SUBSTITUTIONS OR ALTERNATE METHODS OF INSTALLATION WILL BE ACCEPTED FOR FAILURE TO ORDER MATERIALS IN A TIMELY FASHION.
4. ALL ELBOWS AND EXPOSED RISERS SHALL BE RIGID STEEL CONDUIT AND WRAPPED IN APPROVED PVC TAPE WHEN INSTALLED UNDERGROUND.
5. ALL EQUIPMENT AND REQUIREMENTS OF CITY OF PHOENIX AVIATION DEPARTMENT DESIGN MANUAL SHALL BE MET.
6. COLOR ALL CONDUIT AS REQUIRED BY CITY OF PHOENIX AVIATION DEPARTMENT DESIGN MANUAL UNLESS OTHERWISE NOTED ON PLANS.
   a. ELECTRICAL: RACEWAY SUPPLIED COLOR
   b. CITY COMM: YELLOW
   c. FIRE ALARM: RED
   d. HVAC CONTROL: WHITE
   e. ACAMS: GREEN
   f. SHARED CITY COMM AND ACAMS: STRIPPED GREEN AND YELLOW
   g. ATC: RACEWAY SUPPLIED COLOR
7. ALL UNDERGROUND CONDUIT SHALL BE ENCASED IN RED CONCRETE.
8. ALL CONDUIT SHALL ENTER AND EXIT OPPOSITE SIDES OF PULL BOXES AND MANHOLES.
9. ALL CONDUIT SHALL BE RIGID CONDUIT WHERE COMMUNICATIONS ENTER BUILDING AND EXTEND TO FIRST POINT OF CABLE DEMARCATION. ALL OUTDOOR RATED CABLE SHALL BE IN RIGID CONDUIT.
10. PROVIDE CONDUIT AND PULL BOXES FOR BOMBARDIER SYSTEMS. ALL DEVICE LOCATIONS SHALL BE ROUTED TO ATC ROOM.



KEY MAP

COMMUNICATIONS NOTES:

1. ALL OUTSIDE PLANT ABOVE GROUND COMMUNICATIONS CONDUIT SHALL BE GALVANIZED RIGID STEEL CONDUIT (GRC) AND ALL INSIDE PLANT ABOVE GROUND COMMUNICATIONS CONDUIT SHALL BE ELECTRICAL METALLIC TUBING (EMT) UNLESS OTHERWISE NOTED.
2. ALL CONDUIT (GRC AND EMT) WALL PENETRATIONS TO BE FIRE SEALED PER CODE.
3. ADD PULL BOXES, AS NECESSARY, TO ENSURE COMMUNICATIONS EMT CONDUIT RUNS DO NOT EXCEED 180 DEGREES OF BENDS AND CONTAIN NO MORE THAN TWO 90-DEGREE ELBOWS BETWEEN PULL BOXES.
4. MINIMUM BEND RADII FOR 2-INCH CONDUIT AND SMALLER IS 6 TIMES INTERNAL CONDUIT DIAMETER AND THE MINIMUM BEND RADII FOR LARGER THAN 2-INCH CONDUIT IS 10 TIMES INTERNAL CONDUIT DIAMETER.
5. CONTRACTOR TO INSTALL 1,200 LB. TEST PULL STRING IN ALL COMMUNICATIONS CONDUITS, EXCEPT 4" CONDUITS. INSTALL 2,500 LB. TEST PULL STRING IN ALL 4" CONDUITS. PULL STRING TO BE SECURED AT BOTH ENDS.
6. ALL COMMUNICATIONS CABLING, FIBER AND COPPER, TO BE PROVIDED AND INSTALLED BY THE CITY OF PHOENIX.
7. CONTRACTOR TO INSTALL 4" X 4" X 2⅛" DEEP OUTLET BOX WITH SINGLE-GANG MUD RING AT ALL COMMUNICATIONS LOCATIONS, UNLESS OTHERWISE NOTED.
8. ALL MECHANICAL DUCTING, DIFFUSERS, LIGHTING, FIRE SUPPRESSION PIPING, NOZZLES, AND SPRINKLERS SHALL BE A MINIMUM OF 120 INCHES ABOVE FINISHED FLOOR TO MAINTAIN WORKING CLEARANCE FOR COMMUNICATIONS PATHWAYS.

LEGEND

- PULL BOX
- [A] OUTLET BOX FOR AUTOMATED EXTERNAL DEFIBRILLATOR (AED)
- [P] PED DEVICE
- TWO-DATA/TWO VOICE OUTLET BOX ON 18" ON CENTER AFF
- W WALL PHONE OUTLET BOX 48" ON CENTER AFF
- CEILING MOUNTED DATA OUTLET BOX
- FLOOR MOUNTED DATA
- DATA OUTLET BOX
- COMMUNICATIONS CABINET/RACK
- COMMUNICATIONS CONDUIT (ABOVE GROUND)
- COMMUNICATIONS CONDUIT (UNDERGROUND)
- INDICATES CONDUIT TURNING UP OR TOWARDS THE VIEWER
- INDICATES CONDUIT TURNING DOWN OR AWAY FROM THE VIEWER
- CABLE TRAY
- CONDUITS AND JUNCTION BOXES FOR ELECTRICAL DOOR ACCESS CONTROLS
- CONDUIT STUB OUT LOCATION
- TBG

ABBREVIATIONS

ACAMS	ACCESS CONTROL AND DEVICE MONITORING SYSTEM
ACS	ACCESS CONTROL SYSTEM COMPONENT OF ACAMS
ATC	AUTOMATED TRAIN CONTROL
CITY COMM	CITY COMMUNICATIONS
COP	CITY OF PHOENIX
DM	DEVICE MONITORING COMPONENT OF ACAMS
ENT	ENTRANCE
EVIDS	ELECTRONIC VISUAL DISPLAY SYSTEM (FIDS AND ADVERTISING USE)
EXT	EXISTING
FIDS	FLIGHT INFORMATION DISPLAY SYSTEM APPLICATION OF EVIDS
ITS	INFORMATION TECHNOLOGY SYSTEMS
PA	PUBLIC ADDRESS SYSTEM
PEDS	PASSENGER EMERGENCY AND DURESS SYSTEM
TBG	TELECOMMUNICATIONS GROUND BUSBAR

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA USA
Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

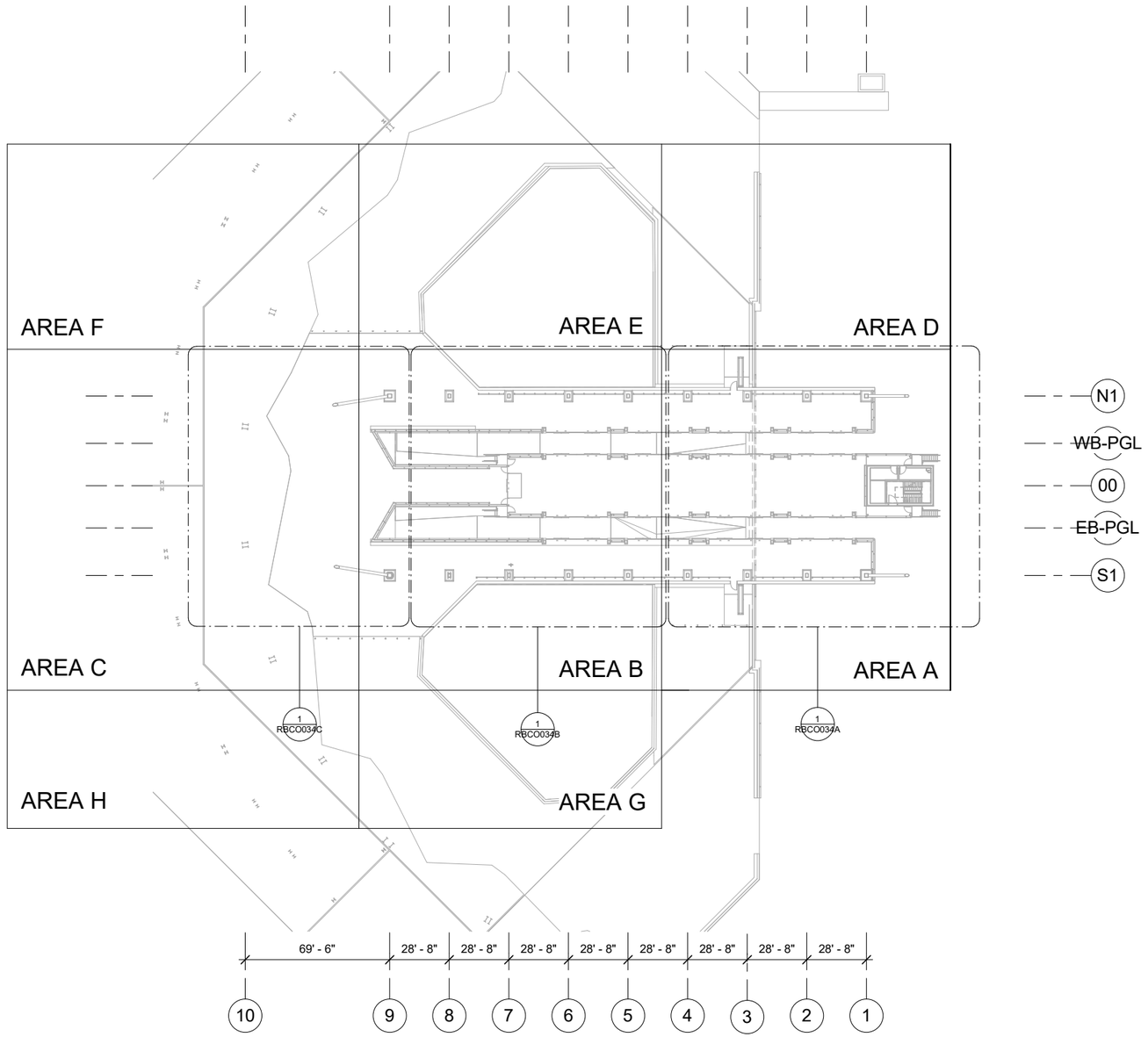
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KIVA No.: 07-5204

STAGE 2 - B04 DESIGN SUBMISSION

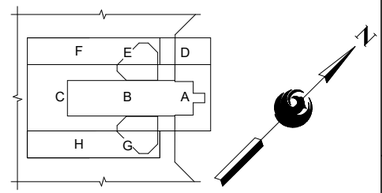
RCC STATION COMMUNICATIONS GENERAL NOTES AND LEGEND

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Sheet Reference No: RBCO0001

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673360\AV10000011-S-2-RCC0000C001.dwg Daniel.Thompson



1 LEVEL 4 - PLATFORM
SCALE: 1/32" = 1'-0"



KEY PLAN

0' 16' 32' 64'

PER CITY OF PHOENIX ORDINANCE G-4336, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

Registered Professional Engineer - Electrical
49025
PETER M. SYNTAX
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/32" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
KEY MAP
COMMUNICATIONS

Package: **B04 - RBCO030A**
Sheet Reference No:
V6 - 133 of 260

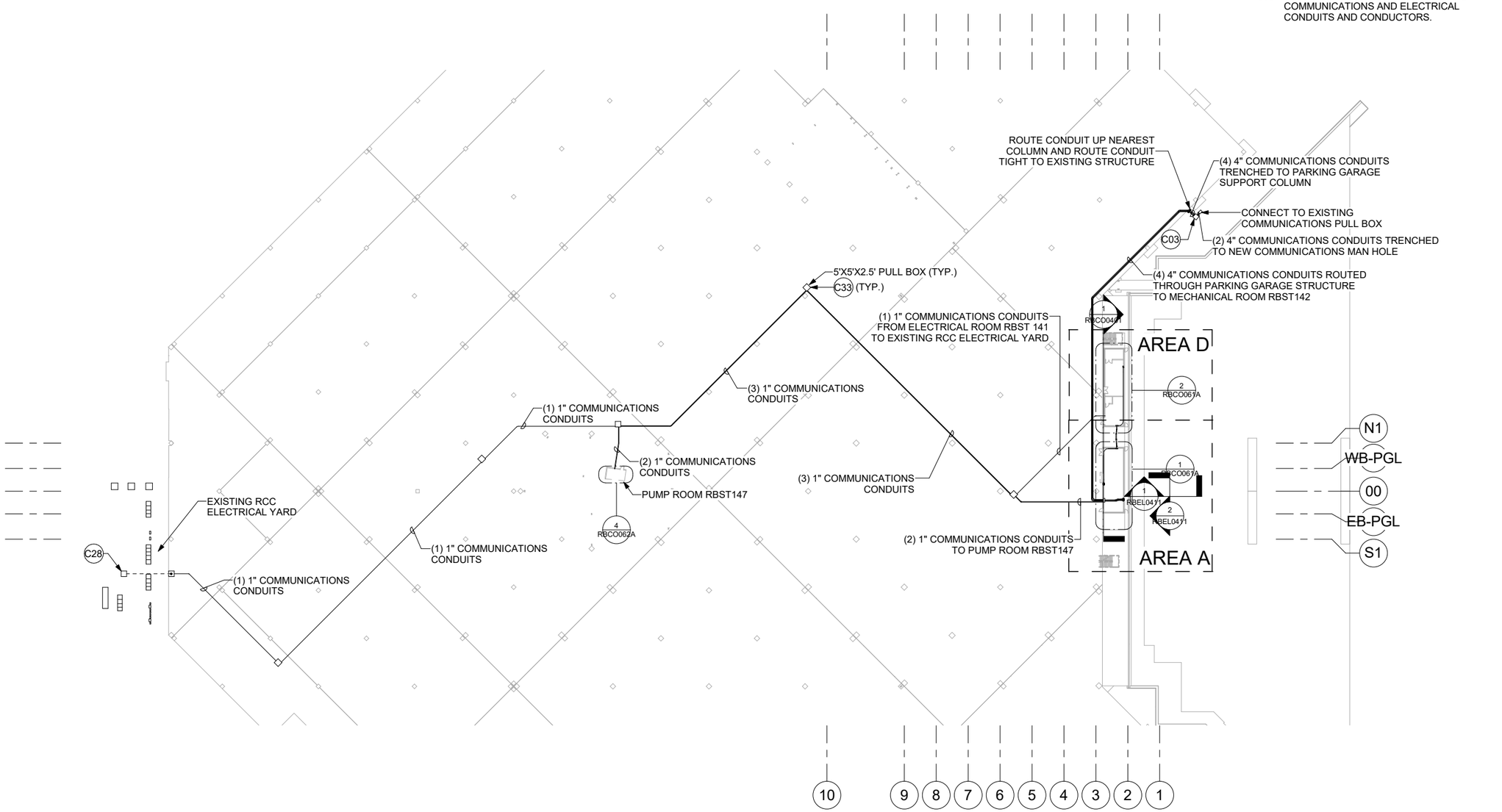
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CONSTRUCTION NOTES

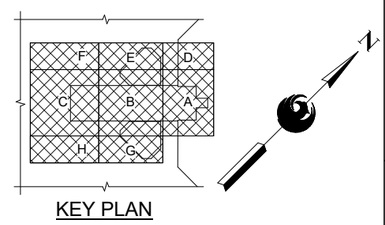
C03 INSTALL 4'x 4'x 4' COMMUNICATIONS MANHOLE PER DETAIL 1 ON SHEET B04-RBCO0806.

C28 INSTALL COMMUNICATIONS PULL BOX PER DETAIL 2 ON SHEET B04-RBCO0806.

C33 ADD PULL BOX DIVIDER TO SEPERATE COMMUNICATIONS AND ELECTRICAL CONDUITS AND CONDUCTORS.



1 COMMUNICATIONS LEVEL 1 - GROUND - AREA A AND AREA D
SCALE: 1" = 50'-0"



KEY PLAN

0' 25' 50' 100'

Project Number: Project Number
7/13/2018 5:29:55 PM

Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt

Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
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	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

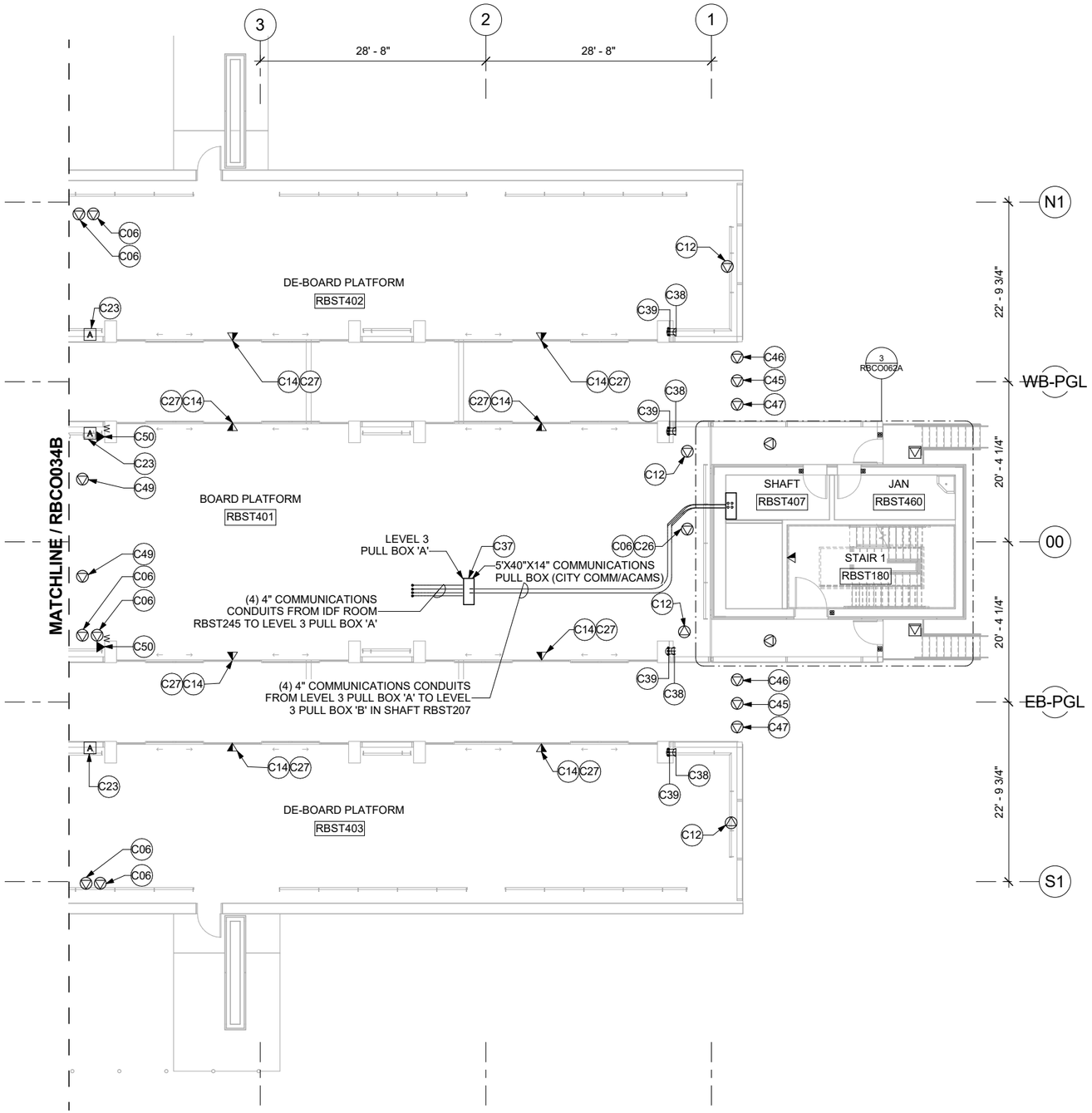
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Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1" = 50'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
SITE PLAN
COMMUNICATIONS
LEVEL 1 - GROUND
AREA A AND AREA D

Package: B04 - RBCO031A

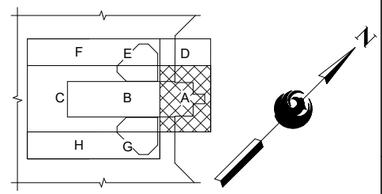
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V6 - 134 of 260



1 **COMMUNICATIONS LEVEL 4 - PLATFORM - AREA A**
SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

- C06 INSTALL (1) 1" (CITY COMM) CONDUIT TO LEVEL 4 CITY COMM AND ACAMS PULL BOX IN SHAFT RBST407. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR CITY COMM AND ACAMS USE ONLY.
- C12 INSTALL (2) 3/4" CONDUIT (ATC) TO ATC CABLE TRAY. SEE ELECTRICAL PLANS FOR CABLE TRAY LOCATION.
- C14 INSTALL (1) 1" CONDUIT (PA) TO LEVEL 3 CITY COMM AND ACAMS PULL BOX 'A'. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR FIRE ALARM AND PA USE ONLY.
- C23 INSTALL (1) 1" CONDUIT (ACAMS) TO LEVEL 3 CITY COMM AND ACAMS PULL BOX 'A'. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR ACAMS AND CITY COMM USE ONLY.
- C26 INSTALL FLUSH MOUNTED BOX (4" X 4" X 2 1/8" DEEP) WITH BLANK COVER FOR FUTURE EVIDS/FIDS.
- C27 INSTALL FLUSH MOUNTED BOX (4" X 4" X 2 1/8" DEEP) WITH BLANK COVER ABOVE DOOR HEADER FOR PA SYSTEM.
- C37 CITY COMMUNICATIONS PULL BOX TO SERVE BELOW PLATFORM AREA COMMUNICATIONS.
- C38 ROUTE (3) 1.5" COMMUNICATIONS CONDUITS FOR PA SYSTEM TO LEVEL 2 IDF ROOM VIA THE CITY COMMUNICATIONS PULL BOX UNDER PLATFORM.
- C39 ROUTE (3) 1.5" COMMUNICATIONS CONDUITS FOR PA SYSTEM UP COLUMN TO DOOR HEADER CHASE. REFER TO PA PLANS FOR DEVICE LOCATIONS.
- C45 PROVIDE FLUSH MOUNT JUNCTION BOX TO THE UNDERSIDE OF DECK. ROUTE (2) 3/4" CONDUIT TO ATC ROOM FOR CBTC ANTENNAS. COORDINATE LOCATION WITH BOMBARDIER PRIOR TO ROUGH-IN.
- C46 PROVIDE FLUSH MOUNT JUNCTION BOX TO UNDERSIDE OF DECK. ROUTE (2) 3/4" CONDUIT TO ATC ROOM FOR GUIDEWAY CAMERAS. COORDINATE WITH BOMBARDIER PRIOR TO ROUGH-IN.
- C47 PROVIDE (2) 1" CONDUITS AND FLUSH MOUNTED BOXES PER BOMBARDIER BWAN ANTENNA AND WNRA ENCLOSURES. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH BOMBARDIER PRIOR TO ROUGH-IN.
- C49 PROVIDE 3/4" CONDUIT FROM CEILING TO ATC ROOM FOR FUTURE MICROPHONE. COORDINATE WITH BOMBARDIER PRIOR TO ROUGH-IN.
- C50 PROVIDE JUNCTION BOX FLUSH MOUNTED IN WALL 3'6" ABOVE FLOOR FOR BOMBARDIER WALL PHONE. PROVIDE (2) 3/4" CONDUIT TO CABLE TRAY. COORDINATE EXACT LOCATION WITH ARCHITECT AND BOMBARDIER PRIOR TO ROUGH-IN.



KEY PLAN

0' 4' 8' 16'

Peter M. Syntax — Electrical — Arizona — 49025 — Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR CIRCULATION ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

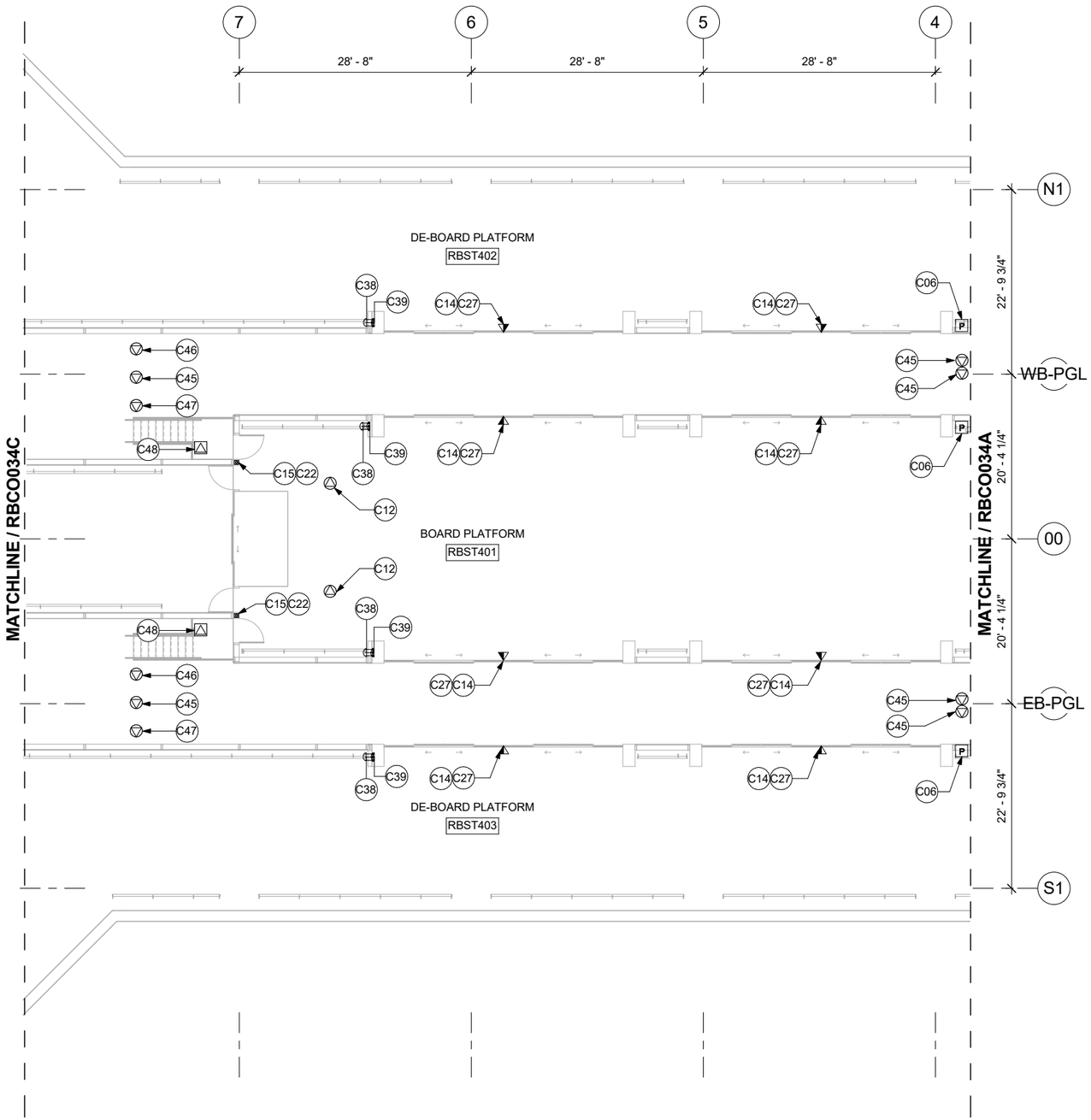
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
SITE PLAN
COMMUNICATIONS
LEVEL 4 - PLATFORM
AREA A

Package: B04 - RBCO034A

Sheet Reference No:

Project Number: Project Number
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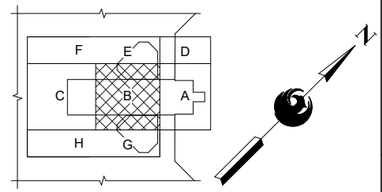


1 COMMUNICATIONS LEVEL 4 - PLATFORM - AREA B

SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

- C06 INSTALL (1) 1" (CITY COMM) CONDUIT TO LEVEL 4 CITY COMM AND ACAMS PULL BOX IN SHAFT RBST407. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR CITY COMM AND ACAMS USE ONLY.
- C12 INSTALL (2) 3/4" CONDUIT (ATC) TO ATC CABLE TRAY. SEE ELECTRICAL PLANS FOR CABLE TRAY LOCATION.
- C14 INSTALL (1) 1" CONDUIT (PA) TO LEVEL 3 CITY COMM AND ACAMS PULL BOX 'A'. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR FIRE ALARM AND PA USE ONLY.
- C15 INSTALL CONDUITS AND JUNCTION BOXES IN AND BELOW DOOR FRAME FOR SINGLE DOOR PER DETAIL ON SHEET B04-RBCO0805.
- C22 INSTALL (1) 1.25" CONDUIT (ACAMS) TO LEVEL 3 CITY COMM AND ACAMS PULL BOX 'A'. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR ACAMS AND CITY COMM USE ONLY.
- C27 INSTALL FLUSH MOUNTED BOX (4" X 4" X 2 1/8" DEEP) WITH BLANK COVER ABOVE DOOR HEADER FOR PA SYSTEM.
- C38 ROUTE (3) 1.5" COMMUNICATIONS CONDUITS FOR PA SYSTEM TO LEVEL 2 IDF ROOM VIA THE CITY COMMUNICATIONS PULL BOX UNDER PLATFORM.
- C39 ROUTE (3) 1.5" COMMUNICATIONS CONDUITS FOR PA SYSTEM UP COLUMN TO DOOR HEADER CHASE. REFER TO PA PLANS FOR DEVICE LOCATIONS.
- C45 PROVIDE FLUSH MOUNT JUNCTION BOX TO THE UNDERSIDE OF DECK. ROUTE (2) 3/4" CONDUIT TO ATC ROOM FOR CBTC ANTENNAS. COORDINATE LOCATION WITH BOMBARDIER PRIOR TO ROUGH-IN.
- C46 PROVIDE FLUSH MOUNT JUNCTION BOX TO UNDERSIDE OF DECK. ROUTE (2) 3/4" CONDUIT TO ATC ROOM FOR GUIDEWAY CAMERAS. COORDINATE WITH BOMBARDIER PRIOR TO ROUGH-IN.
- C47 PROVIDE (2) 1" CONDUITS AND FLUSH MOUNTED BOXES PER BOMBARDIER BWAN ANTENNA AND WNRA ENCLOSURES. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH BOMBARDIER PRIOR TO ROUGH-IN.
- C48 PROVIDE 3" SLEEVE FOR FUTURE BLUE PHONE. COORDINATE WITH BOMBARDIER PRIOR TO ROUGH-IN.



KEY PLAN

0' 4' 8' 16'

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

Expires 12-31-2020

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
SITE PLAN
COMMUNICATIONS
LEVEL 4 - PLATFORM
AREA B

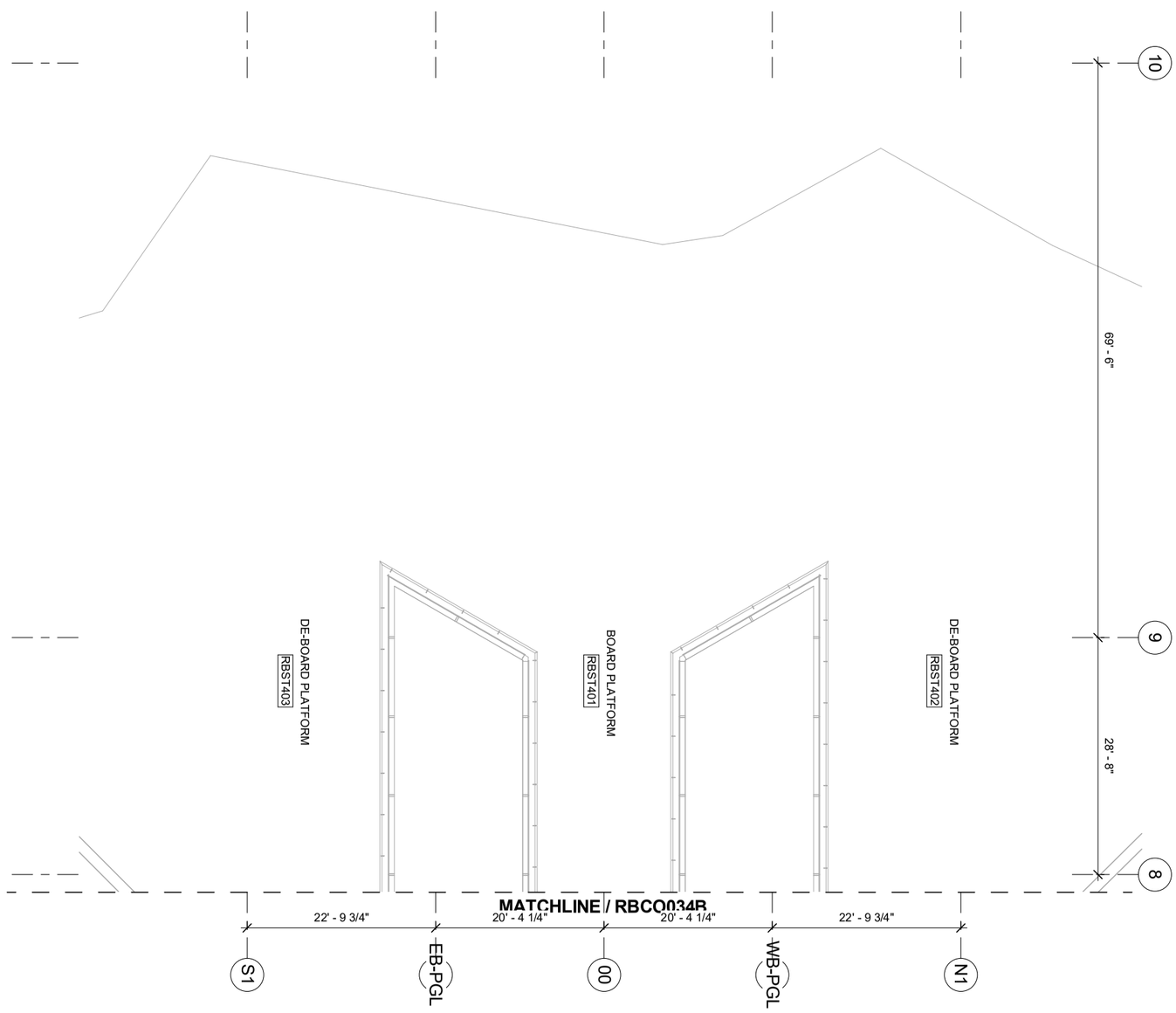
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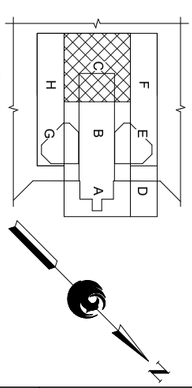
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1 COMMUNICATIONS LEVEL 4 - PLATFORM - AREA C
SCALE: 1/8" = 1'-0"

0' 4' 8' 16'

KEY PLAN



STAGE 2 - B04 DESIGN SUBMISSION

Package: **B04 - RBC0034C**
Sheet Reference No: V6 - 137 of 260

RCC STATION
SITE PLAN
COMMUNICATIONS
LEVEL 4 - PLATFORM
AREA C

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

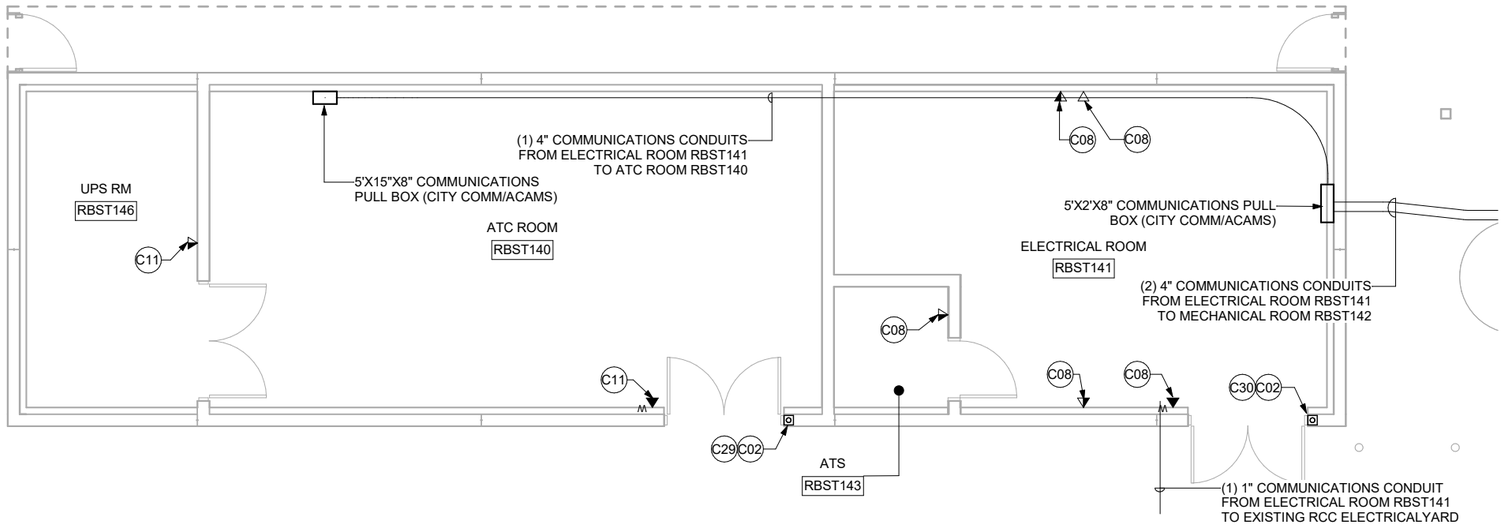
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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer
49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA, U.S.A.
Expires 12-31-2020

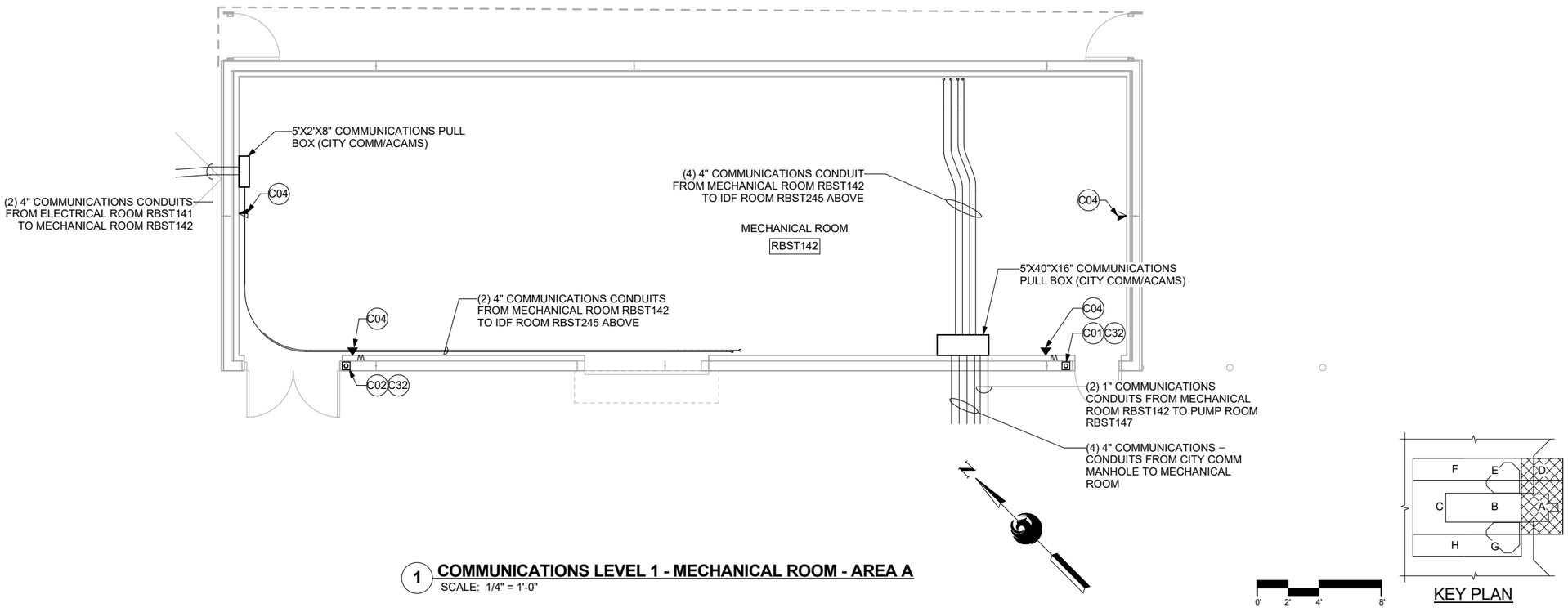
Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming



2 COMMUNICATIONS LEVEL 1 - ELECTRICAL AND ATC ROOMS - AREA D

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



1 COMMUNICATIONS LEVEL 1 - MECHANICAL ROOM - AREA A

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

KEY PLAN

0' 2' 4' 8'

CONSTRUCTION NOTES

- C01 INSTALL CONDUITS AND JUNCTION BOXES IN AND ABOVE WALL FOR SINGLE DOOR PER DETAIL 1 ON SHEET B04-RBCO0804.
- C04 INSTALL (1) 1" CONDUIT (CITY COMM) TO CITY COMM AND ACAMS PULL BOX (SW SIDE) IN LEVEL 1 MECHANICAL ROOM.
- C08 INSTALL (1) 1" CONDUIT (CITY COMM) TO CITY COMM AND ACAMS PULL BOX IN LEVEL 1 ELECTRICAL ROOM. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN.
- C11 INSTALL (1) 1" CONDUIT (CITY COMM) TO CITY COMM AND ACAMS PULL BOX IN LEVEL 1 ATC ROOM. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN.
- C32 INSTALL (2) 4" CONDUIT (ATC) FROM CITY ATC PULL BOX IN SHAFT TO ATC PULL BOX IN LEVEL 2 IDF ROOM.

Registered Professional Engineer - Electrical - USA
49025
PETER M. SYNYAK
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
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CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

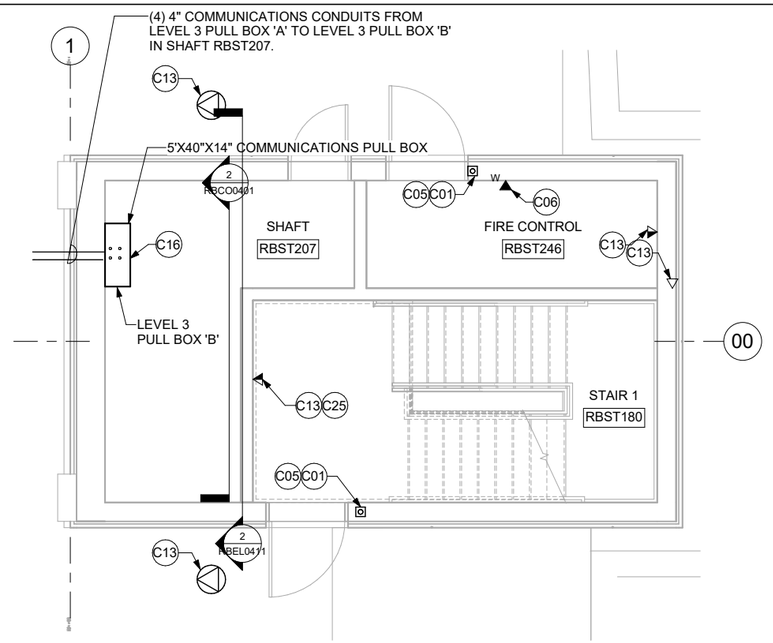
RCC STATION
SITE PLAN
COMMUNICATIONS
LEVEL 1 - ENLARGED PLAN
ATC, ELECTRICAL, AND MECHANICAL ROOMS

Package: B04 - RBCO061A

Sheet Reference No:

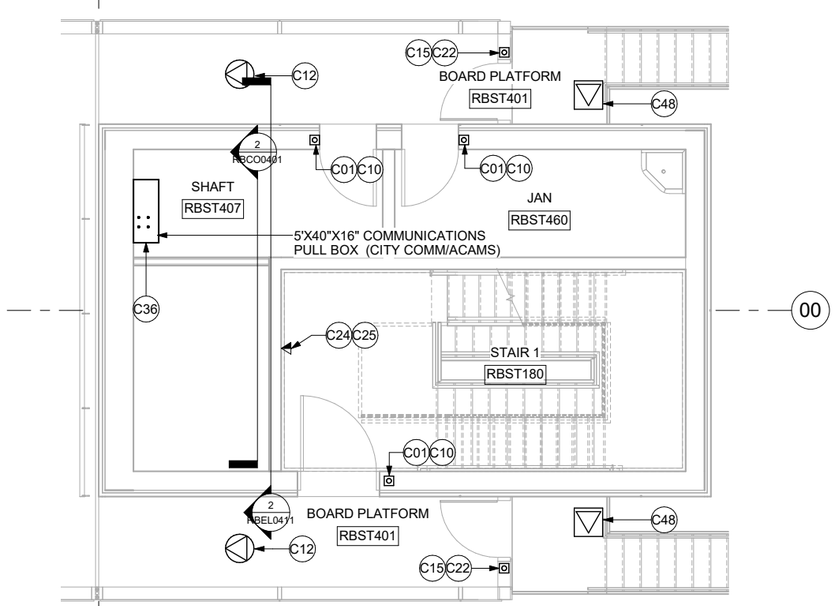
Project Number: Project Number
7/13/2018 5:30:11 PM

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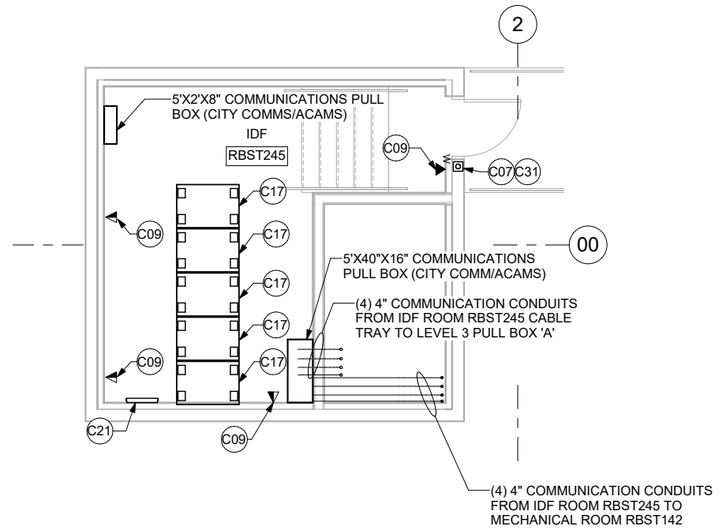
1 COMMUNICATIONS ENLARGED PLAN - LEVEL 3 - VERTICAL CIRCULATION CORE

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



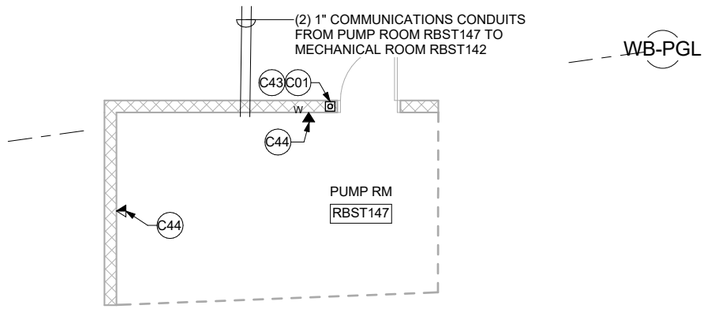
3 COMMUNICATIONS ENLARGED PLAN - LEVEL 4 - VERTICAL CIRCULATION CORE

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



2 COMMUNICATIONS ENLARGED PLAN - LEVEL 2 - IDF ROOM

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



4 COMMUNICATIONS ENLARGED PLAN - LEVEL 1 - PUMP ROOM

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

GENERAL NOTES

1. CONTRACTOR TO INSTALL 3/4" AC FIRE RATED PLYWOOD 6" AFF AROUND PERIMETER OF IDF ROOM. (SEE ARCHITECTURAL PLANS FOR PLYWOOD REQUIREMENTS.
2. CONTRACTOR SHALL LEAVE ONE FIRE RETARDANT STAMP VISIBLE FOR INSPECTION PER SHEET OF PLYWOOD.
3. WITHIN IDF ROOMS, ALL HORIZONTAL NON-COMMUNICATIONS DEVICES (SPRINKLER SYSTEM, ELECTRICAL CONDUIT, MECHANICAL DUCTWORK, LIGHTING, ETC.) SHALL BE INSTALLED 120" ABOVE FINISHED FLOOR, FOR SPACE FOR THE COMMUNICATIONS AND POWER CABLE TRAYS.

CONSTRUCTION NOTES

C01 INSTALL CONDUITS AND JUNCTION BOXES IN AND ABOVE WALL FOR SINGLE DOOR PER DETAIL 1 ON SHEET B04-RBCO0804.

C05 INSTALL (1) 1.25" CONDUIT (CITY COMM) TO LEVEL 3 CITY COMM AND ACAMS PULL BOX 'B' IN SHAFT RBST207.

C06 INSTALL (1) 1" (CITY COMM) CONDUIT TO LEVEL 4 CITY COMM AND ACAMS PULL BOX IN SHAFT RBST407. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR CITY COMM AND ACAMS USE ONLY.

C07 INSTALL CONDUITS AND JUNCTION BOXES IN AND ABOVE WALL FOR SINGLE DOOR PER DETAIL 1 ON SHEET B04-RBCO0803.

C09 INSTALL (1) 1" CONDUIT TO COMMUNICATIONS CABLE TRAY IN IDF ROOM.

C10 INSTALL (1) 1.25" CONDUIT (CITY COMM) TO LEVEL 4 CITY COMM AND ACAMS PULL BOX IN SHAFT RBST407.

C12 INSTALL (2) 3/4" CONDUIT (ATC) TO ATC CABLE TRAY. SEE ELECTRICAL PLANS FOR CABLE TRAY LOCATION.

C13 INSTALL (1) 1" CONDUIT (CITY COMM) TO LEVEL 3 CITY COMM AND ACAMS PULL BOX 'B' IN SHAFT RBST207.

C15 INSTALL CONDUITS AND JUNCTION BOXES IN AND BELOW DOOR FRAME FOR SINGLE DOOR PER DETAIL ON SHEET B04-RBCO0805.

C16 INSTALL (2) 4" CONDUIT (CITY COMM AND ACAMS) LEVEL 3 CITY COMM AND ACAMS PULL BOX 'B' IN SHAFT RBST207 TO LEVEL 4 PULL BOX IN SHAFT RBST407.

C17 INSTALL (2) 4" SQUARE BOXES ABOVE EQUIPMENT CABINET, EACH ABOVE A CABINET KNOCKOUT WITH L5-20R POWER RECEPTICAL AND BOX SUPPORT FOR MOUNTING TO THE POWER CABLE TRAY. ROUTE CONDUCTORS OF EACH CIRCUIT IN A SEPARATE SEAL-TIGHT FLEXIBLE CONDUIT TO DEDICATED 20A CIRCUIT BREAKER AT POWER PANEL. COORDINATE POWER TRAY AND CABINET LOCATIONS WITH THE CITY AND SEE DETAILS ON SHEET B04-RBCO0807 FOR ADDITIONAL DETAILS

C21 INSTALL TGB MOUNTED ON WALL 24" AFF AND PROVIDE BONDING JUMPERS PER DETAILS ON SHEET B04-RBCO0802. EXTEND #4/0 CU GROUND WIRE FROM GROUND BUSBAR TO BUILDING STEEL. SEE DETAILS.

C22 INSTALL (1) 1.25" CONDUIT (ACAMS) TO LEVEL 3 CITY COMM AND ACAMS PULL BOX 'A'. PROVIDE PULL BOXES AS NECESSARY. PULL BOXES SHALL BE DEDICATED FOR ACAMS AND CITY COMM USE ONLY.

C24 INSTALL (1) 1" CONDUIT (CITY COMM) TO LEVEL 4 CITY COMM AND ACAMS PULL BOX IN SHAFT RBST407.

C25 INSTALL FLUSH MOUNTED BOX (4" X 4" X 2 1/8" DEEP) AT 42" AFF WITH BLANK COVER FOR AREA OF REFUGE CALL BOX.

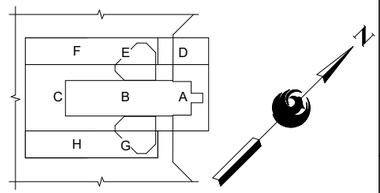
C31 INSTALL (1) 1.25" CONDUIT (ACAMS) TO ACCESS CONTROL PANEL IN IDF ROOM.

C36 INSTALL COMMUNICATIONS PULL BOX TO SERVE ABOVE PLATFORM AREA AND EPIDECK COMMUNICATIONS.

C43 INSTALL (1) 1.25" CONDUIT (CITY COMM) TO CITY COMM AND ACAMS PULL BOX IN PUMP ROOM RBST147.

C44 INSTALL (1) 1" CONDUIT (CITY COMM) TO CITY COMM AND ACAMS PULL BOX IN PUMP ROOM RBST147.

C48 PROVIDE 3" SLEEVE FOR FUTURE BLUE PHONE. COORDINATE WITH BOMBARDIER PRIOR TO ROUGH-IN.



KEY PLAN

0' 2' 4' 8'

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Designed by: PMS
Drawn by: BRB
Checked by: MAC
Date: 07/13/18
Dwg scale: 1/4" = 1'-0"
CIP No.: AV10000011
KIVA No.: 07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION SITE PLAN COMMUNICATIONS ENLARGED PLAN CORE BUILDING, IDF ROOM AND PUMP ROOM

Package: B04 - RBCO062A

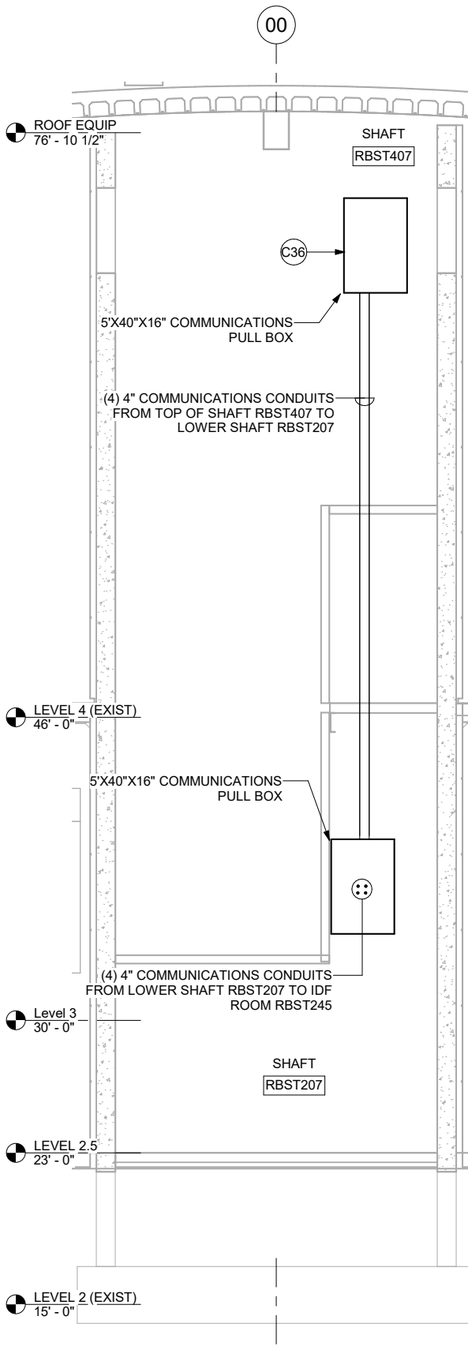
Sheet Reference No: V6 - 139 of 260

Expires 12-31-2020
Design Sub-Consultant
Kimley»Horn
Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

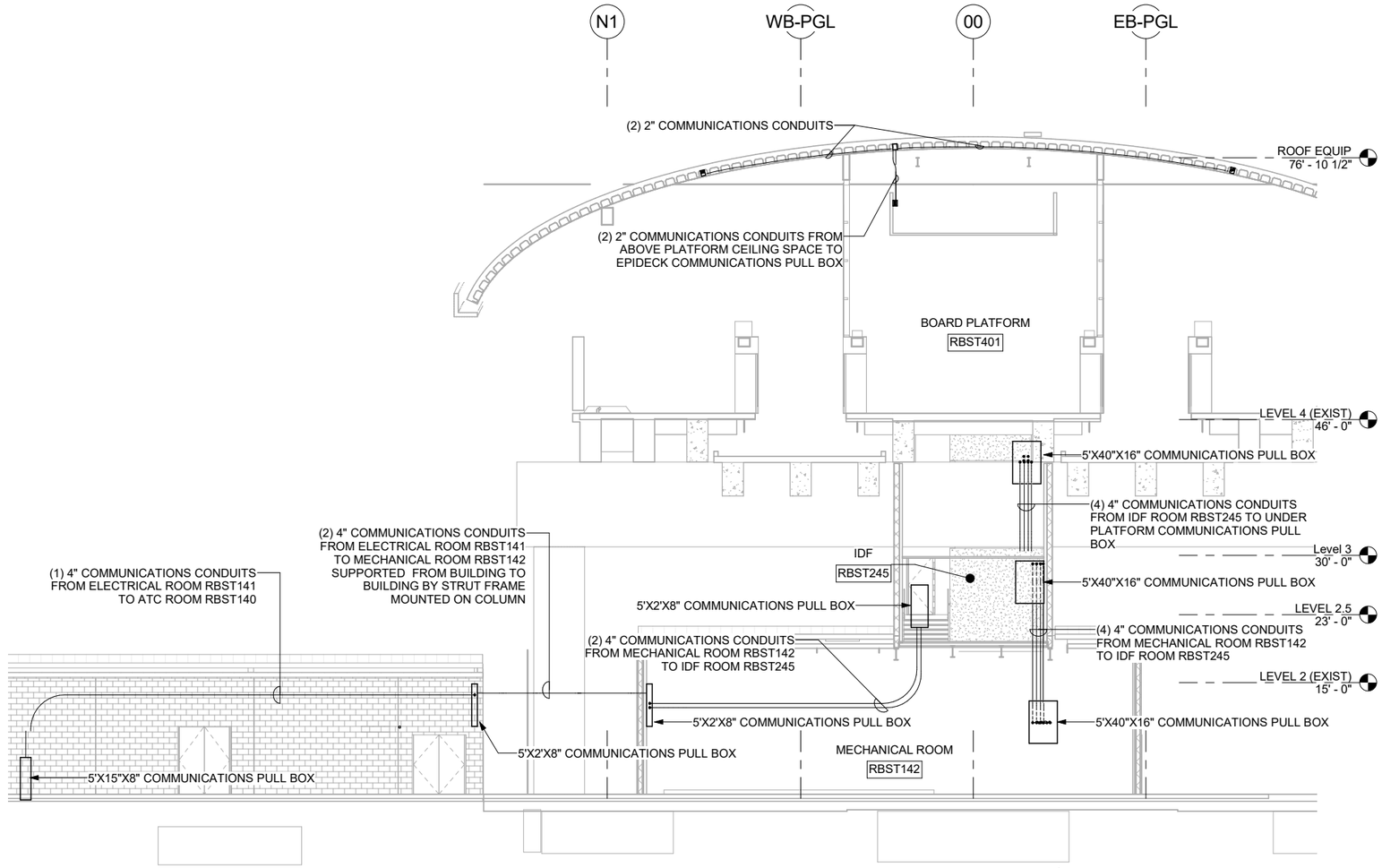
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7/13/2018 5:30:18 PM
Local File:BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt



2 SHAFT COMMUNICATIONS CONDUIT ROUTING

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

0' 2' 4' 8'



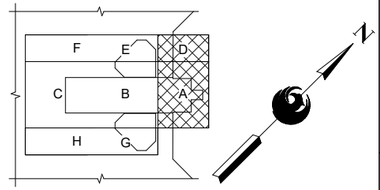
1 IDF ROOM COMMUNICATIONS CONDUIT ROUTING

SCALE: 1/8" = 1'-0"

0' 4' 8' 16'

CONSTRUCTION NOTES

~ C36 INSTALL COMMUNICATIONS PULL BOX TO SERVE ABOVE PLATFORM AREA AND EPIDECK COMMUNICATIONS.



KEY PLAN

Registered Electrical Engineer
49025
PETER M. SYNTAX
Expires 12-31-2020
Design Sub-Consultant
Kimley»Horn
Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

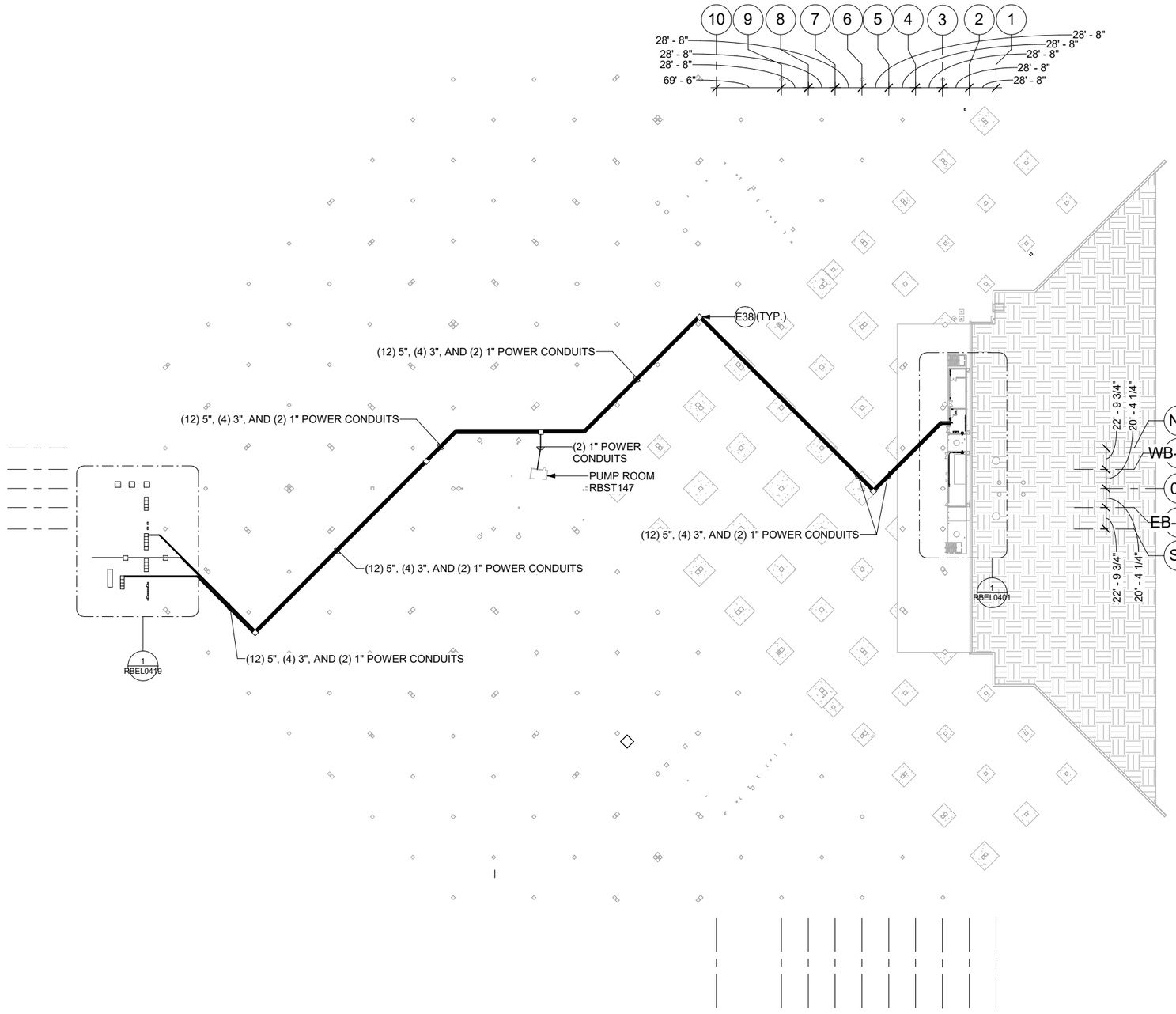
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION SECTIONS COMMUNICATIONS CONDUIT ROUTING

Package: B04 - RBCO0401

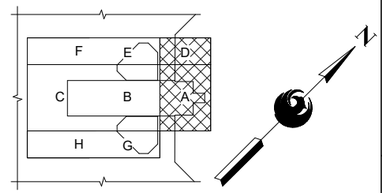
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Project Number: Project Number
7/13/2018 5:30:50 PM
Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELX001_R17_A360.rvt



1 RENTAL CAR CENTER CONDUIT ROUTING

SCALE: 1/64" = 1'-0"



KEY PLAN

0' 32' 64' 128'

CONSTRUCTION NOTES

E38 PROVIDE SEPARATE PULL BOXES FOR COMMUNICATIONS, HVAC, NORMAL POWER, EMERGENCY POWER, LEGALLY REQUIRED, AND OPTIONAL STANDBY SYSTEMS. ALL PULL BOXES SHALL BE LABELLED ACCORDINGLY.

Registered Professional Engineer - Electrical - 49025 - PETER M. SYNTAX - Date Signed - Not Valid Without Signature and Original Seal - Arizona U.S.A.

Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
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PHX DVT EYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/64" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

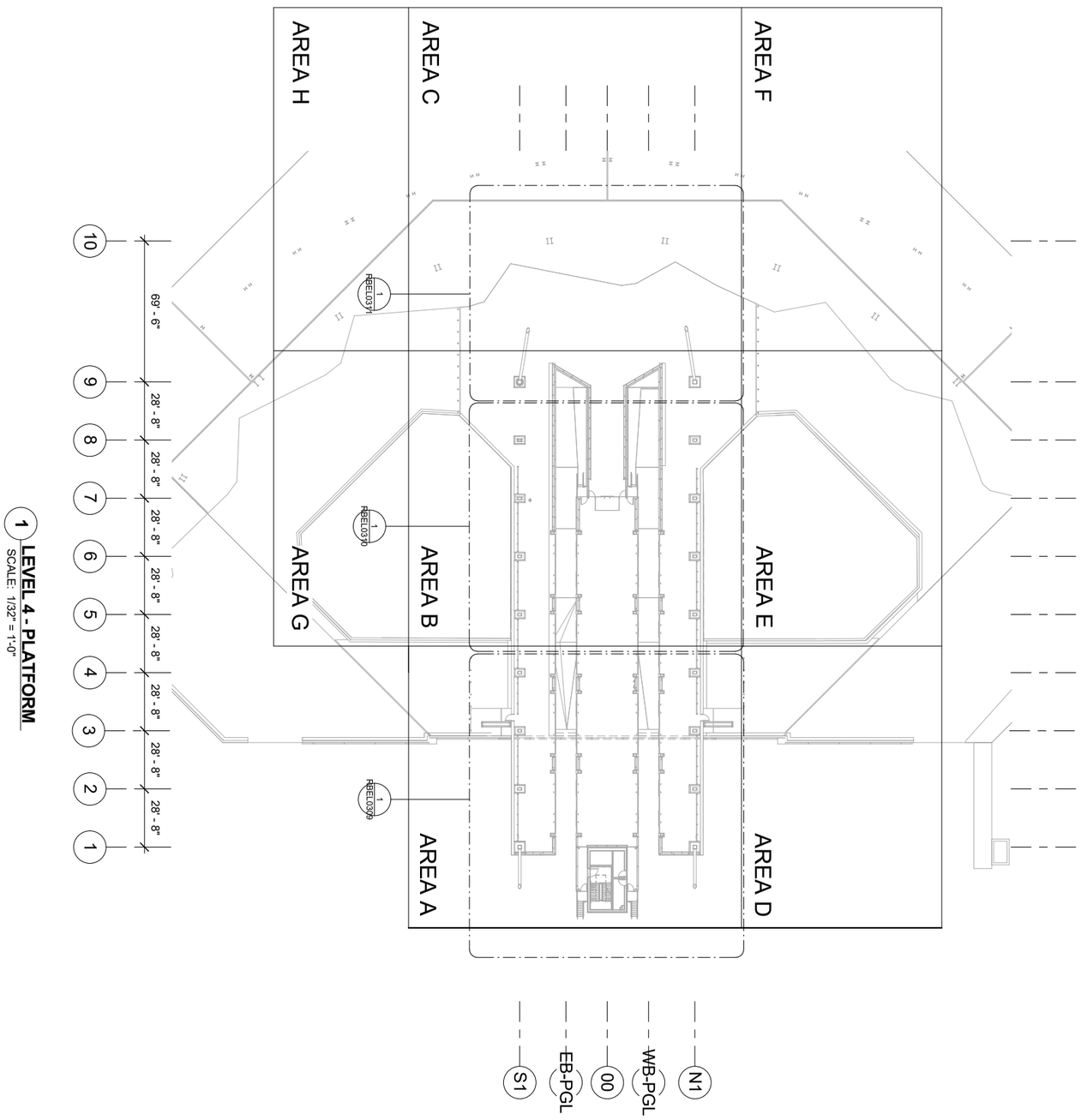
RCC STATION
PRIMARY STATION FEEDER
SITE PLAN
ELECTRICAL

Package: B04 - RBEL0201

Sheet Reference No: V6 - 141 of 260

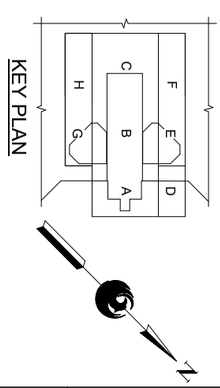
Project Number: Project Number
7/13/2018 5:30:56 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-RCELXX01_R17_A360.rvt



1 **LEVEL 4 - PLATFORM**
SCALE: 1/32" = 1'-0"

KEY PLAN



STAGE 2 - B04 DESIGN SUBMISSION

Package: **B04 - RBEL0301** Sheet Reference No:
V6 - 142 of 260

RCC STATION
KEY MAP
LIGHTING

Designed by:	PMS
Drawn by:	BRB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	1/32" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

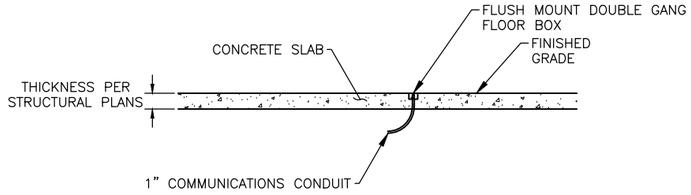
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

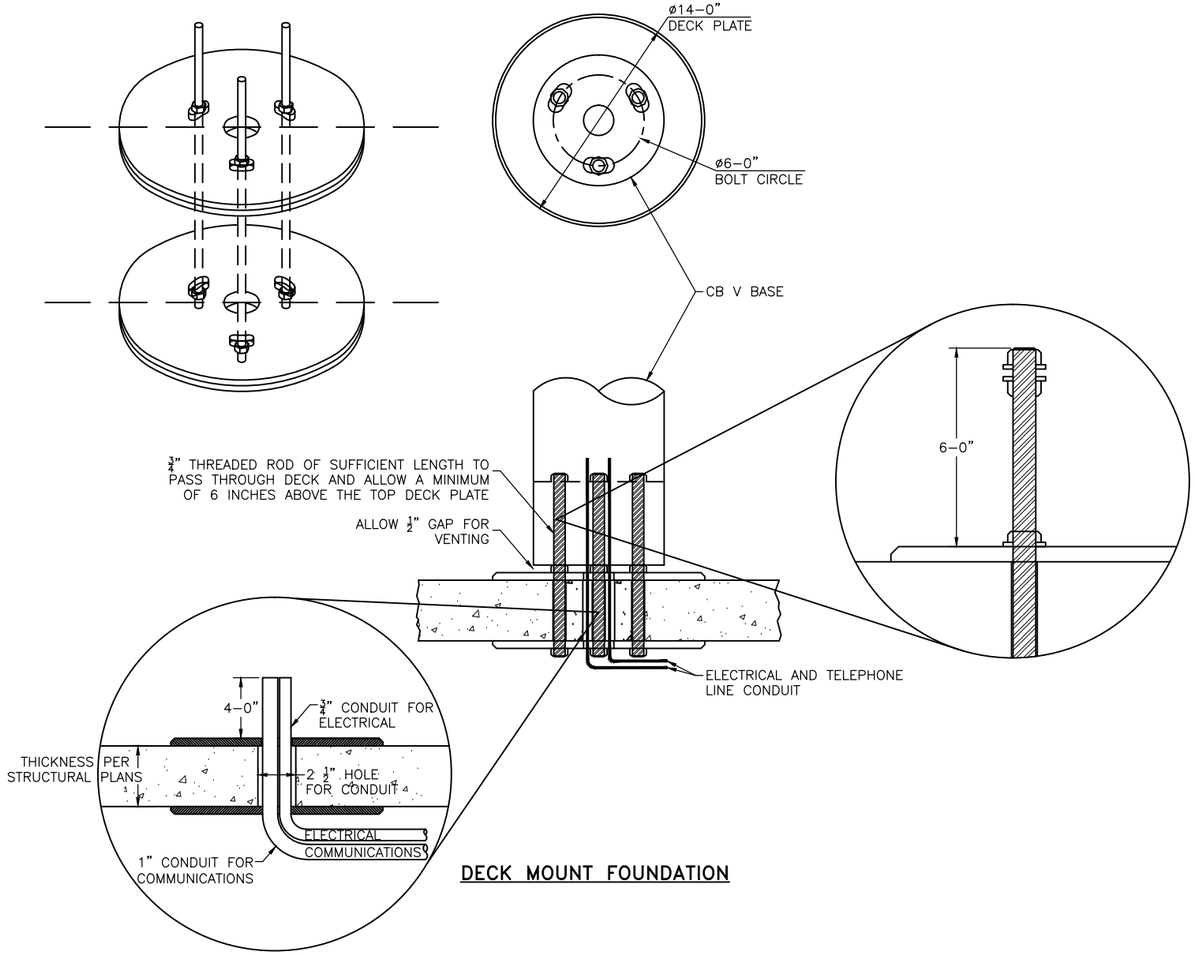
Registered Professional Engineer
49025
PETER M.
SYNTAX
ARIZONA, U.S.A.
Date Signed 07/13/18
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming



1 TYPICAL CONDUIT STUB UP TO FLOOR BOX
N.T.S.

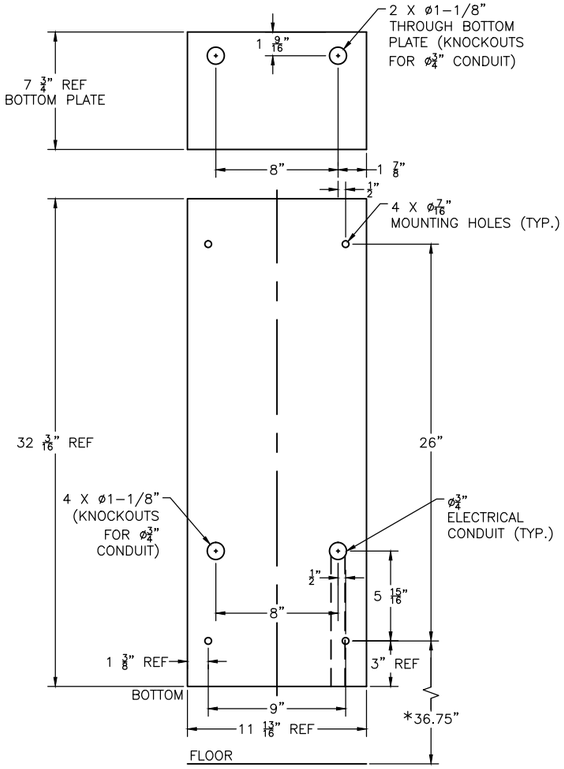


DECK MOUNT FOUNDATION

2 PEDS DETAILS (FLOOR MOUNT)
N.T.S.

GENERAL NOTES

1. CONTRACTOR SHALL ORDER PEDS UNITS THROUGH AN AUTHORIZED PEDS DEALER. THE AUTHORIZED DEALER SHALL PROVIDE A SUPERVISORY ROLE FOR PROGRAMMING PHONES.
2. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PHOENIX MAINTENANCE CONTRACTOR ONE WEEK PRIOR TO INSTALLATION FOR INSTALLATION SUPPORT.
3. MOUNTING PLATES AND TEMPLATES SHALL BE ORDERED PRIOR TO INSTALLATION.



3 PEDS DETAILS (WALL MOUNT)
N.T.S.

*INSTALLATION DIMENSIONS SHOWN FROM GROUND TO LOWER RIGHT MOUNTING HOLE ARE FOR DUAL BUTTON FACEPLATES.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	DATE
REVISIONS / SUBMISSIONS	
SUBMITTED FOR REVIEW	04/06/18
ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MLB
Drawn by:	MLB
Checked by:	DSH
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07–5204

STAGE 2 – B04 DESIGN SUBMISSION

RCC STATION
COMMUNICATIONS DETAILS
PEDS/AED

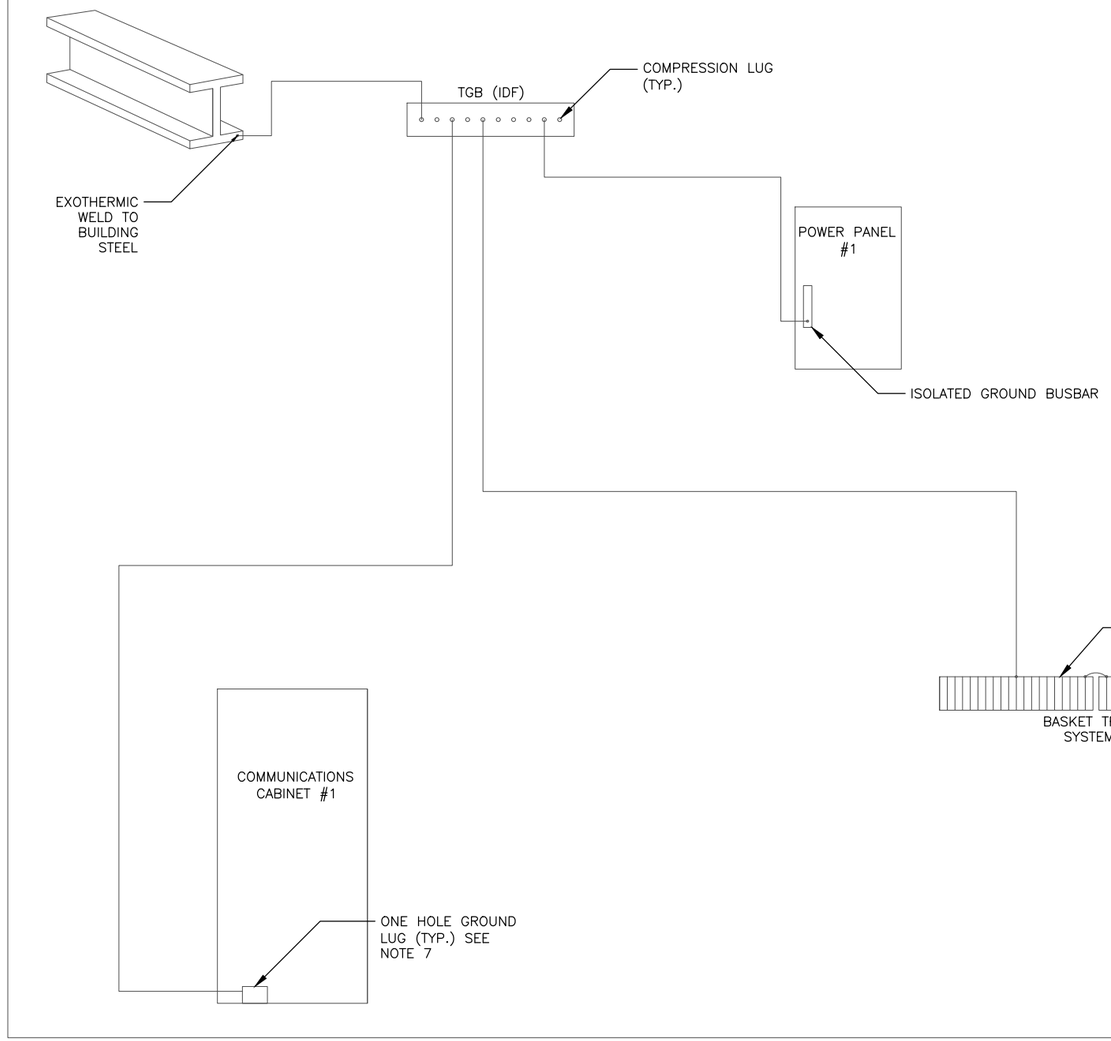
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PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d06733360\AV10000011-S-2-RCC008CZ05.dwg Daniel.Thompson

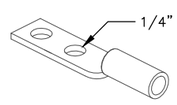
GENERAL NOTES

1. TO ENSURE SOLID CONNECTION BUILDING STEEL SHALL BE GROUND BARE AT CONNECTION POINT

BY CONTRACTOR

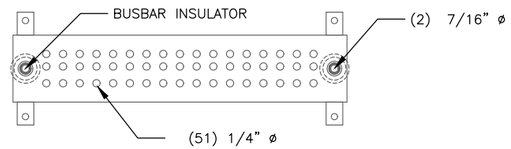


1 **COMMUNICATIONS GROUND DETAILS**
N.T.S.

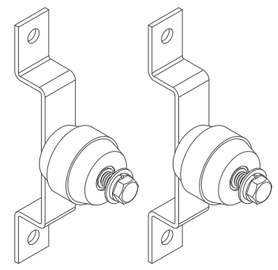


1. COMPRESSION LUG TO BE INSTALLED BY ELECTRICAL CONTRACTOR ON GROUND WIRE AT MAIN ELECTRICAL SERVICE GROUND AND AT TMGB/GB.

3 **COMPRESSION LUG**
N.T.S.

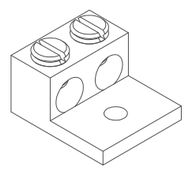


4 **TMGB/TGB BUSBAR**
N.T.S.



1. TO BE INSTALLED AS A MOUNTING DEVICE FOR THE TMGB/TGB
2. CONTRACTOR TO COORDINATE WITH CITY OF PHOENIX ITS AND COMMUNICATIONS DESIGNER FOR EXACT LOCATIONS

2 **BUSBAR INSULATOR**
N.T.S.



5 **ONE HOLE GROUND LUG**
N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673360\AV100000011-S-2-RCC008C205.dwg Daniel.Thompson

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA
Exp. Date 12/31/20
Design Sub-Consultant Kimley»Horn
Design Consultant Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
	ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

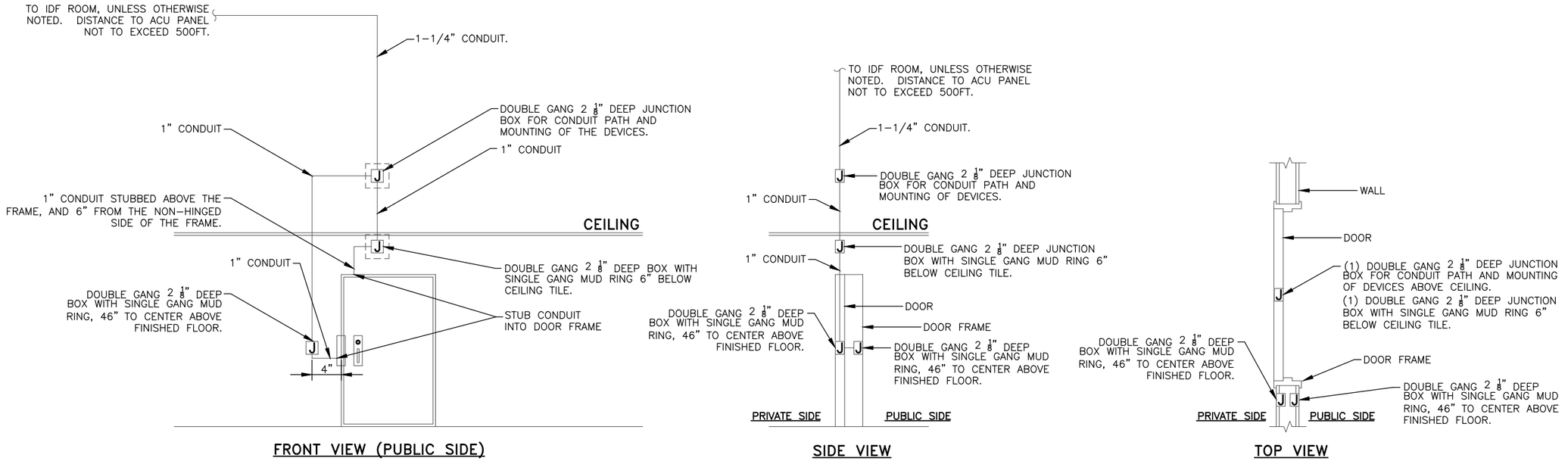
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: MLB	Drawn by: MLB
Checked by: DSH	Date: 07/13/18
Dwg scale: N.T.S.	CIP No.: AV10000011
KIVA No.: 07-5204	

STAGE 2 – B04 DESIGN SUBMISSION

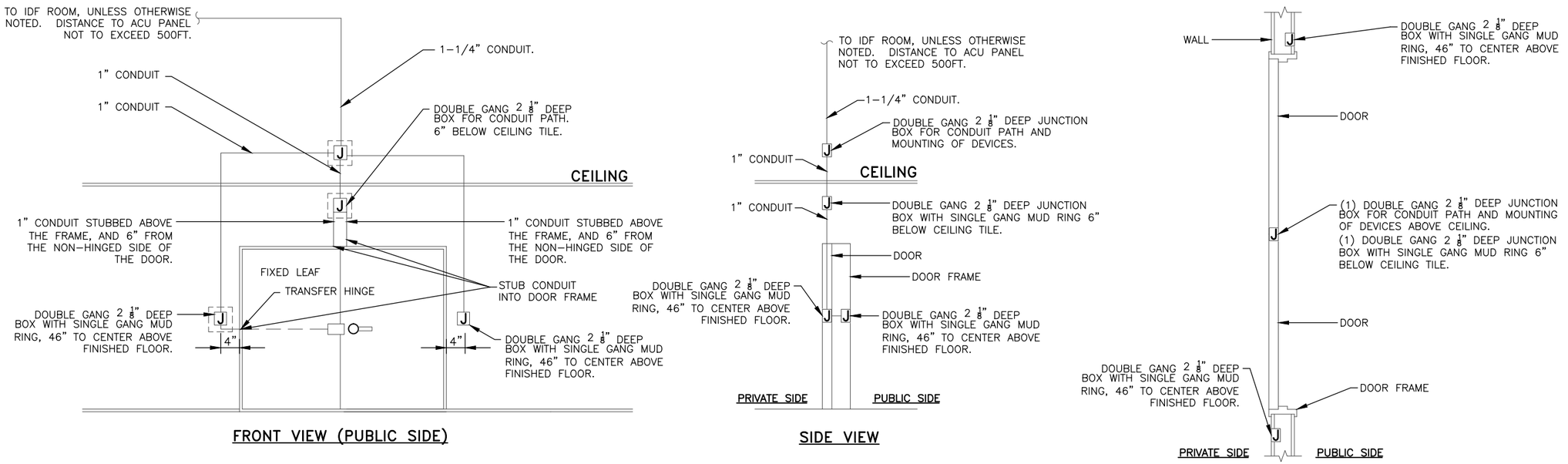
RCC STATION
COMMUNICATIONS DETAILS
IDF GROUNDING DETAILS

Package: B04 Sheet Reference No: **RBCO0802**



ITEMS SURROUNDED IN A "DOTTED BOX" ARE LOCATED ON THE SECURE SIDE OF THE DOOR.

1 SINGLE DOOR
SCALE: N.T.S.



ITEMS SURROUNDED IN A "DOTTED BOX" ARE LOCATED ON THE SECURE SIDE OF THE DOOR.

2 DOUBLE DOOR
SCALE: N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673360\AV10000011-S-2-RCC008C205.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant Kimley»Horn

Design Consultant Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX DOT BYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

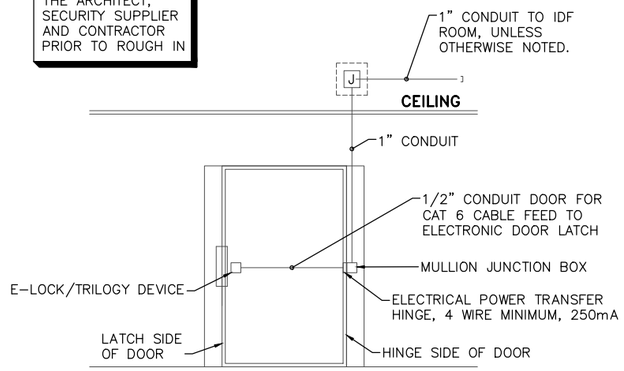
Designed by:	MLB
Drawn by:	MLB
Checked by:	DSH
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - 804 DESIGN SUBMISSION

RCC STATION
COMMUNICATIONS DETAILS
SECURE DOORS

Package: B04 - RBCO0803
Sheet Reference No:
V6 - 145 of 260

NOTE:
CHECK ALL ROUGH–IN REQUIREMENTS WITH THE ARCHITECT, SECURITY SUPPLIER AND CONTRACTOR PRIOR TO ROUGH IN

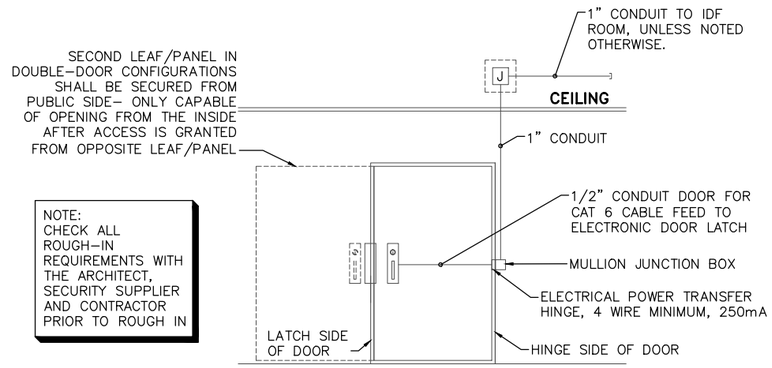


FRONT VIEW (PUBLIC SIDE)

1 E–LOCK/TRILOGY LOCK 'ROUGH–IN' AT SINGLE DOOR
N.T.S.

SECOND LEAF/PANEL IN DOUBLE–DOOR CONFIGURATIONS SHALL BE SECURED FROM PUBLIC SIDE– ONLY CAPABLE OF OPENING FROM THE INSIDE AFTER ACCESS IS GRANTED FROM OPPOSITE LEAF/PANEL

NOTE:
CHECK ALL ROUGH–IN REQUIREMENTS WITH THE ARCHITECT, SECURITY SUPPLIER AND CONTRACTOR PRIOR TO ROUGH IN



FRONT VIEW (PUBLIC SIDE)

2 E–LOCK/TRILOGY LOCK 'ROUGH–IN' AT SINGLE/DOUBLE DOOR
N.T.S.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673360\AV10000011-S-2-RCC008CZ05.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA

Exp. Date 12/31/20

Design Sub–Consultant Kimley»Horn

Design Consultant Gannett Fleming

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PHX DOT BYR
CITY OF PHOENIX AVIATION DEPARTMENT

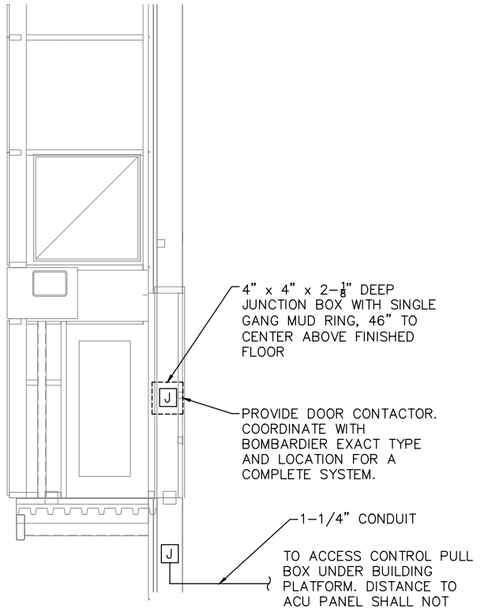
PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

STAGE 2 – B04 DESIGN SUBMISSION

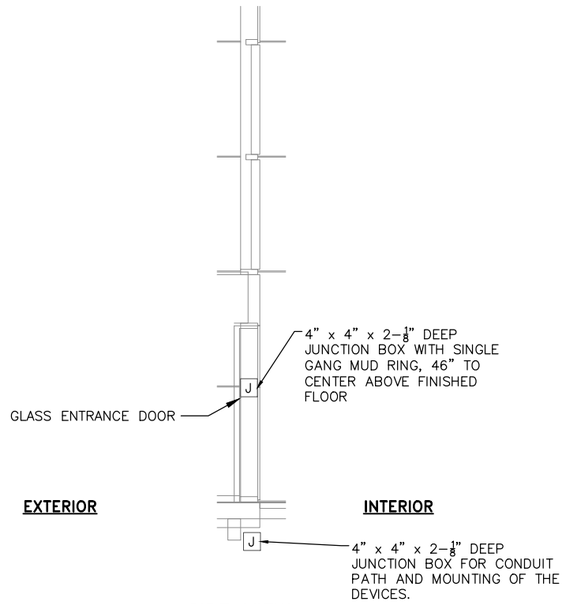
RCC STATION
COMMUNICATIONS DETAILS
SECURE DOORS

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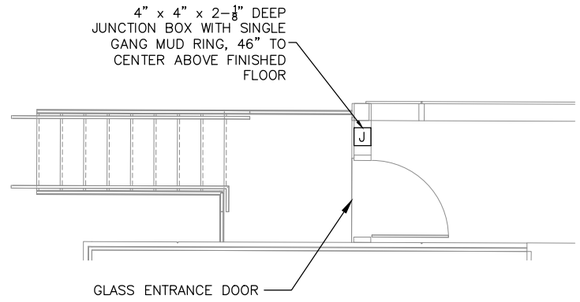
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B04 - RBCO0804



FRONT VIEW (PUBLIC SIDE)

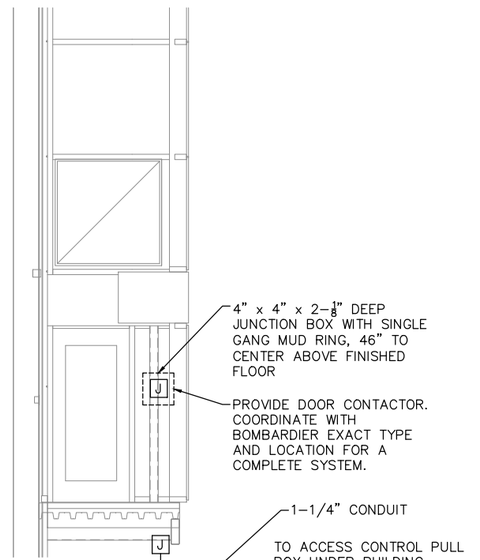


SIDE VIEW

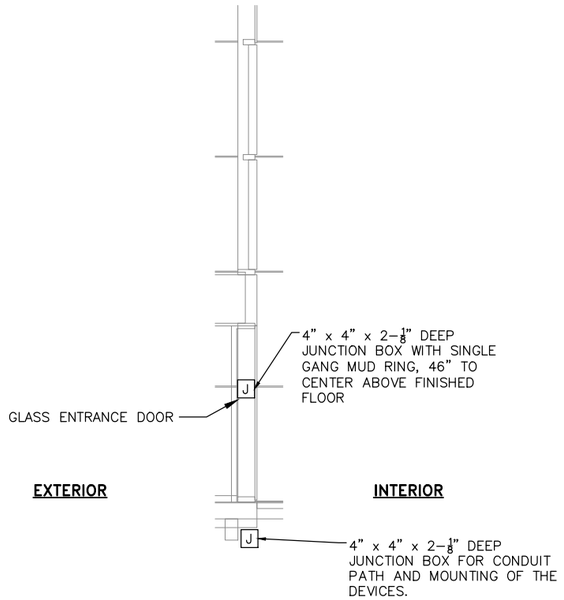


TOP VIEW

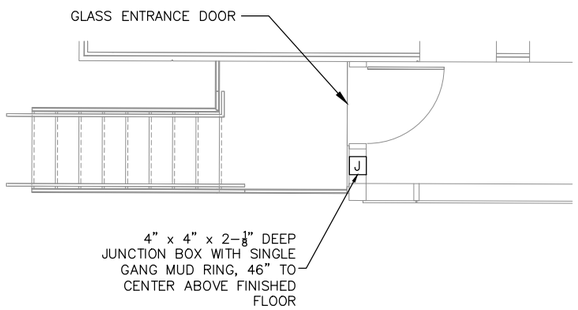
1 SECURE DOORS – FOR EMERGENCY EXIT FROM TRACK AREA (SOUTH)
N.T.S.



FRONT VIEW (PUBLIC SIDE)



SIDE VIEW



TOP VIEW

2 SECURE DOORS FOR EMERGENCY EXIT FROM TRACK AREA (NORTH)
N.T.S.

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

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STAGE 2 – B04 DESIGN SUBMISSION

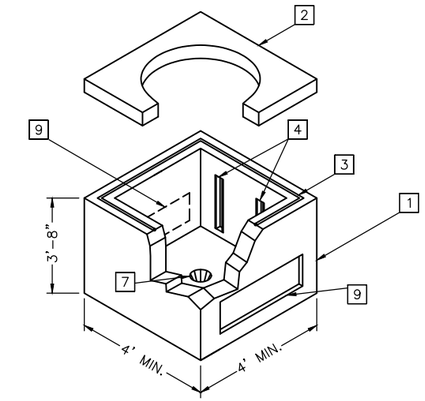
RCC STATION
COMMUNICATIONS DETAILS
EMERGENCY EXIT FROM TRAIN AIREA

Package: B04-RBCO0805

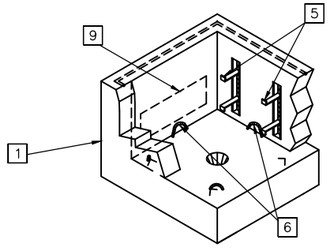
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V6 - 147 of 260

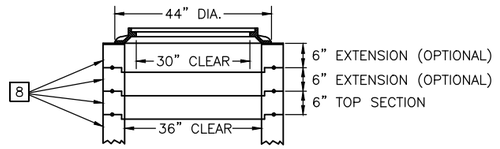
PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673360\AV10000011-S-2-RCC008CZ05.dwg Daniel.Thompson



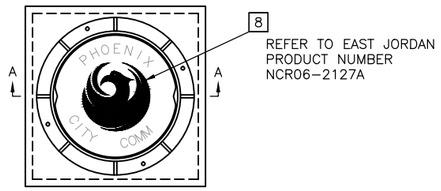
PRECAST CONCRETE MANHOLE



RACK AND HOOK ASSEMBLY

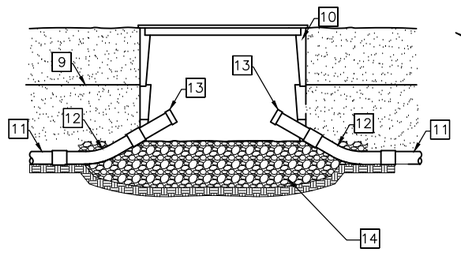


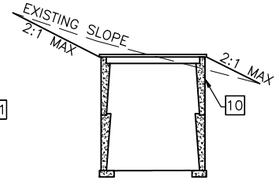
SECTION A–A MANHOLE COVER
ASSEMBLE EXTENSIONS (TRAFFIC RATED)



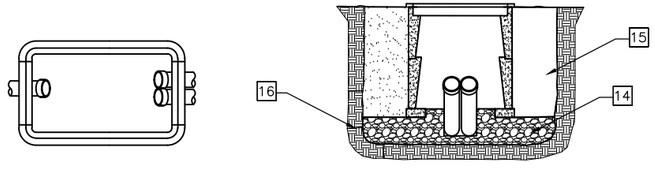
MANHOLE COVER ASSEMBLY EXTENSIONS

1 MANHOLE DETAIL
N.T.S.





INSTALLATION ON A SLOPE



2 PULLBOX DETAIL (SEE ADOT STANDARD DRAWINGS 2010 T.S.1–2)
N.T.S.

GENERAL NOTES

1. NUMBERS IN SQUARES REFER TO ITEMS IN DESCRIPTIONS LIST.
2. ALL DIMENSIONS ARE MINIMUMS, UNLESS OTHERWISE NOTED ON PLANS.
3. SEE PLANS FOR REQUIRED CONDUIT/DUCT QUANTITY, TYPE, AND SIZE.
4. CONTRACTOR SHALL SUBMIT FOR APPROVAL MANUFACTURERS DRAWINGS AND STRUCTURAL CALCULATIONS FOR ALL CONCRETE ELEMENTS OF MANHOLES AND FABRICATED LIDS PRIOR TO INSTALLATION.
5. CONTRACTOR SHALL FIELD VERIFY NEW MANHOLE DEPTHS AND PROVIDE EXTENSIONS AS REQUIRED WHEN INSTALLING OVER NEW OR EXISTING DUCT BANKS. PROVIDE DEPTH NECESSARY TO MEET DUCT DRAINAGE SLOPE SPECIFICATIONS PER ANSI/TIA/EIA 758.
6. ALL STEEL, OTHER THAN REBAR, TO BE HOT DIPPED GALVANIZED AFTER FABRICATION.
7. ALL NEW MANHOLES SHALL BE FURNISHED WITH RACKS AND HOOKS INSTALLED.
8. ALL NEW MANHOLES SHALL BE FURNISHED WITH PULLING IRONS (4 TYPICAL).
9. PROVIDE GROUND ROD AND KNOCKOUT THROUGH FLOOR FOR GROUND ROD INSTALLATION. GROUT AFTER INSTALLATION OF GROUND ROD. (LOCATE GROUND ROD IN NORTHEAST CORNER OF MANHOLE.) CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF GROUND ROD DETAILS TO ENGINEER FOR REVIEW.
10. DO NOT CONNECT COUNTERPOISE TO GROUNDING SYSTEM. ROUTE AROUND MANHOLES.
11. MAKE DUCT ENTRY INTO MANHOLE THROUGH LOWER KNOCKOUT WINDOWS. RESERVE UPPERS FOR SINGLE CONDUITS AND SHALLOW DUCTS.
12. GROUT ALL CONDUIT PENETRATIONS.
13. PROVIDE BELL END FOR EVERY CONDUIT IN THE ARRAY.
14. TONGUE AND GROOVE JOINT WITH CONCEAL MASTIC SEALANT.
15. COMMUNICATIONS SHALL BE EMBOSSED ON THE PULL BOX LID.
16. PROVIDE 2–INCH BASE OF PEA GRAVEL FOR SUMP TO DRAIN BELOW MANHOLE.

ITEM	DESCRIPTIONS LIST
1	PRECAST CONCRETE BASE
2	PRECAST REINFORCED CONCRETE SLAB LID
3	TONGUE AND GROOVE JOINT
4	GALVANIZED UNISTRUT "C" CHANNEL
5	RACKS AND HOOKS (REQUIRED ON ALL SIDES)
6	PULLING IRON. ONE (1) PER SIDE TYPICAL
7	9" DIA. DRAIN SUMP KNOCKOUT HOLE THROUGH FLOOR
8	COVER ASSEMBLY EXTENSIONS
9	MARKER TAPE
10	ADOT NO. 7 PULLBOX WITH EXTENSION
11	PVC CONDUIT
12	30 DEGREE PVC ELBOW 15" RADIUS
13	BELL END FOR PVC
14	PEA GRAVEL (6" BELOW PULLBOX FOR DRAINAGE)
15	COMPACTED BACKFILL
16	NATIVE SOIL

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA, USA
Exp. Date 12/31/20

Design Sub–Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: MLB	Drawn by: MLB	Checked by: DSH	Date: 07/13/18	Dwg scale: N.T.S.	CIP No.: AV10000011	KIVA No.: 07–5204

STAGE 2 – B04 DESIGN SUBMISSION

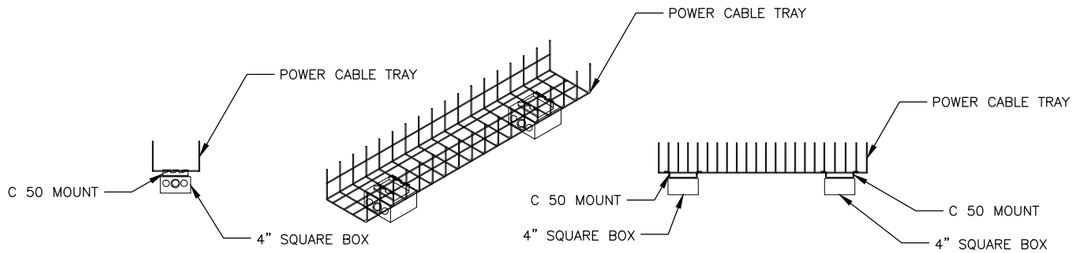
RCC STATION
COMMUNICATIONS DETAILS
MANHOLE AND PULLBOX DETAILS

Package: B04 - RBCO0806
Sheet Reference No:
V6 - 148 of 260

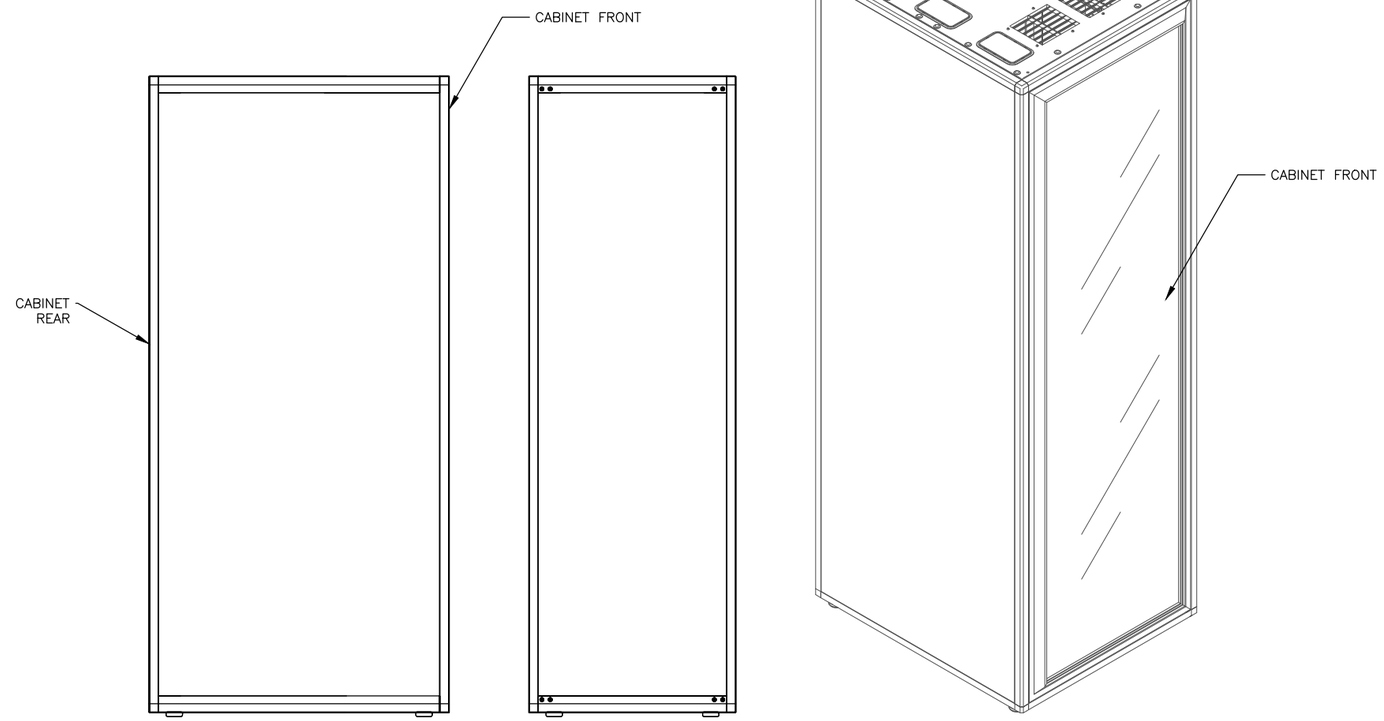
PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673360\AV10000011-S-2-RCC008CZ05.dwg Daniel.Thompson

GENERAL NOTES

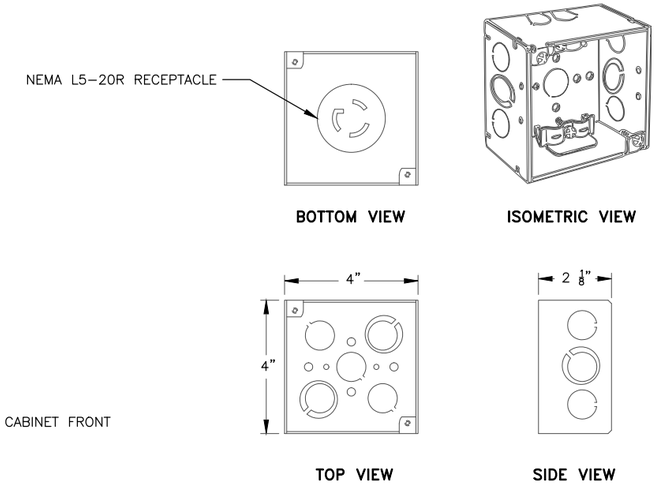
1. INSTALL L5-20R, 4" SQUARE BOX, AND C 50 ELECTRICAL BOX SUPPORT TO POWER CABLE TRAY ABOVE CABINET KNOCKOUT. ROUTE CONDUCTORS IN SEAL-TIGHT FLEXIBLE CONDUIT TO DEDICATED 20A CIRCUIT AT POWER PANEL. EACH 20A CIRCUIT SHALL BE ROUTED IN A SEPARATE SEAL-TIGHT FLEXIBLE CONDUIT (I.E. ONE CONDUIT PER CIRCUIT).



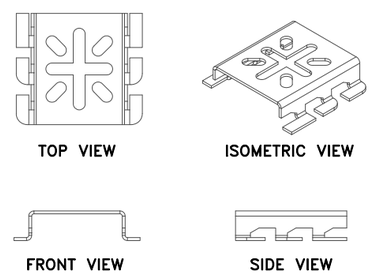
1 POWER CABLE TRAY
N.T.S.



3 POWER OUTLET MOUNTED ABOVE EQUIPMENT CABINET
N.T.S.



2 4" SQUARE BOX
N.T.S.



4 CABLOFIL C 50 MOUNT ATTACHMENT
N.T.S.

REGISTERED PROFESSIONAL ENGINEER (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA U.S.A.

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Design Sub-Consultant Kimley»Horn

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PHOENIX, AZ 85034

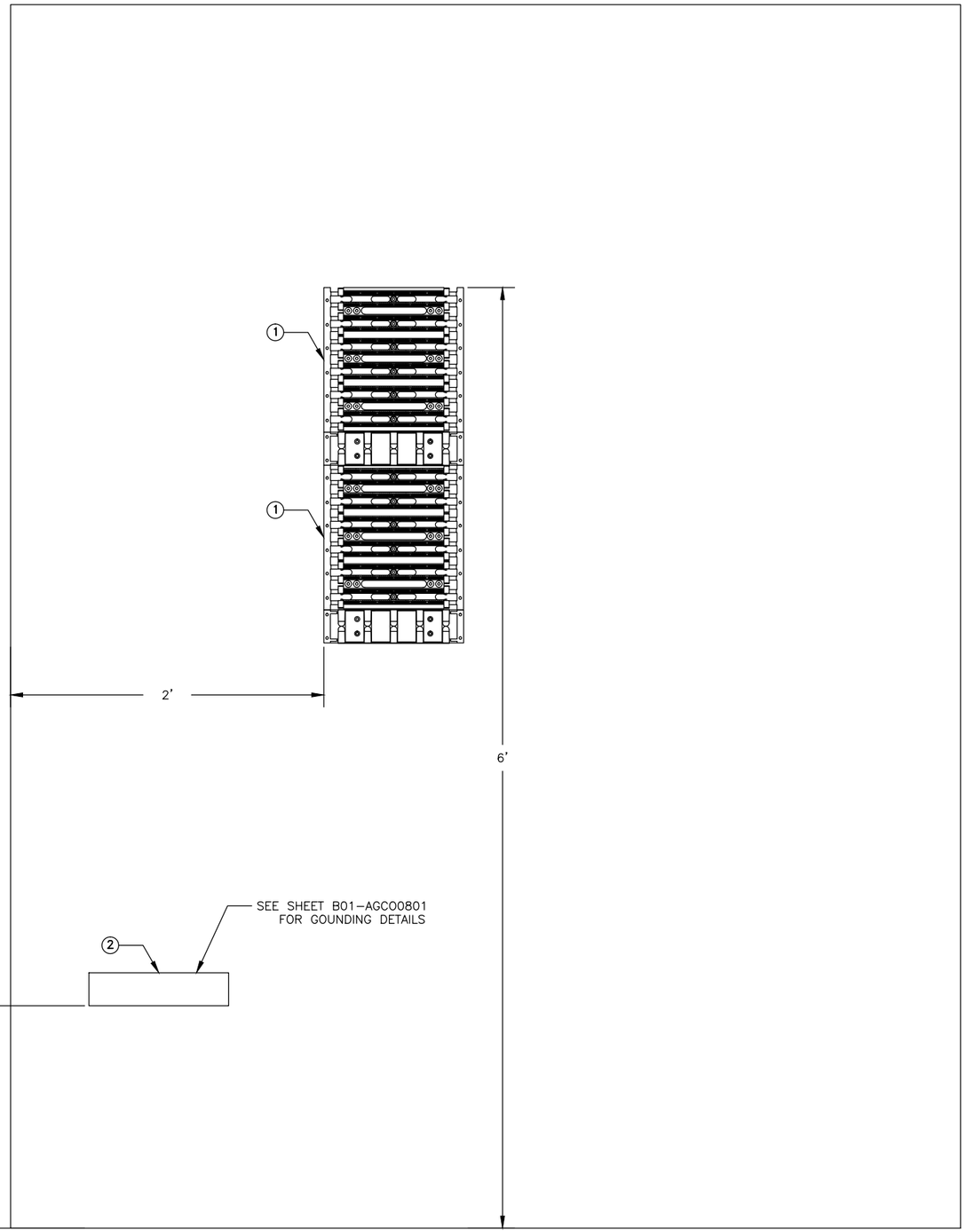
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KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
COMMUNICATIONS DETAILS
CABINET POWER OUTLET

Package: B04 - RBCO0807
Sheet Reference No:
V6 - 149 of 260

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1 TYPICAL COMMUNICATIONS ROOM (IDF) COPPER WALL FIELD
N.T.S.

GENERAL NOTES

1. ALL COMMUNICATION CABLING FIBER AND COPPER TO BE PROVIDED AND INSTALLED BY THE CITY OF PHOENIX.
2. BOND ALL COMMUNICATIONS CABLE TRAY, EQUIPMENT CABINETS, AND COMMUNICATIONS EQUIPMENT ENCLOSURES TO TGB.

CONSTRUCTION NOTES

1 300-PAIR 110-BLOCK TO BE PROVIDED AND INSTALLED BY THE CITY OF PHOENIX

2 INSTALL TELECOMMUNICATIONS GROUNDING BUSBAR (TGB) AT 24" ABOVE FINISHED FLOOR

LEGEND

TGB = TELECOMMUNICATIONS GROUND BUSBAR

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA USA

Exp. Date 12/31/20

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Design Consultant
Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
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CITY OF PHOENIX AVIATION DEPARTMENT

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STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
COMMUNICATIONS DETAILS
COPPER WALL FEILD

Package: B04 - RCCO0808
Sheet Reference No:
V6 - 150 of 260

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WIRE TYPE SCHEDULE

SYMBOL EXAMPLE: 1"A 3/4"C 2"F — TO EQUIPMENT RACK

TWO 1" CONDUITS WITH MICROPHONE LEVEL, ONE CONDUIT WITH PRODUCTION COMMUNICATION LEVEL AND ONE 2" CONDUIT WITH VIDEO LEVEL.

SLASH MARKS INDICATE QUANTITY OF CONDUIT; QUANTITY OF WIRES IS NOT SHOWN.

A	MIC, 2 CONDUCTOR SHIELDED	H	CAMERA POWER
B	LINE, 2 CONDUCTOR SHIELDED	J	DC CONTROL / POWER
C	PRODUCTION COMMUNICATIONS	K	CONTROL, DIGITAL
D	SPEAKER, LOW Z, PAIR #10 THHN	L	OPTICAL FIBER
E	SPEAKER 70V, PAIR #14 THHN	M	DIGITAL AV
F	VIDEO CO-AX	N	DATA, NETWORK
G	RF CO-AX	O	AC POWER

NOTES:

1. ALL UNLABELED CONDUIT IS 1"
2. SEE SPECIFICATIONS FOR CABLE REQUIREMENTS.

PROJECT WORK SCOPE

ITEMS TO BE PROVIDED AND INSTALLED	ELECTRICAL CONTRACTOR		AUDIOVISUAL CONTRACTOR	
	PROVIDES	INSTALLS	PROVIDES	INSTALLS
AUDIOVISUAL CONDUIT RISER DIAGRAM		X+	X	
AUDIOVISUAL EQUIPMENT RACKS AND DEVICES			X	X
■ METALLIC CONDUIT BETWEEN AUDIOVISUAL DEVICES AND AUDIOVISUAL EQUIPMENT RACKS	X	X◊		
■ CONDUIT INSULATION BUSHINGS BETWEEN METALLIC CONDUIT AND AUDIOVISUAL EQUIPMENT RACKS	X	X◊		
■ AUDIOVISUAL EQUIPMENT RACK CABLING			X	X
■ AUDIOVISUAL EQUIPMENT RACK TERMINATIONS			X	X
■ AUDIOVISUAL DEVICE SPECIALTY WALL BACK BOXES		X+	X	
■ AUDIOVISUAL DEVICE SPECIALTY CEILING BACK BOXES		X◊	X	
■ AUDIOVISUAL DEVICE SPECIALTY FLOOR BOXES	X	X+		
■ BLANK PLATES FOR UNUSED AV SECTIONS OF AUDIOVISUAL SPECIALTY BOXES			X	X
■ BLANK PLATES FOR UNUSED NON-AV SECTIONS OF AUDIOVISUAL SPECIALTY BOXES	X	X		
■ AUDIOVISUAL DEVICE METALLIC CONDUIT	X	X◊		
■ AUDIOVISUAL DEVICE CABLING			X	X
■ AUDIOVISUAL DEVICE TERMINATION			X	X
EMPTY CONDUIT (FOR FUTURE AV USE)	X	X		
CABLE TRAYS FOR AUDIOVISUAL USE	X	X		
CABLE SLEEVES FOR AUDIOVISUAL USE	X	X		
PULL BOXES FOR AUDIOVISUAL USE	X	X		

◊ = INSTALLATION CRITERIA TO BE PROVIDED BY AUDIOVISUAL CONTRACTOR
+ = INSTALLATION CRITERIA TO BE PROVIDED BY AUDIOVISUAL CONSULTANT

AV CONDUIT SPACING REQUIREMENTS

EMI SOURCE	MINIMUM SEPERATION FROM AUDIOVISUAL SIGNAL CONDUIT	
	EMI SOURCE IN FERROUS METAL CONDUIT	EMI SOURCE EXPOSED, IN CABLE TRAY OR NON-FERROUS METAL CONDUIT
TV, SECURITY, LIFE SAFETY CIRCUITS, AND OTHER BUILDING CONTROL NETWORKS	6 INCHES	12 INCHES
SINGLE-PHASE POWER CIRCUITS	18 INCHES	36 INCHES
THREE-PHASE POWER CIRCUITS	36 INCHES	72 INCHES
FLUORESCENT & DIMMED LIGHTING CIRCUITS	36 INCHES	
COLD-CATHODE, MERCURY VAPOR, HID, HALOGEN, ETC. LIGHTING	48 INCHES	
TRANSFORMERS & MOTORS	60 INCHES	

BACK BOX SCHEDULE

SYMBOL EXAMPLE: [X] [XXX] WALL, CATWALK OR ABOVE CEILING MOUNTED BACKBOX.
(X) (XX) FLUSH MOUNTED CEILING BACKBOX
⟨X⟩ ⟨XXX⟩ FLUSH IN FLOOR MOUNTED BACKBOX.

SYMBOL	FUNCTION (PANEL NAME)	BOX SIZE	NOTES	DETAIL#	MOUNTING LOCATION (CENTER OF BOX)
[M]$_2$	AMBIENT NOISE SENSOR, WALL MOUNT	1-GANG	(2)	2/B04-RBAV0801, 3/B04-RBAV0801	9'-7" OR 9'-5", MOUNTED WITHIN LOUDSPEAKER OR MICROPHONE ENCLOSURE
(S)$_1$	LOUDSPEAKER, RECESSED CEILING	-	(1,2)	1/B04-RBAV0801	MOUNTED ABOVE TORSION CEILING PANEL
[S]$_2$	LOUDSPEAKER, WALL MOUNT	1-GANG	(2)	1/B04-RBAV0802	9'-7", MOUNTED WITHIN LOUDSPEAKER ENCLOSURE

GENERAL NOTES:
A. ALL ONE AND TWO GANG STYLE BACK BOXES ARE 5" SQUARE WITH TRIM RING.
B. ALL GANG STYLE BACK BOXES ARE 2-1/8" DEEP. ALL MASONRY BACK BOXES ARE 3 1/2" DEEP.
C. ALL BOXES ARE RECESSED FOR FLUSH MOUNTING UNLESS NOTED OTHERWISE.
D. MOUNTING LOCATIONS ARE NOTED TO THE CENTER OF THE BACK BOX UNLESS OTHERWISE NOTED.

KEY NOTES:
1. AUDIOVISUAL SPECIALITY EQUIPMENT TO BE FURNISHED BY AV CONTRACTOR FOR ROUGH-IN INSTALLATION BY ELECTRICAL CONTRACTOR.
2. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL LOCATION INFORMATION. COORDINATE FINAL LOCATION WITH ARCHITECT.

GENERAL INSTALLATION NOTES

REFER TO SPECIFICATION DIVISION 13 SECTION 13859 FOR DETAILED AV INSTALLATION INSTRUCTIONS.

I. CONDUIT AND WIRE PULLING:
A. ALL CONDUIT, PULL BOXES AND BACK BOXES TO BE INSTALLED BY ELECTRICAL CONTRACTOR PER DIVISION 26.
B. USE ALL FERROUS METAL CONDUIT. NON METALLIC CONDUIT SHALL NOT BE ALLOWED UNLESS SPECIFICALLY NOTED ON THE AV CATEGORY CONDUIT RISER.
C. IN EACH CONDUIT RUN BETWEEN SUCCESSIVE BACK BOXES AND PULL BOXES, INSTALL A LENGTH OF YELLOW PULL LINE.
D. SLASH MARK (—//—) = QUANTITY OF INDICATED CONDUIT SIZE. QUANTITY OF CONDUIT FILL IS NOT SHOWN ON RISER. REFER TO A/V SPECIFICATION FOR WIRE TYPES. REFER TO THE SINGLE LINE DRAWINGS FOR QUANTITIES.
E. PULL BOXES ARE NOT SHOWN ON THE RISERS, BUT MUST BE INSTALLED AFTER EACH 270 DEGREES OF BEND. EVERY 50 FEET OF STRAIGHT CONDUIT LENGTH SHALL BE CONSIDERED EQUAL TO 90 DEGREES OF CONDUIT BEND.
F. THE ELECTRICAL CONTRACTOR SHALL DEVELOP CONDUIT CONTINUITY BY PASSING A MOUSE WITH A PULL STRING THROUGH EACH CONDUIT RUN.
G. ELECTRICAL CONTRACTOR SHALL MAKE AVAILABLE A FIELD REPRESENTATIVE FOR THE INSTALLER OF THE A/V EQUIPMENT DURING THE A/V INSTALLATION.
H. PULL WIRES THROUGH J-BOXES WITHOUT CUTS OR SPLICES.
I. AUDIO AND CONTROL LINES MAY BE CUT AT TERMINAL CABINETS FOR EASE OF INSTALLATION. SPLICES ARE MADE ONLY VIA BARRIER TERMINAL STRIPS OR OTHER APPROVED METHODS.
J. NO WIRES SHALL BE SPLICED IN ANY OTHER WAY OR AT ANY OTHER PLACE THAN THE TERMINAL CABINETS AS DESCRIBED ABOVE.
K. LEAVE NO CONDUIT COMING INTO RACKS FROM TOP AND/OR SIDES EXPOSED TO FRONT VIEW OF RACKS. PLACE TRIM OR PANELS TO HIDE CONDUIT RUNS FOR A NEAT APPEARANCE.
L. WHERE CONDUIT IS TO BE SURFACE RUN, THE CONTRACTOR SHALL FINISH THE CONDUIT TO MATCH THE WALL FINISH.
M. REFER TO ELECTRICAL/TELECOM DRAWINGS FOR ADDITIONAL CONDUIT ROUTING AND PATH INFORMATION.

II. BACK BOX LOCATIONS AND MOUNTING:
A. REFER TO ARCHITECTURAL DRAWINGS AND COORDINATE EXACT MOUNTING LOCATIONS OF ALL BACK BOXES.
B. PRIOR TO INSTALL, CONTRACTOR SHALL VERIFY LOCATION OF ALL BACK BOXES WITH OWNER'S REPRESENTATIVE IN THE FIELD.

III. WIRING:
A. WIRE ALL RACKS COMPLETELY IN THE SOUND CONTRACTOR'S SHOP. NO INTERNAL RACK WIRING TO BE DONE ON THE JOB SITE.
B. ROUTE RACK AND WIRE WAY WIRING TO AVOID INDUCED HUM IN AUDIO LINES OR EQUIPMENT.
C. FOLLOW THE GROUNDING PLAN SHOWN ON THE DRAWINGS.
D. LABEL ALL SWITCHES, CONTROLS, RECEPTACLES AND GENERAL INFORMATION LABELING WITH ENGRAVED PLASTIC LAMINATE OR ENGRAVED METAL PLATES. DRY TRANSFER OR OTHER TYPES OF ADHESIVE (LABEL GUNS) ARE NOT ACCEPTABLE.
E. CONNECT MICROPHONE, LINE-LEVEL AND DC CONTROL CABLES ENTERING EQUIPMENT RACK ONLY TO BARRIER TERMINAL STRIPS OR DIRECTLY TO PATCH PANELS.
F. CONNECT LOUDSPEAKER LINES ENTERING EQUIPMENT RACKS VIA BARRIER TERMINAL STRIPS WITH SPADE LUGS. DO NOT BUS COMMONS TOGETHER; DO NOT GROUND.
G. BUNDLE AUDIO CABLES TO THE CONTROL CONSOLE AND SECURE THE BUNDLE TO THE CONSOLE LEAVING A CABLE LOOP LONG ENOUGH TO MOVE THE CONSOLE AWAY FROM THE WALL FOR SERVICE.
H. WIRING OF 3-PIN CONNECTORS, RECEPTACLES, JACKS AND PLUGS: PIN 1 OR SLEEVE: SHIELD, DO NOT GROUND; PIN 2 OR TIP: RED (OR WHITE), (+) HIGH; PIN 3 OR RING: BLACK, (-) LOW
I. WIRING OF 2-PIN CONNECTORS, RECEPTACLES, JACKS AND PLUGS: PIN 1 OR (-): BLACK, COMMON; PIN 2 OR (+): RED (OR WHITE), HOT
J. ALL AUDIO EQUIPMENT SHALL HAVE BALANCED INPUTS AND OUTPUTS. INCLUDE INPUT/OUTPUT TRANSFORMERS WHERE NECESSARY. UNBALANCED AUDIO CIRCUITS ARE NOT ACCEPTABLE UNLESS NOTED OTHERWISE IN THE DRAWINGS OR SPECIFICATIONS.

IV. WIRE NUMBERING:
EACH CABLE SHALL BE ASSIGNED A UNIQUE NUMBER AND PRINTED WITH THAT NUMBER ON EACH END WITH PERMANENT WIRE LABELS SUCH AS TYTON TAB TAG OR SHRINK TAB LABELS. THESE WIRE NUMBERS SHALL BE SHOWN ON THE AS-BUILT DRAWINGS AND COMPILED IN A TERMINAL AND WIRE SCHEDULE.

VI. SEISMIC RESTRAINTS:
A. ALL HANGING OR FREE STANDING EQUIPMENT AND CABINETS FURNISHED INCLUDING, BUT NOT LIMITED TO, RACKS, AND LOUDSPEAKERS, SHALL BE SECURED TO SUBSTANTIAL BUILDING STRUCTURE SO AS TO RESIST SEISMIC ACCELERATION PER CBC2001. SEE STRUCTURAL DRAWING.
B. LOUDSPEAKER HANGING DETAILS, RACK BRACING, AND OTHER SEISMIC RESTRAINTS NOT SHOWN ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DEVELOP THESE DETAILS.
C. SUBMIT THE DRAWINGS TO THE ARCHITECT FOR REVIEW AFTER THEY HAVE BEEN APPROVED, STAMPED AND SIGNED BY A STRUCTURAL ENGINEER REGISTERED, LICENSED, AND ENGAGED IN REGULAR PRACTICE IN THE PROJECT'S STATE.

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Design Sub-Consultant
MCH
M•RAY CONANT HOOVER INC
Acoustics and Audio Visual Consultants
Architectural Sound Systems
Information Technology Systems

Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

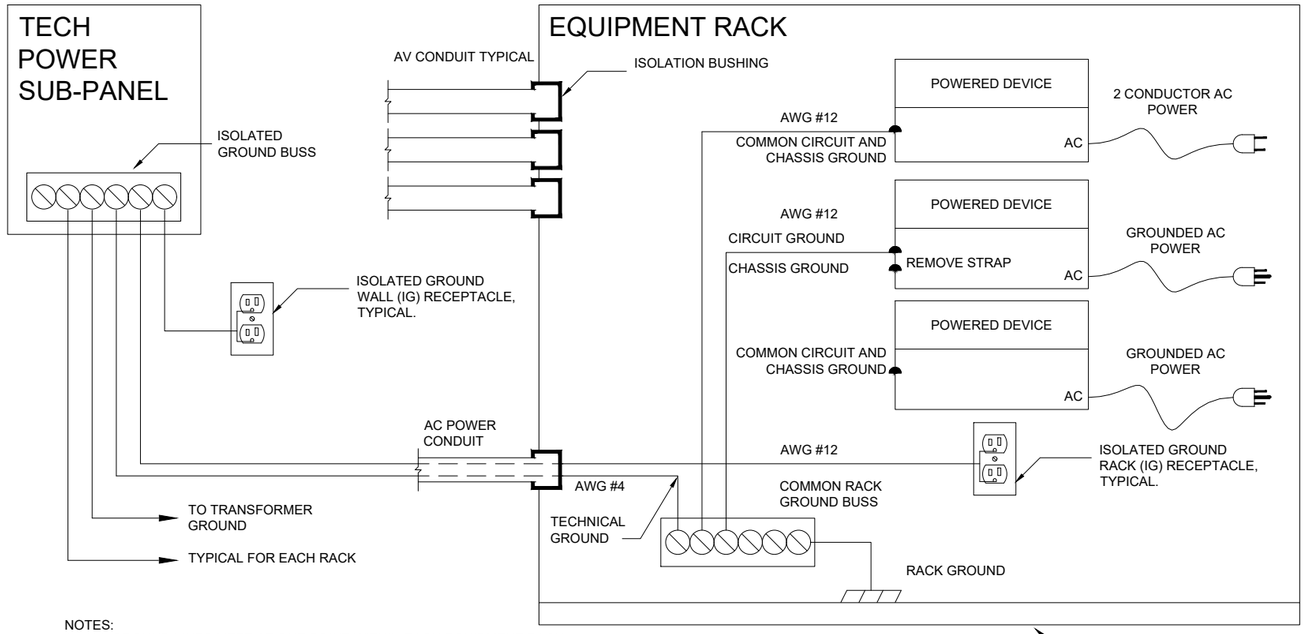
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Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	NONE
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KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
GENERAL NOTES & SCHEDULES

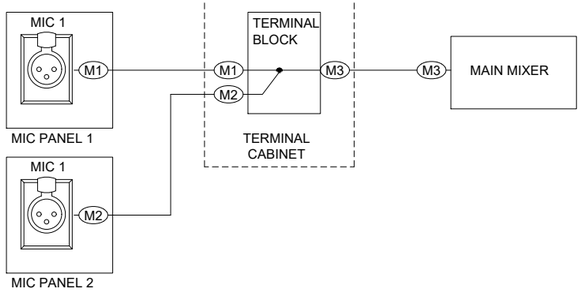
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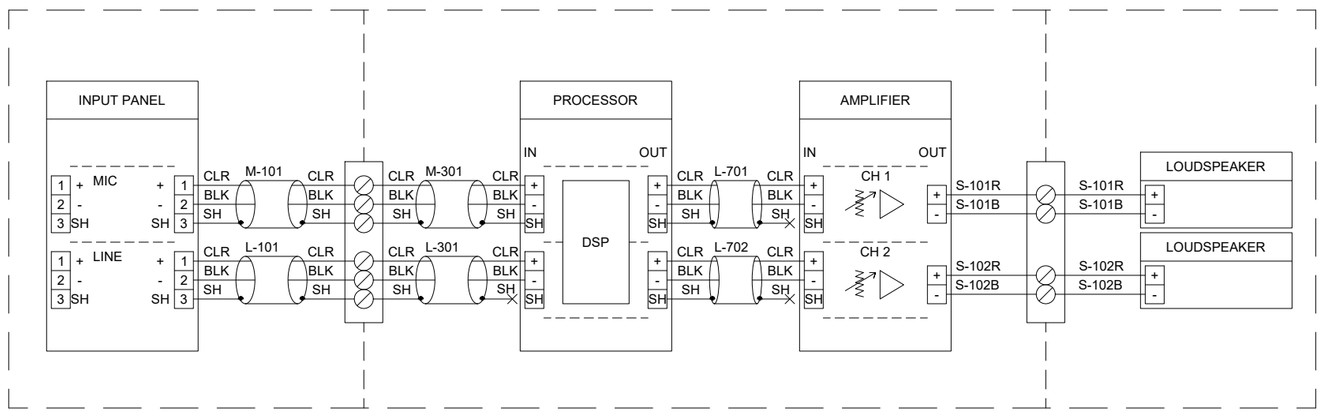


NOTES:
1. ALL GROUND LINES MEET AT ONE POINT WITHIN EACH EQUIPMENT RACK.
2. DO NOT BUSS GROUND LINES EXCEPT AS SHOWN.
3. DO NOT CONNECT ELECTRICAL BOX OR CONDUIT TO PIN 1 OR SHIELD AT AV RECEPTACLES.
4. ISOLATED GROUND RECEPTACLES TYPICAL FOR ALL POWER RECEPTACLES IN THE EQUIPMENT RACK.
5. ISOLATE ALL CONDUIT FROM THE EQUIPMENT RACKS WITH ISOLATION BUSHINGS.
6. AVC SHALL COORDINATE THE SUPPLY AND INSTALLATION OF EQUIPMENT RACK TECHNICAL GROUND WITH THE ELECTRICAL CONTRACTOR.
7. AVC SHALL FURNISH FULL HEIGHT TAPPED COPPER BUS BARS IN EACH EQUIPMENT RACK , U.O.N.

2 RBAV0002 **TECHNICAL POWER GROUNDING DETAIL**
SCALE: NO SCALE



3 RBAV0002 **WIRING NUMBER DETAIL**
SCALE: NO SCALE



1. NEVER CONNECT THE SHIELDS TO CHASSIS AT OUTPUT.
2. ALL GROUND LINES MEET AT ONE POINT WITHIN THE EQUIPMENT RACK(S).
3. EQUIPMENT CONFIGURATION IF FOR ILLUSTRATION ONLY.
4. SEE POWER GROUNDING DETAIL FOR CONDITION SPECIFIC AC GROUNDING INFORMATION.

1 RBAV0002 **SIGNAL GROUNDING DETAIL**
SCALE: NO SCALE

Design Sub-Consultant
MCH
M-RAY CONANT HOOVER INC.
Acoustics and Audio Visual Consultants
Architectural Lighting Consultants
Technology Consultants

Design Consultant
Gannett Fleming

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REVISIONS / SUBMISSIONS	DATE

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

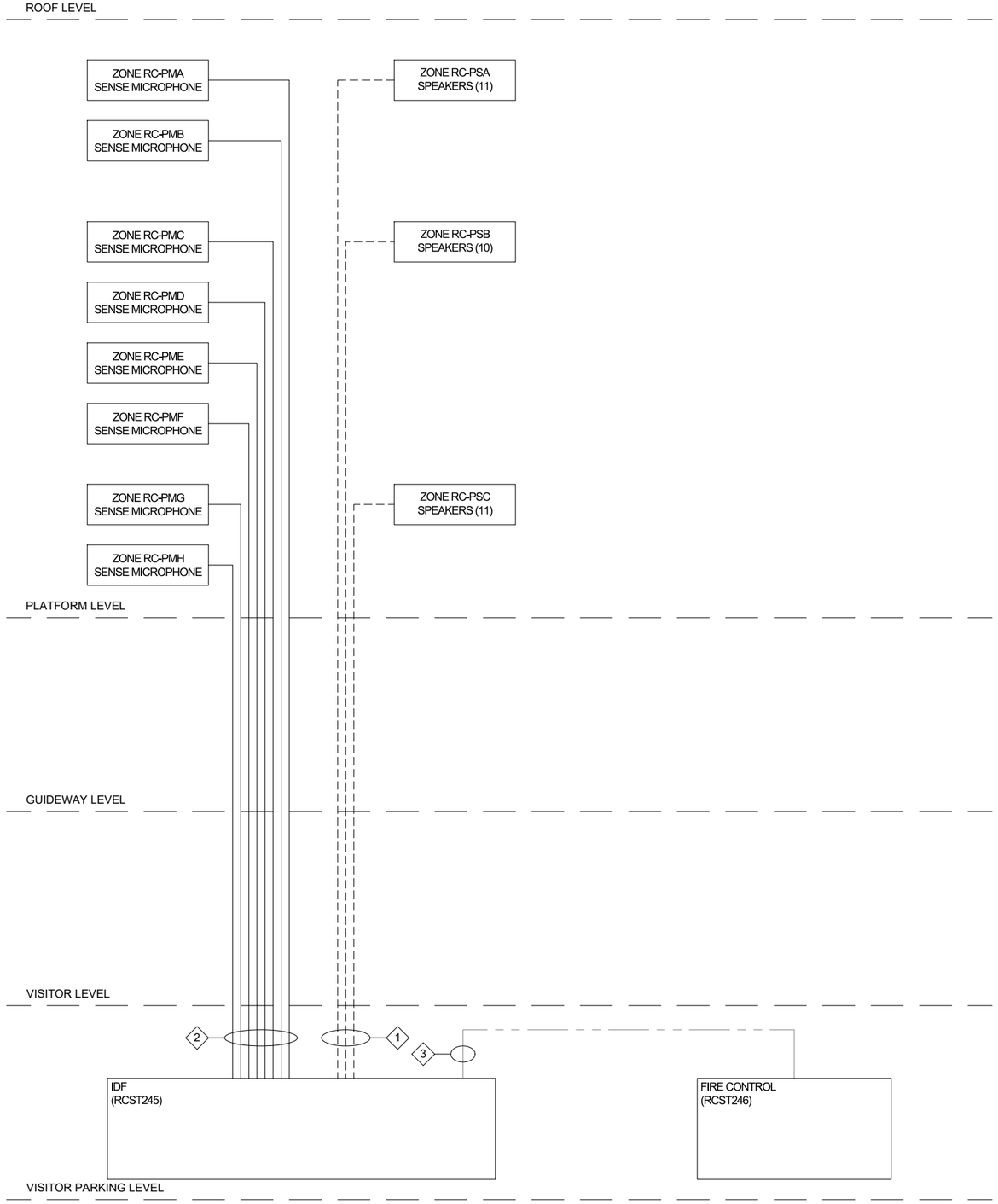
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Checked by:	RBW
Date:	07/13/2018
Dwg scale:	NONE
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
POWER & GROUNDING DETAILS

Package: B04 - RBAV0002
Sheet Reference No:
V6 - 152 of 260

Project Number: 062421
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KEY NOTES:

1. TWO CONDUCTOR FPLR CIC RATED COPPER TO FIRST LOUDSPEAKER IN RUN OR COLLECTION BOX FROM IDF OR FIREWALL BOUNDARY. TWO CONDUCTOR COPPER OTHERWISE.
2. THREE CONDUCTOR COPPER FOR SENSE MICROPHONES.
3. MULTI-CONDUCTOR SHIELDED COPPER FOR FACU INITIATED ZONE CONTROL AND SYSTEM TROUBLE ALERTS TO FIRE CONTROL.

1 RBAV0010 **CABLING RISER DIAGRAM**
SCALE: NO SCALE

Design Sub-Consultant
MCH
McKAY CONANT HOOVER INC.
Acoustics and Audio Visual Consultants
Architecture and Interior Design

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	NONE
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
CABLING RISER DIAGRAM

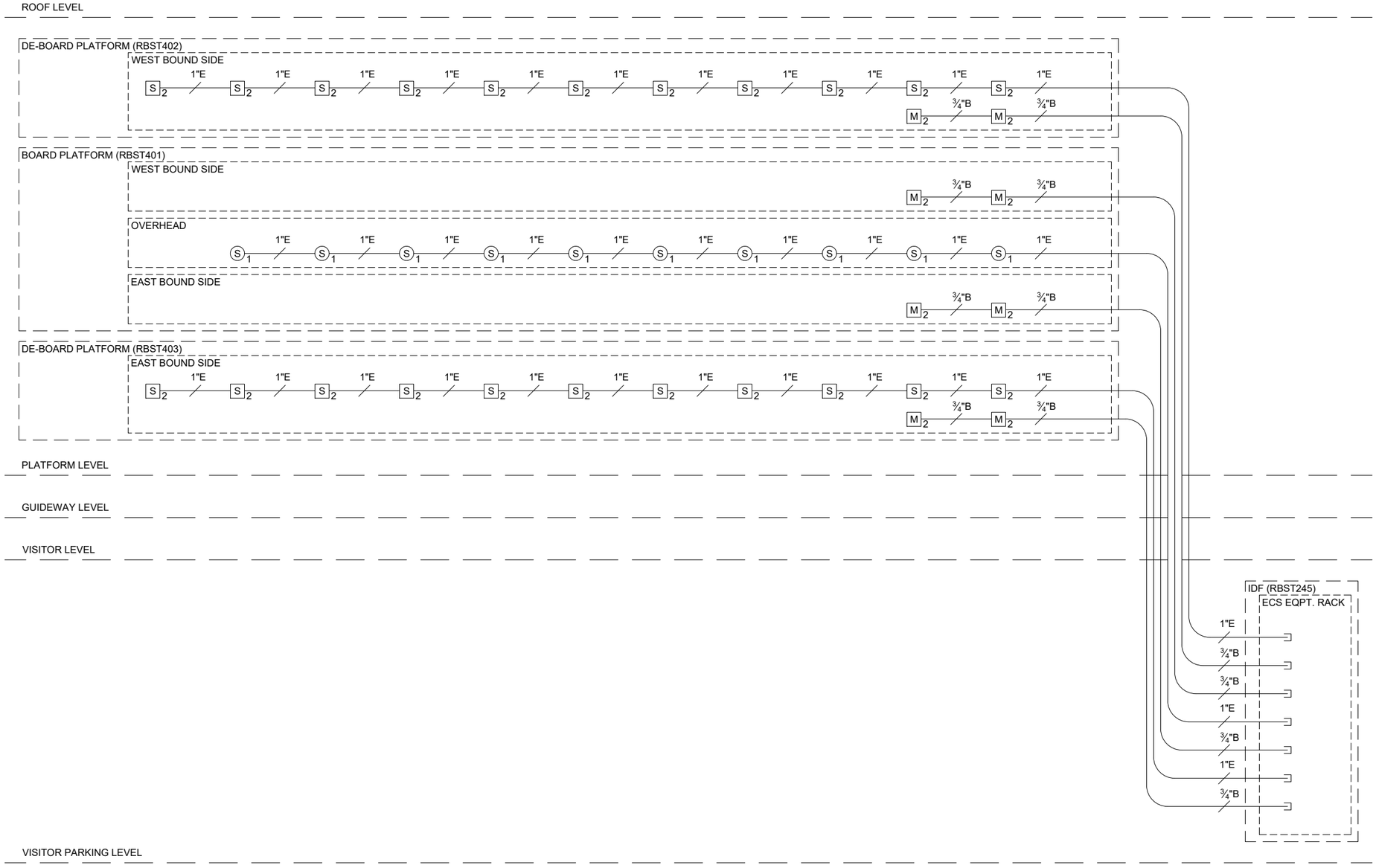
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NOTE: USE ALL FERROUS METAL CONDUIT. NON METALLIC CONDUIT SHALL NOT BE ALLOWED UNLESS SPECIFICALLY NOTED ON THE AV CONDUIT RISER.

REFER TO B04-RBAV0001 FOR ADDITIONAL INFORMATION.



1 RBAV0011 **CONDUIT RISER DIAGRAM**
SCALE: NO SCALE

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Design Sub-Consultant
MCH
McKAY CONANT HOOVER INC.
Acoustics and Audio Systems Consultants
Architectural Lighting Consultants
Information Technology Consultants

Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

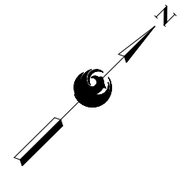
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Date:	07/13/2018
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KIVA No.:	07-5204

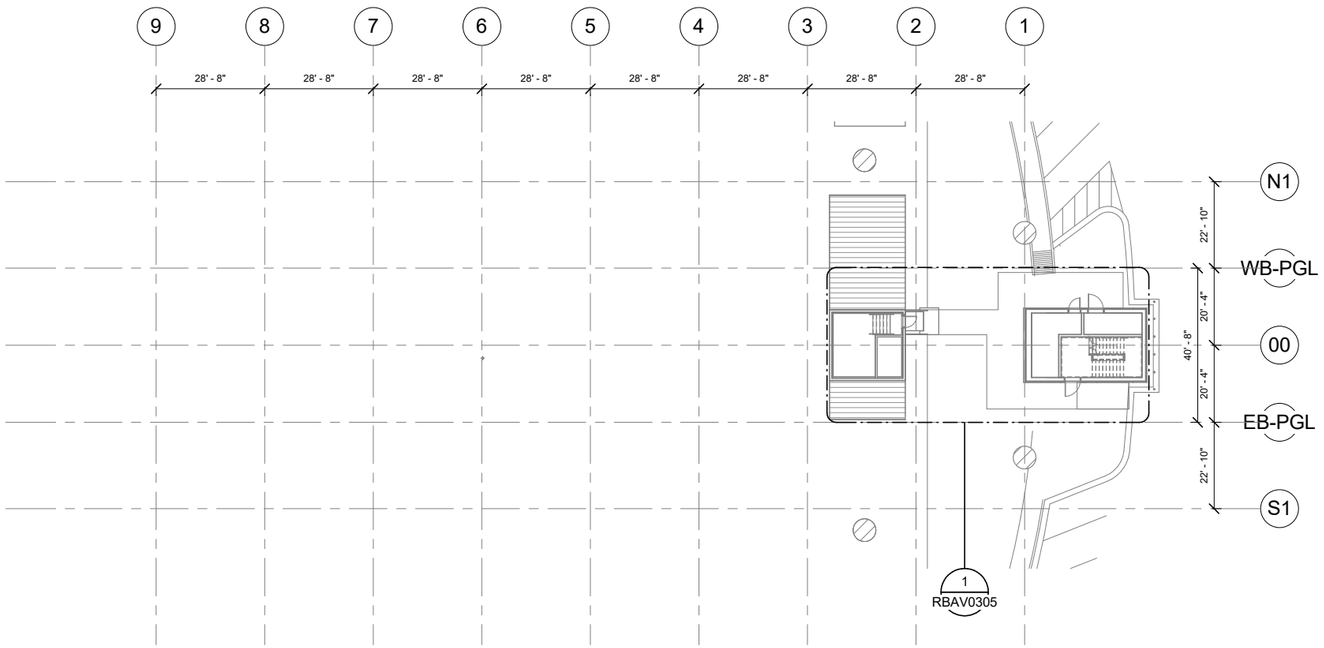
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
CONDUIT RISER DIAGRAM

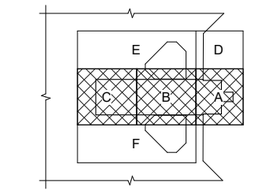
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6/21/2018 9:53:36 AM





2 RBAV0101 **MASS NOTIFICATION - VISITOR PARKING LEVEL**
SCALE: 1" = 20'-0"



KEY PLAN

20' 10' 0 20' 40'
1" = 20'

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	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant
MCH
McKAY CONANT HOOVER INC
Acoustics and Media Systems Consultants
Architectural Lighting Consultants
Theatrical Consultants

Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1" = 20'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

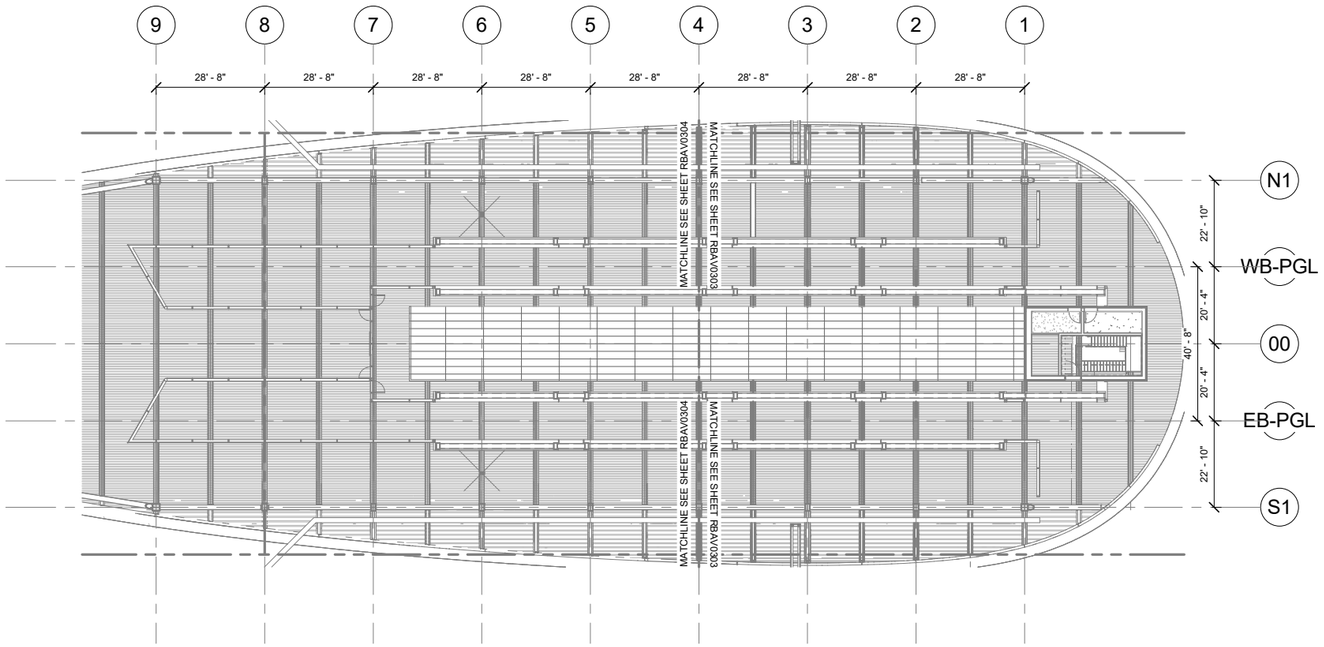
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
OVERALL CALLOUT PLANS
VISITOR PARKING LEVEL

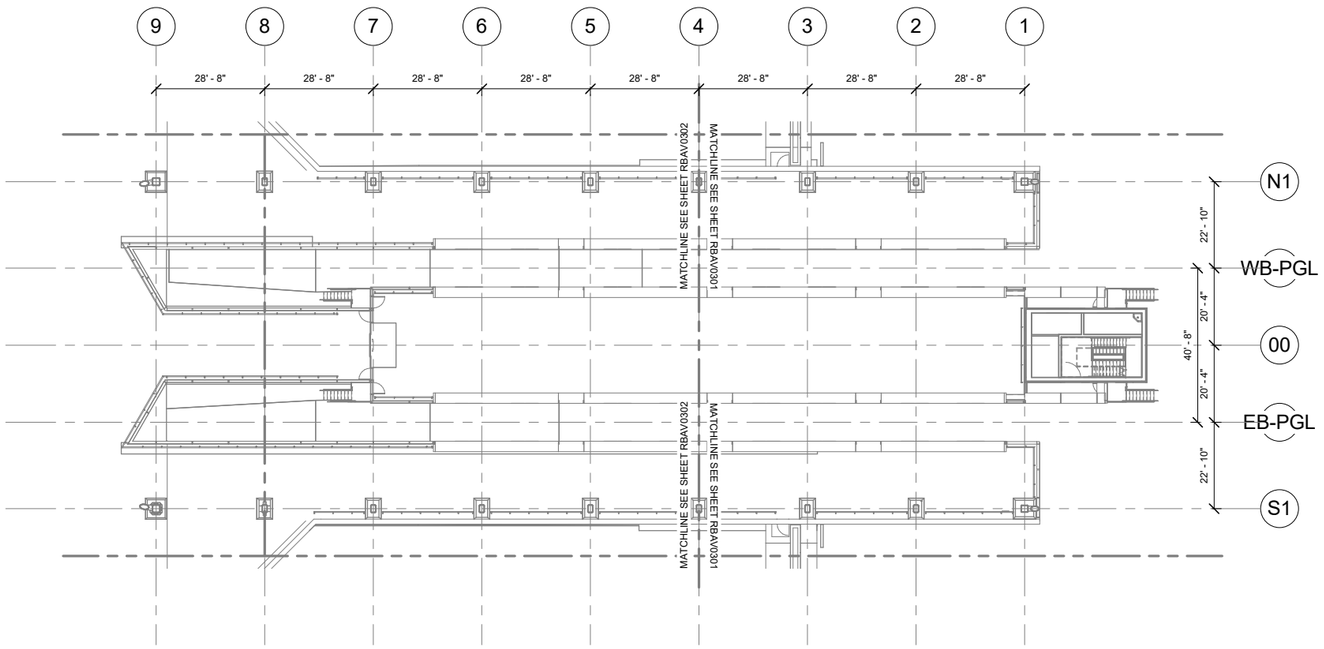
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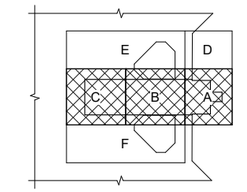
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2 RBAV0102 **MASS NOTIFICATION CALLOUT CEILING PLAN - PLATFORM LEVEL**
SCALE: 1" = 20'-0"



1 RBAV0102 **MASS NOTIFICATION CALLOUT FLOOR PLAN - PLATFORM LEVEL**
SCALE: 1" = 20'-0"



KEY PLAN

20' 10' 0 20' 40'
1" = 20'

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Design Sub-Consultant
MCH
MCKAY CONANT HOOVER INC.
Acoustics and Audio Visual Consultants
Architecture and Media Systems Consultants
Electrical Engineers and Communications Engineers

Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1" = 20'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

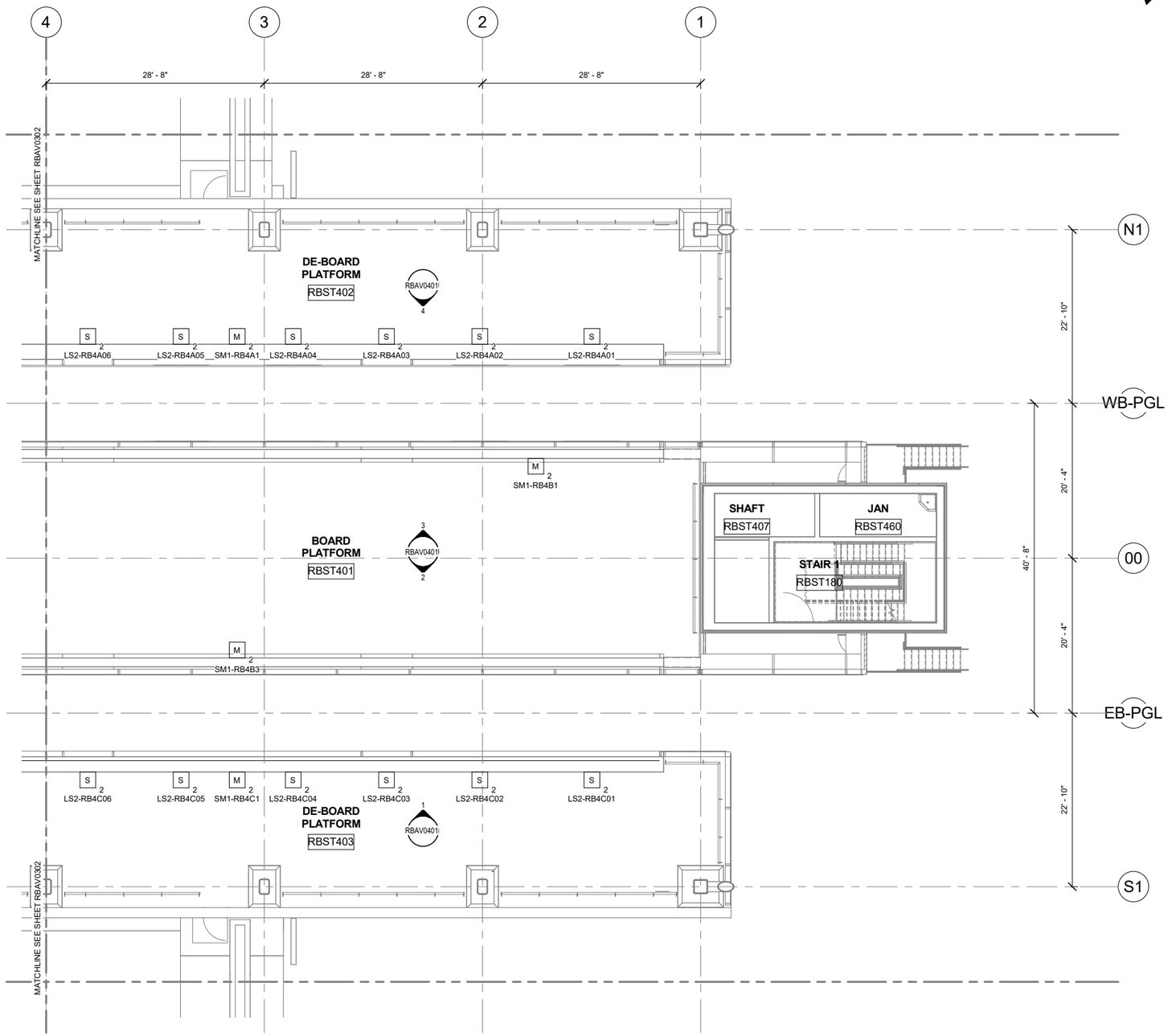
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
OVERALL CALLOUT PLANS
PLATFORM LEVEL

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Project Number: 62421
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1 RBAV0301 **MASS NOTIFICATION - PLATFORM LEVEL (AREA A)**

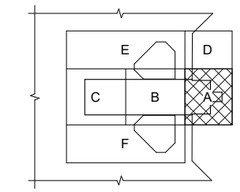
SCALE: 1/8" = 1'-0"

SHEET NOTES

DEVICE ANNOTATIONS:

M 2 AMBIENT NOISE SENSOR, MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS

S 2 LOUDSPEAKER, MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS



KEY PLAN

8' 4' 0' 8' 16'

1/8" = 1'-0"

Design Sub-Consultant

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McKAY CONANT HOOVER INC.
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5055 Kingsway, Suite 300, Burnaby, BC, V5H 4T8
Tel: 604.669.3456 Fax: 604.669.3457

Design Consultant

Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000111
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

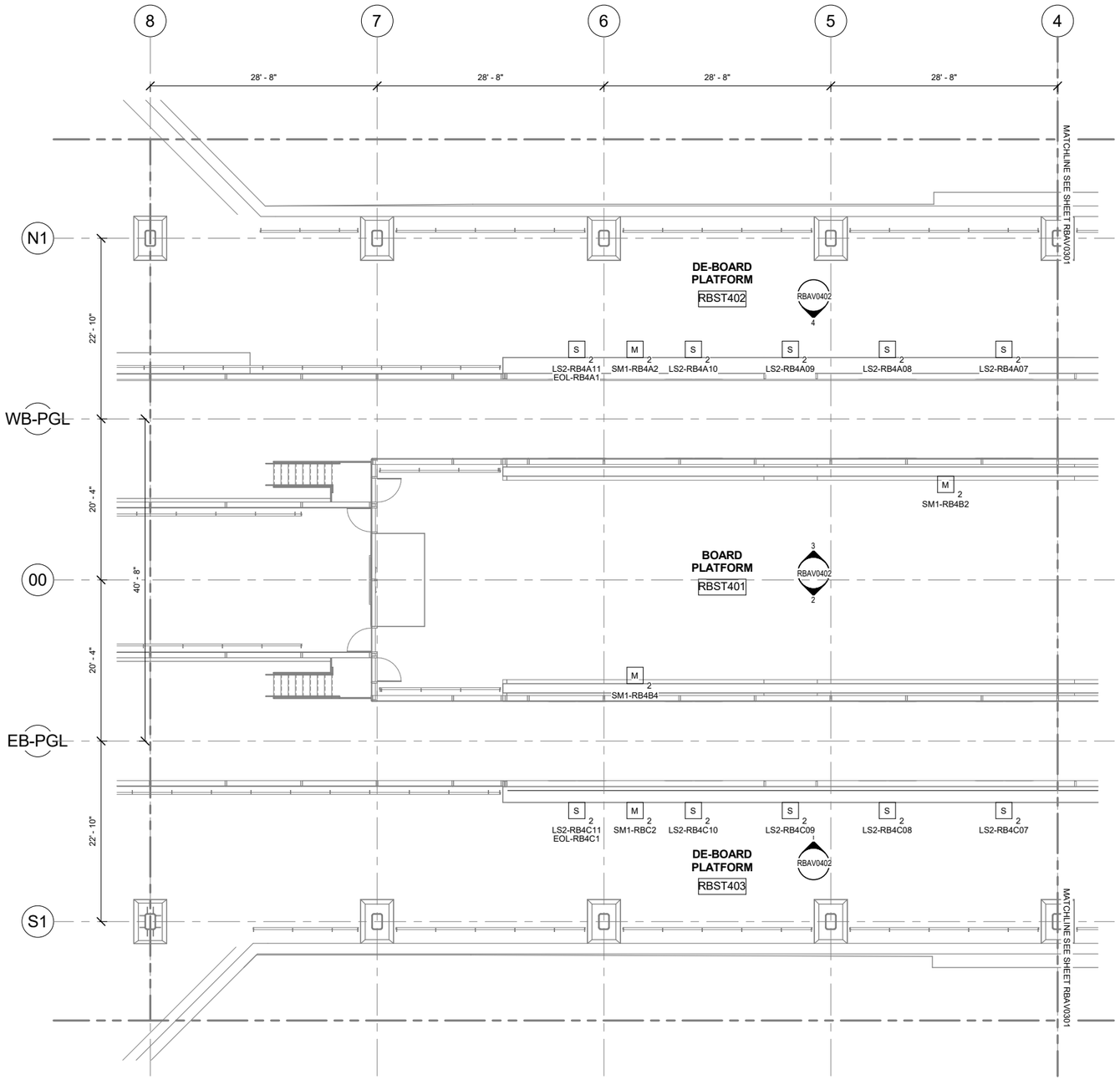
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ENLARGED FLOOR PLANS
PLATFORM LEVEL (AREA A)

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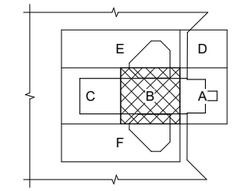
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SCALE: 1/8" = 1'-0"

SHEET NOTES

DEVICE ANNOTATIONS:

M 2 AMBIENT NOISE SENSOR, MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS

S 2 LOUDSPEAKER, MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS



KEY PLAN

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

Design Sub-Consultant
MCH
M-KAY CONANT HOOVER INC
Acoustics and Media Systems Consultants
Architectural Lighting Consultants
Technology Consultants

Design Consultant
Gannett Fleming

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500 S 24TH STREET
PHOENIX, AZ 85034

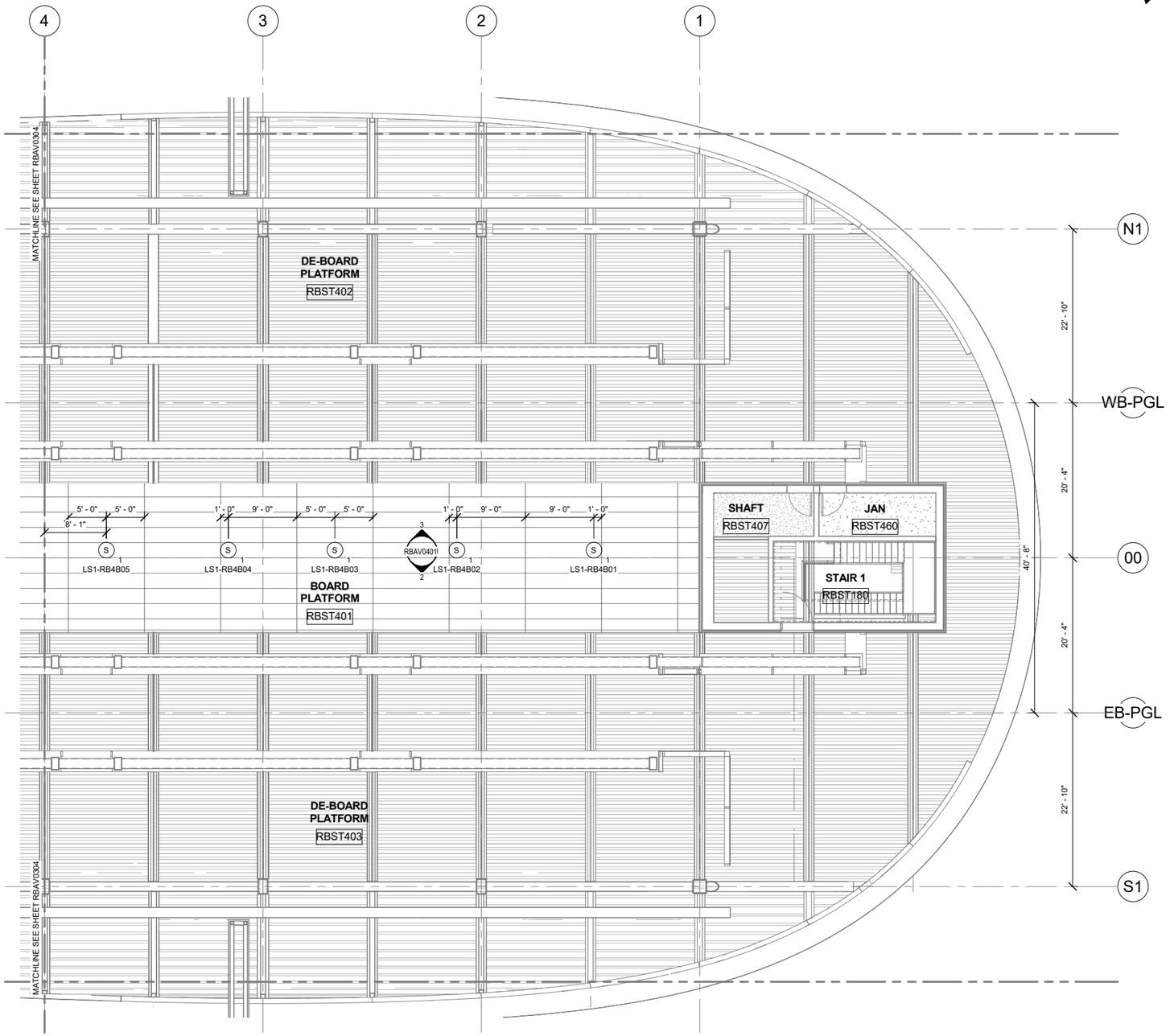
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Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000111
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
ENLARGED FLOOR PLANS
PLATFORM LEVEL (AREA B)

Package: **B04 - RBAV0302**
Sheet Reference No:
V6 - 158 of 260

Project Number: 62421
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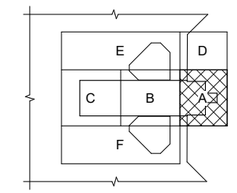


1 RBAV0303 **MASS NOTIFICATION - PLATFORM LEVEL (AREA A)**
SCALE: 1/8" = 1'-0"

SHEET NOTES

DEVICE ANNOTATIONS:

(S)1 LOUDSPEAKER, RECESSED CEILING MOUNTED



KEY PLAN

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

Design Sub-Consultant
MCH
M-KAY CONANT HOOVER INC
Acoustics and Media System Consultants
Architectural Theatrical Broadcast
Corporate Systems

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

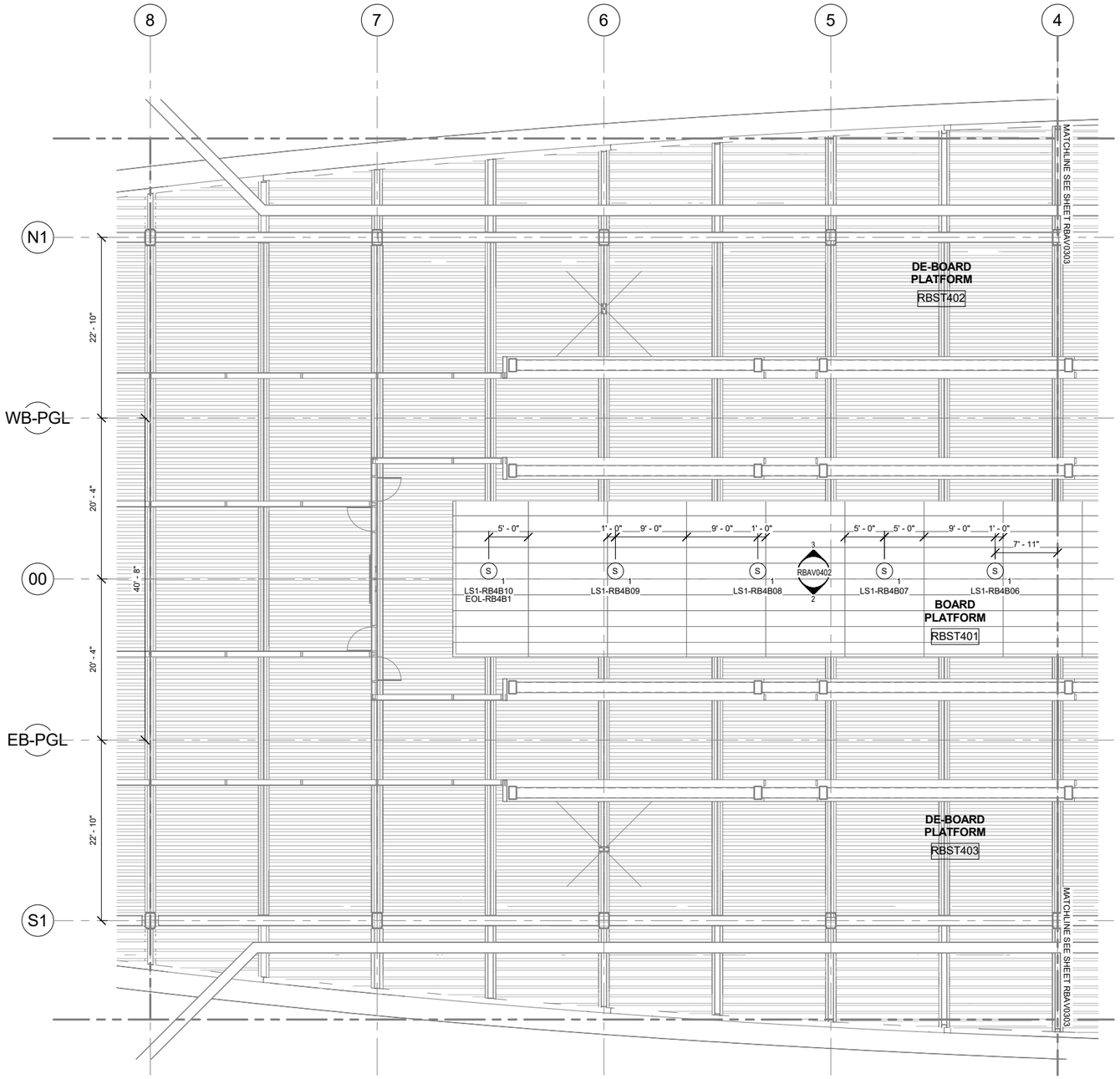
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CIP No.:	AV100000111
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
ENLARGED REFLECTED CEILING PLANS
PLATFORM LEVEL (AREA A)

Package: **B04 - RBAV0303**
Sheet Reference No:
V6 - 159 of 260

Project Number: 62421
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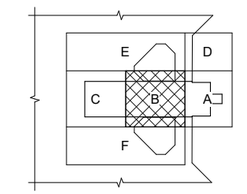


1 RBAV0304 **MASS NOTIFICATION - PLATFORM LEVEL (AREA B)**
SCALE: 1/8" = 1'-0"

SHEET NOTES

DEVICE ANNOTATIONS:

(S)1 LOUDSPEAKER, RECESSED CEILING MOUNTED



KEY PLAN

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

Design Sub-Consultant
MCH
M•KAY CONANT HOOVER INC
Acoustics and Audio Visual Consultants
Architecture and Interior Design
Technology Integration

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

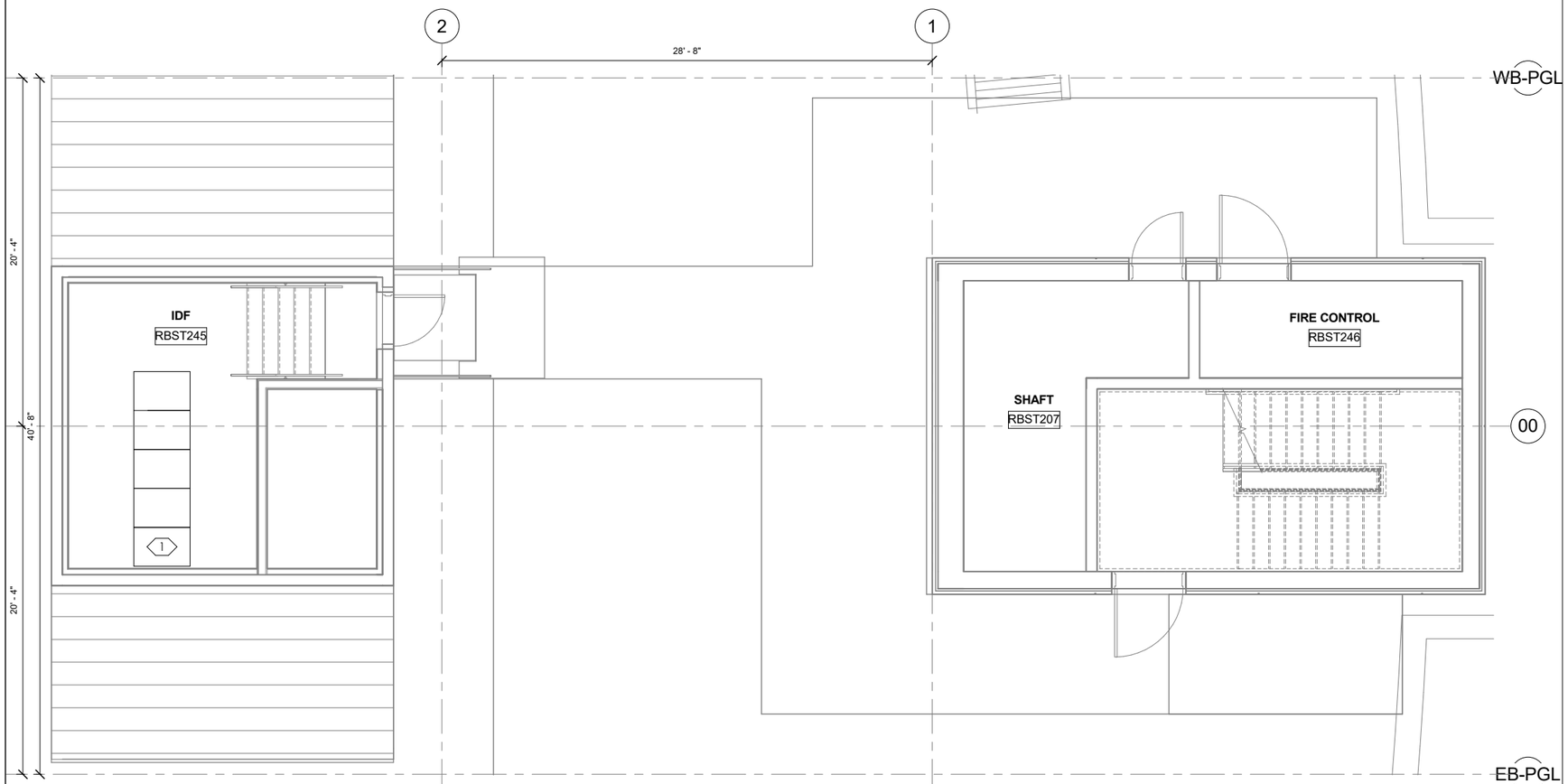
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Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000111
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
ENLARGED REFLECTED CEILING PLANS
PLATFORM LEVEL (AREA B)

Package: **B04 - RBAV0304**
Sheet Reference No:
V6 - 160 of 260

Project Number: 62421
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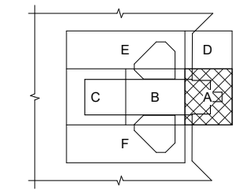


1 RBAV0305 **MASS NOTIFICATION - IDF PLAN**
SCALE: 1/4" = 1'-0"

SHEET NOTES

KEYNOTES:

1. ECS EQUIPMENT INSTALLED WITHIN EQUIPMENT CABINET PROVIDED BY TEC. REFER TO B04-RBCO062A & B04-RBAV0701 FOR EQUIPMENT ELEVATION AND ADDITIONAL DETAILS.



KEY PLAN

4' 2' 0' 4' 8'
1/4" = 1'-0"

Design Sub-Consultant
MCH
M-KAY CONANT HOOVER INC
Acoustics and Audio Visual Consultants
Architectural Lighting Consultants
Technology Consultants

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

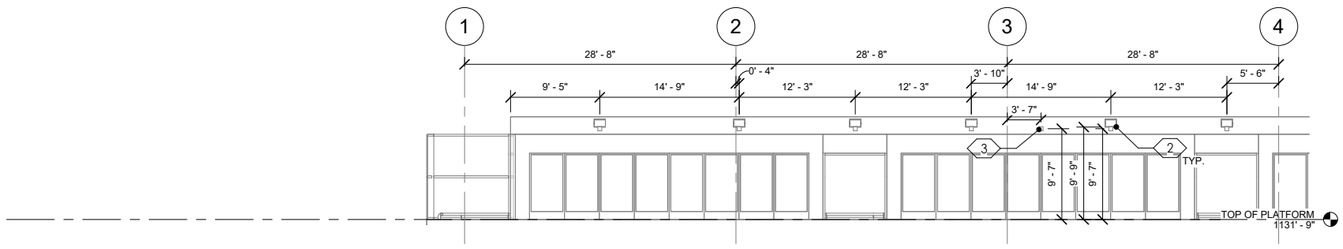
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CIP No.:	AV100000111
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

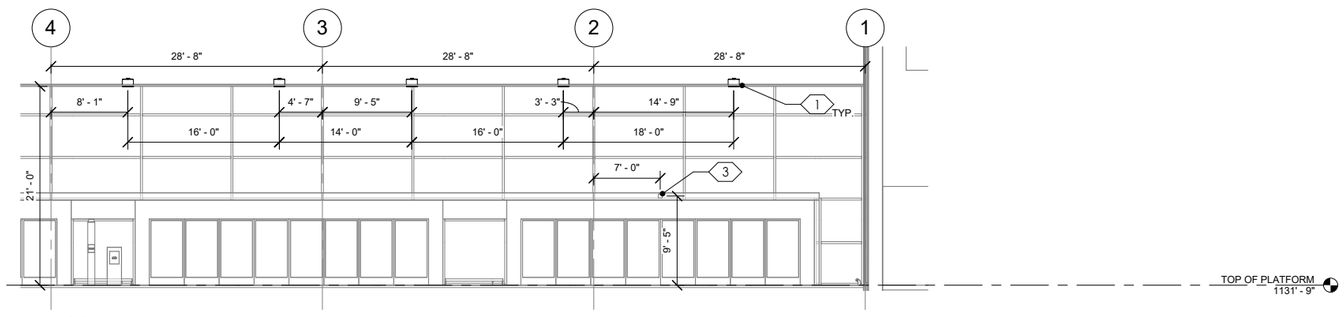
RCC STATION
MASS NOTIFICATION (ECS)
ENLARGED PLANS
IDF ROOM

Package: B04 - RBAV0305
Sheet Reference No:
V6 - 161 of 260

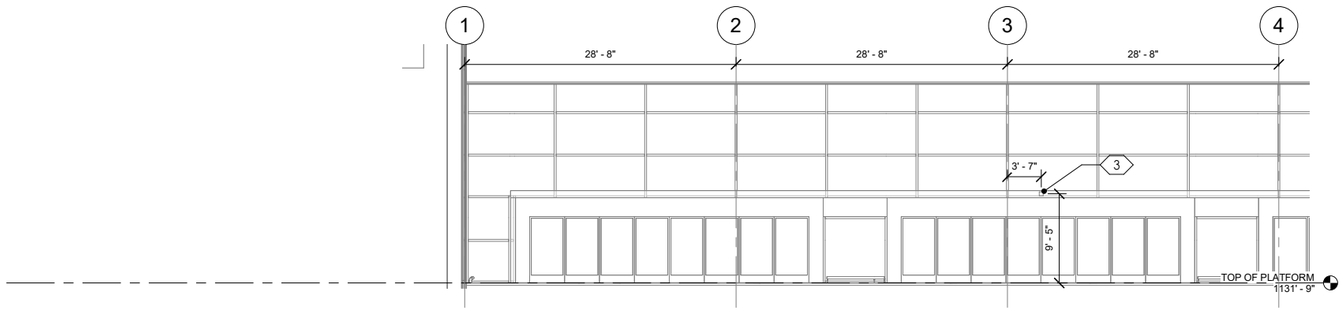
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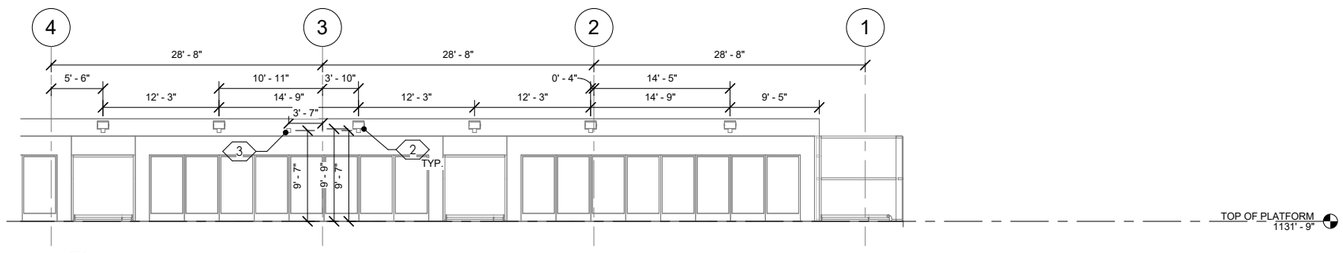
4 RBAV0401 **DE-BOARD PLATFORM, AREA A SOUTH ELEVATION**
SCALE: 1/8" = 1'-0"



3 RBAV0401 **BOARD PLATFORM, AREA A NORTH ELEVATION**
SCALE: 1/8" = 1'-0"



2 RBAV0401 **BOARD PLATFORM, AREA A SOUTH ELEVATION**
SCALE: 1/8" = 1'-0"



1 RBAV0401 **DE-BOARD PLATFORM, AREA A NORTH ELEVATION**
SCALE: 1/8" = 1'-0"

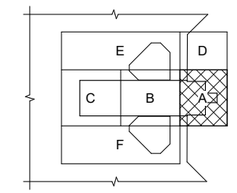
SHEET NOTES

KEYNOTES:

1. LOUDSPEAKER, RECESSED CEILING MOUNTED
UL 1480
MOUNTED ABOVE 40% PERFORRATED AREA IN TORSION CEILING PANEL.
REFER TO 1/B04-RBAV0801 FOR ADDITIONAL MOUNTING INFORMATION.

2. LOUDSPEAKER, WALL MOUNTED
UL 1480
MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS BEHIND 40% PERFORATED AREA
@ 9'-7" AFF TO CENTER OF BACKBOX
@ 9'-9" AFF TO BOTTOM OF LOUDSPEAKER BRACKET
REFER TO 1/B04-RBAV0802 FOR ADDITIONAL MOUNTING INFORMATION.

3. WALL MOUNTED AMBIENT NOISE SENSOR
MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS BEHIND 40% PERFORATED AREA
@ 9'-7" OR 9'-5" AFF TO CENTER OF BACKBOX
REFER TO 2/B04-RBAV0801 & 3/B04-RBAV0801 FOR ADDITIONAL MOUNTING INFORMATION.



KEY PLAN

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

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant
MCH
McKAY CONANT HOOVER INC.
Architects and Multi-Norms Consultants
Civil Engineers and Land Surveyors
Structural Engineers

Design Consultant
Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

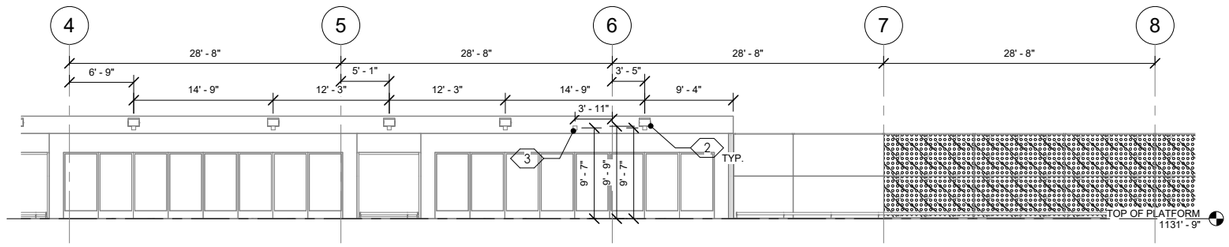
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CIP No.:	AV100000111
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
ELEVATIONS AND SECTIONS
PLATFORM LEVEL (AREA A)

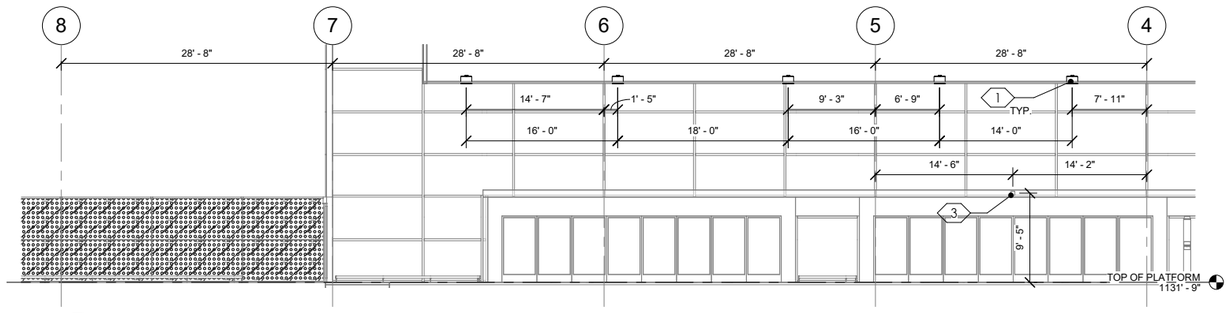
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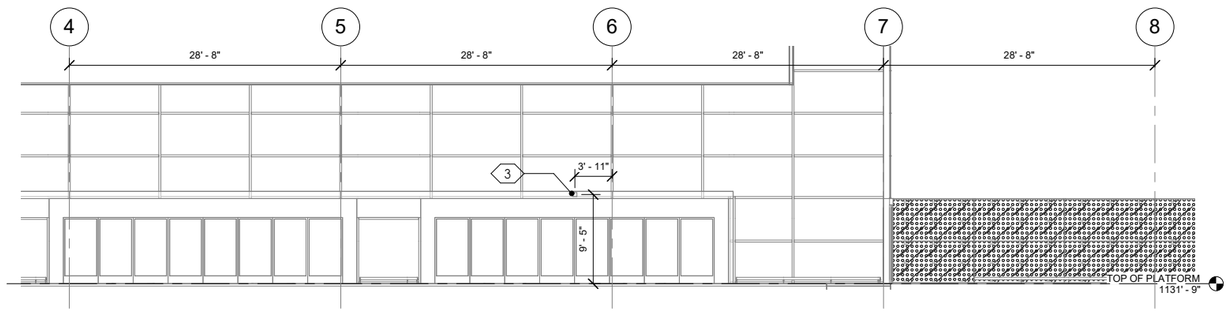
4 RBAV0402 **DE-BOARD PLATFORM, AREA B SOUTH ELEVATION**

SCALE: 1/8" = 1'-0"



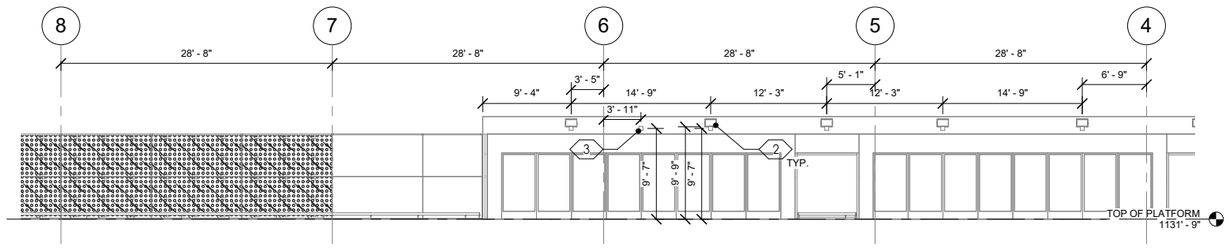
3 RBAV0402 **BOARD PLATFORM, AREA B NORTH ELEVATION**

SCALE: 1/8" = 1'-0"



2 RBAV0402 **BOARD PLATFORM, AREA B SOUTH ELEVATION**

SCALE: 1/8" = 1'-0"



1 RBAV0402 **DE-BOARD PLATFORM, AREA B NORTH ELEVATION**

SCALE: 1/8" = 1'-0"

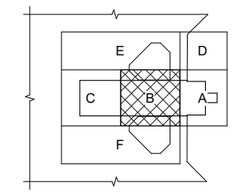
SHEET NOTES

KEYNOTES:

1. LOUDSPEAKER, RECESSED CEILING MOUNTED
UL 1480
MOUNTED ABOVE 40% PERFORRATED AREA IN TORSION CEILING PANEL.
REFER TO 1/B04-RBAV0801 FOR ADDITIONAL MOUNTING INFORMATION.

2. LOUDSPEAKER, WALL MOUNTED
UL 1480
MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS BEHIND 40% PERFORATED AREA
@ 9'-7" AFF TO CENTER OF BACKBOX
@ 9'-9" AFF TO BOTTOM OF LOUDSPEAKER BRACKET
REFER TO 1/B04-RBAV0802 FOR ADDITIONAL MOUNTING INFORMATION.

3. WALL MOUNTED AMBIENT NOISE SENSOR
MOUNTED WITHIN ENCLOSURE ABOVE TRAIN DOOR PORTALS BEHIND 40% PERFORATED AREA
@ 9'-7" OR 9'-5" AFF TO CENTER OF BACKBOX
REFER TO 2/B04-RBAV0801 & 3/B04-RBAV0801 FOR ADDITIONAL MOUNTING INFORMATION.



KEY PLAN

8' 4' 0' 8' 16'

1/8" = 1'-0"

Design Sub-Consultant

MCH
McKAY CONANT HOOVER INC
Architects and Multi-Norms Consultants
5055 Kingsley Drive Chicago, Illinois 60615
T 773.372.7000 F 773.372.7007

Design Consultant

Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KMH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

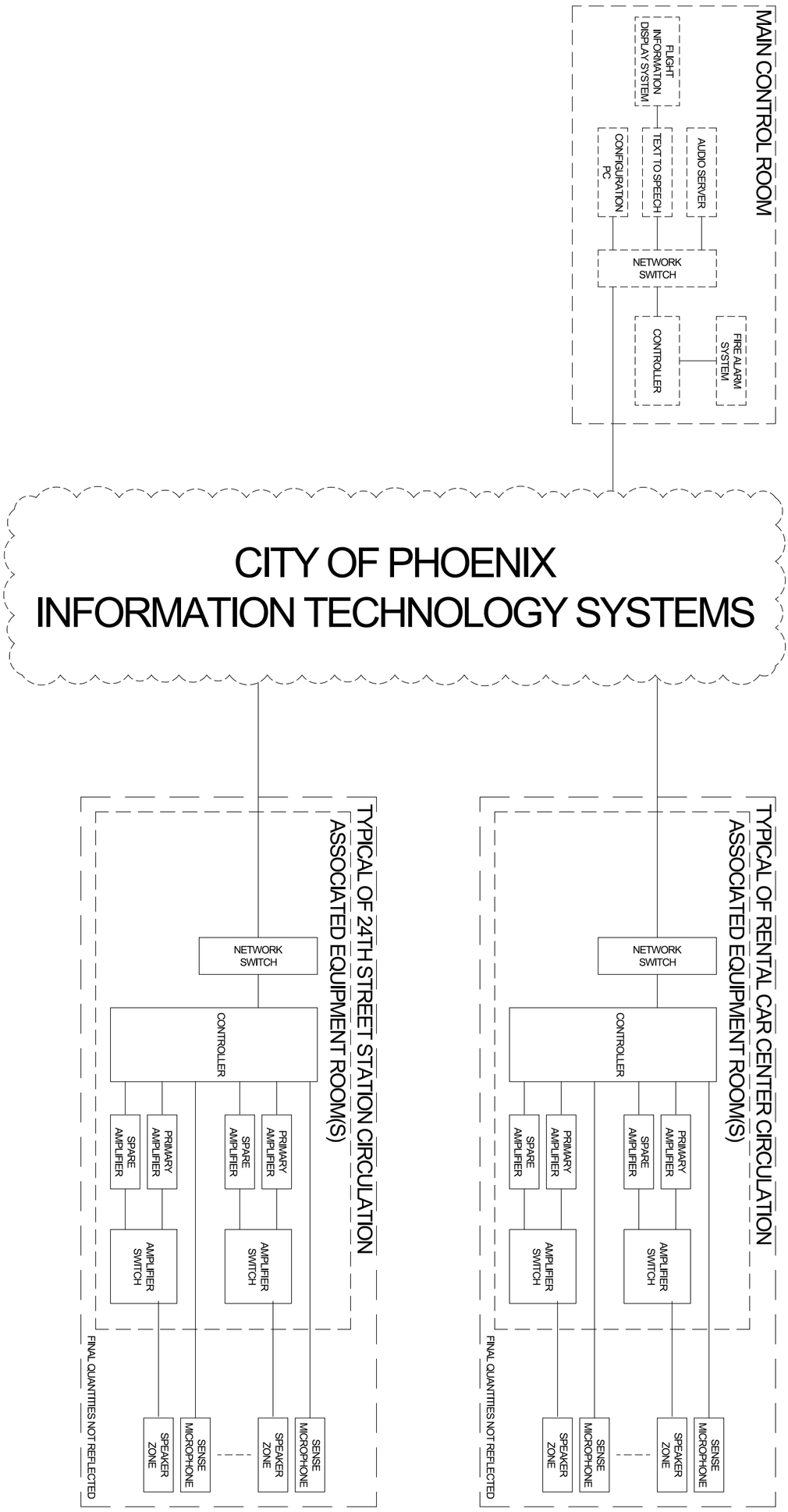
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
ELEVATIONS AND SECTIONS
PLATFORM LEVEL (AREA B)

Package: **B04 - RBAV0402**

Sheet Reference No:

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Package: **B04 - RBAV0501**
Sheet Reference No: V6 - 164 of 260

STAGE 2 - B04 DESIGN SUBMISSION

PHX SKY TRAIN
MASS NOTIFICATION (ECS)
FUNCTION DIAGRAM

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	NONE
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KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

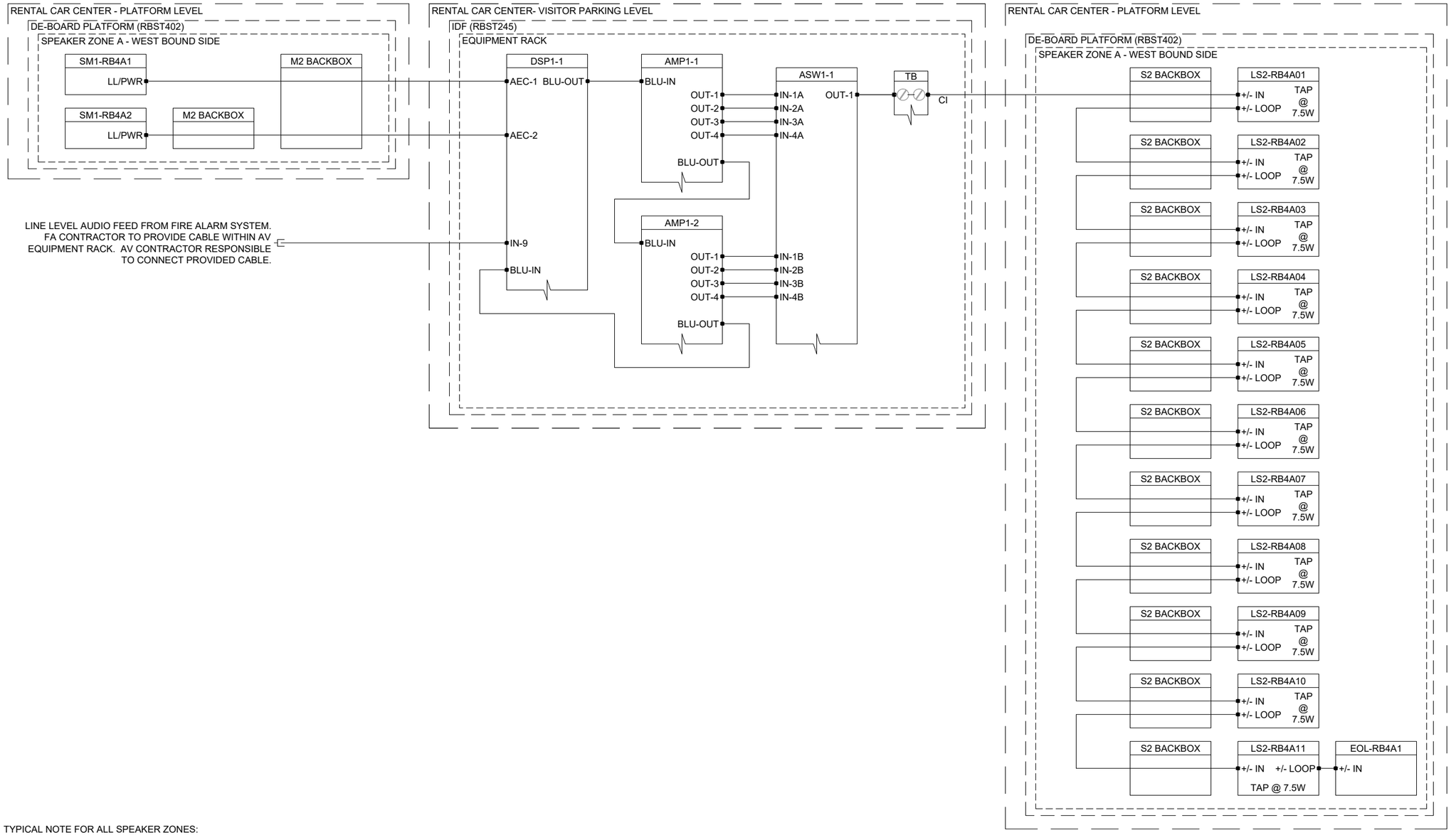
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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NO.	REVISIONS / SUBMISSIONS	DATE
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	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant
MCH
MCKAY CONANT HOOVER INC
Acoustics and Media Systems Consultants

Design Consultant
Gannett Fleming



TYPICAL NOTE FOR ALL SPEAKER ZONES:
TWO CONDUCTOR FPLR CIC RATED COPPER FROM AMP SWITCH TO FIRST LOUDSPEAKER IN EACH ZONE.

NOTES:

- REFER TO FLOOR AND CEILING PLANS FOR LOUDSPEAKER LOCATION, PLACEMENT, AND QUANTITIES.
- REFER TO FLOOR AND CEILING PLANS FOR SENSE MICROPHONE LOCATIONS, PLACEMENT, AND QUANTITIES.
- REGARDLESS OF CONDUIT PATHS, ALL LOUDSPEAKER RUNS SHALL BE CONNECTED AS A SINGLE HOME RUN. AVC RESPONSIBLE TO COORDINATE PATHS WITH EC OR RUN EXTRA CABLES TO ALLOW FOR SINGLE HOME RUN AS SHOWN.
- END OF LINE SENSOR TO BE INSTALLED WITHIN THE LOUDSPEAKER ENCLOSURE NEXT TO THE FINAL LOUDSPEAKER IN THE RUN.
- DSPx-n REFLECTS A SINGLE DSP FILE DESIGN; FINAL EQUIPMENT CONFIGURATION IS NOT A SINGLE UNIT AS SHOWN.

1 RBAV0502 **AUDIO SINGLE LINE DIAGRAM (1 OF 3)**
SCALE: NO SCALE

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant
MCH
M-RAY CONANT HOOVER INC
Acoustics and Audio Visual Consultants
Architectural and Engineering Systems Integration

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY HARBOR
CITY OF PHOENIX AVIATION DEPARTMENT

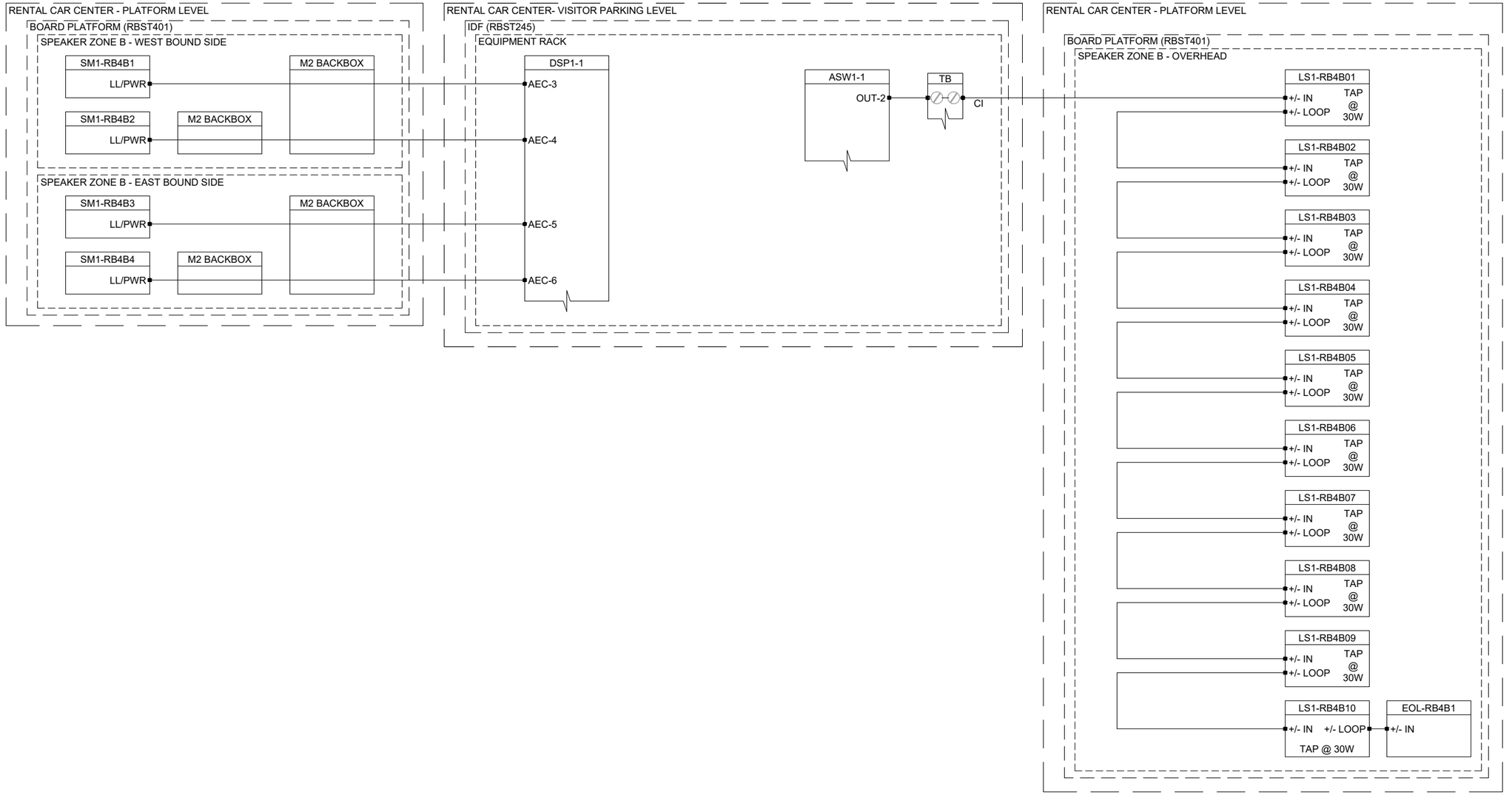
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Date:	07/13/2018
Dwg scale:	NONE
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
SINGLE LINE DIAGRAMS

Package: **B04 - RBAV0502**
Sheet Reference No:
V6 - 165 of 260

Local File: Z:\skyharbor - sky train\Drawings\CAD\AV10000011-S-2-RBAV0502.dwg
Project Number: 062421
6/21/2018 4:31:54 PM



TYPICAL NOTE FOR ALL SPEAKER ZONES:
TWO CONDUCTOR FPLR CIC RATED COPPER FROM AMP SWITCH TO FIRST LOUDSPEAKER IN EACH ZONE.

NOTES:

- REFER TO FLOOR AND CEILING PLANS FOR LOUDSPEAKER LOCATION, PLACEMENT, AND QUANTITIES.
- REFER TO FLOOR AND CEILING PLANS FOR SENSE MICROPHONE LOCATIONS, PLACEMENT, AND QUANTITIES.
- REGARDLESS OF CONDUIT PATHS, ALL LOUDSPEAKER RUNS SHALL BE CONNECTED AS A SINGLE HOME RUN. AVC RESPONSIBLE TO COORDINATE PATHS WITH EC OR RUN EXTRA CABLES TO ALLOW FOR SINGLE HOME RUN AS SHOWN.
- END OF LINE SENSOR TO BE INSTALLED WITHIN THE BACK CAN OF THE FINAL LOUDSPEAKER IN THE RUN.
- DSPx-n REFLECTS A SINGLE DSP FILE DESIGN; FINAL EQUIPMENT CONFIGURATION IS NOT A SINGLE UNIT AS SHOWN.

1 RBAV0503 **AUDIO SINGLE LINE DIAGRAM (2 OF 3)**
SCALE: NO SCALE

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Project Number: 062421
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Design Sub-Consultant
MCH
M-RAY CONANT HOOVER INC
Acoustics and Audio Visual Consultants
Architectural Lighting Consultants
Information Technology Consultants

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

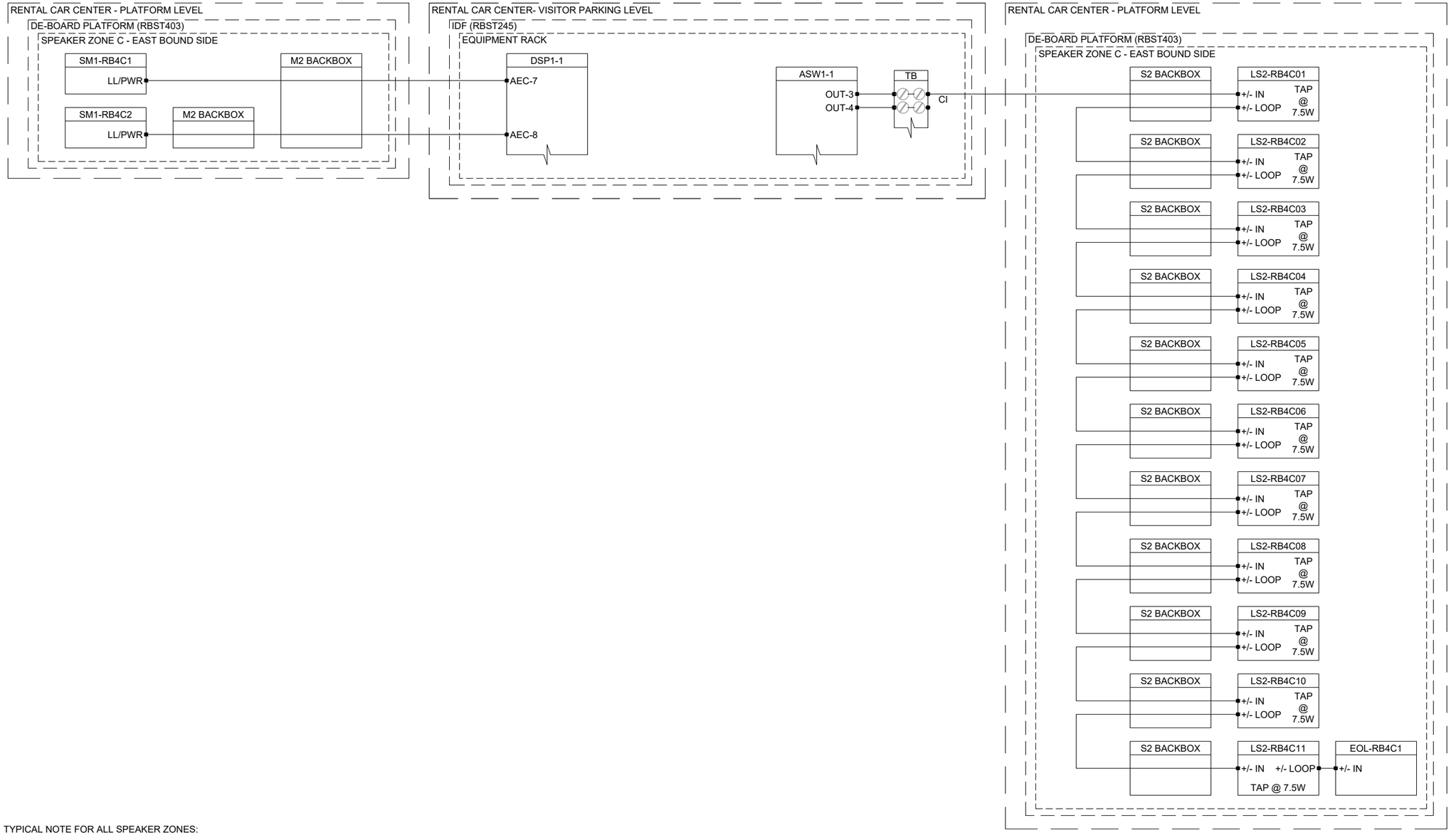
PHX SKY HARBOR
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	NONE
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
SINGLE LINE DIAGRAMS

Package: **B04 - RBAV0503**
Sheet Reference No:
V6 - 166 of 260



TYPICAL NOTE FOR ALL SPEAKER ZONES:
TWO CONDUCTOR FPLR CIC RATED COPPER FROM AMP SWITCH TO FIRST LOUDSPEAKER IN EACH ZONE.

NOTES:

- REFER TO FLOOR AND CEILING PLANS FOR LOUDSPEAKER LOCATION, PLACEMENT, AND QUANTITIES.
- REFER TO FLOOR AND CEILING PLANS FOR SENSE MICROPHONE LOCATIONS, PLACEMENT, AND QUANTITIES.
- REGARDLESS OF CONDUIT PATHS, ALL LOUDSPEAKER RUNS SHALL BE CONNECTED AS A SINGLE HOME RUN. AVC RESPONSIBLE TO COORDINATE PATHS WITH EC OR RUN EXTRA CABLES TO ALLOW FOR SINGLE HOME RUN AS SHOWN.
- END OF LINE SENSOR TO BE INSTALLED WITHIN THE LOUDSPEAKER ENCLOSURE NEXT TO THE FINAL LOUDSPEAKER IN THE RUN.
- DSPx-n REFLECTS A SINGLE DSP FILE DESIGN; FINAL EQUIPMENT CONFIGURATION IS NOT A SINGLE UNIT AS SHOWN.

1 RBAV0504 **AUDIO SINGLE LINE DIAGRAM (3 OF 3)**
SCALE: NO SCALE

PER CITY OF PHOENIX ORDINANCE G-4390, THESE PLANS ARE FOR EXCLUSIVE USE ON THIS PROJECT AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant: MCH Mayat Conant Hoover Inc. Acoustics and Audio Visual Communications Architectural Lighting Design Technology Systems

Design Consultant: Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

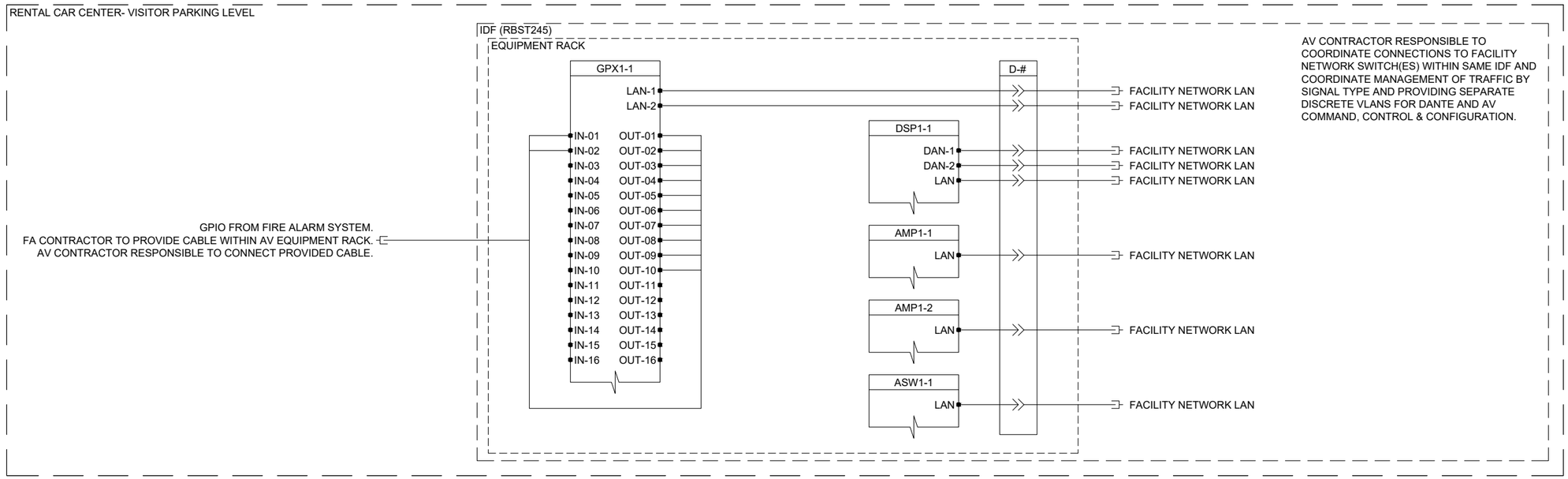
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Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	NONE
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
SINGLE LINE DIAGRAMS

Package: **B04 - RBAV0504**
Sheet Reference No:
V6 - 167 of 260

Local File: Z:\skyharbor - sky train\Drawings\CAD\AV10000011-S-2-RBAV0502.dwg
Project Number: 062421
6/21/2018 4:32:03 PM



1 RBAV0505 **DATA & CONTROL SINGLE LINE DIAGRAM**
SCALE: NO SCALE

Project Number: 062421
6/21/2018 4:32:08 PM

Local File: Z:\skyharbor - sky train\Drawings\CAD\AV10000011-S-2-RBAV0503.dwg

Design Sub-Consultant
MCH
M-RAY CONANT HOOVER INC
Acoustics and Audio Visual Consultants
Architecture and Media System Consultants
Architecture • Interior Design • Acoustics • Audio Visual • Systems Integration

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4390, THESE PLANS ARE FOR CITY OF PHOENIX USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KM/H
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	NONE
CIP No.:	AV10000011
KIVA No.:	07-5204

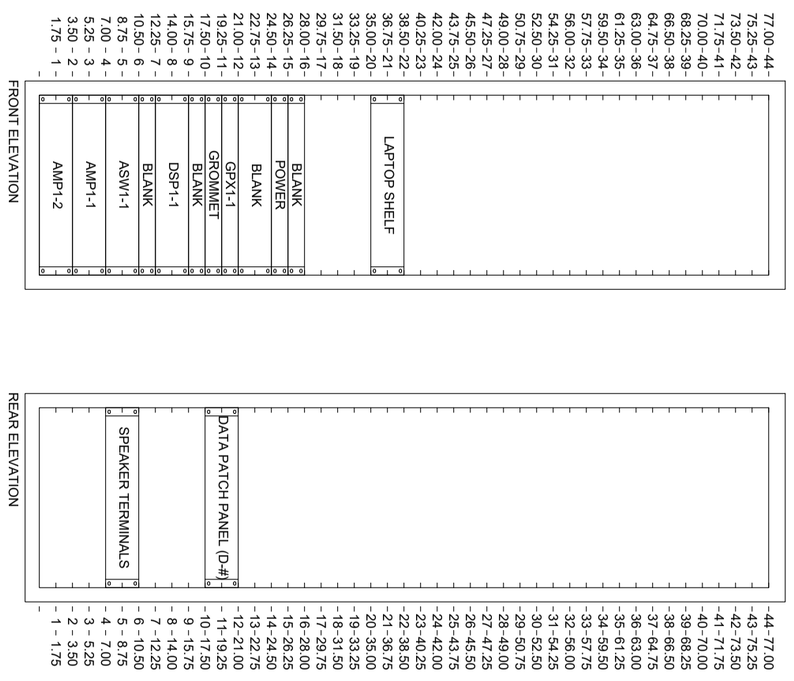
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
SINGLE LINE DIAGRAMS

Package: **B04 - RBAV0505**
Sheet Reference No:

1 RBAV0701 SCALE: 1-1/2" = 1'-0"

MASS NOTIFICATION EQUIPMENT RACK ELEVATION - IDF RCST245



STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
RACK ELEVATIONS

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1-1/2" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

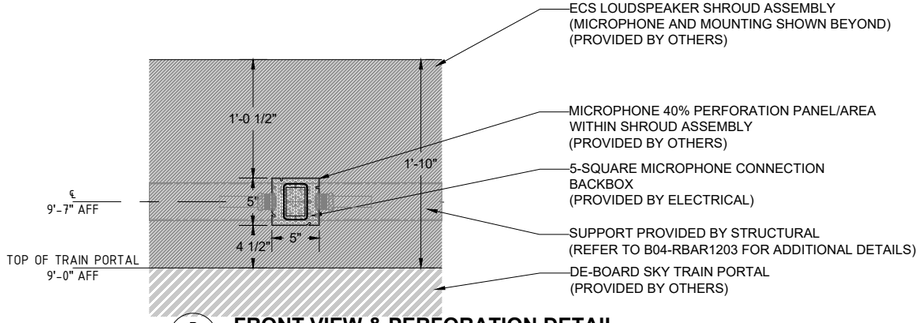
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

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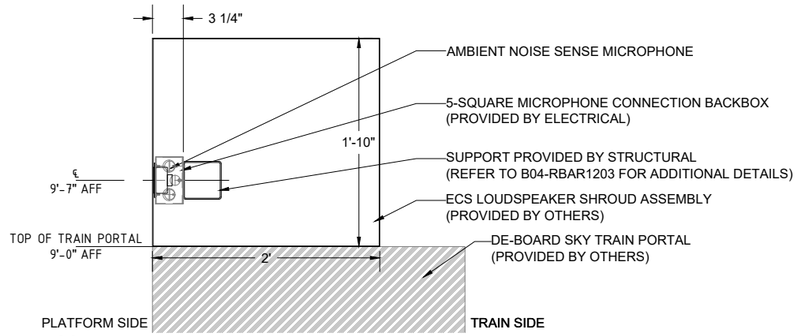
Design Sub-Consultant
MCH
MF KAY CONANT HOOVER INC
Acoustics and Media Systems Consultants

Design Consultant
Gannett Fleming

Package: **B04 - RBAV0701** Sheet Reference No: V6 - 169 of 260

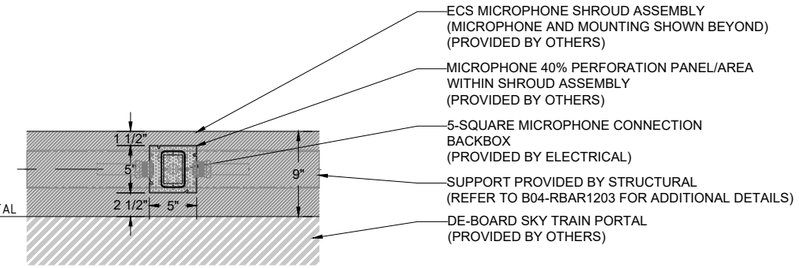


B **FRONT VIEW & PERFORATION DETAIL**

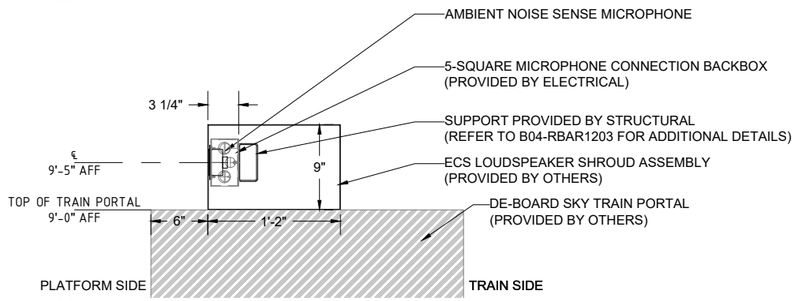


A **SIDE VIEW**

3 **DE-BOARD PLATFORM MICROPHONE DETAILS**
RBAV0801 SCALE: 1-1/2" = 1'-0"

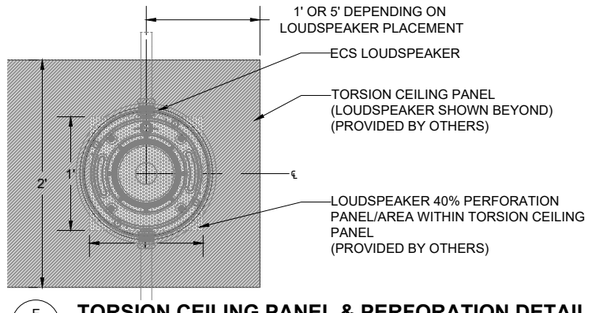


B **FRONT VIEW & PERFORATION DETAIL**

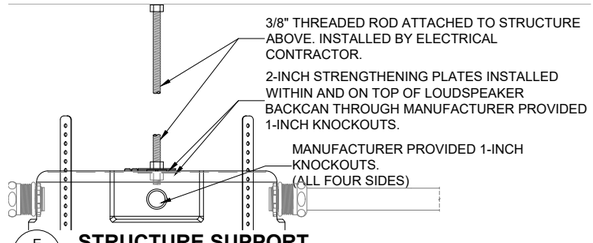


A **SIDE VIEW**

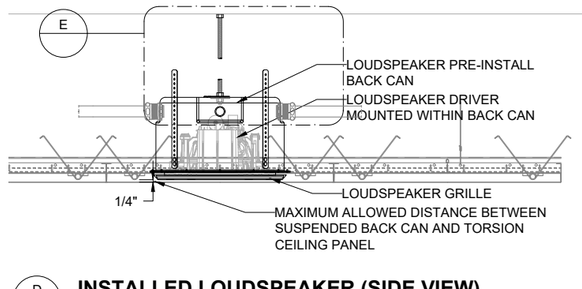
2 **BOARD PLATFORM MICROPHONE DETAILS**
RBAV0801 SCALE: 1-1/2" = 1'-0"



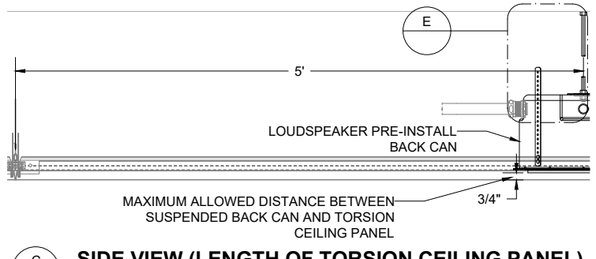
F **TORSION CEILING PANEL & PERFORATION DETAIL**



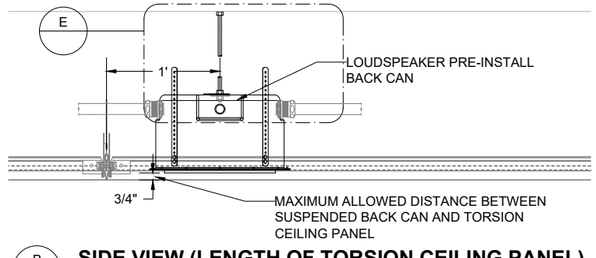
E **STRUCTURE SUPPORT**
SCALE: 3" = 1'-0"



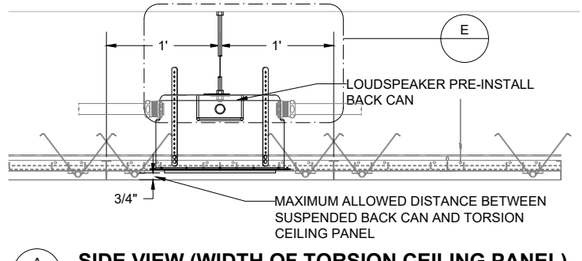
D **INSTALLED LOUDSPEAKER (SIDE VIEW)**



C **SIDE VIEW (LENGTH OF TORSION CEILING PANEL)**
(AT LOCATIONS WHERE SHOWN AT THE MIDDLE OF THE LENGTH OF THE PANEL)



B **SIDE VIEW (LENGTH OF TORSION CEILING PANEL)**
(AT LOCATIONS WHERE SHOWN AT THE END OF THE LENGTH OF THE PANEL)



A **SIDE VIEW (WIDTH OF TORSION CEILING PANEL)**

1 **ABOVE CEILING-MOUNTED LOUDSPEAKER DETAILS**
RBAV0801 SCALE: 1-1/2" = 1'-0"

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant
MCH
McKAY CONANT HOOVER INC.
Acoustics and Audio Visual Consultants
Architecture and Interior Design
Technology and Communications

Design Consultant
Gannett Fleming

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1-1/2" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

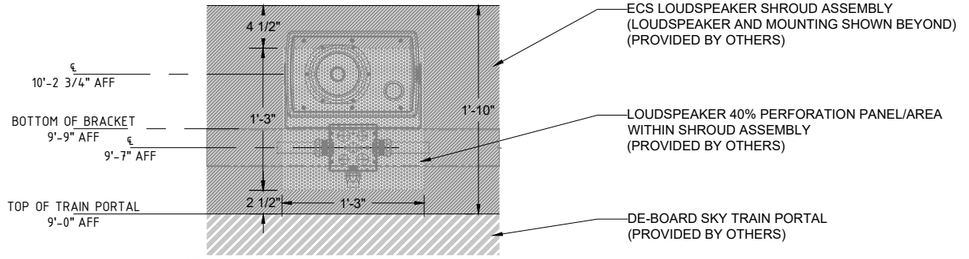
RCC STATION
MASS NOTIFICATION (ECS)
MOUNTING DETAILS

Package:
B04 - RBAV0801
V6 - 170 of 260

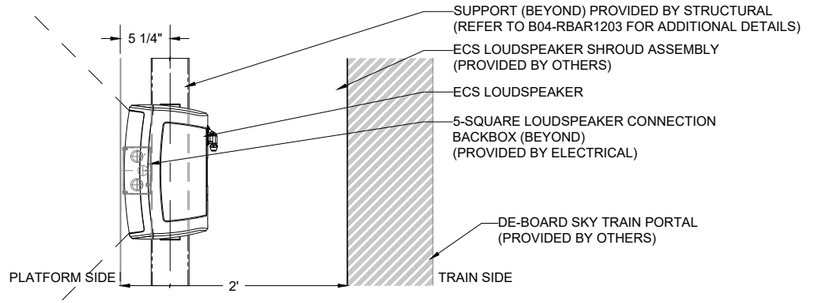
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Project Number: 062421
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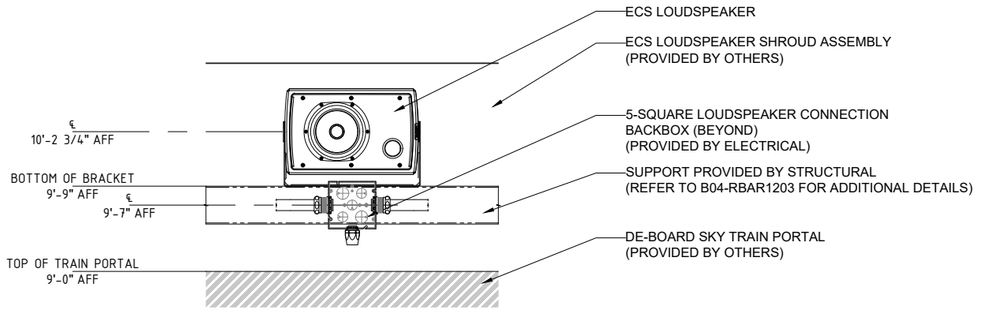
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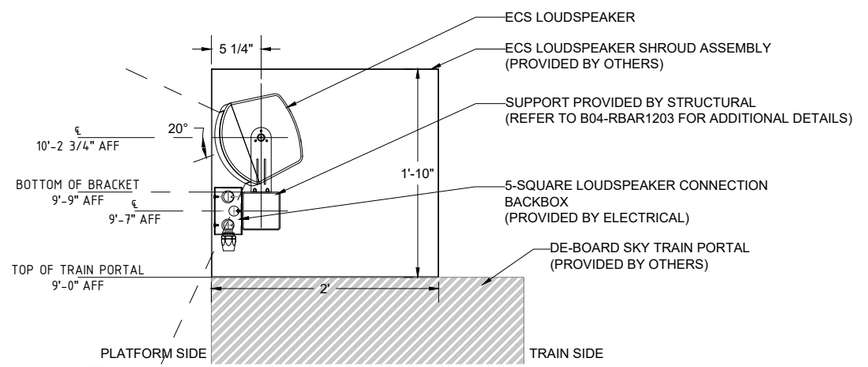
D **SHROUD PERFORATION DETAIL (FRONT VIEW)**



C **PLAN VIEW**



B **FRONT VIEW**



A **SIDE VIEW**

1 **DE-BOARD PLATFORM LOUDSPEAKER DETAILS**

RBAV0802 SCALE: 1-1/2" = 1'-0"

Design Sub-Consultant
MCH
McKay Conant Hoover Inc.
Acoustics and Audio Systems Consultants
2728 North 24th Street Phoenix Arizona 85008

Design Consultant
Gannett Fleming

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NO.	DATE
REVISIONS / SUBMISSIONS	
SUBMITTED FOR REVIEW	04/06/18
ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	RBW
Drawn by:	KMvH
Checked by:	RBW
Date:	07/13/2018
Dwg scale:	1-1/2" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

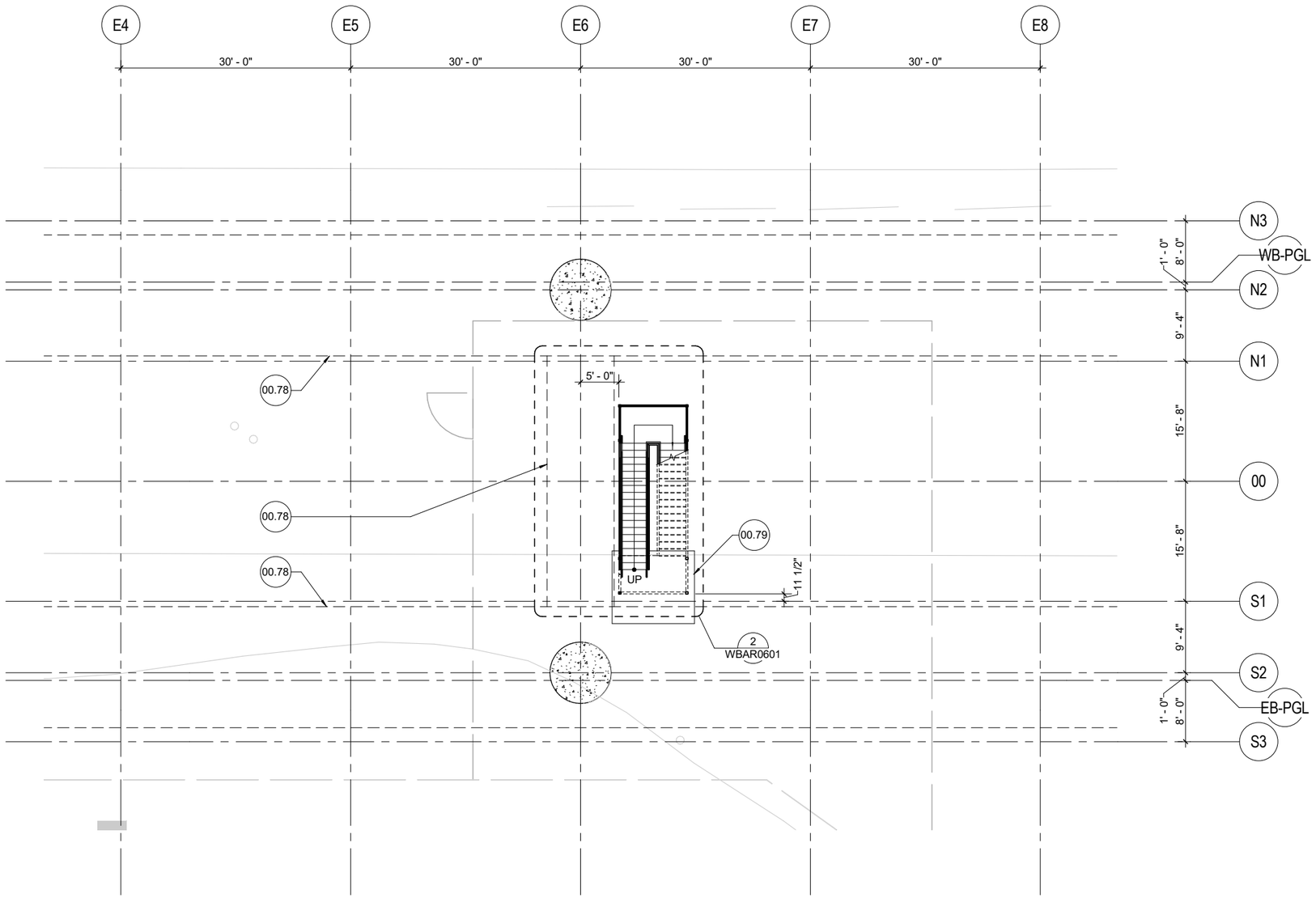
STAGE 2 - B04 DESIGN SUBMISSION

RCC STATION
MASS NOTIFICATION (ECS)
MOUNTING DETAILS

Package:
B04 - RBAV0802

Sheet Reference No:
V6 - 171 of 260

Project Number: 062421
7/11/2018 8:02:51 AM
Local File: Z:\skyharbor - sky train\Drawings\CAD\AV10000011-S-2-RBAV0801.dwg



1 LEVEL 3 - APRON LEVEL - AREA E
SCALE: 1/8" = 1'-0"

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

SHEET NOTES

A REFER TO AND COORDINATE WITH STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR INFORMATION NOT SHOWN ON THIS SHEET.

B REFER TO THE LIFE SAFETY PLANS IN THE LS-SERIES SHEETS FOR FIRE RESISTIVE CONSTRUCTION REQUIREMENTS.

C BUILDING COORDINATES PER CIVIL DRAWINGS ARE LOCATED AT GRIDLINES 0 AND 00. COORDINATES ARE X=668846.78227, Y=886207.57208, AND PGL=1160.0'

D REFER TO THE WBAR12-SERIES SHEETS FOR STAIR AND RAILING DETAILS.

KEY NOTES

00.78 DASHED LINE INDICATES EDGE OF GUIDEWAY STRUCTURE ABOVE

00.79 LINE OF SLAB EDGE

A | B | C | D | E | F

KEY PLAN

N

REGISTERED ARCHITECT
CERTIFICATE NO. 35861
MICHAEL L KRAGER
Date Signed 7-31-2018
ARIZONA, U.S.A.

Design Sub-Consultant
SMITHGROUP
architecture engineering interiors planning

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR CONSTRUCTION ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	MR
Drawn by:	JI,MT,TK
Checked by:	KW
Date:	07/13/2018
Dwg scale:	AS NOTED
CIP No.:	AV100000011
KIVA No.:	07-5204

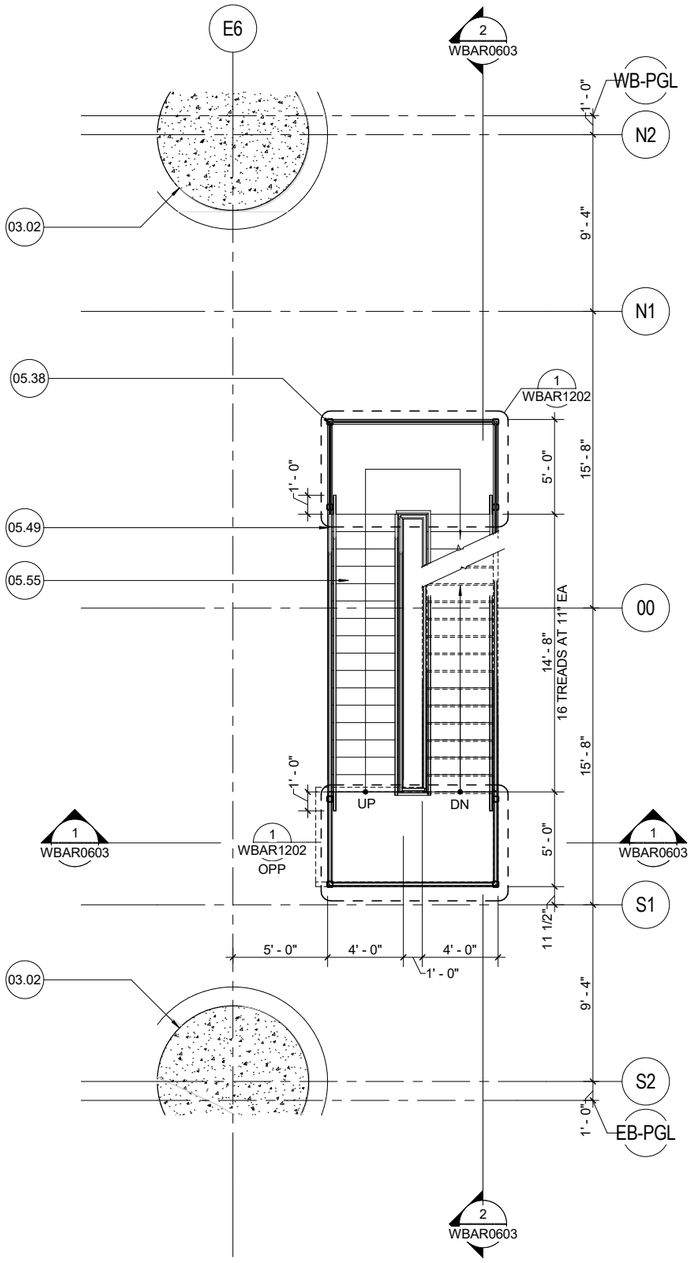
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
ARCHITECTURAL
FLOOR PLAN - APRON - LEVEL 3 - AREA E

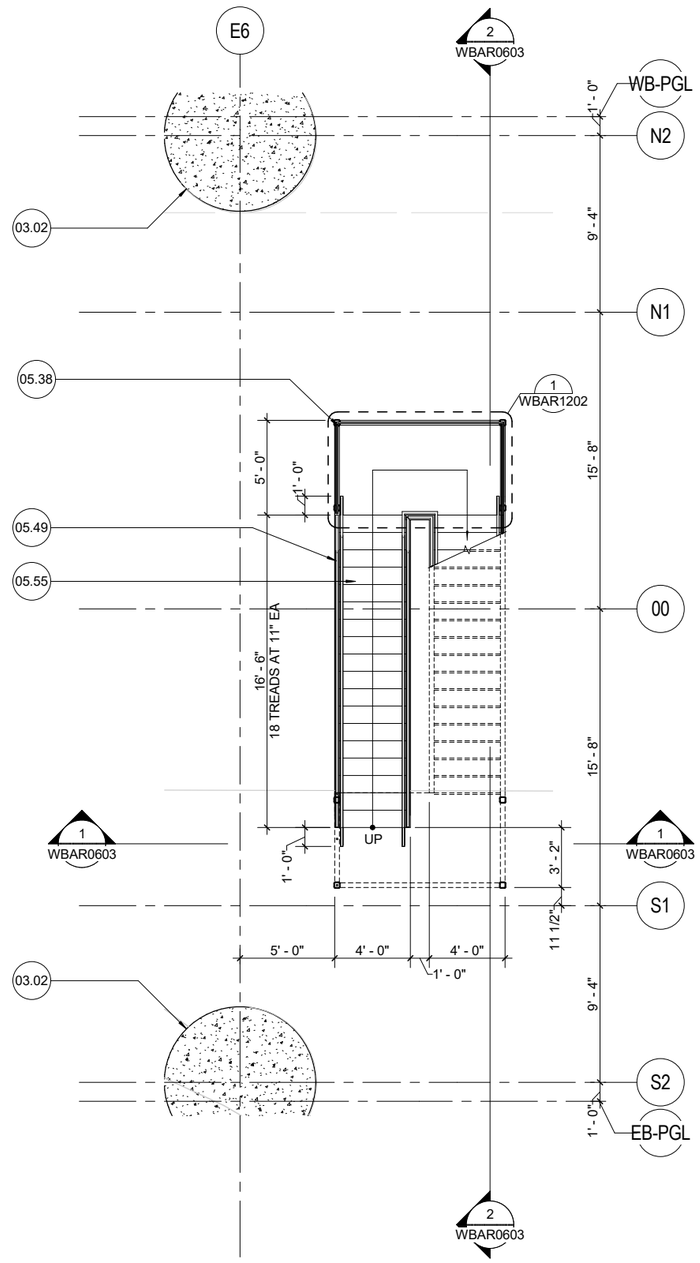
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Sheet Reference No: V6 - 172 of 260

Project Number: 062421
7/11/2018 3:19:39 PM

Local File:BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTARXX01_R17_A360.rvt



1 ENLARGED STAIR PLAN - INTERMEDIATE LANDING
SCALE: 1/4" = 1'-0"



2 ENLARGED STAIR PLAN - LEVEL 3 - APRON LEVEL
SCALE: 1/4" = 1'-0"

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

SHEET NOTES

A REFER TO AND COORDINATE WITH STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR INFORMATION NOT SHOWN ON THIS SHEET.

B REFER TO THE LIFE SAFETY PLANS IN THE LS-SERIES SHEETS FOR FIRE RESISTIVE CONSTRUCTION REQUIREMENTS.

C BUILDING COORDINATES PER CIVIL DRAWINGS ARE LOCATED AT GRIDLINES 0 AND 00. COORDINATES ARE X=668846.78227, Y=886207.57208, AND PGL=1160.0'

D REFER TO THE WBAR12-SERIES SHEETS FOR STAIR AND RAILING DETAILS.

KEY NOTES

03.02	GUIDEWAY STRUCTURAL SUPPORT COLUMN
05.38	STRUCTURAL COLUMN, TYP.
05.49	TYPICAL STAIR GUARDRAIL AND HANDRAIL. SEE STAIR AND RAILING SYSTEMS DETAILS FOR DETAILED INFORMATION.
05.55	HEAVY DUTY ADA GRATING WITH SPRAY TRACTION SURFACE

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR PUBLIC USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

Design Sub-Consultant
SMITHGROUP
architecture engineering interiors planning
Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

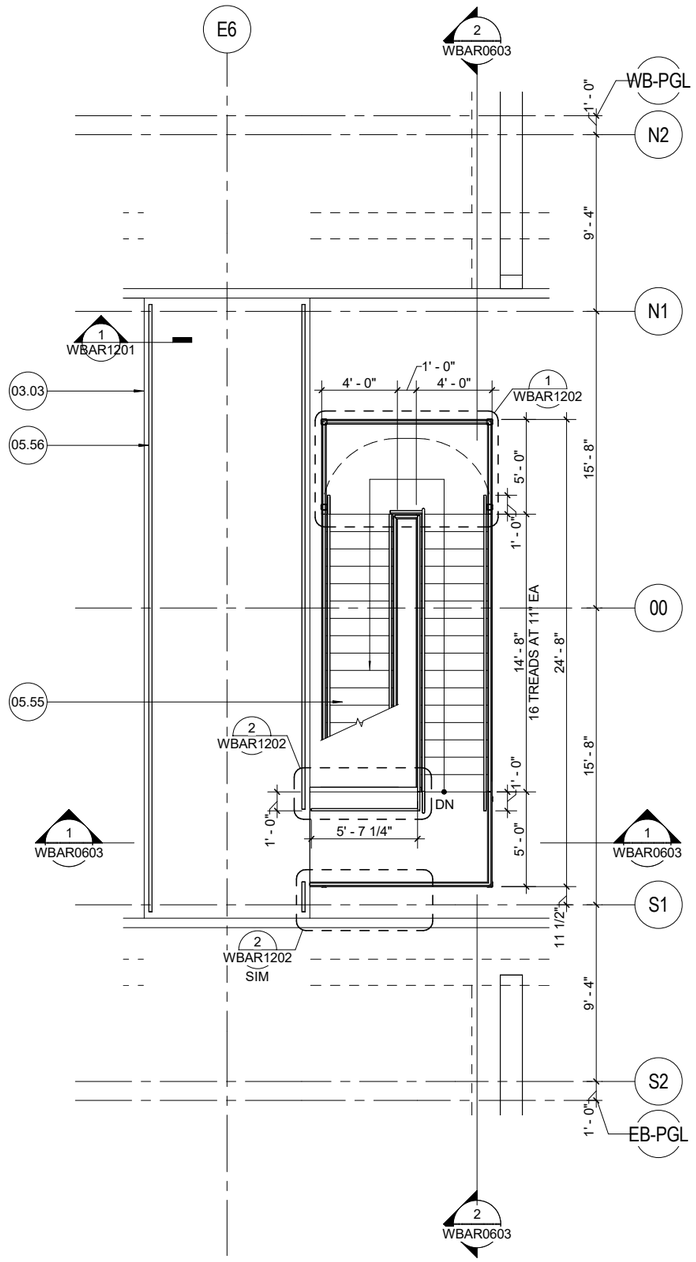
Designed by:	MR
Drawn by:	JI,MT,TK
Checked by:	KW
Date:	07/13/2018
Dwg scale:	AS NOTED
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
ARCHITECTURAL
ENLARGED PLANS - STAIR

Package: B04 - WBAR0601
Sheet Reference No:
V6 - 173 of 260

Local File:BIM 360:/62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTARXX01_R17_A360.rvt
Project Number: 062421
7/11/2018 3:16:41 PM



1 ENLARGED STAIR PLAN - LEVEL 5 - T.O.C. GUIDEWAY
SCALE: 1/4" = 1'-0"

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

SHEET NOTES

A REFER TO AND COORDINATE WITH STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR INFORMATION NOT SHOWN ON THIS SHEET.

B REFER TO THE LIFE SAFETY PLANS IN THE LS-SERIES SHEETS FOR FIRE RESISTIVE CONSTRUCTION REQUIREMENTS.

C BUILDING COORDINATES PER CIVIL DRAWINGS ARE LOCATED AT GRIDLINES 0 AND 00. COORDINATES ARE X=668846.78227, Y=886207.57208, AND PGL=1160.0'

D REFER TO THE WBAR12-SERIES SHEETS FOR STAIR AND RAILING DETAILS.

KEY NOTES

03.03 GUIDEWAY STRUCTURE

05.55 HEAVY DUTY ADA GRATING WITH SPRAY TRACTION SURFACE

05.56 STEEL GUIDEWAY GUARDRAIL - SEE STAIR AND RAILING SYSTEMS DETAILS FOR DETAILED INFORMATION

REGISTERED ARCHITECT
CERTIFICATE NO. 35861
MICHAEL L. KRAGER
Date Signed 7/13/2018
ARIZONA, U.S.A.

Design Sub-Consultant
SMITHGROUP
architecture engineering interiors planning

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	MR
Drawn by:	JI/MT/TK
Checked by:	KW
Date:	07/13/2018
Dwg scale:	AS NOTED
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

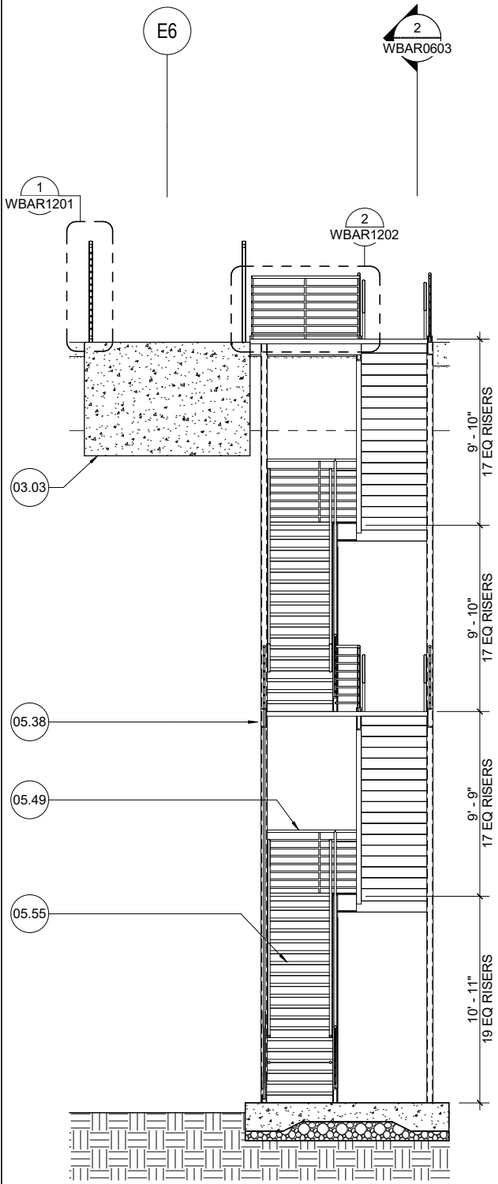
WEST TERMINAL STATION
ARCHITECTURAL
ENLARGED PLANS - STAIR

Package: B04 - WBAR0602
Sheet Reference No:
V6 - 174 of 260

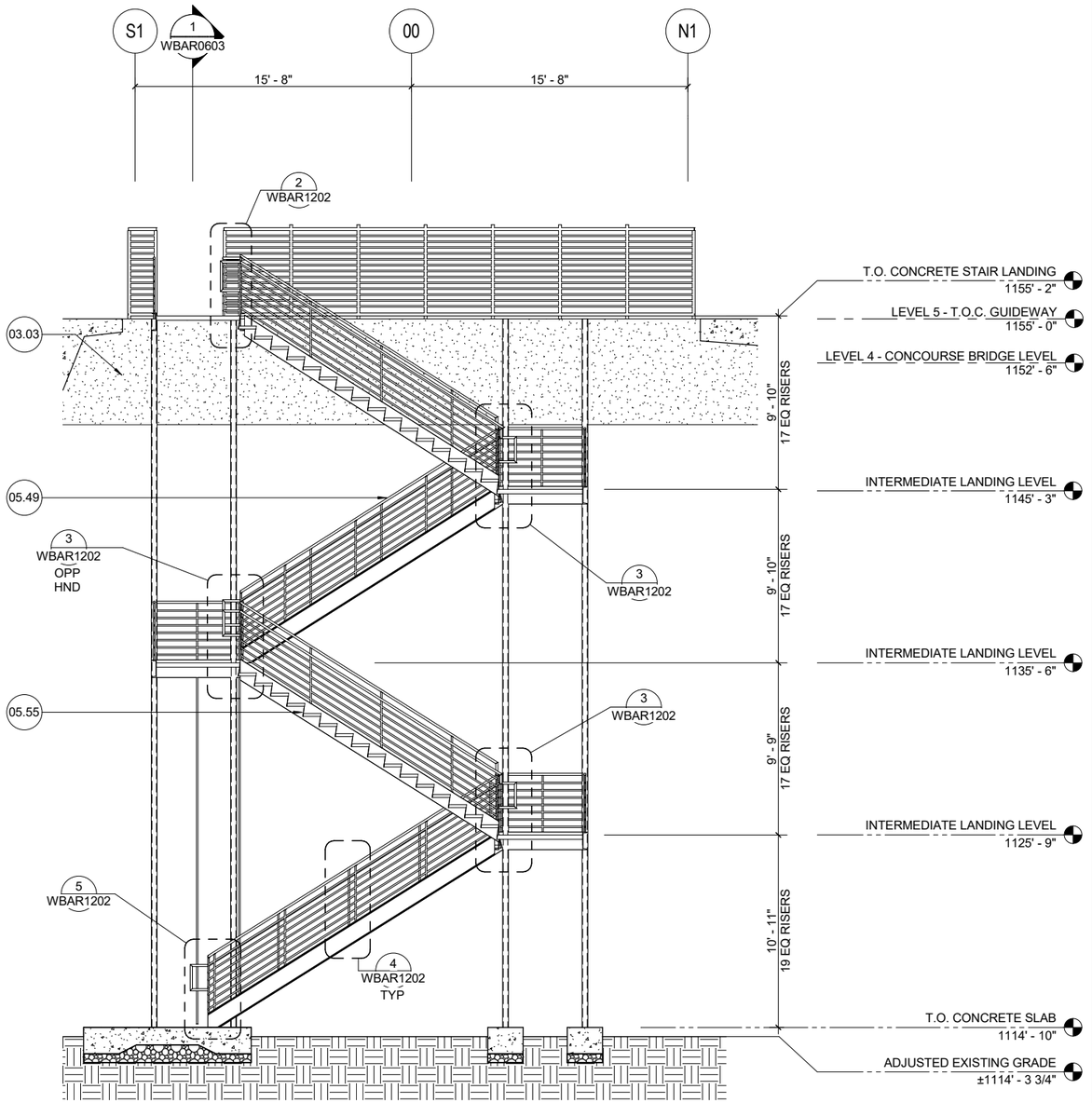
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Project Number: 062421
7/11/2018 3:19:41 PM

Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTARXX01_R17_A360.rvt



1 ENLARGED TRANSVERSE SECTION - STAIR
SCALE: 1/4" = 1'-0"



2 ENLARGED LONGITUDINAL SECTION - STAIR
SCALE: 1/4" = 1'-0"

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

SHEET NOTES

A REFER TO AND COORDINATE WITH STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR INFORMATION NOT SHOWN ON THIS SHEET.

B REFER TO THE LIFE SAFETY PLANS IN THE LS-SERIES SHEETS FOR FIRE RESISTIVE CONSTRUCTION REQUIREMENTS.

C BUILDING COORDINATES PER CIVIL DRAWINGS ARE LOCATED AT GRIDLINES 0 AND 00. COORDINATES ARE X=668846.78227, Y=886207.57208, AND PGL=1160.0'

D REFER TO THE WBAR12-SERIES SHEETS FOR STAIR AND RAILING DETAILS.

KEY NOTES

03.03	GUIDEWAY STRUCTURE
05.38	STRUCTURAL COLUMN, TYP.
05.49	TYPICAL STAIR GUARDRAIL AND HANDRAIL. SEE STAIR AND RAILING SYSTEMS DETAILS FOR DETAILED INFORMATION.
05.55	HEAVY DUTY ADA GRATING WITH SPRAY TRACTION SURFACE

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Design Sub-Consultant
SMITHGROUP
architecture engineering interiors planning
Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

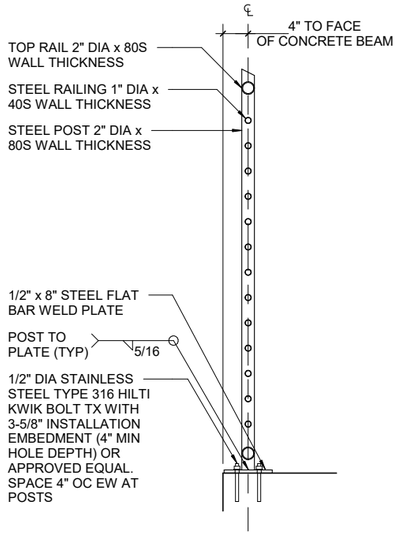
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Date:	07/13/2018
Dwg scale:	AS NOTED
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

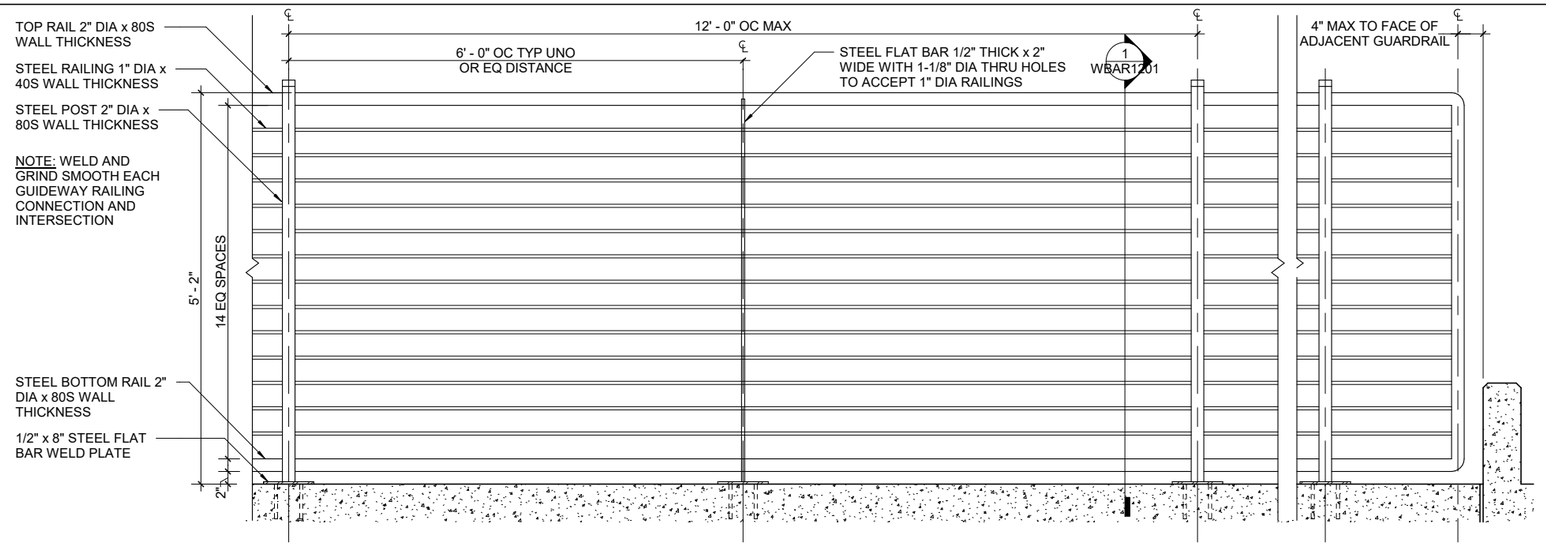
WEST TERMINAL STATION
ARCHITECTURAL
ENLARGED SECTION - STAIR

Package: B04 - WBAR0603
Sheet Reference No: V6 - 175 of 260

Project Number: 062421
7/11/2018 3:19:42 PM
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1 GUIDEWAY GUARDRAIL - SECTION
SCALE: 1" = 1'-0"



2 GUIDEWAY GUARDRAIL - ELEVATION
SCALE: 1" = 1'-0"

1" = 1'-0"
0 1' 2'

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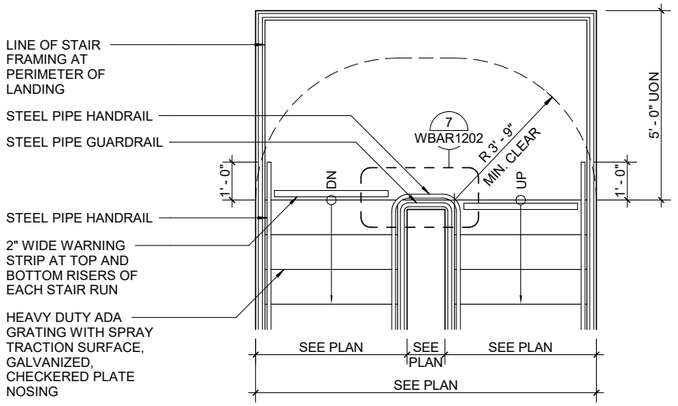
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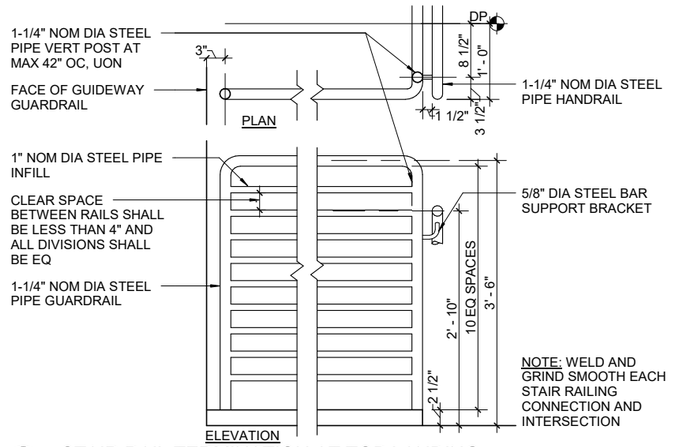
WEST TERMINAL STATION
ARCHITECTURAL
STAIRS AND RAILING SYSTEMS

Package: B04 - WBAR1201
Sheet Reference No: V6 - 176 of 260

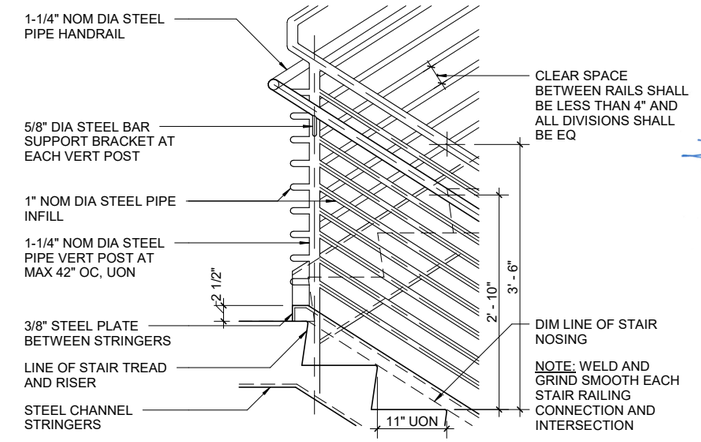
Project Number: 062421
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1 TYPICAL STAIR INTERMEDIATE LANDING PLAN
WBAR0601 SCALE: 1/2" = 1'-0"



2 STAIR RAIL TERMINATION AT TOP LANDING
WBAR0602 SCALE: 1" = 1'-0"



3 TYPICAL STAIR RAILING TRANSITION AT LANDINGS
WBAR0603 SCALE: 1" = 1'-0"

4 TYPICAL STAIR GUARDRAIL SECTION
WBAR0603 SCALE: 1" = 1'-0"

5 STAIR RAIL TERMINATION AT BOTTOM LANDING
WBAR0603 SCALE: 1" = 1'-0"

6 STAIR AT FLOOR SLAB DETAIL
WBAR1202 SCALE: 3" = 1'-0"

7 TYPICAL STAIR RAILING TRANSITION AT LANDINGS - ENLARGED
WBAR1202 SCALE: 3" = 1'-0"

3" = 1'-0"
0 4" 8"
1" = 1'-0"
0 1' 2'
1/2" = 1'-0"
0 2' 4'

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STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
ARCHITECTURAL
STAIRS AND RAILING SYSTEMS

Package: B04 - WBAR1202
Sheet Reference No: V6 - 177 of 260

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Project Number: 062421
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STRUCTURAL DESIGN PARAMETERS

1.01 GENERAL:
- A. CONSTRUCTION SHALL COMPLY WITH THE BUILDING CODE AND OTHER APPLICABLE CODES AND STANDARDS.
- B. BUILDING CODE: INTERNATIONAL BUILDING CODE (IBC 2012) AS ADOPTED AND AMENDED BY THE CITY OF PHOENIX.

2.01 DESIGN CRITERIA:
- A. REFERENCE STANDARDS: MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-10.
- B. STRUCTURAL RISK CATEGORY = III
- C. SUPERIMPOSED DEAD LOADS
  - i) SEE FLOOR LOADING MAPS
- D. LIVE LOADS:
  - i) ELEVATED FLOOR LIVE LOAD
    - (1) SEE FLOOR LOADING MAPS
    - (2) STAIR LL = 100PSF
    - (3) ALL FLOORS, ROOFS AND STAIRS: 2,000LB CONCENTRATED LL
  - ii) GROUND FLOOR, LL = 250PSF
- E. WIND LOAD PARAMETERS:
  - i) EXPOSURE CATEGORY = C
  - ii) BASIC WIND SPEED = 120 MPH
  - iii) INTERNAL PRESSURE COEFFICIENT: GC(pi) = 0.18±
  - iv) COMPONENTS AND CLADDING WIND PRESSURE: AS REQUIRED BY CHAPTER 30 OF ASCE 7-10
  - v) SERVICEABILITY CONSIDERATIONS: USE 50-YEAR MEAN RECURRENCE INTERVAL (MRI) WIND SPEED, V=90MPH (FOR DRIFT CONSIDERATIONS, NOT FOR STRENGTH)
- F. SEISMIC LOAD PARAMETERS:
  - i) MAPPED SPECTRAL RESPONSE ACCELERATION:
    - (1) AT SHOR PERIODS: S(S) = 0.173g
    - (2) AT 1 SECOND: S(1) = 0.057g
  - ii) DESIGN SPECTRAL RESPONSE ACCELERATION:
    - (1) AT SHORT PERIODS: S(DS) = 0.138g
    - (2) AT 1 SECOND: S(D1) = 0.065g
  - iii) SITE CLASS C
  - iv) SEISMIC DESIGN CATEGORY = A
  - v) ESSENTIAL NONSTRUCTURAL COMPONENTS REQUIRED FOR LIFE SAFETY AFTER AN EARTHQUAKE INCLUDING FIRE SUPPRESSION AND EGRESS STAIRS, Ip = 1.5
  - vi) BASIC LATERAL FORCE RESISTING SYSTEM = INTERMEDIATE REINFORCED CONCRETE MOMENT FRAME
    - (1) DESIGN BASE SHEAR: 758 KIPS
    - (2) RESPONSE COEFFICIENT = C(s) = 0.007
    - (3) RESPONSE MODIFICATION FACTOR: R = 5
  - vii) ANALYSIS PROCEDURE USED: MODAL RESPONSE SPECTRUM ANALYSIS.

GENERAL STRUCTURAL NOTES

1.01 GENERAL:
- A. THE STRUCTURAL DRAWINGS SHOW THE COMPLETED PROJECT. THEY DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND AROUND THE JOB SITE DURING CONSTRUCTION.
- B. GENERAL NOTES AND TYPICAL DETAILS APPLY EVEN THOUGH NOT SPECIFICALLY REFERENCED ON STRUCTURAL DRAWINGS, UNLESS NOTED OTHERWISE.

1.02 COORDINATION:
- A. DETAILS ON THE STRUCTURAL DRAWINGS ARE TYPICAL. VERIFY ALL SITE DIMENSIONS, ELEVATIONS, AND SLOPES WITH ARCHITECTURAL, CIVIL, AND GRADING DRAWINGS. STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- B. MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DRAWINGS SHALL BE PROVIDED PRIOR TO PLACING CONCRETE. STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS AND SHOP DRAWINGS PROVIDED BY MANUFACTURERS OF EQUIPMENT.

2.01 FIELD EXECUTION:
- A. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, SHORING, GUYING AND OTHER MEANS TO AVOID EXCESSIVE STRESSES AND HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.
- B. CONTRACTOR SHALL EXERCISE EXTREME CARE DURING THE CONSTRUCTION OF THE NEW STRUCTURE TO AVOID DAMAGE TO EXISTING STRUCTURES. CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS REQUIRED TO FACILITATE CONSTRUCTION OF THE WORK AND ENSURING THE SAFETY, STABILITY AND INTEGRITY OF ADJACENT STRUCTURES AND FACILITIES.

DEFERRED SUBMITTALS

1.01 DESCRIPTION:
- A. DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION BUT WILL BE SUBMITTED TO THE BUILDING OFFICIAL WITHIN A SPECIFIC TIME. DEFERRAL OF ANY SUBMITTAL ITEMS IS SUBJECT TO APPROVAL BY THE BUILDING OFFICIAL.
- B. THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL TIME AND EFFORT REQUIRED TO OBTAIN A BUILDING DEPARTMENT REVIEW AND SHALL ALSO INCLUDE ALL TIME AND EFFORT TO SECURE CALCULATIONS AND DRAWINGS APPROPRIATELY SEALED BY AN ENGINEER FOR DEFERRED ITEMS REQUIRING DESIGN.

1.02 SUBMITTALS:
- A. DOCUMENTS FOR DEFERRED SUBMITTALS SHALL BE SUBMITTED TO THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE FOR REVIEW PRIOR TO THEM BEING FORWARDED TO THE BUILDING OFFICIAL. THE DESIGN PROFESSIONAL WILL REVIEW THE SUBMITTAL DOCUMENTS FOR GENERAL CONFORMANCE WITH THE DESIGN INTENT FOR THE STRUCTURE OR FACILITY.
- B. SUBMITTALS OF ENGINEERING DESIGN PROVIDED BY OTHERS SHALL HAVE DRAWINGS AND CALCULATIONS APPROPRIATELY SIGNED AND SEALED BY A PROFESSIONAL STRUCTURAL/CIVIL ENGINEER REGISTERED IN THE STATE IN WHICH THE SUBMITTED ITEMS WILL BE INSTALLED
- C. IN ALL CASES THE COMPONENTS MUST BE DESIGNED AND MANUFACTURED BY A FABRICATOR APPROVED BY THE GOVERNING BODY HAVING JURISDICTION.
- D. SUBMITTALS SHALL INCLUDE KEY PLANS, SECTIONS, AND DETAILS REQUIRED FOR CONSTRUCTION.

1.03 COORDINATION:
- A. THE CONTRACTOR/SUPPLIER SHALL FIELD VERIFY ALL DIMENSIONS BEFORE START OF WORK

2.01 SHOP FABRICATION:
- A. THE FOLLOWING ITEMS ARE DEFERRED SUBMITTAL ITEMS.
  - i) STEEL STAIRS AND ACCESS PLATFORMS
  - ii) GUARDRAILS
  - iii) TEMPORARY SHORING

3.01 FIELD EXECUTION:
- A. FIELD INSTALLATION OF DEFERRED STRUCTURAL ITEMS IS SUBJECT TO SPECIAL STRUCTURAL INSPECTION.
- B. SHOP FABRICATION OF DEFERRED STRUCTURAL ITEMS MAY ALSO BE SUBJECT TO SPECIAL STRUCTURAL INSPECTION, UNLESS NOTED OTHERWISE.

CONCRETE

1.01 DESCRIPTION:
- A. PROVIDE NORMAL WEIGHT CONCRETE (144PCF WET) EXCEPT PROVIDE LIGHT WEIGHT STRUCTURAL CONCRETE (120PCF WET), WHERE NOTED.

1.02 COORDINATION:
- A. INSTALL JOINTS, WATERSTOPS, AND SEALANTS IN CONCRETE WHERE APPLICABLE IN ACCORDANCE WITH OTHER SECTIONS OF THE GENERAL STRUCTURAL NOTES, PLANS, AND PROJECT SPECIFICATIONS.
- B. PATCHING OF CONCRETE SHALL BE CONSIDERED STRUCTURAL. SEE STRUCTURAL CONCRETE REPAIR SECTION OF THE GENERAL STRUCTURAL NOTES.

1.03 QUALITY ASSURANCE:
- A. PRODUCE AND DELIVER CONCRETE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS IN ACI 301 AND TOLERANCES OF ACI 117. PLACE CONCRETE IN ACCORDANCE WITH ACI 304. CONDUCT HOT WEATHER AND COLD WEATHER CONCRETING IN ACCORDANCE WITH ACI 305 AND ACI 306 RESPECTIVELY.

2.01 MIX WATER:
- A. USE POTABLE WATER FREE FROM MATERIALS THAT ARE DELETERIOUS TO CONCRETE OR STEEL (ASTM C1602).
  CEMENTITIOUS MATERIALS:
  - i) PORTLAND CEMENT: CONFORM TO ASTM C 150, TYPE II, EXCEPT FOR MASS CONCRETE PROVIDE TYPE IV CEMENT OR ADDITIVES OR OTHER PROVISIONS TO REDUCE THE HEAT OF HYDRATION.
  - ii) FLY ASH: ACCEPTABLE FOR USE IN MIX DESIGN IF COMPLIANT WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND THE MAX RATIO OF FLY ASH TO TOTAL CEMENT AND FLY ASH DOES NOT EXCEED 20 PERCENT BY WEIGHT. CONFORM TO ASTM C 618, TYPE F. DO NOT USE FLYASH IN COLORED CONCRETE WITHOUT WRITTEN APPROVAL.

2.02 AGGREGATE:
- A. PROVIDE A SINGLE SIZE OR A GRADATION OF AGGREGATE WITH THE MAXIMUM SIZE AS SHOWN ON THE MIX DESIGN PROPORTIONS BELOW. DO NOT USE AGGREGATES CONTAINING SOLUBLE SALTS OR OTHER SUBSTANCES SUCH AS IRON SULFIDES, PYRITE, MARCASITE, OCHRE, OR OTHER MATERIALS THAT MAY CAUSE STAINS ON EXPOSED CONCRETE SURFACES.
- B. UNLESS NOTED OTHERWISE, AGGREGATE SHALL BE NORMAL WEIGHT CONFORMING TO ASTM C33.
- C. AGGREGATE FOR LIGHTWEIGHT STRUCTURAL CONCRETE SHALL CONFORM TO ASTM C 330.

2.03 ADMIXTURES:
- A. SUBMIT ADMIXTURES TO THE ENGINEER FOR REVIEW. DO NOT USE ADMIXTURES CONTAINING CALCIUM CHLORIDE. ADMIXTURES AND COMBINATIONS OF ADMIXTURES SHALL BE THE SAME AS THOSE USED IN THE FIELD OR TRIAL TEST DATA SUBMITTED.
- B. AIR ENTRAINING ADMIXTURE (ASTM C260): DO NOT USE CONTENT OF ENTRAINED AIR GREATER THAN THAT SUBMITTED IN TEST DATA FOR REVIEW. ALLOWABLE TOLERANCE FOR AIR CONTENT AT THE POINT OF DELIVERY IS +/ -1.5 PERCENT.
- C. SUPERPLASTICIZERS (HIGH RANGE WATER REDUCERS) AND WATER REDUCERS: COMPLY WITH ASTM C494 TYPE A AND TYPE F. FOR PLANT-ADDED SUPERPLASTICIZERS, BATCHES ARRIVING ON SITE WITH A SLUMP OF 5" OR LESS WILL NOT BE ACCEPTED. FOR SITE-ADDED SUPERPLASTICIZERS, THE MIX SHALL BE SLUMPED AT THE OB SITE PRIOR TO THE ADDITION OF SUPERPLASTICIZERS. PROVIDE COMPUTER BATCH RECORDS IF SUPERPLASTICIZERS ARE USED. DO NOT ADD ADDITIONAL SUPERPLASTICIZERS ON SITE.
- D. SHRINKAGE REDUCING ADMIXTURE:
  - i) USE IN CONCRETE TOPPINGS FOR STAIR TREADS AND LANDINGS.
  - ii) PROVIDE ADMIXTURE THAT REDUCES CONCRETE DRYING SHRINKAGE BY 41 TO 62 PERCENT WHEN TESTED PER ASTM C157 WITHOUT REDUCING CONCRETE 28-DAY STRENGTH AND IS COMPATIBLE WITH OTHER ADMIXTURES INCLUDING AIR-ENTRAINMENT.

2.04 SLUMP:
- A. TOLERANCE FOR SPECIFIED SLUMP IS +/- 1INCH BEFORE THE ADDITION OF SUPERPLASTICIZERS/WATER REDUCERS PER ACI 117. MAXIMUM SLUMP WITH SUPERPLASTICIZERS IS 8 INCHES. DO NOT ADD WATER ON SITE OR AFTER SUPERPLASTICIZERS HAVE BEEN USED.

2.05 MIX DESIGN PROPORTIONS (NORMAL WT CONCRETE U.N.O.)
- A. PROVIDE COMPUTERIZED BATCH RECORDS WITH ALL LOAD LOCATION.

LOCATION	MIN 28 DAY COMPR. STRENGTH	MAX W/CM RATIO	SLUMP	% AIR	MAX AGG. SIZE
REINFORCED STRUCTURAL CONCRETE	4000 PSI	0.45	4"	4.5	1"
GUIDEWAY AND GIRDER	6000 PSI	0.40	4"	1.5	1"

2.06 NON-SHRINK GROUT:
- A. USE PLASTIC OR STIFF (DRY PACK), NON-METALLIC NON-SHRINK GROUT WITH MINIMUM 7,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. CONFORM TO THE REQUIREMENTS OF CRD-C 621 CORPS OF ENGINEERS FOR NON-SHRINK GROUT.
- B. SATURATE THE AREA WITH POTABLE WATER FOR 24 HOURS IMMEDIATELY PRIOR TO APPLICATION OF THE GROUT PER THE MANUFACTURER'S RECOMMENDATIONS. WET CURE AND APPLY CURING COMPOUNDS TO EXPOSED GROUT SURFACES.
- C. USE BASF CONSTRUCTION GROUT, EUCO DRY PACK GROUT, OR EQUAL.

2.07 STRUCTURAL FIBER REINFORCING:
- A. PROVIDE STRUCTURAL FIBER REINFORCING IN CONCRETE TOPPINGS FOR STAIR TREADS AND LANDINGS.
- B. FIBERS SHALL BE TYPE III SYNTHETIC FIBERS PER ASTM C 1116 WITH A MINIMUM LENGTH OF 2 INCHES. PROVIDE AT DOSAGE RATE OF 3 LBS/CU YD.
- C. AFTER FINISH WORK AND 28 DAYS FROM CONCRETE PLACEMENT, "BURN OFF" EXPOSED FIBERS.

3.01 CONCRETE PLACING:
- A. WHEN SPAN EXCEEDS 20'-0", CAMBER UP ALL CONCRETE BEAMS AND SLABS L/400 AT MIDSPAN. CAMBER UP ALL OVERHANGS L/300 AT EDGE OF CANTILEVER. RECORD CAMBERS AT UNDERSIDE OF STRUCTURE IMMEDIATELY BEFORE AND AFTER RESHORING AND IMMEDIATELY AFTER DESHORING.
- B. DO NOT PLACE CONCRETE IN CONTACT WITH ALUMINUM.
- C. THE MAXIMUM FREE DROP OF CONCRETE IS 6'-0" WITHOUT A TREMIE PIPE TO PREVENT SEGREGATION. DEPOSIT CONCRETE AS NEAR AS POSSIBLE TO ITS FINAL POSITION. DO NOT EMPLOY ANY PRACTICES CAUSING SEGREGATION SUCH AS VIBRATING CONCRETE TO SPEED CONVEYANCE.
- D. MECHANICALLY VIBRATE CONCRETE, EXCEPT SLABS ON GRADE NEED BE VIBRATED ONLY AROUND UNDER-FLOOR DUCTS AND OTHER ITEMS EMBEDDED IN THE SLAB. REVIBRATE TOPS OF COLUMNS, CAISSONS (DRILLED PIERS), AND THE TOP 5 FEET OF WALLS (OVER 10 FEET IN HEIGHT).
- E. DO NOT CAST WALLS OR GRADE BEAMS IN A SINGLE POUR GREATER THAN 40 FEET IN LENGTH. WAIT 48 HOURS BETWEEN ADJACENT CONCRETE CASTINGS.
- F. WAIT 28 DAYS MINIMUM AFTER CONCRETE HAS BEEN PLACED BEFORE SAND BLASTING, WATER BLASTING OR OTHER SURFACE TREATMENT.
- G. DO NOT PLACE CONCRETE IN STANDING WATER
- H. WHERE MASONRY ABUTS AGAINST CONCRETE WALLS OR COLUMNS PROVIDE CONTINUOUS DOVE TAIL SLOTS FOR DOVE TAIL ANCHORS.

3.02 FINISHING:
- A. PROVIDE FINISHES ON FORMED SURFACES PER ACI 301 AND FORMED SURFACE IRREGULARITIES PER ACI 117 AS FOLLOWS.
  - i) ROUGH FORM FINISH: SURFACES NOT EXPOSED TO PUBLIC VIEW. PATCH TIE HOLES, LEAVE TEXTURE IMPARTED BY FORM, REMOVE FINS GREATER THAN 1/2 INCH IN HEIGHT.
  - ii) SMOOTH FORM FINISH: SURFACES EXPOSED TO PUBLIC VIEW. REMOVE FINS GREATER THAN 1/8 INCH IN HEIGHT.
  - iii) SURFACES EXPOSED TO VIEW: CLASS B SURFACE WITH ABRUPT IRREGULARITIES LESS THAN 1/4 INCH.

REGISTERED PROFESSIONAL ENGINEER (Structural)
48434
SCOTT E. SWEETEN
Date Signed 5/20/18
ARIZONA U.S.A.
EXPIRES 9/30/19

Design Sub-Consultant

Design Consultant
Gannett Fleming

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	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	AS NOTED
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KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GENERAL STRUCTURAL NOTES I

Package: B04 - WBSB0006
Sheet Reference No: V6 - 178 of 260

Project Number: 062421
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CONCRETE (CONTINUED)

B. THE USE OF WATER OR "SPRINKLING" AS AN AID TO FINISHING UNFORMED SURFACES IS PROHIBITED.
C. PROVIDE 3/4" X 3/4" CHAMFERS AT ALL EXPOSED CORNERS OF SLABS, WALLS, COLUMNS AND BEAMS.

3.03 CURING:
A. CURE CONCRETE PER ACI 318 AND ACI 301 FOR 7 DAYS AFTER PLACEMENT. CURING COMPOUNDS SHALL HAVE A FUGITIVE DYE. CURING COMPOUNDS SHALL BE COMPATIBLE WITH FUTURE TOPPINGS, PAINT, WATERPROOFING AND FINISHES. APPLY TWO HEAVY COATS OF CURING COMPOUND USING A HIGH PRESSURE AIRLESS SPRAYER. APPLY THE SECOND COAT 90 DEGREES TO THE FIRST. CLEAN NOZZLES AFTER EACH USE.
B. OTHER CONCRETE SURFACES CURING COMPOUND SHALL MEET THE MOISTURE RETENTION REQUIREMENTS OF ASTM C-309, TYPE 1-D AT COVERAGE RATE SPECIFIED, AND PASS VOC REQUIREMENTS.
1. USE ATLAS RES-CURE, W.R. MEADOWS 1100 CLEAR, 1300 CLEAR, VOCOMP-20 OR EQUAL.
C. COLUMNS, WALLS, GRADE BEAMS, AND FOUNDATIONS: START CURING IMMEDIATELY UPON THE REMOVAL OF FORMS AND THE COMPLETION OF FINISHING WORK. THE TOPS OF SPREAD FOUNDATIONS REQUIRE CURING COMPOUND.

D. SLAB AND CAST-IN-PLACE FINISHED CONCRETE: START CURING IMMEDIATELY AFTER THE CONCRETE HAS SET ENOUGH TO WALK ON WITHOUT HARMING THE FINISH.

3.04 CONCRETE REPAIR OR MODIFICATION.
A. PATCHING OF CONCRETE SHALL BE CONSIDERED STRUCTURAL. NOTIFY ENGINEER ON A CASE BY CASE BASIS.
B. WHEN DRILLING, CHIPPING, SAWCUTTING, OR CORING INTO CONCRETE, X-RAY OR FERROSCAN EXISTING CONCRETE TO LOCATE REINFORCING. DO NOT CUT, NICK, OR OTHERWISE DAMAGE EXISTING REINFORCING.

REINFORCING STEEL

1.01 COORDINATION:
A. DO NOT DAMAGE OR DISRUPT REINFORCING BARS, STEEL EMBEDS, OR CONNECTORS FROM THEIR PROPER LOCATION BY THE PLACEMENT OF EMBEDDED PIPING OR CONDUIT. PROVIDE REQUIRED CLEARANCE BETWEEN REINFORCEMENT AND EMBEDDED PIPING AND CONDUIT.

2.01 REINFORCEMENT MATERIALS:
A. REINFORCING STEEL SHALL BE DEFORMED EXCEPT #2 BARS, SPIRALS, AND WELDED PLAIN WIRE FABRIC.
B. REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS.
i) #2 BARS - ASTM A 663, GRADE 80
ii) #3 BARS AND LARGER - ASTM A 615, GRADE 60
iii) STIRRUPS AND COLUMN TIES - ASTM A 615, GRADE 60
iv) STEEL WIRE - ASTM A 82
v) WELDED PLAIN (SMOOTH) WIRE FABRIC - ASTM A 185
vi) TENDONS IN PRESTRESSED CONCRETE - ASTM A 416
vii) WELDABLE REINFORCING STEEL - ASTM A 706
viii) REBAR TERMINATORS - ASTM A 576

2.02 REINFORCEMENT CONNECTORS:
A. REINFORCEMENT CONNECTORS ARE ACCESSORIES INCLUDING MECHANICAL BUTT SPLICES, FORM SAVERS, COUPLERS, AND TERMINATORS.
B. REINFORCEMENT CONNECTORS SHALL DEVELOP IN TENSION AND COMPRESSION AT LEAST 125PERCENT OF THE YIELD STRENGTH (Fy) OF THE REINFORCING BAR IN ACCORDANCE WITH ACI 318. INSTALL PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
C. SPECIAL INSPECTION WILL INCLUDE RANDOM TORQUE TESTING OF COUPLERS BEFORE AND AFTER INSTALLATION IN FORMS. IF ANY COUPLER DOES NOT PASS THE TORQUE TEST, ALL COUPLERS WILL BE TORQUED BY AN INDEPENDENT TESTING LAB AT THE CONTRACTOR'S EXPENSE. COUPLERS USED IN COLUMNS SHALL NOT BE LONGER THAN 8" OR HAVE A DIAMETER LARGER THAN 2.5 INCHES.

2.03 HEADED DEFORMED BARS (HDB):
A. PROVIDE HEADED ENDS OF REINFORCING BARS EITHER FACTORY-FORGED, FACTORY-WELDED, OR MECHANICALLY ATTACHED AT THE JOBSITE OR FACTORY. HEADED ENDS SHALL DEVELOP THE REINFORCING BAR YIELD SOLELY BY BEARING AT THE HEADED END.
B. PROVIDE ICC-ES REPORT THAT VERIFIES CONFORMANCE TO ASTM A970 AND ACI 318. PROVIDE LABELING OF FACTORY FORGED OR FACTORY WELDED HEADED BARS IN ACCORDANCE WITH SECTION 15 OF ASTM A970.PROVIDE MANUFACTURER'S IDENTIFICATION MARKS ON EACH COMPONENT OF MECHANICALLY ATTACHED HEADS.
C. PROVIDE CLEAR COVER OF 2 BAR DIAMETERS MINIMUM, AND CLEAR SPACING BETWEEN BARS OF 4 BAR DIAMETERS MINIMUM.

3.01 PLACEMENT:
A. SECURELY TIE REINFORCING AND EMBEDDED ITEMS IN POSITION BEFORE PLACING CONCRETE OR GROUT. DO NOT STAB OR SHOVE INTO FRESHLY PLACED CONCRETE.
B. TIE COLUMN CAGES TO FORMS AND SQUARE BEFORE PLACING CONCRETE. CAGES AND FORMS SHALL BE SQUARED UP PLUMB AND CENTERLINE LOCATIONS OF COLUMNS SHALL BE CHECKED BEFORE PLACING CONCRETE.
C. BAR SUPPORTS AND SPACERS SHALL BE PROVIDED IN ACCORDANCE WITH ACI 301 REINFORCING SHOWN ON THE DRAWINGS SHALL NOT BE BURIED ABOVE OR BELOW ITS REQUIRED POSITION AND LAYER. ADDITIONAL BARS MAY BE USED AS BURIED BAR SUPPORTS, BUT ONLY IF THEY ARE IN CONFORMANCE WITH CONCRETE COVER REQUIREMENTS.

3.02 SLAB REINFORCEMENT:
A. SEE DETAILS FOR BARS AT SLAB EDGES AND OPENINGS.
B. SLAB REINFORCEMENT SHALL NOT BE CUT AT PLUMBING OR OTHER OPENINGS. SPREAD REINFORCEMENT AROUND OPENINGS.
C. SUPPORT SLAB TOP REINFORCEMENT ON HIGH CHAIRS. USE #5 BARS AS SUPPORT BARS WHERE REQUIRED. BARS AND CHAIRS MUST BE SECURELY TIED TOGETHER. PROVIDE SUFFICIENT SUPPORT TO MAINTAIN CONCRETE PROTECTION AS SPECIFIED. USE NON-FERROUS CHAIRS WHERE RUST STAINS ARE UNACCEPTABLE.

3.03 WALL REINFORCEMENT:
A. SEE DETAILS FOR BARS AT WALL CORNERS, ENDS,AND OPENINGS.

3.04 COLUMN REINFORCEMENT:
A. HOOKS ON COLUMN TIES SHALL BE 135 DEGREES. PROVIDE 90 DEGREE HOOKS AT TERMINATION OF COLUMN VERTICAL BARS. HOOK VERTICAL REINFORCEMENT INTO SLAB OR BEAMS.

3.05 BEAM REINFORCEMENT:
A. STIRRUP SUPPORT BARS SHALL BE PROVIDED BETWEEN ENDS OF TOP BARS AS REQUIRED. SUPPORT BARS SHALL BE #6 MINIMUM.

3.06 COVER:
A. CONCRETE COVER FOR REINFORCING BARS (TO FACE OF BAR INCLUDING PRIMARY REINFORCEMENT, STIRRUPS, TIES, AND SPIRALS) UNLESS NOTED OTHERWISE ON DRAWINGS.
B. CAST-IN-PLACE CONCRETE (NON-PRESTRESSED)
i) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:
(1) ALL BARS - 3"
ii) CONCRETE CAST AGAINST FORMS AND PERMANENTLY EXPOSED TO EARTH, LIQUID, WEATHER OR BEARING ON A WORK MAT:
(1) ALL BARS - 2"
iii) CONCRETE NOT EXPOSED TO EARTH, LIQUID OR WEATHER:
(1) SLABS, WALLS, JOISTS #11 BARS AND SMALLER – 3/4"
(2) PRIMARY REINFORCING, STIRRUPS, AND TIES IN BEAMS, COLUMNS, PEDESTALS AND TENSION TIES, STIRRUPS, SPIRALS – 1 1/2"
iv) ALL MECHANICAL SPLICES SHALL COMPLY WITH THE COVE STATED ABOVE.

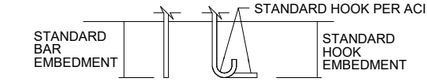
1 PDD COMMENTS

3.07 SPLICES:
A. REINFORCEMENT SHALL BE CONTINUOUS WITH FULL TENSION LAPS AND TERMINATED WITH A 90 DEGREE STANDARD HOOK, UNLESS NOTED OTHERWISE.
B. WALL REINFORCEMENT AT CORNERS, INTERSECTIONS, AND JUNCTIONS SHALL BE CONTINUOUS AND LAPPED OR TERMINATED IN A 90 DEGREE STANDARD HOOK.
C. SPLICE REINFORCING BARS ONLY AT APPROVED LOCATIONS. SPLICE BOTTOM BARS OVER SUPPORTS AND TOP BARS AT MID-SPAN ONLY, UNLESS NOTED OTHERWISE ON DRAWINGS.
D. DOWEL VERTICAL REINFORCEMENT TO FOUNDATIONS, UNLESS NOTED OTHERWISE ON DRAWINGS. ALL DOWELS SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCEMENT THAT IT IS SPLICED WITH, UNLESS NOTED OTHERWISE ON DRAWINGS.
E. STAGGER END LAP SPLICES OF WELDED WIRE FABRIC AS REQUIRED FOR MAXIMUM 3 LAYERS OF FABRIC AT ANY LOCATION.
F. PROVIDE THE SAME MINIMUM FIRE RATED COVER TO MECHANICAL SPLICE COUPLERS AS REQUIRED FOR BOTH PRIMARY AND REGULAR REINFORCEMENT. ADJUST STIRRUPS AND TIES AS NOTED IN SPECIAL DETAILS.
G. DRAWINGS DO NOT INDICATE ALL REQUIRED BAR SPLICES. SUBMIT SPLICE LAYOUT AS A PART OF REINFORCING BAR SHOP DRAWINGS, INCLUDING SPLICES ADDED TO IMPLEMENT CONTRACTORS MEANS AND METHODS.

3.08 LAP SPLICE LENGTHS:
A. TOP BARS ARE HORIZONTAL BARS LOCATED WHERE 12 INCHES OR MORE OF FRESH CONCRETE WILL BE PLACED BELOW THE BAR.
B. LAP WELDED WIRE FABRIC TWO FULL SQUARES.
C. LAP SPLICES ARE CLASS 'B' SPLICES, UNLESS NOTED OTHERWISE.
D. MINIMUM LAP SPLICE AND EMBEDMENT LENGTHS FOR CLASS 'B' LAPS AND FOR BARS WITH CONCRETE COVER OF AT LEAST ONE BAR DIAMETER ARE GIVEN IN THE FOLLOWING SCHEDULE, UNLESS NOTED OTHERWISE. PROVIDE STANDARD HOOK PER ACI STANDARD BAR HOOK EMBEDMENT.

REINFORCEMENT LAP SPLICE AND EMBEDMENT LENGTH (f'c≥4000 PSI)

BAR SIZE NO.	METRIC BAR SIZE NO.	BAR SPACING	MIN LAP LENGTH (IN)		MIN EMBEDMENT LENGTH (IN)		
			TOP BARS	OTHER BARS	STRAIGHT BARS		WITH STANDARD HOOK
			CLASS B	CLASS B	TOP BARS	OTHER BARS	
REQUIREMENTS FOR SLABS & WALLS**							
#3	#10	≥ 3db	28	22	22	17	9
#4	#13		37	29	29	22	11
#5	#16		47	36	36	28	14
#6	#19		56	43	43	33	17
#7	#22		81	63	63	48	20
#8	#25		93	72	72	55	22
#9	#29		105	81	81	62	25
#10	#32		116	89	89	69	28
#11	#36		128	98	98	76	30
REQUIREMENTS FOR BEAMS & COLUMNS**							
#3 THRU #7	#10 THRU #22	≥ 2db	SAME AS SLABS AND WALLS ABOVE				
#8	#25	2db OR LESS	121	93	93	71	19
#9	#29		136	105	105	81	22
#10	#32		153	118	118	91	24
#11	#36		170	131	131	181	27



** FOR BAR SPACING LESS THAN 3 BAR DIAMETER, ADD 50% MORE LENGTH TO LAP AND STRAIGHT EMBEDMENT LENGTHS.

3.09 WELDING:
A. DO NOT WELD REINFORCING STEEL EXCEPT WHERE SUCH WELDING HAS BEEN SUBMITTED TO THE OWNER'S AGENT FOR REVIEW BY THE STRUCTURAL ENGINEER.
B. WELDING WILL NOT BE ACCEPTED AS A SUBSTITUTE FOR TIE WIRES OR TO AID IN SUPPORTING REINFORCING STEEL.
C. WELD REINFORCING BARS IN CONFORMANCE WITH AWS D1.4 USING ELECTRODE E8018-X.
D. SUBMIT WELDER CERTIFICATIONS AND WELDING PROCEDURES PER AWS D1.4.

CONSTRUCTION JOINTS

1.01 DESCRIPTION:
A. LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE AS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER. SUBMIT CONSTRUCTION JOINT LOCATIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS TO THE ENGINEER FOR REVIEW.
B. UNLESS NOTED OTHERWISE ON DRAWINGS CONSTRUCTION JOINTS FOR CONCRETE GRADE BEAMS, BEAMS AND SLABS SHALL BE IN THE MIDDLE THIRD OF THE SPAN

1.02 COORDINATION:
A. PROVIDE AND INSTALL POLYVINYL CHLORIDE (PVC) AND HYDROPHILIC VINYLESTER WATERSTOPS WHERE SHOWN ON DRAWINGS AND AT ALL CONSTRUCTION JOINTS IN WATERBEARING, AND PARTIALLY AND FULLY UNDERGROUND SLABS AND WALLS (INCLUDING ELEVATOR AND ESCALATOR PITS, AND CHEMICAL CONTAINMENT AREAS). WATERSTOPS ARE NOT REQUIRED IN WALLS AND SLABS WHEN THERE IS WATER ON BOTH SIDES UNLESS NOTED OTHERWISE.
B. PROVIDE AND INSTALL PREFORMED JOINT MATERIAL IN EXPANSION AND ISOLATION JOINTS WHERE NOTED ON DRAWINGS. PROVIDE ELASTOMERIC JOINT SEALANT AND ALL NECESSARY ACCESSORIES SUCH AS BACKER ROD AND BOND BREAKER TAP WHERE EXPANSION JOINT IS TO BE SUBMERGED FOR ANY AMOUNT OF TIME OR WHERE ON DRAWINGS AS NOTED "CAULK AND SEAL".

2.01 MATERIALS:
A. PROVIDE WATERSTOPS AND JOINT SEALANT SUITABLE FOR THEIR CONDITION OF USE SUCH AS MOVEMENT AND/OR CHEMICAL ATTACK, FOR EXAMPLE, WATER CONTAMINATED WITH SOLVENTS AND HYDROCARBONS).
B. PROVIDE PREFORMED JOINT FILLER IN ACCORDANCE WITH ASTM D 1752 TYPE I (FOAM RUBBER) OR TYPE II (CORK) AT INTERIOR EXPANSION JOINTS AND AS NOTED ON DRAWINGS. PROVIDE PREFORMED BITUMINOUS JOINT FILLER IN ACCORDANCE WITH ASTM D 1751 FOR EXTERIOR ISOLATION JOINTS AND AS NOTED ON DRAWINGS.

3.01 ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED FOR BOND. CAULK AND SEAL JOINTS PER JOB SPECIFICATIONS AND WHERE NOTED ON DRAWINGS.

3.02 SEE TYPICAL DETAILS FOR INSTALLATION OF CONSTRUCTION JOINTS AND WATERSTOPS IN NEW CONSTRUCTION AND BETWEEN EXISTING AND NEW CONSTRUCTION.

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
1	PDD COMMENTS	07/13/18
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Consultant
Gannett Fleming
Design Sub-Consultant
48434 E. SUNLAKE SWEETEN, ARIZONA 85193 — EXPIRES 9/7/19

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	AS NOTED
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GENERAL STRUCTURAL NOTES II

Package: B04 - WBSB0007
Sheet Reference No: V6 - 179 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBX01_R17_A360.rvt
Project Number: 062421
7/13/2018 5:20:22 PM

CONSTRUCTION JOINTS (CONTINUED)

3.03 FOR NON-WATERBEARING SLABS-ON-GRADE, PLACE JOINTS AT MAXIMUM SPACING OF 24 x SLAB THICKNESS AND IN RATIOS NOT TO EXCEED 2:1. TIMING OF JOINT SAWING IS CRITICAL. JOINTS SHOULD BE SAWN AS SOON AS THE CONCRETE IS HARD ENOUGH THAT THE SAWING DOES NOT RAVEL JOINT EDGES OR DISLODGE COURSE AGGREGATE PARTICLES. PROVIDE SAWCUTS IN A RECTANGULAR PATTERN AS SHOWN ON PLANS. WHERE A PATTERN IS NOT SHOWN, SAWCUT ON COLUMN LINES, AT EQUAL SPACES BETWEEN COLUMNS LINES TO PRODUCE THE MAXIMUM SPACING, AND AT ALL RE-ENTRANT CORNERS AND SLAB CHANGES. PROVIDE ISOLATION JOINTS IN A DIAMOND PATTERN AROUND COLUMNS. SUBMIT JOINT LAYOUT PLAN PRIOR TO STARTING WORK.

EMBEDDED PIPING AND CONDUIT

1.01 GENERAL:
- A. SUBMIT LOCATIONS OF PIPES, CONDUIT, DUCTS, REGLETS, OR CHASES TO BE EMBEDDED IN STRUCTURAL CONCRETE FOR REVIEW BY THE STRUCTURAL ENGINEER. COORDINATE WITH CIVIL, MECHANICAL, AND ELECTRICAL DRAWINGS. DO NOT PLACE PIPING OR CONDUIT NOT SHOWN ON DRAWINGS OR APPROVED BY THE ENGINEER.
- B. CONDUITS, PIPES, OR SLEEVES ARE NOT CONSIDERED TO PROVIDE STRUCTURAL STRENGTH IN SUBSTITUTION FOR THE CONCRETE DISPLACED.
- C. PIPES AND FITTINGS SHALL BE APPROPRIATE FOR THE MATERIALS, PRESSURE AND TEMPERATURE THAT THEY ARE SUBJECTED TO. ALUMINUM WITHOUT EFFECTIVE COATING OR COVERING IS PROHIBITED. PIPING, CONDUIT AND OUTLET BOXES SHALL BE RIGID STEEL OR FLEXIBLE PLASTIC
- D. PIPE PASSING THROUGH WALLS OF A WATER-TIGHT STRUCTURE SHALL HAVE AN INTEGRAL WATERSTOP.

2.01 COLUMNS:
- A. TOTAL AREA OF BOXES, PIPES, CONDUIT AND OTHER NON-STRUCTURAL ITEMS EMBEDDED IN COLUMNS SHALL DISPLACE NO MORE THAN 2% OF THE COLUMN CROSS SECTIONAL AREA CALCULATED FOR STRENGTH.
- B. BOXES, PIPES, CONDUIT, OR OTHER NON-STRUCTURAL EMBEDDED ITEMS SHALL BE PLACED CLOSER TO REINFORCEMENT THAN THE REQUIRED COVER FOR FIRE PROTECTION.
- C. EMBEDMENT OF BOXES SHALL BE NO WIDER THAN 10% OF THE COLUMN DIMENSION AND NO TALLER THAN THE COLUMN OR WALL TIE/HORIZONTAL REINFORCING SPACING LESS 3".

2.02 SUSPENDED SLABS, WALLS, AND BEAMS:
- A. MAXIMUM ALLOWABLE OUTSIDE DIMENSION OF CONDUIT OR PIPING IS 1/3 OF CONCRETE MEMBER OVERALL THICKNESS.
- B. PLACE CONDUIT AND PIPING IN ONE LAYER WITHIN THE MIDDLE THIRD OF THE MEMBER THICKNESS. PLACE CONDUIT OR PIPING IN SLABS BETWEEN TOP AND BOTTOM REINFORCING STEEL.
- C. SPACE CONDUITS AT (3) DIAMETERS OR WIDTHS ON CENTER MINIMUM.

2.03 SLABS ON METAL DECK:
- A. MAXIMUM ALLOWABLE OUTSIDE DIMENSION OF CONDUIT OR PIPING IS 1-1/2 INCHES. RUN CONDUIT ONLY IN DECK FLUTES. PLACE(1) CONDUIT PER FLUTE.
- B. SPACE ADJACENT CONDUITS AT EVERY OTHER FLUTE. DO NOT CROSS OTHER CONDUITS.

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- A. TOTAL AREA OF BOXES, PIPES, CONDUIT AND OTHER NON-STRUCTURAL ITEMS EMBEDDED IN COLUMNS SHALL DISPLACE NO MORE THAN 2% OF THE COLUMN CROSS SECTIONAL AREA CALCULATED FOR STRENGTH.
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- C. EMBEDMENT OF BOXES SHALL BE NO WIDER THAN 10% OF THE COLUMN DIMENSION AND NO TALLER THAN THE COLUMN OR WALL TIE/HORIZONTAL REINFORCING SPACING LESS 3".

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- B. SPACE ADJACENT CONDUITS AT EVERY OTHER FLUTE. DO NOT CROSS OTHER CONDUITS.

3.04 PLACING:
- A. FABRICATE AND PLACE PIPING AND CONDUIT SO THAT CUTTING, BENDING, OR DISPLACEMENT OF REINFORCING STEEL FROM ITS PROPER LOCATION IS NOT BE REQUIRED.
- B. DO NOT PLACE CONDUIT OR PIPING NEXT TO REINFORCEMENT SO THAT THE CONCRETE COVER FOR BOND DEVELOPMENT, TRANSFER OF LOAD TO CONCRETE, OR FIRE PROTECTION IS ADVERSELY AFFECTED. CONDUIT AND PIPING PLACEMENT SHALL NOT ADVERSELY AFFECT THE STRENGTH OF THE STRUCTURE.
- C. CONDUIT GROUPS SHALL CONSIST OF NOT MORE THAN (3) SINGLE CONDUITS. PROVIDE 1'-0" SEPARATION BETWEEN GROUPS OF CONDUIT. PROVIDE TEMPERATURE REINFORCEMENT BETWEEN CONDUIT AND CONCRETE SURFACES:
  1. IN STRUCTURES NOT REQUIRED TO BE LIQUID-TIGHT, PLACE #4 @ 12" MINIMUM REINFORCING ABOVE AND BELOW PERPENDICULAR TO THE CONDUIT. ADDED REINFORCING SHALL EXTEND 18 INCHES PAST THE CONDUIT ON BOTH SIDES.
  2. IN STRUCTURES REQUIRED TO BE LIQUID-TIGHT, PLACE MINIMUM TEMPERATURE REINFORCING ABOVE AND BELOW PERPENDICULAR TO THE CONDUIT AS FOLLOWS.
     a. SLABS/WALLS 12" THICK OR LESS: #5 @ 12". EXTEND 18" PAST CONDUIT ON BOTH SIDES.
     b. SLABS/WALLS GREATER THAN 12" THICK: #5 @ 6". EXTEND 18" PAST CONDUIT ON BOTH SIDES.
- D. CONDUIT AND PIPING PLACEMENT SHALL NOT ADVERSELY AFFECT THE STRENGTH OF THE STRUCTURE, AND SHALL NOT REDUCE THE CODE REQUIRED FIRE PROTECTION COVER.
  1. CONDUIT SHALL BE FIRMLY CHAIRED AND TIED TO PREVENT DISPLACEMENT DURING POURING.
  2. PROVIDE MINIMUM CLEARANCE 2 INCHES TO REINFORCING FROM EMBEDDED BOXES, FIXTURES, THRU SLEEVES OR PIPE PENETRATIONS.
  3. FOR LIQUID CONTAINING STRUCTURES, PROVIDE MINIMUM OF 2 INCHES CONCRETE COVER TO CONDUIT, PIPES, AND FITTINGS. FOR CONCRETE SURFACES NOT EXPOSED TO EARTH, CONTAINED LIQUIDS, OR WEATHER PROVIDE MINIMUM OF 1-INCH CONCRETE COVER.

SPECIAL INSPECTION

1.01 DESCRIPTION:
- A. THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE SPECIAL STRUCTURAL INSPECTORS IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE.

1.02 CONTRACTOR AND INSPECTOR RESPONSIBILITIES:
- A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT ALL STRUCTURAL WORK FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY STRUCTURAL INSPECTION PROVIDED BY OTHERS DOES NOT RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY.
- B. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO STOP OR DELAY THE WORK.
- C. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE FACILITIES FOR THE STRUCTURAL INSPECTOR TO INSPECT THE WORK SAFELY AND EFFICIENTLY. TWENTY-FOUR (24) HOUR NOTICE IS REQUIRED PRIOR TO INSPECTION.
- D. WORK MUST BE COMPLETED AT TIME OF INSPECTION.
- E. INSPECTION OF WORK PROVIDED BY THE CONTRACTOR SUCH AS TEMPORARY SHORING OR JACKING SYSTEMS SHALL BE PROVIDED BY THE CONTRACTOR'S DESIGN ENGINEER FOR THOSE SYSTEMS. THE CONTRACTOR/ENGINEER SHALL PROVIDE A LETTER/REPORT TO BOTH THE OWNER AND ENGINEER OF RECORD THAT THESE INSPECTIONS HAVE BEEN COMPLETED BEFORE EACH PHASE OF SUCH WORK CAN PROCEED.
- F. THE STRUCTURAL INSPECTOR IS NOT INSPECTING FOR ANY OSHA COMPLIANCE OR FOR TEMPORARY CONSTRUCTION, SUCH AS BRACING.
- G. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO DIRECT OR APPROVE CHANGES FROM THE CONTRACT DOCUMENTS. IF THE CONTRACTOR WISHES TO QUESTION THE STRUCTURAL INSPECTOR'S INTERPRETATION OF THE CONTRACT DOCUMENTS, HE MAY DO SO DIRECTLY WITH THE STRUCTURAL ENGINEER OF RECORD.

2.01 SHOP ACTIONS:
- A. SHOP FABRICATION WORK IS SUBJECT TO SPECIAL INSPECTION UNLESS THE FABRICATOR IS REGISTERED AND APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT SPECIAL INSPECTION.
- B. FABRICATOR SHALL SUBMIT CERTIFICATE OF COMPLIANCE STATING WORK PREFORMED WAS IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.

3.01 REQUIRED VERIFICATION AND SPECIAL INSPECTIONS:

INSPECTION OF CONCRETE CONSTRUCTION	
INSPECTION ITEM	FREQUENCY OF INSPECTION
A. STRUCTURAL CAST-IN-PLACE CONCRETE:	
1. REINFORCING STEEL MATERIALS AND PLACEMENT	PERIODIC
2. BOLTS INSTALLED IN CONCRETE PRIOR TO AND DURING CONCRETE PLACEMENT	CONTINUOUS
3. VERIFY USE OF REQUIRED MIX DESIGN	PERIODIC
4. SAMPLING OF FRESH CONCRETE	CONTINUOUS
5. CONCRETE AND SHOTCRETE PLACEMENT TECHNIQUE	CONTINUOUS
6. MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	PERIODIC
7. FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS	PERIODIC
B. POST-TENSIONED CONCRETE:	
1. TENDON SYSTEM MATERIALS AND PLACEMENT	PERIODIC
2. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS AND REMOVAL OF SHORES AND FORMS	PERIODIC
3. APPLICATION OF STRESSING FORCES	CONTINUOUS
4. STRESSING RECORDS	CONTINUOUS
5. GROUTING OF BONDED PRESTRESSING TENDONS	CONTINUOUS
D. PRECAST CONCRETE:	
1. ERECTION OF PRECAST CONCRETE MEMBERS	PERIODIC
2. CONNECTION OF PRECAST MEMBERS	PERIODIC

INSPECTION OF POST-INSTALLED ANCHORS AND DOWELS	
INSPECTION ITEM	FREQUENCY OF INSPECTION
A. ADHESIVE ANCHORS AND REINFORCEMENT DOWELS:	
1. VERIFY DRILL BIT TYPE AND SIZE	CONTINUOUS
2. HOLE DEPTH AND CLEANING PROCEDURE	CONTINUOUS
3. PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE, DIAMETER, AND LENGTH	CONTINUOUS
4. ADHESIVE EXPIRATION DATE	CONTINUOUS
5. PROPER INSTALLATION TECHNIQUE FOR ADHESIVE ANCHORS	CONTINUOUS
B. MECHANICAL ANCHORS, UNDERCUT ANCHORS, AND SCREW ANCHORS:	
1. VERIFY DRILL BIT TYPE AND SIZE	CONTINUOUS
2. HOLE DEPTH AND CLEANING PROCEDURE	CONTINUOUS
3. PRODUCT DESCRIPTION INCLUDING NAME, ANCHOR TYPE, DIAMETER, AND LENGTH	CONTINUOUS
4. PROPER INSTALLATION TECHNIQUE FOR MECHANICAL ANCHORS AND TIGHTENING TORQUE	CONTINUOUS

INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL	
INSPECTION ITEM	FREQUENCY OF INSPECTION
A. MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK	
1. IDENTIFICATION MARKINGS TO CONFORM TO ATSM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	PERIODIC
2. MANUFACTURE'S CERTIFIED TEST REPORTS	PERIODIC
B. INSPECTION OF WELDING	
1. COLD FORMED STEEL DECK	PERIODIC
C. REINFORCING STEEL	
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706	PERIODIC
2. REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT	CONTINUOUS
3. SHEAR REINFORCEMENT	CONTINUOUS
4. OTHER REINFORCING STEEL	PERIODIC

REGISTERED PROFESSIONAL ENGINEER (Structural)
48431
SHANE E. SWEETEN
Date Signed 07/13/18
ARIZONA U.S.A.
EXPIRES 9/30/19

Design Sub-Consultant

Design Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ACK
Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	AS NOTED
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GENERAL STRUCTURAL NOTES III

Package: B04 - WBSB0008
Sheet Reference No: V6 - 180 of 260

Project Number: 062421
7/13/2018 5:20:23 PM
Local File:BIM 360://62421 – Phoenix Sky Train Project - Stage 2/AV10000011-S-2-WTSBXX01_R17_A360.rvt

ABBREVIATIONS

AB	-ANCHOR BOLT(S)
ABC	-AGGREGATE BASE COURSE
ACI	-AMERICAN CONCRETE INSTITUTE
A.F.F.	-ABOVE FINISH FLOOR
AISC	-AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	-ALTERNATE
ALUM	-ALUMINUM
APPROX	-APPROXIMATE
AR	-ANCHOR ROD(S)
ARCH	-ARCHITECT OR ARCHITECTURAL DOCUMENTS
ASTM	-AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	-AMERICAN WELDING SOCIETY
AVG	-AVERAGE
BLDG	-BUILDING
BLK	-BLOCK
BM	-BEAM
BOTT	-BOTTOM
BRG	-BEARING
BTWN	-BETWEEN
CALCS	-CALCULATIONS
℄ TO ℄	-CENTER TO CENTER
CHKD PL	-CHECKERED PLATE
CLG	-CEILING
CIP	-CAST IN PLACE
CJ	-CONTROL JOINT OR CONSTRUCTION JOINT
CLR	-CLEAR
CMU	-CONCRETE MASONRY UNIT
C/L	-CENTER LINE
COL	-COLUMN
CONC	-CONCRETE
CONN	-CONNECTION
CONSTR	-CONSTRUCTION
CONT	-CONTINUE OR CONTINUOUS
DBL	-DOUBLE
DEPR	-DEPRESSION
DIA, ø	-DIAMETER
DIAG	-DIAGONAL
DIM	-DIMENSION
DL	-DEAD LOAD
DN	-DOWN
DP	-DEEP OR DEPTH
DTL	-DETAIL
DWG(S)	-DRAWING(S)
DWL(S)	-DOWEL(S)
E (PSI)	-MODULUS OF ELASTICITY
EA	-EACH
EF	-EACH FACE
EJ	-EXPANSION JOINT
ELEC	-ELECTRICAL
EL	-ELEVATION
EQ	-EQUAL
EQUIP	-EQUIPMENT
ES	-EACH SIDE
EW	-EACH WAY
EXP	-EXPANSION
EXT	-EXTERIOR
FB	-FLAT BAR
FF	-FAR FACE
FDN	-FOUNDATION
FIN	-FINISH
FLG	-FLANGE
FLR	-FLOOR
FRMG	-FRAMING
FS	-FAR SIDE
FT	-FOOT,FEET
FTG	-FOOTING
FY	-YIELD STRESS OF STEEL
GA	-GAGE OR GAUGE
GALV	-GALVANIZED
GPR	-GROUND PENETRATING RADAR
GSN	-GENERAL STRUCTURAL NOTES
HAS	-HEADED ANCHOR STUD
HK	-HOOK
HORIZ	-HORIZONTAL
H.P.	-HIGH POINT
HS	-HIGH STRENGTH
HSS	-HOLLOW STRUCTURAL SECTION
HT	-HEIGHT
I (in^4)	-MOMENT OF INERTIA
IBC	-INTERNATIONAL BUILDING CODE
ICC	-INTERNATIONAL CODE COUNCIL
ID	-INSIDE DIAMETER
I.F.	-INSIDE FACE
IN	-INCH
INFO	-INFORMATION
INT	-INTERIOR
JT	-JOINT
K	-KIP = 1000 LBS.
LBF	-POUND-FORCE
LBS	-POUND(S)
LG	-LONG
LL	-LIVE LOAD
LLH	-LONG LEG HORIZONTAL
LLV	-LONG LEG VERTICAL
L.P.	-LOW POINT
LWC	-LIGHT WEIGHT CONCRETE
MAS	-MASONRY
MATL	-MATERIAL
MAX	-MAXIMUM
MCJ	-MASONRY CONTROL JOINT
MECH	-MECHANICAL
MEJ	-MASONRY EXPANSION JOINT
MEZZ	-MEZZANINE
MFR	-MANUFACTURER
MID	-MIDDLE
MIN	-MINIMUM
MISC	-MISCELLANEOUS
M.O.	-MASONRY OPENING
MPE	-MECHANICAL, PLUMBING & ELECTRICAL
MTL	-METAL
NAAMM	-NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
NF	-NEAR FACE
NIC	-NOT IN CONTRACT
NO., #	-NUMBER
NS	-NEAR SIDE
NTS	-NOT TO SCALE
o.c.	-ON CENTER (LOWERCASE)
OD	-OUTSIDE DIAMETER
O.F.	-OPENING
OUT/OUT	-OUT TO OUT
OH	-OVERHANG
OPP	-OPPOSITE
OPP HD	-OPPOSITE HAND
PCI	-PRESTRESSED CONCRETE INSTITUTE
PC	-PRECAST PRECAST DOUBLE TEE PRECAST INVERTED TEE BEAM
PCF	-POUNDS PER CUBIC FOOT
PEN	-PENETRATION
PERP	-PERPENDICULAR
PGL	-PROFILE GRADE LINE
PJP	-PARTIAL JOINT PENETRATION
PL ℄	-PROPERTY LINE, PLATE
PL OR	-PLATE
PLF	-POUNDS PER LINEAL FOOT
PRELIM	-PRELIMINARY
PROJ	-PROJECTION
PSI	-POUNDS PER SQUARE INCH
PT, P/T	-POST-TENSIONED
R, RAD	-RADIUS
R	-RISER (STAIR)
REINF	-REINFORCED OR REINFORCING
REQ'D	-REQUIRED
R/W	-REINFORCED WITH
R.O.	-ROUGH OPENING
RTU	-ROOF TOP UNIT
SCHED	-SCHEDULE
SGC	-SAND, GRAVEL, COBBLES SOIL LAYER
SHT	-SHEET
SIM	-SIMILAR
SJI	-STEEL JOIST INSTITUTE
SLV	-SLEEVE OR SHORT LEG VERTICAL
SLH	-SHORT LEG HORIZONTAL
SOG	-SLAB ON GRADE
SPA	-SPACES
SPEC	-SPECIFICATION
SQ	-SQUARE
S.S.	-STAINLESS STEEL
STD	-STANDARD
STIFF	-STIFFENER
STL	-STEEL
STRUC	-STRUCTURE OR STRUCTURAL
SYMM	-SYMMETRICAL
T	-TREAD (STAIR)
T&B	-TOP AND BOTTOM
THK	-THICK OR THICKNESS
TL	-TOTAL LOAD
TOC	-TOP OF CONCRETE
TOG	-TOP OF GROUT
TOS	-TOP OF STEEL
TOW	-TOP OF WALL
TYP	-TYPICAL
UNO	-UNLESS NOTED OTHERWISE
U/S	-UNDERSIDE
UT	-ULTRASONIC TESTING
VERT	-VERTICAL
w/	-WITH (LOWERCASE)
w/o	-WITHOUT (LOWERCASE)
WD	-WOOD
WP	-WORK POINT
WWF	-WELDED WIRE FABRIC
X-BRACE	-CROSS BRACING
X-STRONG	-EXTRA STRONG
XX-STRONG	-DOUBLE EXTRA STRONG
&	-AND
@	-AT
#	-NUMBER
%	-PERCENT
ø	-DIAMETER

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MAY NOT BE SHARED WITH OTHRES EXCEPT AS
REQUIRED TO FULFILL THE OBLIGATION OF
YOUR CONTRACT WITH THE CITY OF PHOENIX

Registered Professional Engineer (Structural)
48434
SHANE E.
SWEETEN
Date Signed 07/13/18
ARIZONA U.S.A.
EXPIRES 9/30/19

Design Sub-Consultant

Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

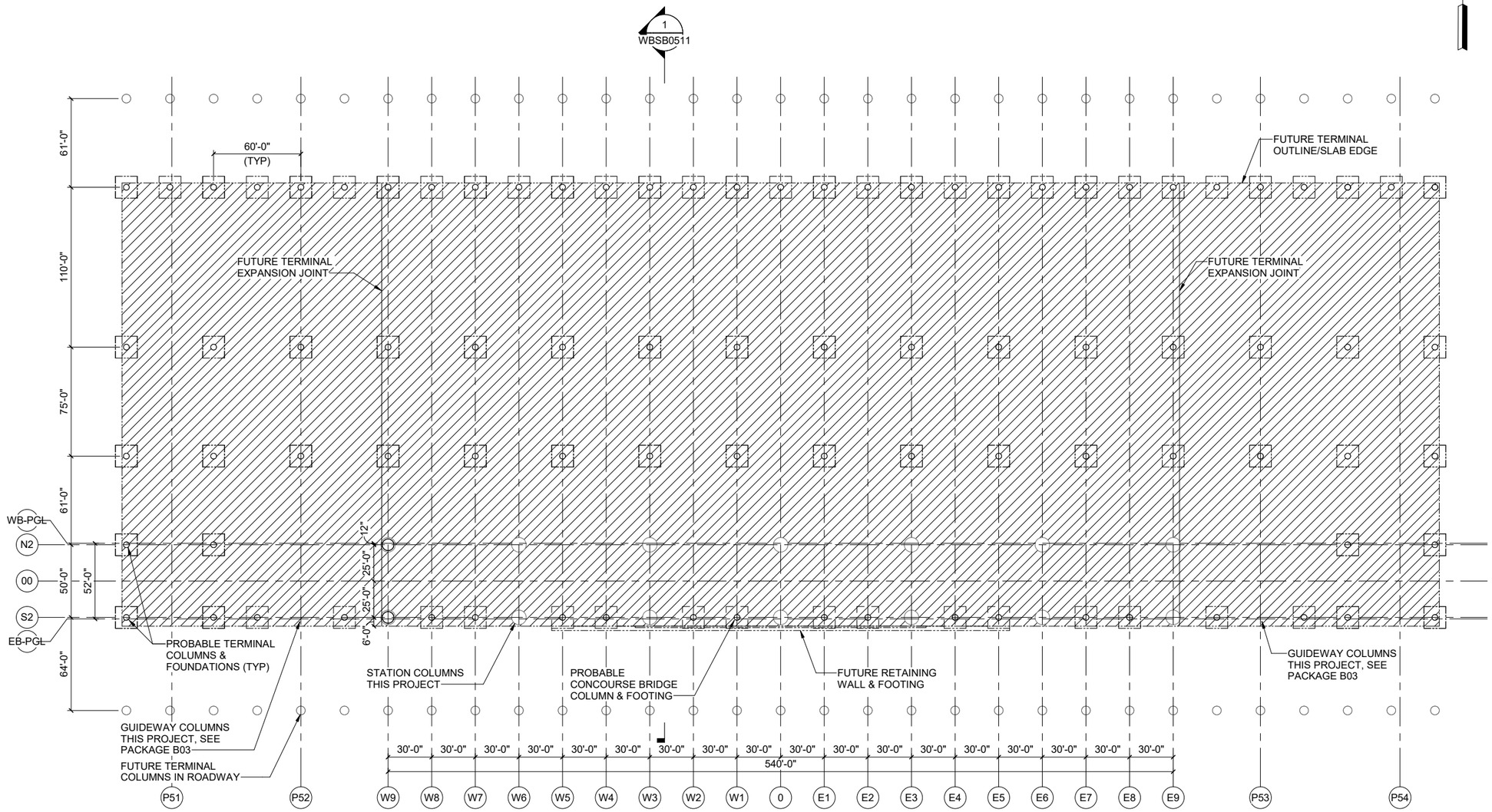
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KIVA No.:	07-5204				

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
ABBREVIATIONS

Package: B04 - WBSB0009
Sheet Reference No: V6 - 181 of 260

Project Number: 062421
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1 WBSB0011 **FUTURE BAGGAGE CLAIM LEVEL PLAN (EL = 1065'-0")**
SCALE: 1" = 40'-0"

NOTE:
1. LOADMAPS DEPICT ANTICIPATED FUTURE TERMINAL EXTENTS, CONFIGURATION AND FLOOR LOADING.

FLOOR LOADING			
MARK	TYPE	SDL	LL
	PUBLIC ASSEMBLY	110 PSF	100 PSF

40' 20' 0 40' 80'
1" = 40'

Project Number: 062421
7/13/2018 5:20:25 PM

Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBXX01_R17_A360.rvt

Design Consultant
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Design Sub-Consultant

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EXPIRES 9/7/2019

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

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CITY OF PHOENIX AVIATION DEPARTMENT

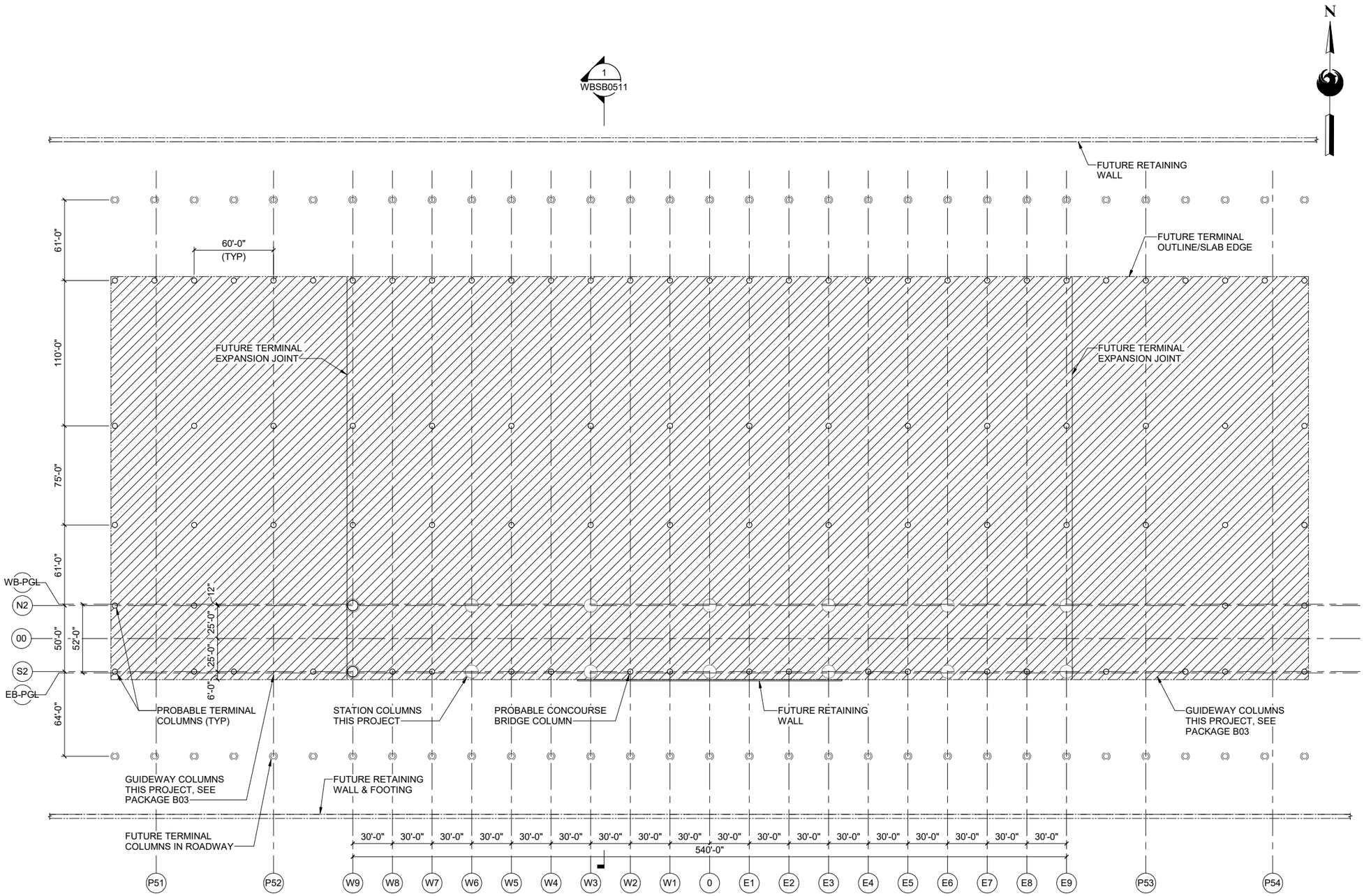
PHX SKY TRAIN
STAGE 2 DESIGN
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PHOENIX, AZ 85034

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Checked by:	SES
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
FUTURE BAGGAGE CLAIM LEVEL
FLOOR LOADING MAPS

Package: **B04 - WBSB0011**
Sheet Reference No:



1 WBSB0012 **FUTURE ARRIVALS TICKETING LEVEL PLAN (EL = 1085'-0")**

SCALE: 1" = 40'-0"

FLOOR LOADING			
MARK	TYPE	SDL	LL
	PUBLIC ASSEMBLY	110 PSF	100 PSF

40' 20' 0 40' 80'
1" = 40'

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Consultant: Gannett Fleming

Design Sub-Consultant

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

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STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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KIVA No.:	07-5204

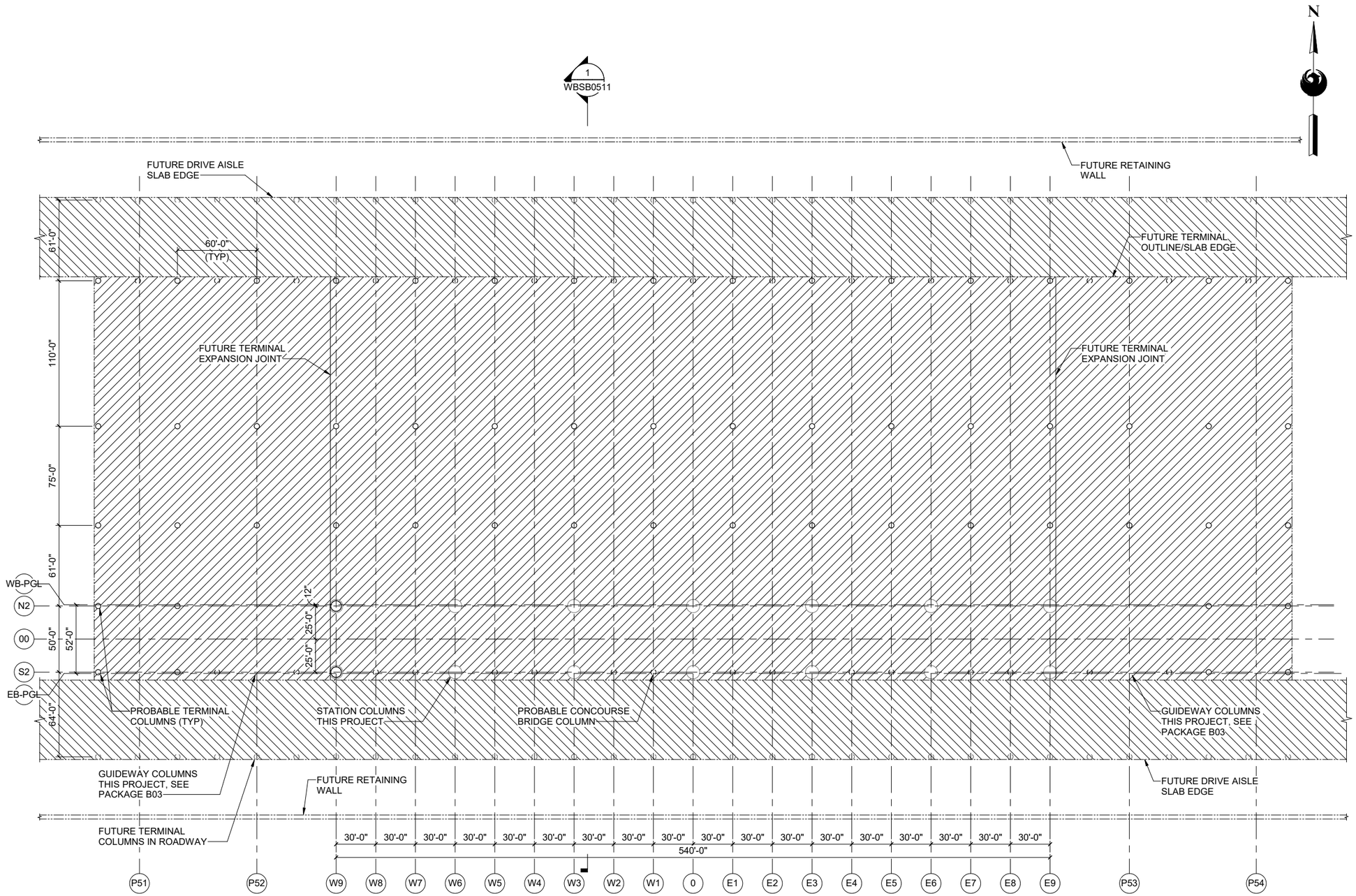
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
FUTURE ARRIVALS LEVEL
FLOOR LOADING MAPS

Package: B04 - WBSB0012
Sheet Reference No: V6 - 183 of 260

Project Number: 062421
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1 WBSB0013 **FUTURE DEPARTURES LEVEL PLAN (EL = 1110'-0")**

SCALE: 1" = 40'-0"

NOTE:
1. LOADMAPS DEPICT ANTICIPATED FUTURE TERMINAL EXTENTS, CONFIGURATION AND FLOOR LOADING.

FLOOR LOADING			
MARK	TYPE	SDL	LL
	PUBLIC ASSEMBLY	110 PSF	100 PSF
	ELEVATED DRIVE AISLE	250 PSF	250 PSF

40' 20' 0 40' 80'
1" = 40'

Project Number: 062421
7/13/2018 5:20:29 PM

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	SUBMITTED FOR REVIEW	04/06/18

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CITY OF PHOENIX AVIATION DEPARTMENT

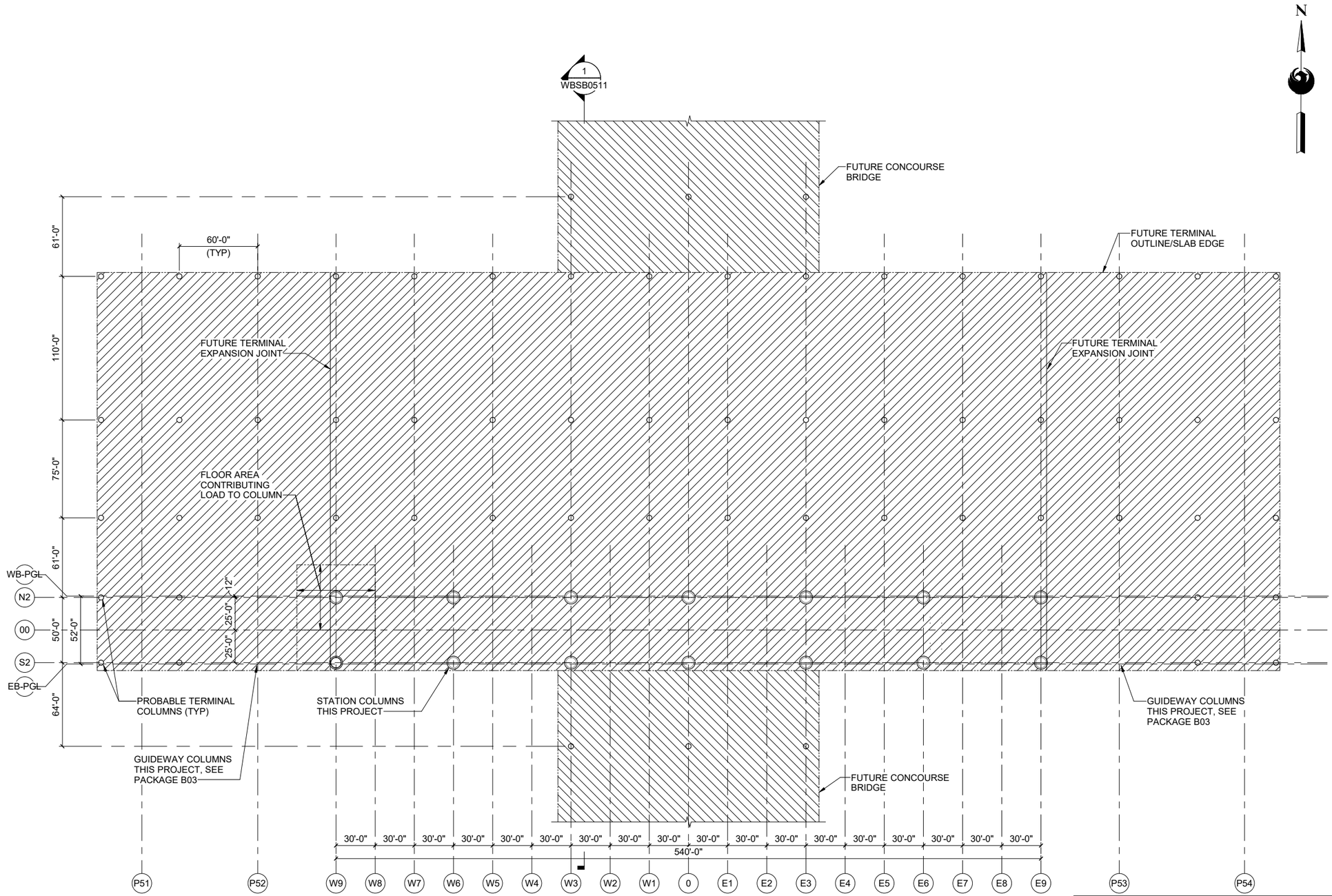
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
FUTURE DEPARTURES LEVEL
FLOOR LOADING MAPS

Package: **B04 - WBSB0013**
Sheet Reference No:
V6 - 184 of 260



1 WBSB0015 **FUTURE SECURITY AND BRIDGE LEVEL PLAN (EL = 1132'-0")**

SCALE: 1" = 40'-0"

NOTE:
1. LOADMAPS DEPICT ANTICIPATED FUTURE TERMINAL EXTENTS, CONFIGURATION AND FLOOR LOADING.

FLOOR LOADING			
MARK	TYPE	SDL	LL
	PUBLIC ASSEMBLY	110 PSF	100 PSF
	CONCOURSE BRIDGE	150 PSF	100 PSF

40' 20' 0 40' 80'
1" = 40'

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	SUBMITTED FOR REVIEW	04/06/18

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
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500 S 24TH STREET
PHOENIX, AZ 85034

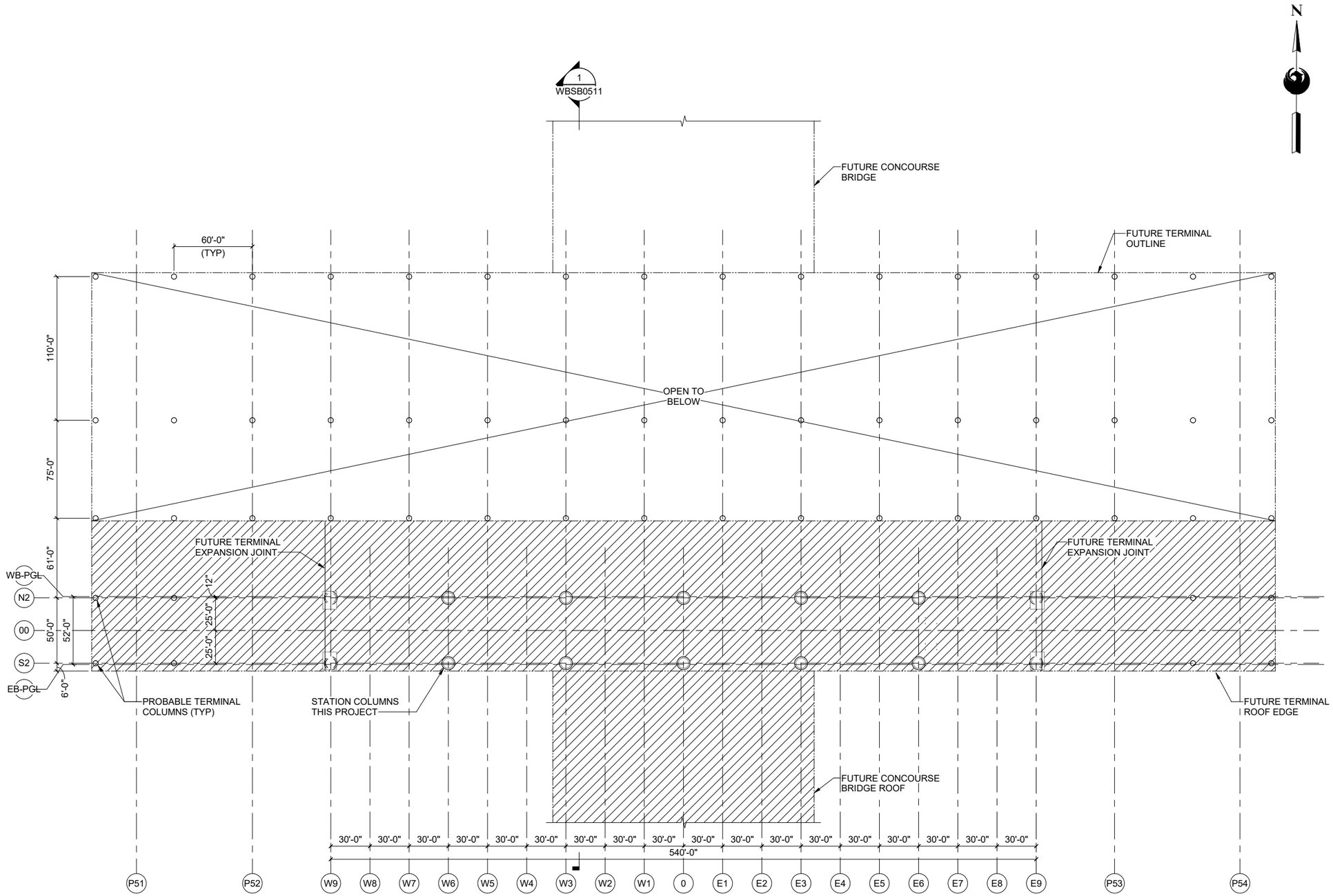
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Date:	07/13/2018
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KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
FUTURE SECURITY AND BRIDGE LEVEL
FLOOR LOADING MAPS

Package: **B04 - WBSB0015**
Sheet Reference No:
V6 - 185 of 260

Project Number: 062421
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FUTURE CONCOURSE BRIDGE / TERMINAL ROOF BELOW GUIDEWAY PLAN (EL = 1152'-6")

1 / WBSB0016 SCALE: 1" = 40'-0"

NOTE:
1. LOADMAPS DEPICT ANTICIPATED FUTURE TERMINAL EXTENTS, CONFIGURATION AND FLOOR LOADING.

FLOOR LOADING			
MARK	TYPE	SDL	LL
	ROOF	60 PSF	20 PSF

40' 20' 0 40' 80'
1" = 40'

Project Number: 062421
7/13/2018 5:20:31 PM

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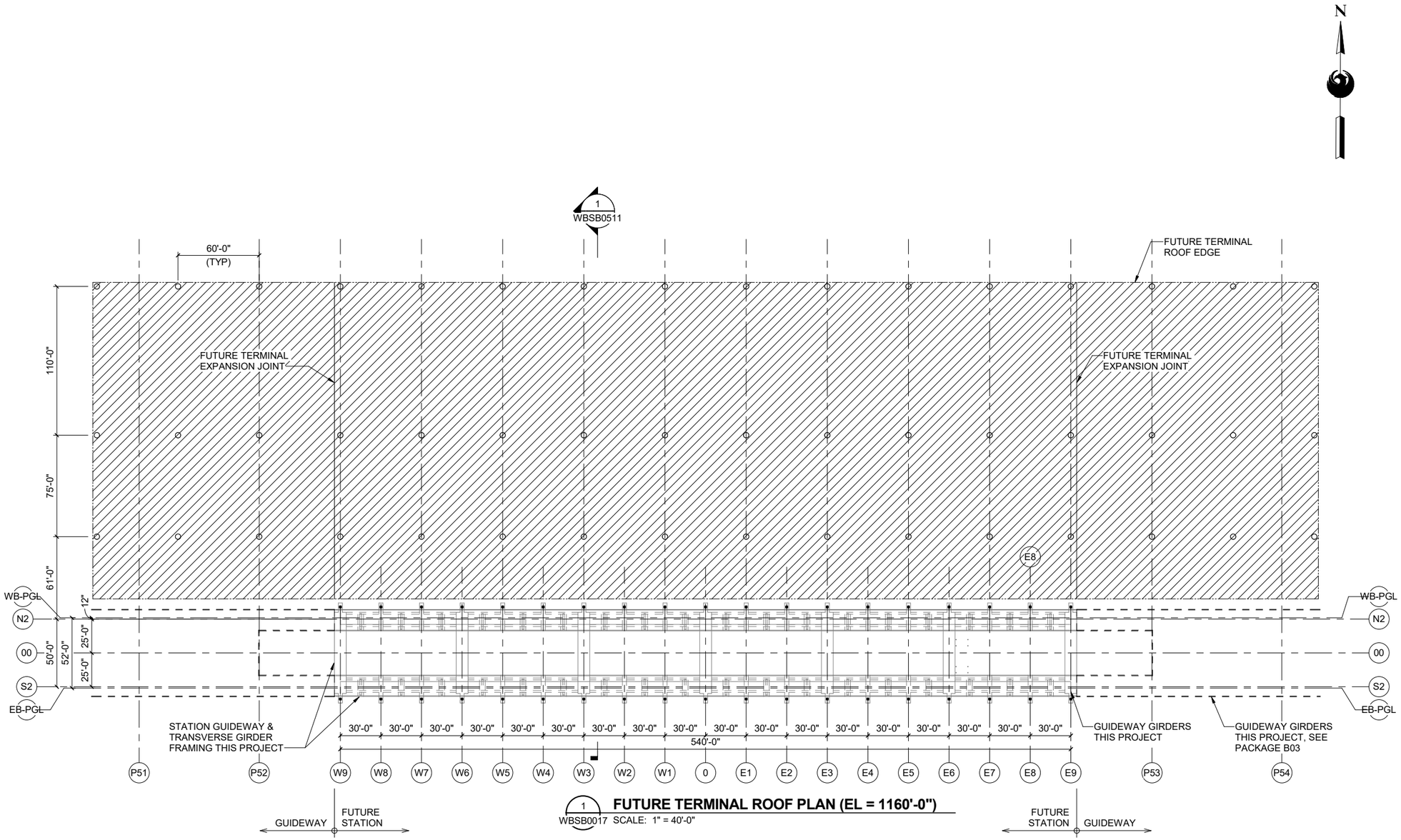
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STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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CIP No.:	AV10000011		
KIVA No.:	07-5204		

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
FUTURE CONCOURSE BRIDGE / TERMINAL ROOF BELOW GUIDEWAY FLOOR LOADING MAPS

Package: B04 - WBSB0016
Sheet Reference No: V6 - 186 of 260



1 WBSB0017 **FUTURE TERMINAL ROOF PLAN (EL = 1160'-0")**
SCALE: 1" = 40'-0"

NOTE:
1. LOADMAPS DEPICT ANTICIPATED FUTURE TERMINAL EXTENTS, CONFIGURATION AND FLOOR LOADING.

TERMINAL ROOF LOADING			
MARK	TYPE	SDL	LL
	ROOF	60 PSF	20 PSF

40' 20' 0 40' 80'
1" = 40'

Project Number: 062421
7/13/2018 5:20:32 PM

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

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CITY OF PHOENIX AVIATION DEPARTMENT

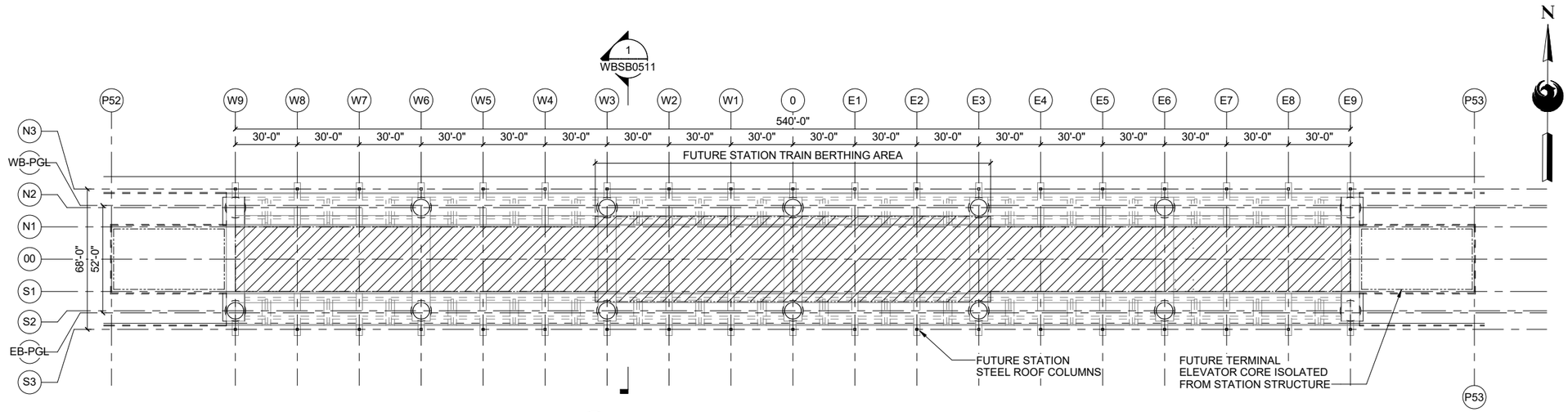
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

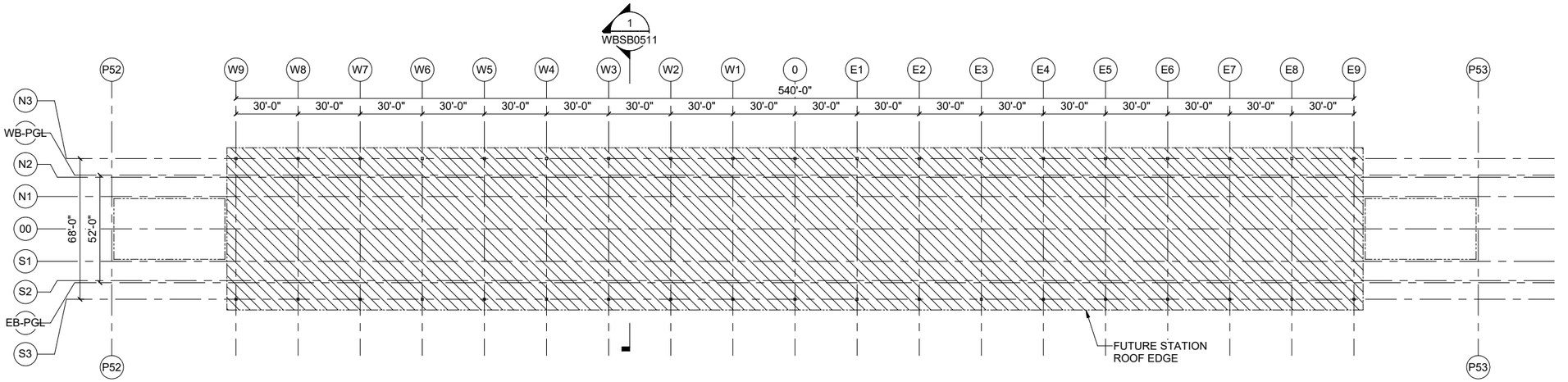
WEST TERMINAL STATION
STRUCTURAL
FUTURE TERMINAL ROOF
FLOOR LOADING MAPS

Package: B04 - WBSB0017
Sheet Reference No:
V6 - 187 of 260



1 WBSB0018 **FUTURE STATION PLATFORM LEVEL PLAN (EL = 1160'-0")**

SCALE: 1" = 30'-0"



2 WBSB0018 **FUTURE STATION ROOF PLAN (EL = 1182'-0")**

SCALE: 1" = 30'-0"

PLATFORM FLOOR LOADING			
MARK	TYPE	SDL	LL
	PUBLIC ASSEMBLY	50 PSF	125 PSF
STATION ROOF LOADING			
MARK	TYPE	SDL	LL
	ROOF	45 PSF	20 PSF

30' 20' 10' 0 30' 60'

1" = 30'

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
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Design Consultant: Gannett Fleming

Design Sub-Consultant

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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Dwg scale:	As indicated
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KIVA No.:	07-5204

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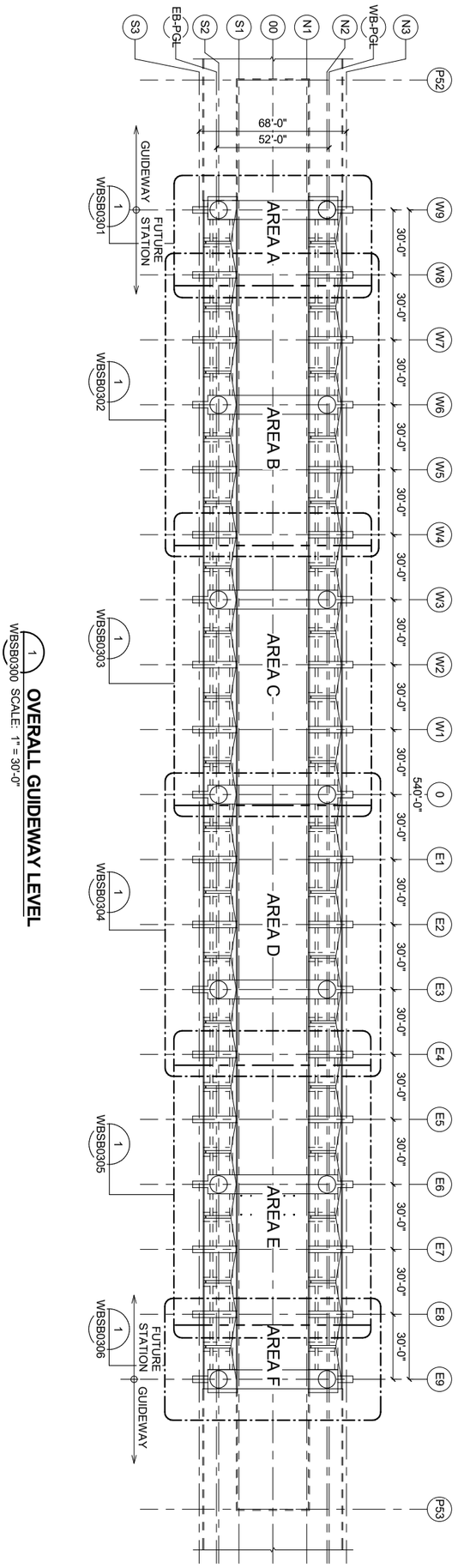
WEST TERMINAL STATION
STRUCTURAL
FUTURE STATION
PLATFORM AND ROOF LEVEL
FLOOR LOADING MAPS

Package: **B04 - WBSB0018**

Sheet Reference No:

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STAGE 2 - B04 DESIGN SUBMISSION

Package: **B04 - WBSB0300**

Sheet Reference No: V6 - 189 of 260

WEST TERMINAL STATION
STRUCTURAL
OVERALL GUIDEWAY LEVEL

Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1" = 30'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN STAGE 2 DESIGN 500 S 24TH STREET PHOENIX, AZ 85034

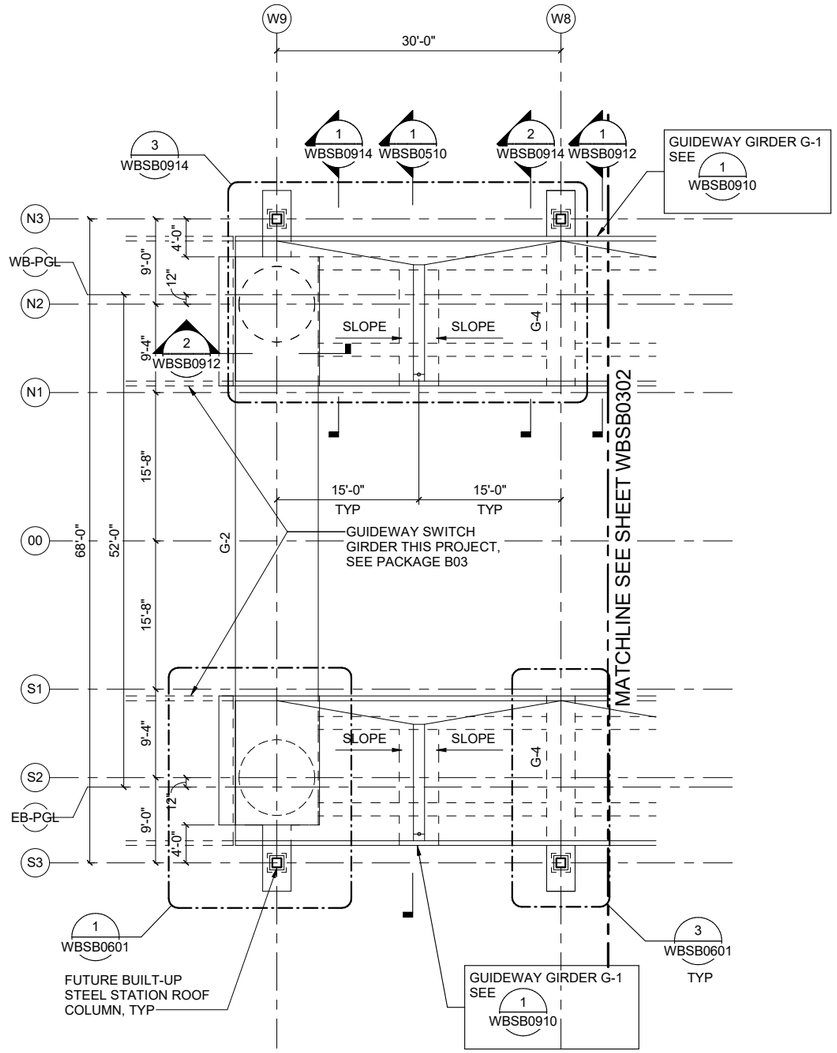
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

48434
SHANE E. SWEETEN
7/13/18
ARIZONA, U.S.A.
EXPIRES 9/30/18

Design Sub-Consultant

Design Consultant
Gannett Fleming



1 WBSB0301 GUIDEWAY LEVEL - AREA A

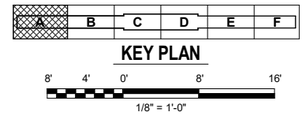
SCALE: 1/8" = 1'-0"

FOR G-2 SEE 1 WBSB0911	FOR G-3 SEE 2 WBSB0911	FOR G-4 SEE 1 WBSB0912

CONSTRUCTION JOINT NOTE
CONSTRUCTION JOINTS WHEN USED SHALL BE AT 1/4 POINTS OF SPAN. SUBMIT JOINT LAYOUT FOR REVIEW AND APPROVAL.

NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ GUIDEWAY DRAWINGS B03







Design Sub-Consultant

Design Consultant

Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN

STAGE 2 DESIGN

500 S 24TH STREET

PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

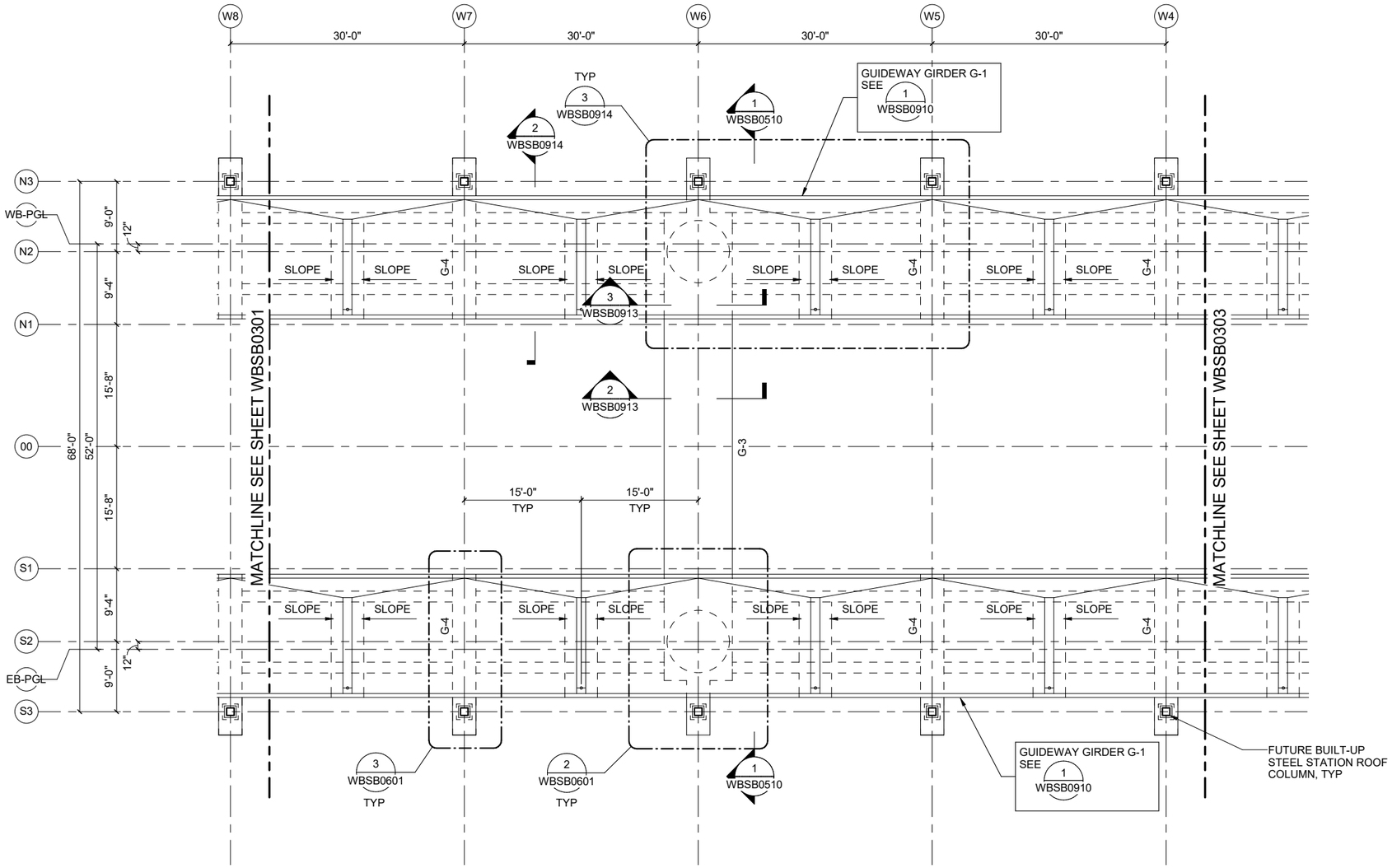
WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY LEVEL AREA A

Package: B04 - WBSB0301

Sheet Reference No: V6 - 190 of 260

Project Number: 062421
7/13/2018 5:20:36 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBXX01_R17_A360.rvt



1 GUIDEWAY LEVEL - AREA B
WBSB0302 SCALE: 1/8" = 1'-0"

FOR G-2 SEE 1 WBSB0911	FOR G-3 SEE 2 WBSB0911	FOR G-4 SEE 1 WBSB0912

CONSTRUCTION JOINT NOTE
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NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ GUIDEWAY DRAWINGS B03

A | B | C | D | E | F

KEY PLAN

8' 4' 0' 8' 16'

1/8" = 1'-0"

N

Project Number: 062421
7/13/2018 5:20:37 PM

Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSB3X001_R17_A360.rvt

Design Consultant: Gannett Fleming

Design Sub-Consultant

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

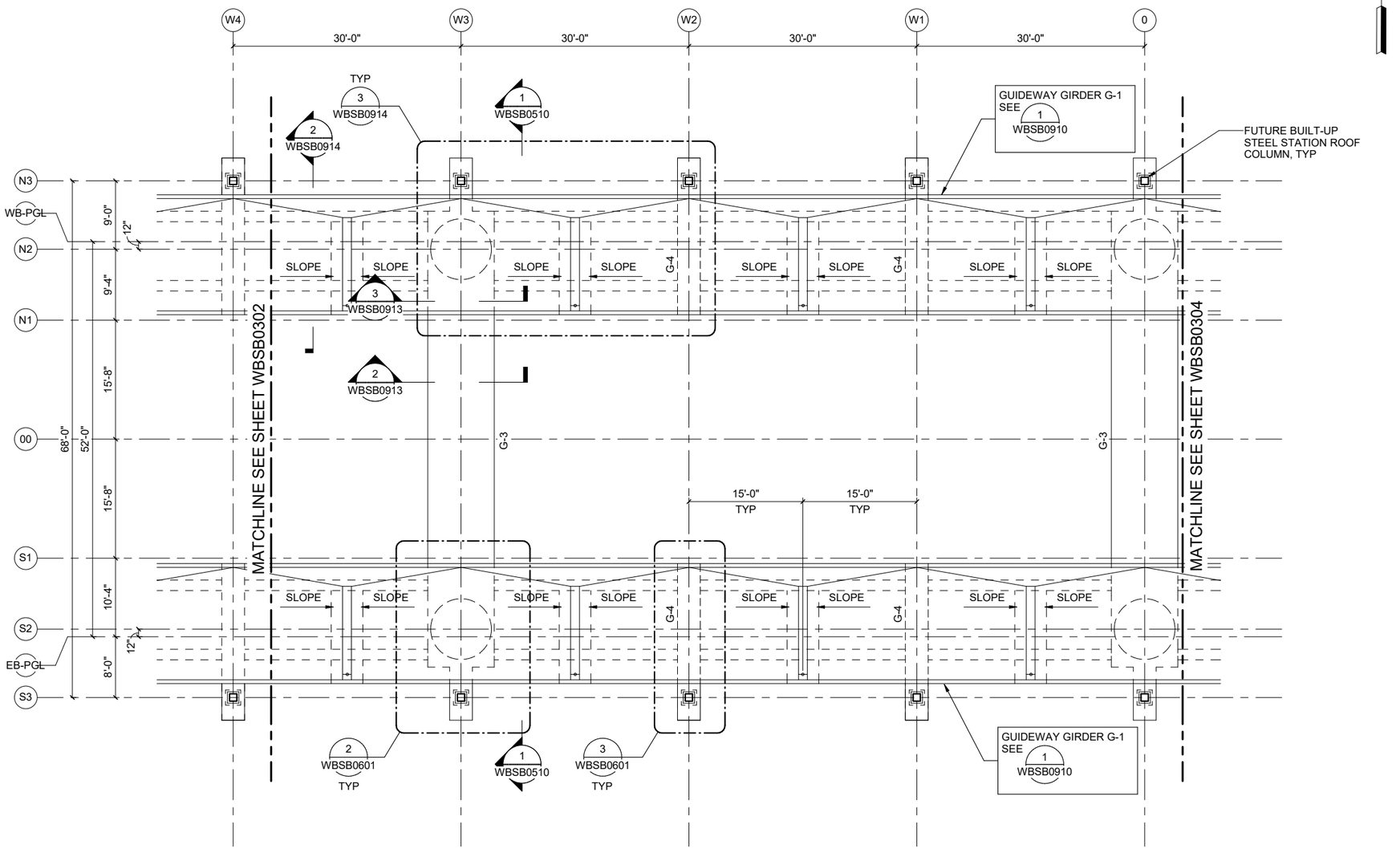
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY LEVEL AREA B

Package: B04 - WBSB0302

Sheet Reference No:

V6 - 191 of 260



N

1 WBSB0303 **GUIDEWAY LEVEL - AREA C**
SCALE: 1/8" = 1'-0"

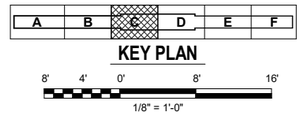
FOR G-2 SEE 1 WBSB0911	FOR G-3 SEE 2 WBSB0911	FOR G-4 SEE 1 WBSB0912

NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ GUIDEWAY DRAWINGS B03

CONSTRUCTION JOINT NOTE

CONSTRUCTION JOINTS WHEN USED SHALL BE AT 1/4 POINTS OF SPAN. SUBMIT JOINT LAYOUT FOR REVIEW AND APPROVAL.



KEY PLAN

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

Project Number: 062421
7/13/2018 5:20:38 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBX01_R17_A360.rvt

Design Consultant
Gannett Fleming

Design Sub-Consultant

Registered Professional Engineer (Structural)
48434
SCOTT E.
SWEETEN
Date Signed 7/13/18
ARIZONA, U.S.A.
EXPIRES 9/30/19

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CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

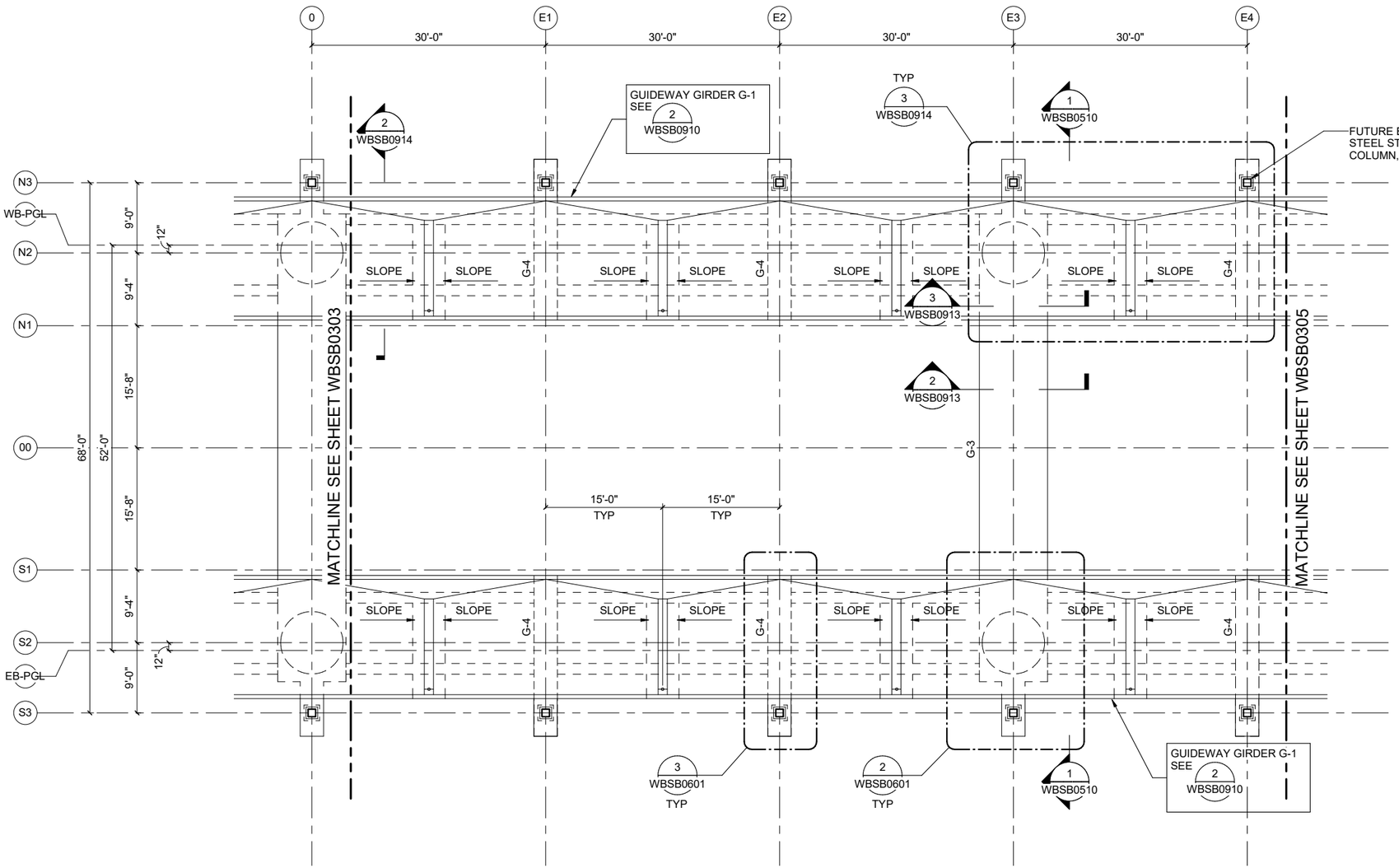
Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY LEVEL AREA C

Package: B04 - WBSB0303

Sheet Reference No:



1 WBSB0304 GUIDEWAY LEVEL - AREA D

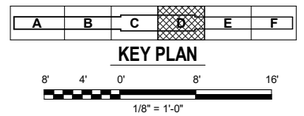
SCALE: 1/8" = 1'-0"

FOR G-2 SEE 1 WBSB0911	FOR G-3 SEE 2 WBSB0911	FOR G-4 SEE 1 WBSB0912

CONSTRUCTION JOINT NOTE
CONSTRUCTION JOINTS WHEN USED SHALL BE AT 1/4 POINTS OF SPAN. SUBMIT JOINT LAYOUT FOR REVIEW AND APPROVAL.

NOTE:

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant

Design Consultant

Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

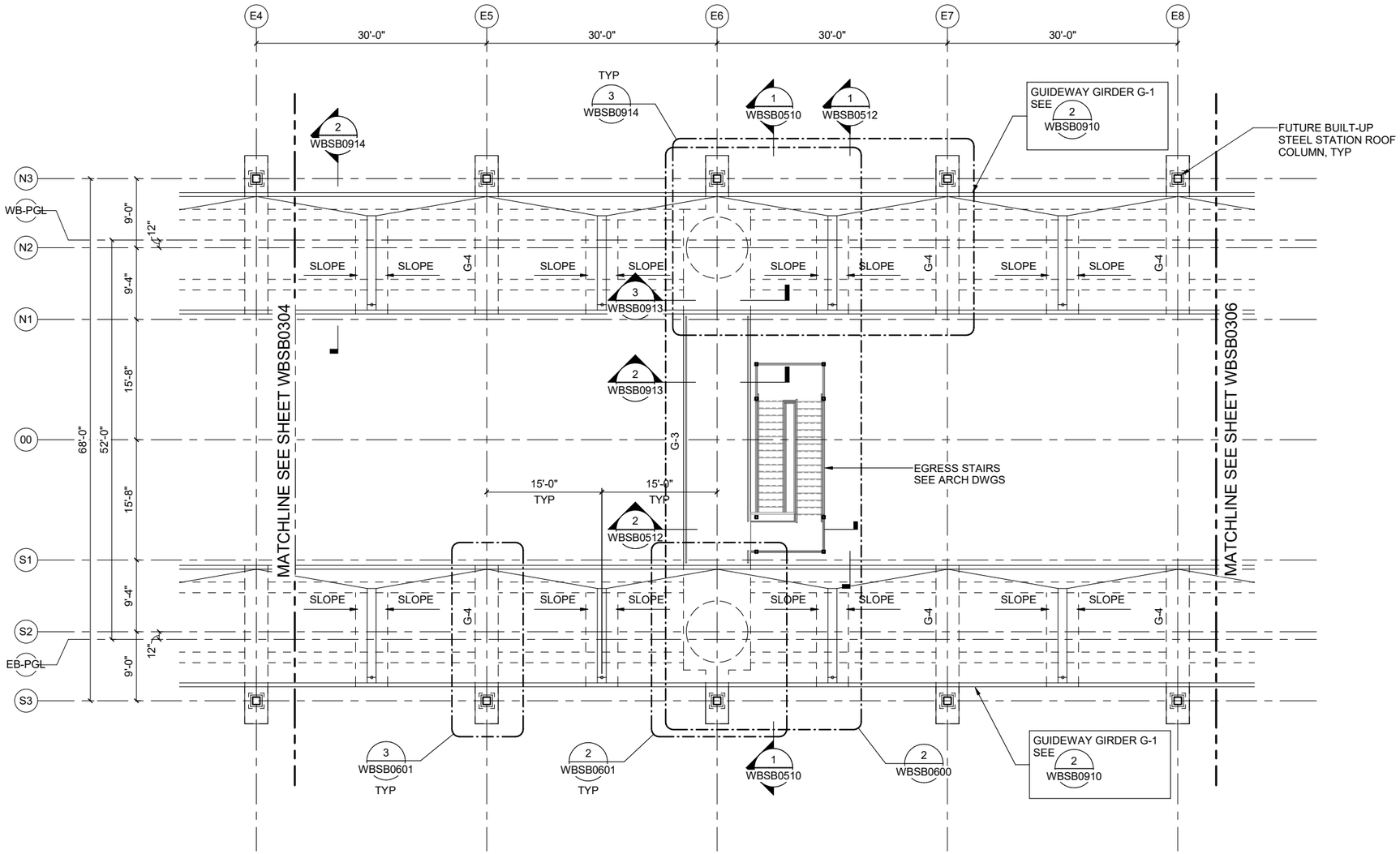
WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY LEVEL AREA D

Package: B04 - WBSB0304

Sheet Reference No: V6 - 193 of 260

Project Number: 062421
7/13/2018 5:20:39 PM

Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSB3X001_R17_A360.rvt



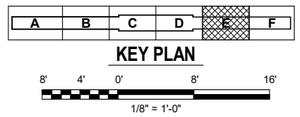
1 WBSB0305 **GUIDEWAY LEVEL - AREA E**
SCALE: 1/8" = 1'-0"

FOR G-2 SEE 1 WBSB0911	FOR G-3 SEE 2 WBSB0911	FOR G-4 SEE 1 WBSB0912

CONSTRUCTION JOINT NOTE
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NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ GUIDEWAY DRAWINGS B03



Project Number: 062421
7/13/2018 5:20:41 PM

Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBX001_R17_A360.rvt

Design Consultant
Gannett Fleming

Design Sub-Consultant

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR CHANGE ONLY AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

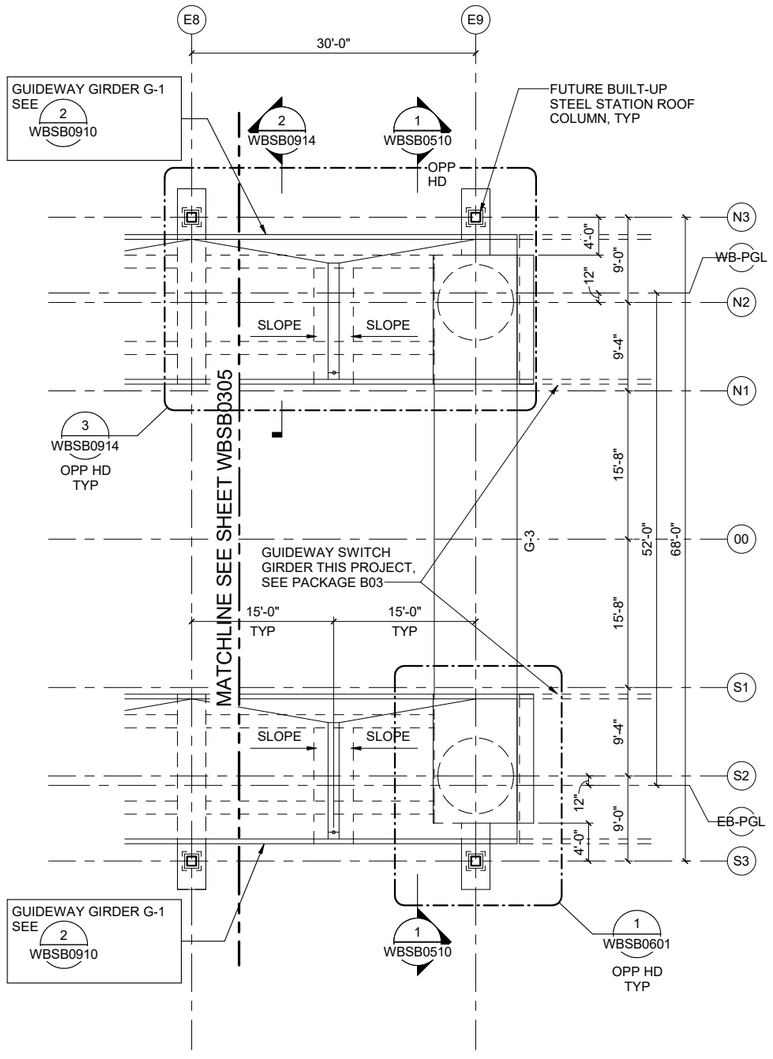
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY LEVEL AREA E

Package: **B04 - WBSB0305**
Sheet Reference No:
V6 - 194 of 260



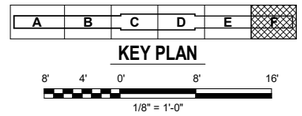
1 WBSB0306 **GUIDEWAY LEVEL - AREA F** SCALE: 1/8" = 1'-0"

FOR G-2 SEE 1 WBSB0911	FOR G-3 SEE 2 WBSB0911	FOR G-4 SEE 1 WBSB0912

CONSTRUCTION JOINT NOTE
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NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ GUIDEWAY DRAWINGS B03







Design Sub-Consultant

Design Consultant

Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY LEVEL AREA F

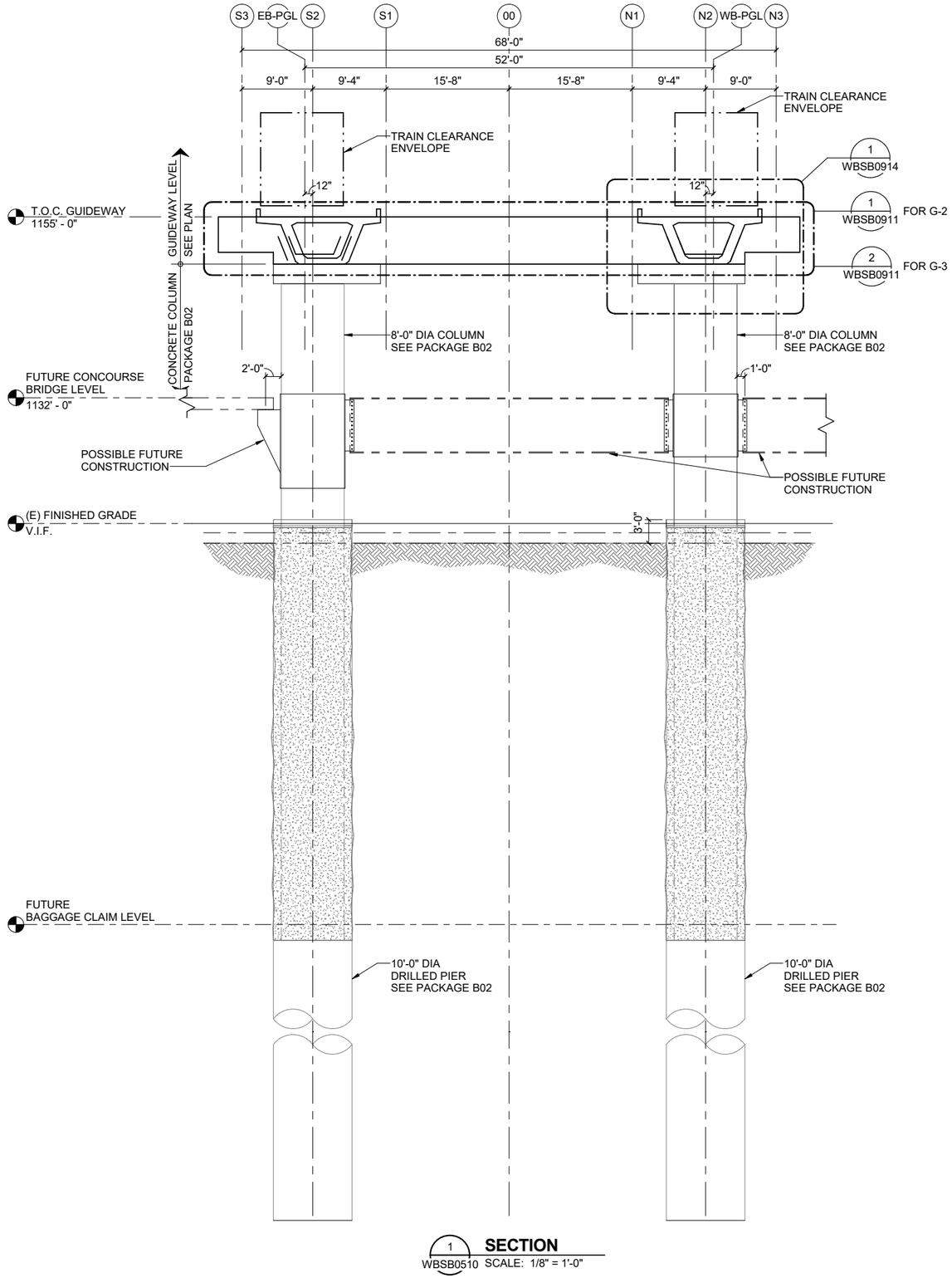
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Sheet Reference No:

V6 - 195 of 260

Project Number: 062421
7/13/2018 5:20:42 PM

Local File BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-WTSBXX01_R17_A360.rvt



1 WBSB0510 **SECTION**
SCALE: 1/8" = 1'-0"

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Design Sub-Consultant

Design Consultant

Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

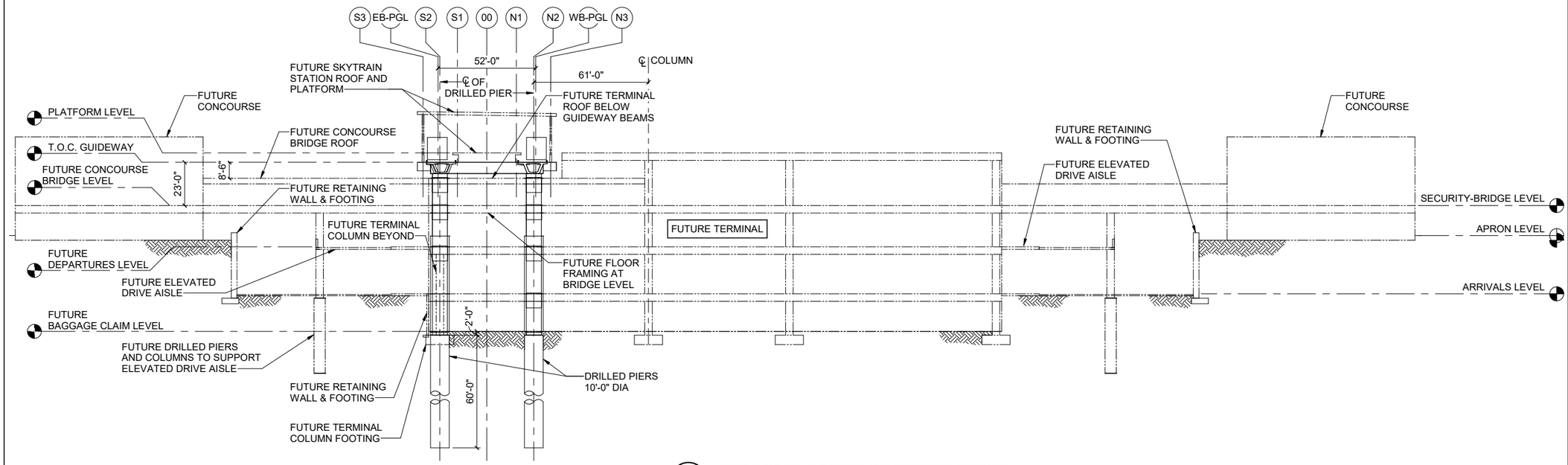
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
TYPICAL STATION SECTION

Package: **B04 - WBSB0510**

Sheet Reference No:
V6 - 196 of 260

Project Number: 062421
7/13/2018 5:20:43 PM
Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSB3X001_R17_A360.rvt



1 WBSB0511 **PROPOSED DESIGN OF FUTURE TERMINAL**
SCALE: 1" = 30'-0"

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Registered Professional Engineer (Structural)
48434
SHANE E.
SWEETEN
Date signed 7/13/18
ARIZONA U.S.A.
EXPIRES 9/30/19

Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

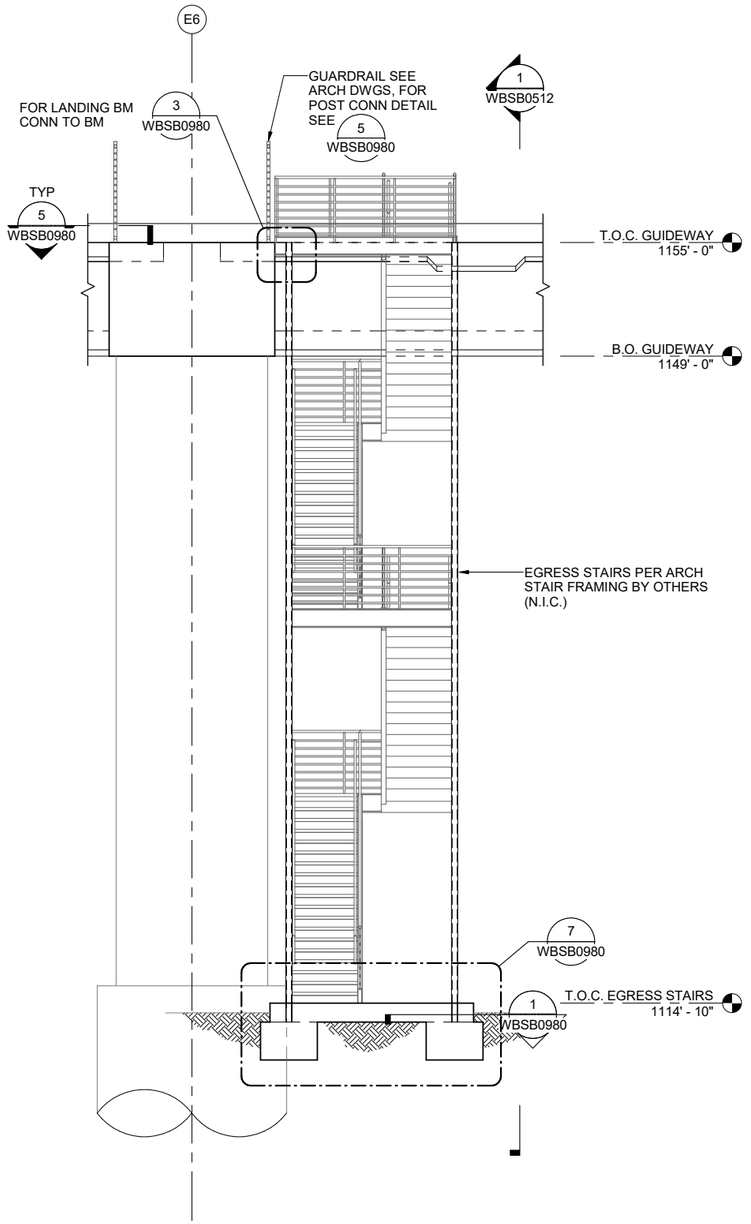
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Drawn by:	DG
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1" = 30'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

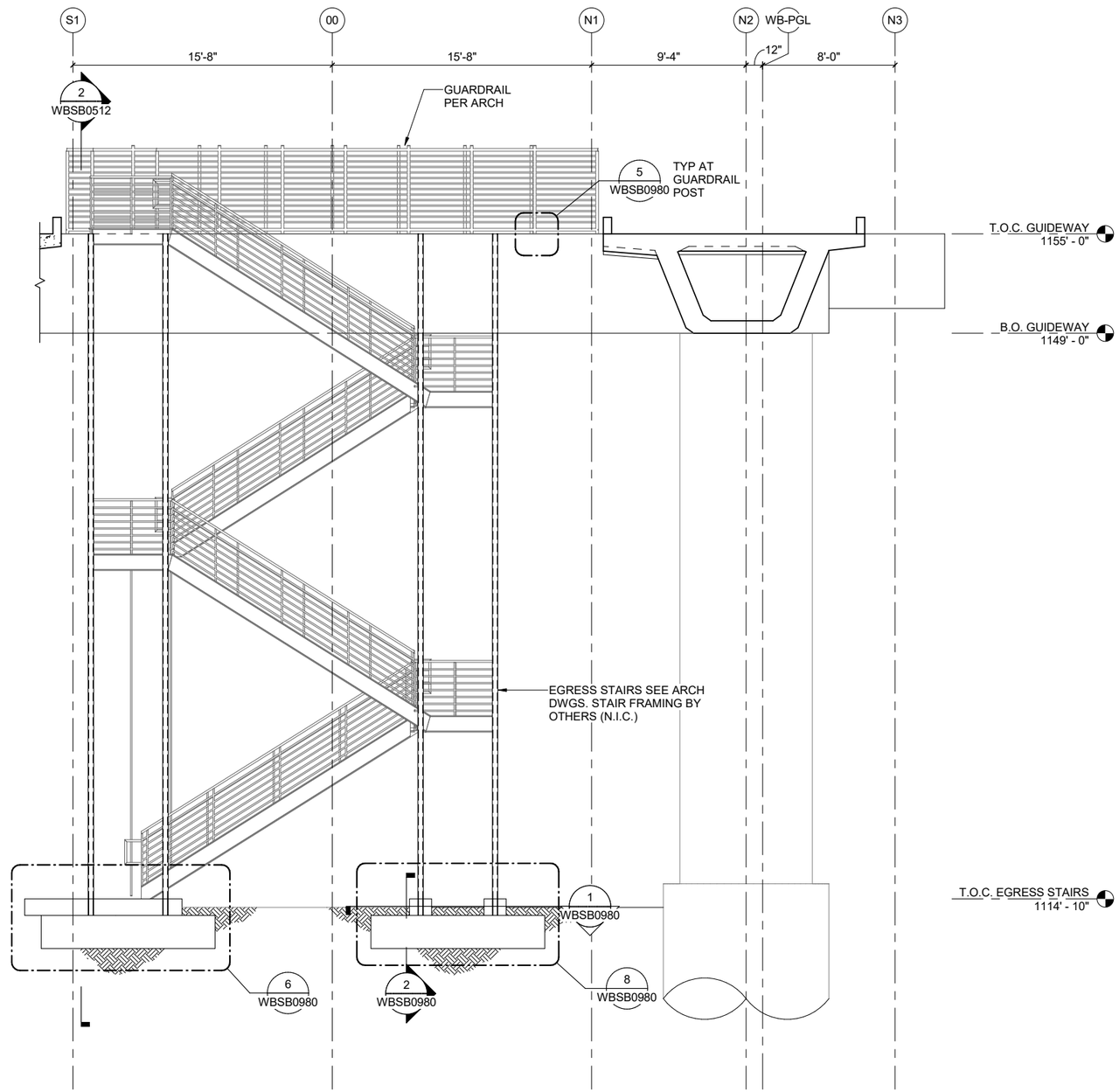
WEST TERMINAL STATION
STRUCTURAL
PROPOSED DESIGN OF FUTURE TERMINAL

Package: **B04 - WBSB0511**
Sheet Reference No:
V6 - 197 of 260

Project Number: 062421
7/13/2018 5:20:44 PM
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBXX01_R17_A360.rvt



2 **STAIR SECTION**
WBSB0512 SCALE: 1/4" = 1'-0"



1 **STAIR SECTION**
WBSB0512 SCALE: 1/4" = 1'-0"

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18

Design Sub-Consultant

Design Consultant

Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

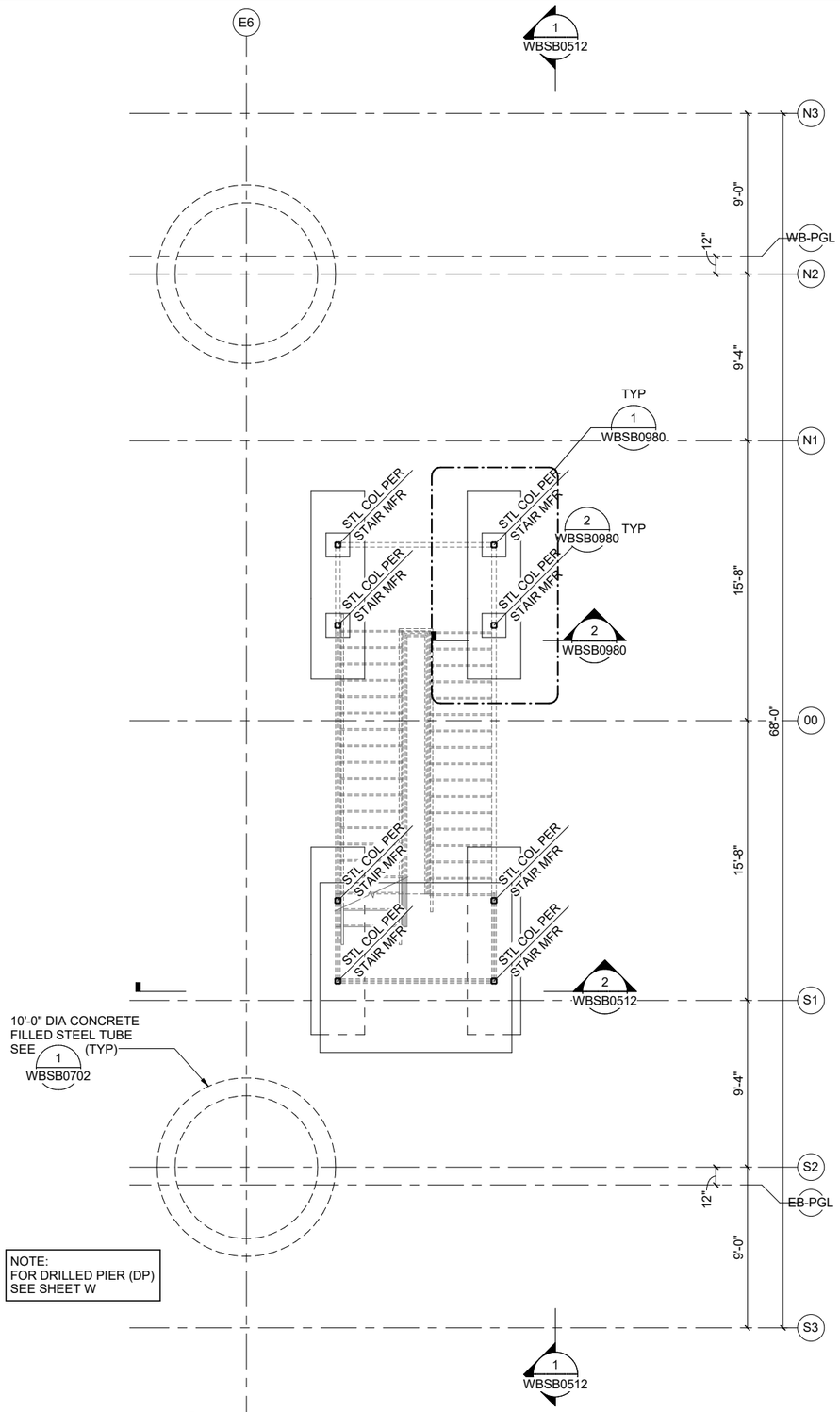
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
EMERGENCY STAIR SECTIONS

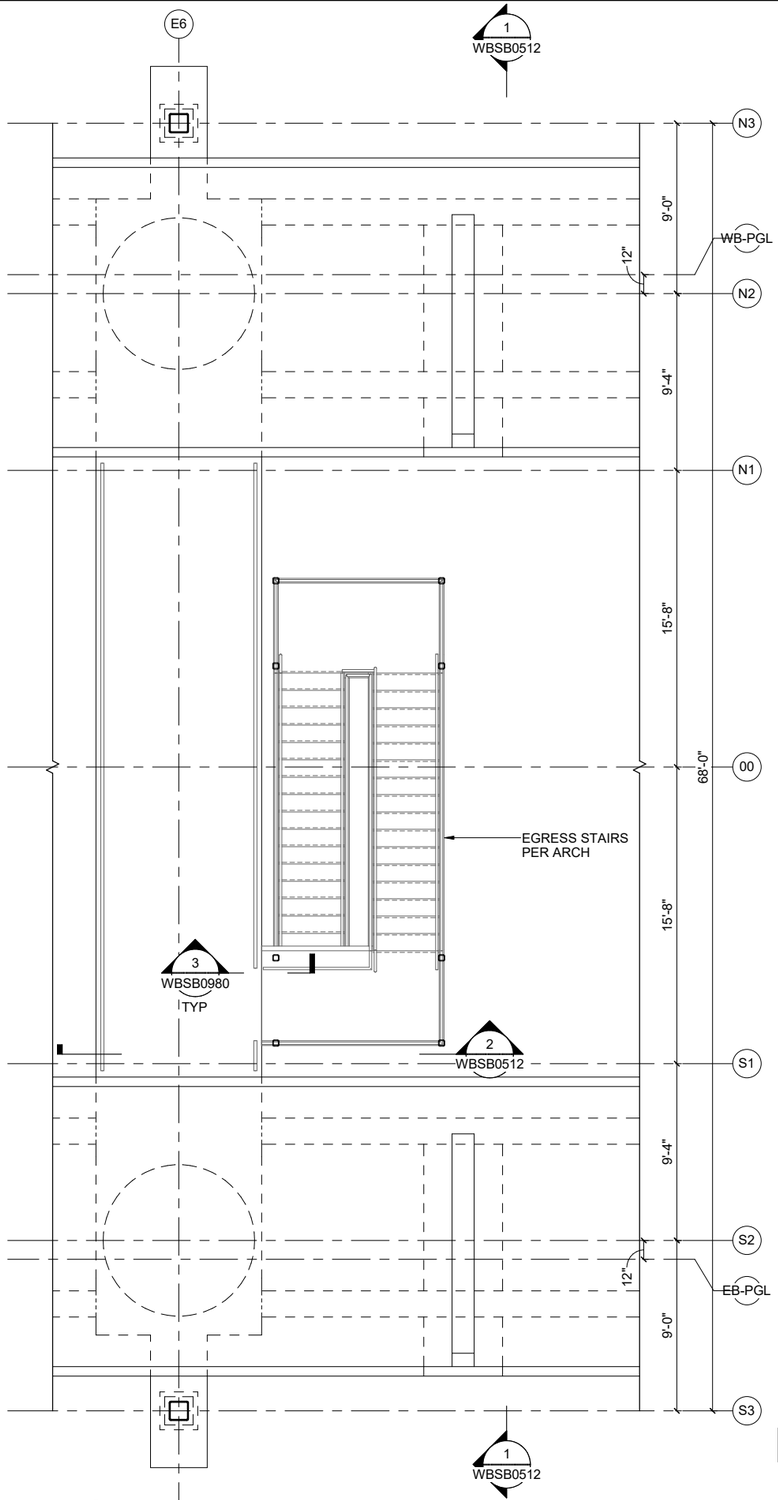
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Sheet Reference No:

Project Number: 062421
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Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBJX01_R17_A360.rvt



1 WBSB0600 **T.O.C. SLAB - AREA E - EMERGENCY STAIRS**
SCALE: 1/4" = 1'-0"



2 WBSB0600 **GUIDEWAY LEVEL - AREA E - EMERGENCY STAIRS**
SCALE: 1/4" = 1'-0"

NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ ARCHITECTURAL DRAWINGS



KEY PLAN

4' 2' 0' 4' 8'

1/4" = 1'-0"

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Registered Professional Engineer (Structural)
48434
SCOTT E.
SWEETEN
Date signed: 7/13/18
ARIZONA, U.S.A.
EXPIRES 9/7/201

Design Sub-Consultant

Design Consultant

Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ACK
Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

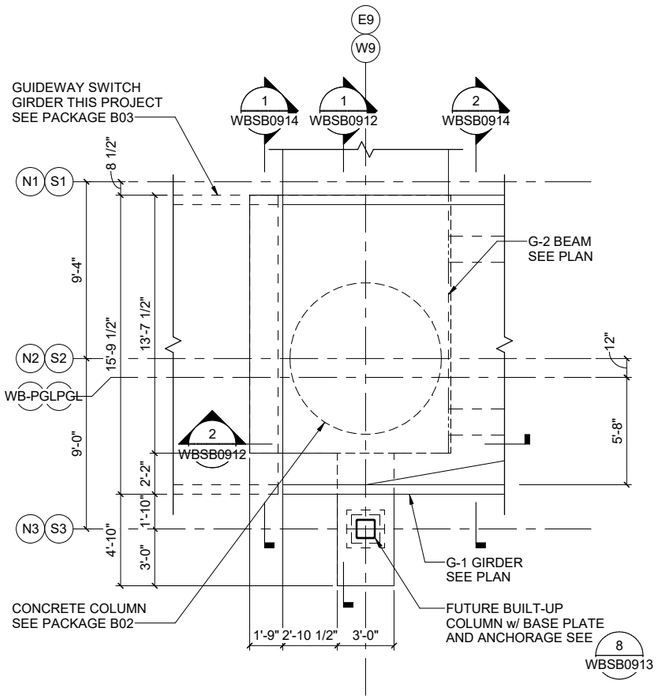
WEST TERMINAL STATION
STRUCTURAL
ENLARGED PLANS - AREA E
EMERGENCY STAIR FRAMING

Package: **B04 - WBSB0600**

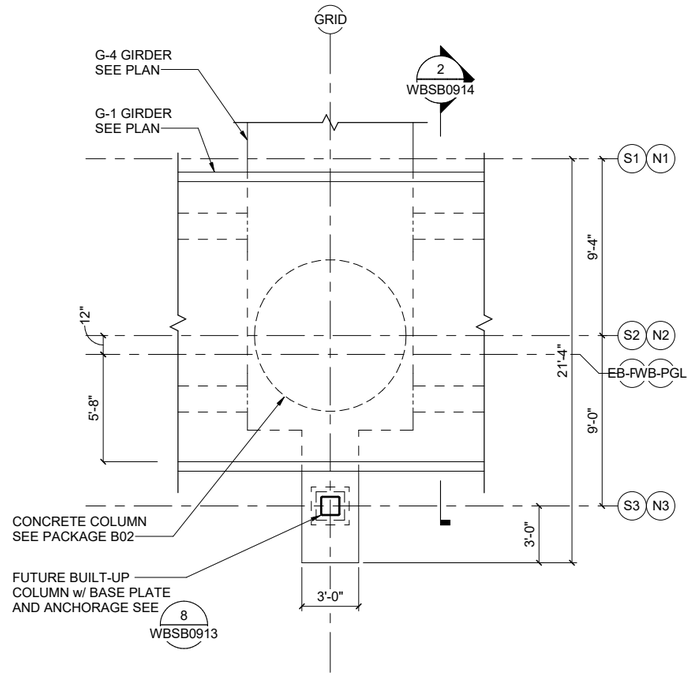
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V6 - 199 of 260

Project Number: 062421
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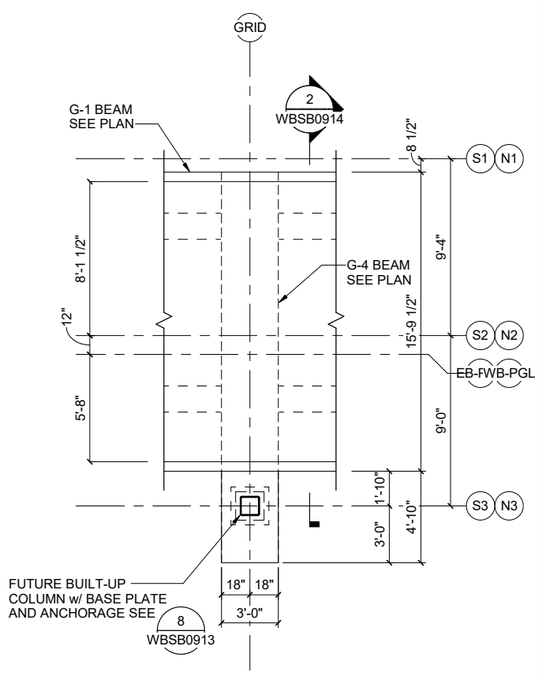
Local File BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBXX01_R17_A360.rvt



1 WBSB0601 **PARTIAL GUIDEWAY PLAN AT GRID W9 & E9**
SCALE: 1/4" = 1'-0"



2 WBSB0601 **PARTIAL GUIDEWAY PLAN AT GRID W6, W3, 0, E3 & E6**
SCALE: 1/4" = 1'-0"



3 WBSB0601 **PARTIAL GUIDEWAY PLAN**
SCALE: 1/4" = 1'-0"

Project Number: 062421
7/13/2018 5:20:48 PM

Local File: BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTSBXX01_R17_A360.rvt

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18

Design Sub-Consultant

Design Consultant

Gannett Fleming

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN

STAGE 2 DESIGN

500 S 24TH STREET
PHOENIX, AZ 85034

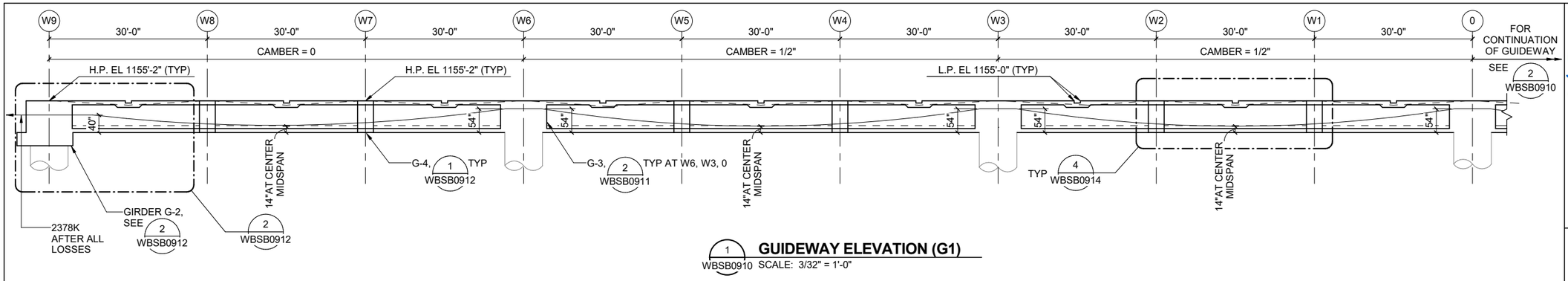
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
PARTIAL GUIDEWAY PLANS AND SECTIONS

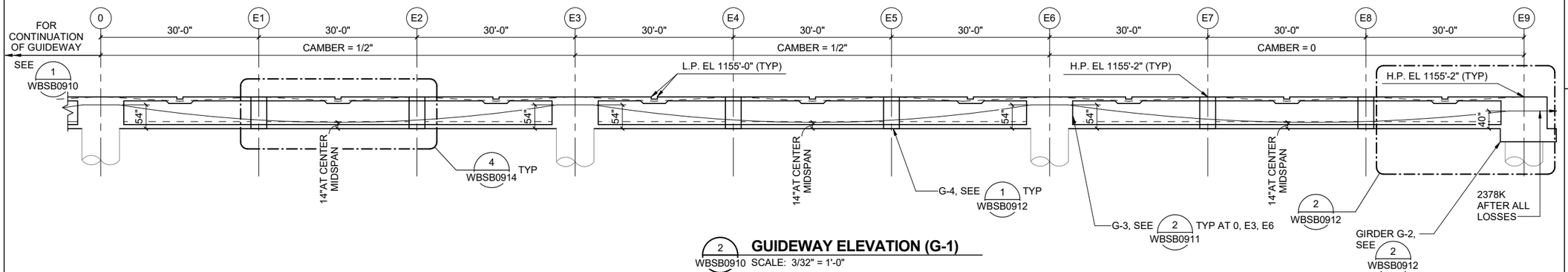
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Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

Package: **B04 - WBSB0601**
V6 - 200 of 260

Sheet Reference No:



1 WBSB0910 **GUIDEWAY ELEVATION (G1)** SCALE: 3/32" = 1'-0"



2 WBSB0910 **GUIDEWAY ELEVATION (G-1)** SCALE: 3/32" = 1'-0"

GUIDEWAY NOTES:

MATERIALS:

A. CONCRETE:
a. 28 DAY COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF f'c = 6000PSI.
b. MINIMUM CONCRETE STRENGTH AT TIME OF STRESSING - f'c = 3500PSI

B. PRESTRESSING STEEL:
a. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION 7 WIRE 0.6 INCH DIAMETER STRANDS.

C. GROUT:
a. GROUT SHALL BE OF NONSHRINK NON-METALLIC TYPE AND SHALL HAVE A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF f'c = 5000 PSI.

POST-TENSION TENDONS DUCTS

A. STRAND TENDONS
a. TENDON SIZE - 9-0.6 INCHES DIAMETER STRANDS PER TENDON (0.217 SQUARE INCHES PER STRAND).
b. MODULUS OF ELASTICITY = 28,000 KSI.
c. MAXIMUM LONGITUDINAL TENDON JACKING STRESSES = 0.75 f'su (f'su = 270 KSI)
d. MAXIMUM ANCHORAGE STRESS IMMEDIATELY AFTER TENDON ANCHORAGE = 0.7f'su.
e. FRICTION COEFFICIENT = 0.25.
f. ANCHOR SET = 0.375 INCHES.
g. TENDONS SHALL BE TENSIONED BY JACKING AT EA END OF TENDON.

B. DUCTS:
a. DUCTS SHALL BE GALVANIZED FERROUS METAL AND SHALL BE FABRICATED WITH EITHER WELD OR INTERLOCKED SEAMS.

C. ANCHORAGE AND BLOCKOUTS:
a. ANCHORAGE SYSTEMS AND BLOCKOUTS AND THEIR DETAILS SHALL BE DETERMINED BY THE POST-TENSIONING SYSTEM USED. THE CONTRACTOR SHALL DETERMINE DIMENSIONS AND ADJUST REINFORCING AS REQUIRED.

CONSTRUCTION STAGING

A. PREPARE AND SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
a. FALSEWORK
b. REINFORCEMENT GUIDEWAYS
c. POST-TENSIONING AND ANCHORAGE DEVICES
d. GROUTING OF TENDON DUCTS

B. ERECT FALSEWORK TO SUPPORT CAST-IN-PLACE GUIDEWAY BEAM, INSTALL FORMWORK BEARINGS, PLACE REINFORCEMENT AND POST-TENSIONING DUCTS FOR COMPLETE GUIDEWAY BEAM.

C. SUGGESTED SEQUENCE OF CONCRETE PLACEMENT AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING THE PLACEMENT SEQUENCE. CONSTRUCTION JOINT LAYOUTS, DIRECTION OF THE CONCRETE PLACEMENT.

D. AFTER CONCRETE REACHES A MINIMUM STRENGTH OF 3500 PSI, INSTALL AND STRESS LONGITUDINAL POST-TENSIONING.

E. REMOVE ALL TEMPORARY SUPPORTS, FORM AND PLACE CONCRETE BLOCKOUT FOR OPENINGS, INSTALL RAILING AND ELEMENTS.

F. CALCULATION SUBMITTAL:
FORCE SHOWN ON DRAWINGS ARE AFTER ALL LOSSES. CONTRACTOR SHALL SUBMIT ELONGATION, JACKING, FRICTION CALCULATIONS FOR REVIEW AND APPROVAL PRIOR TO STARTING WORK.

G. LOCAL ZONE REINFORCING AND ANCHORAGE DEVICES:
CONTRACTOR'S RESPONSIBILITY - SEE SPECIFICATIONS. DESIGN IN ACCORDANCE WITH SECTION 9.21.7 OF AASHTO STANDARD SPECIFICATIONS.

H. GROUT TENDONS:
AFTER JACKING IS COMPLETE AND ANCHORAGES ARE ACCEPTABLE TO THE PROGRAM PROJECT MANAGER, GROUT ALL TENDONS. CONTRACTOR SHOULD PREPARE AND SUBMIT A "GROUTING PLAN" FOR APPROVAL BY PROGRAM PROJECT MANAGER. PRIOR TO GROUTING, ALL TENDON DUCTS, GROUT INLETS AND OUTLETS, AND ANCHORS SHOULD BE EXAMINED AND DEBRIS AND WATER SHOULD BE REMOVED.

GUIDEWAY GIRDER POUR SEQUENCE
1.) BOTTOM SLAB, GIRDER WEB AND VERTICAL DIAPHRAGM
2.) WAIT MINIMUM OF 24 HOURS BETWEEN POURS
3.) POUR TOP SLAB

NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ GUIDEWAY DRAWINGS B03

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

Design Consultant: Gannett Fleming

Design Sub-Consultant

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CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

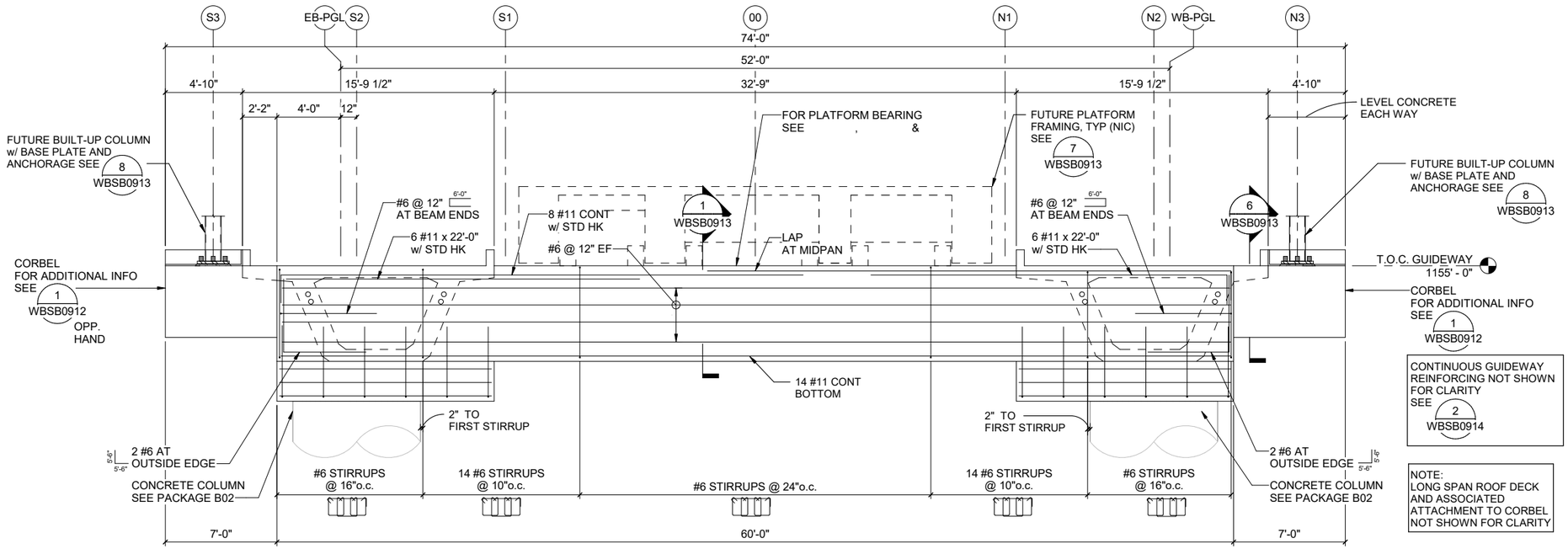
WEST TERMINAL STATION STRUCTURAL GUIDEWAY GIRDER DETAILS

Package: B04 - WBSB0910

Sheet Reference No: V6 - 201 of 260

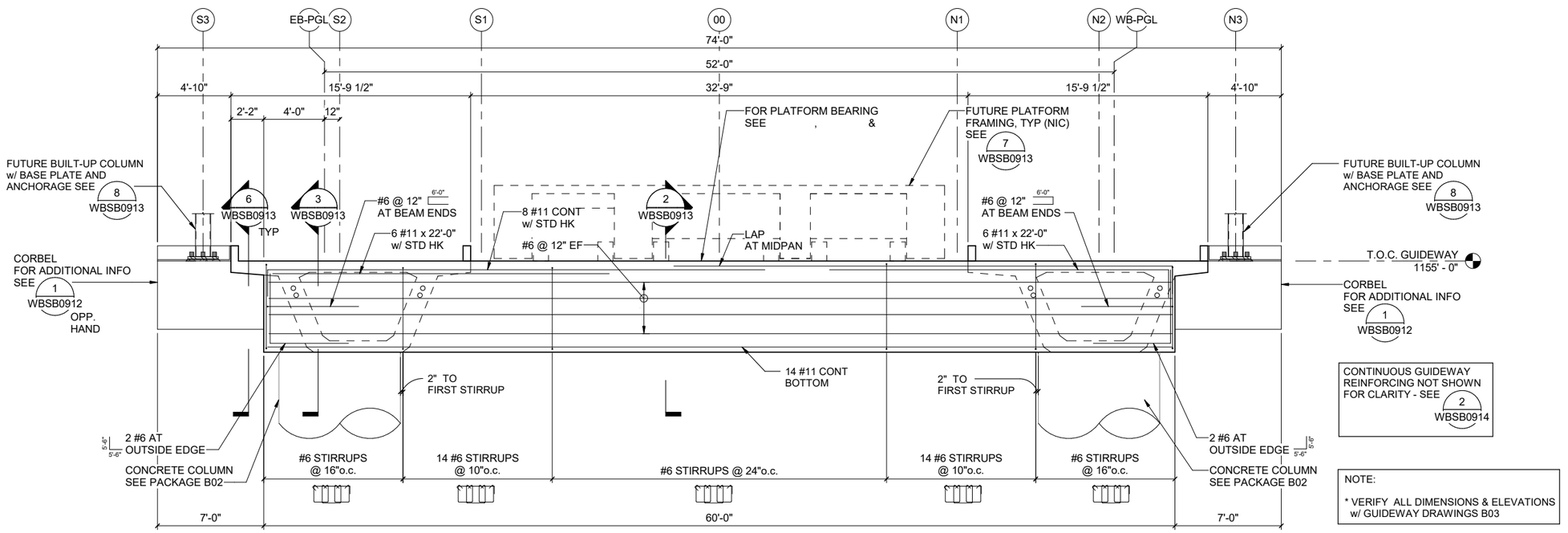
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Project Number: 062421
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BEAM ELEVATION G-2
OCCURS AT W9 & E9

1 WBSB0911 **DETAIL** SCALE: 1/4" = 1'-0"



BEAM ELEVATION G-3

2 WBSB0911 **DETAIL** SCALE: 1/4" = 1'-0"

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Design Sub-Consultant

Design Consultant

Gannett Fleming

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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STAGE 2 - B04 DESIGN SUBMISSION

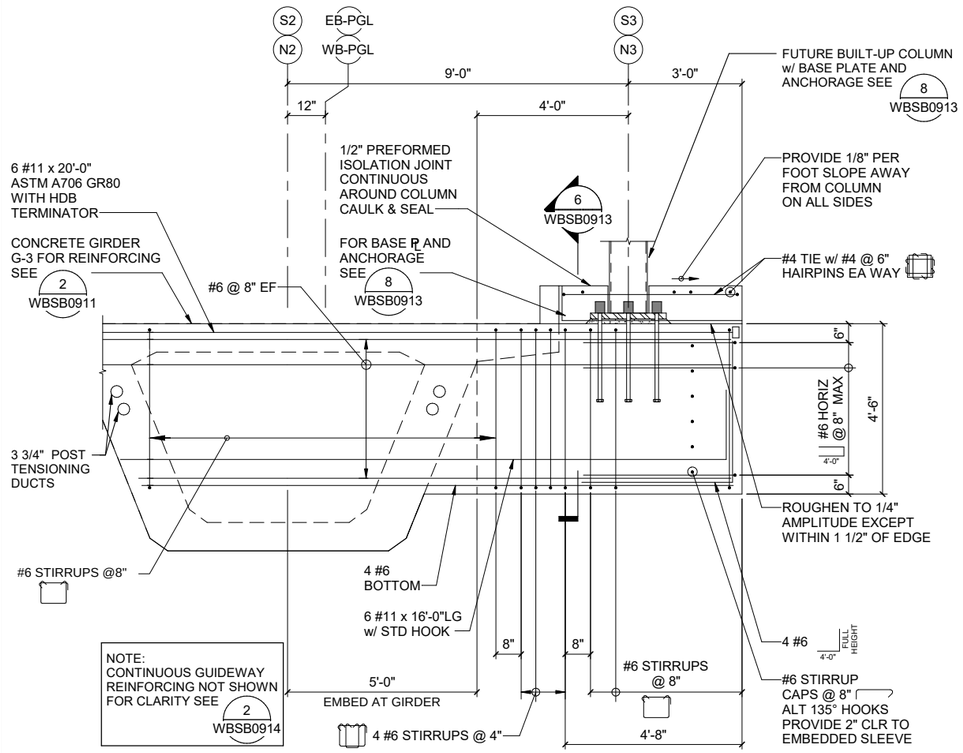
WEST TERMINAL STATION
STRUCTURAL
GIRDER DETAILS / ELEVATIONS

Package: **B04 - WBSB0911**

Sheet Reference No:
V6 - 202 of 260

Project Number: 062421
7/13/2018 5:20:50 PM

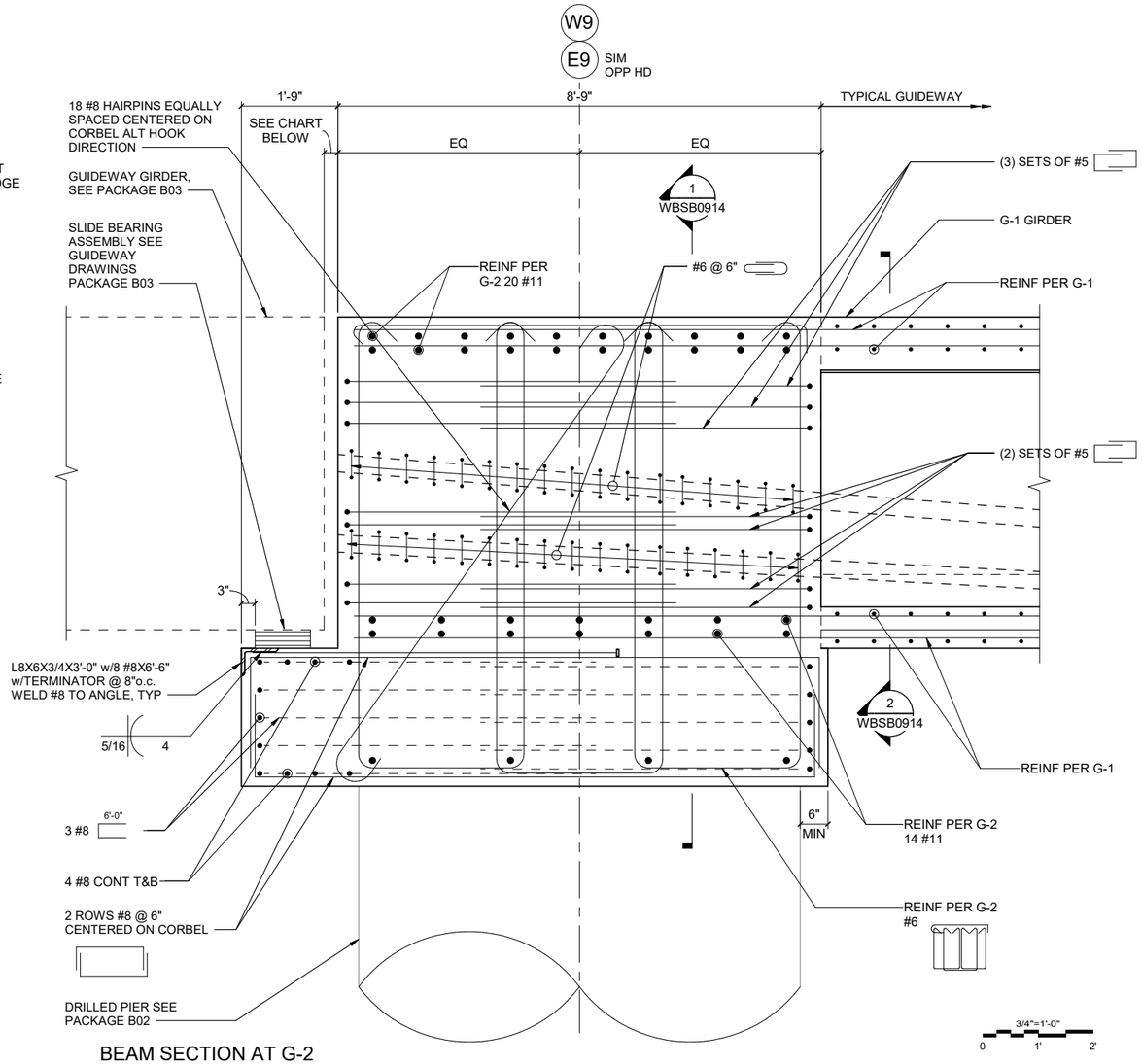
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BEAM ELEVATION G-4

1 WBSB0912 **DETAIL**
SCALE: 1/2" = 1'-0"

JOINT WIDTH AT TIME OF POUR								
AMBIENT TEMP	30°	40°	50°	60°	70°	80°	90°	100°
JOINT SIZE	3"	2 7/8"	2 1/2"	2 3/8"	2 1/4"	2"	1 7/8"	1 3/4"



BEAM SECTION AT G-2

2 WBSB0912 **DETAIL**
SCALE: 3/4" = 1'-0"

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Design Consultant
Gannett Fleming

Design Sub-Consultant

48434 SAMUEL E. SWEETEN Date signed 9/13/18 ARIZONA U.S.A. EXPIRES 9/30/19

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

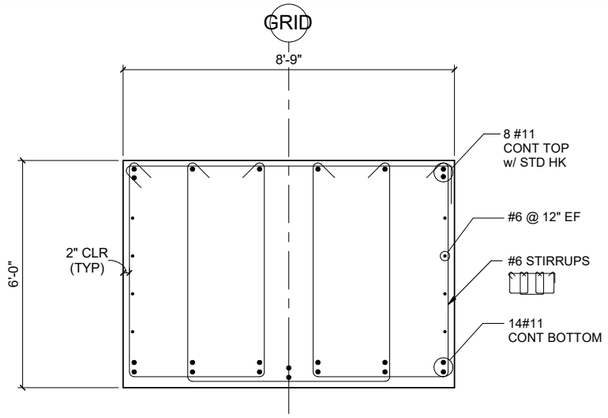
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CIP No.:	AV10000011	KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GIRDER DETAILS / ELEVATIONS

Package: **B04 - WBSB0912**
Sheet Reference No:
V6 - 203 of 260

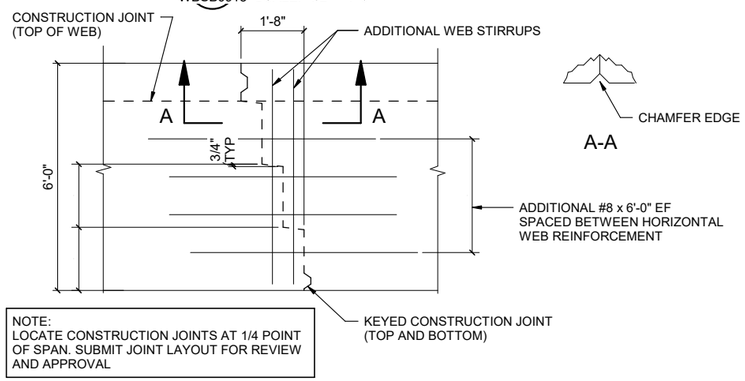
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Project Number: 062421
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G-2

1 **DETAIL**

WBSB0913 SCALE: 1/2" = 1'-0"



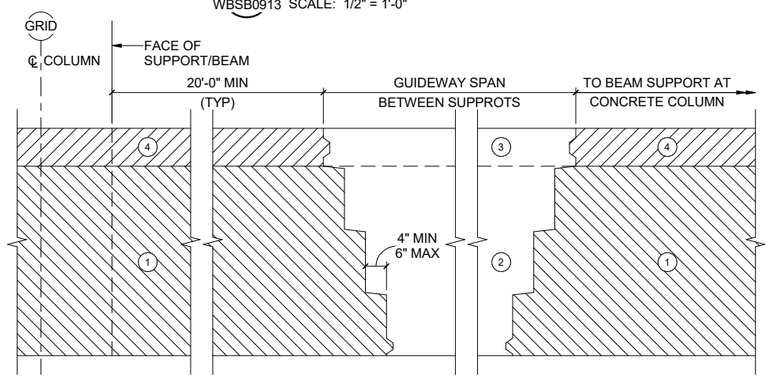
A-A

NOTE:
LOCATE CONSTRUCTION JOINTS AT 1/4 POINT OF SPAN. SUBMIT JOINT LAYOUT FOR REVIEW AND APPROVAL

WEB CONSTRUCTION JOINT

4 **DETAIL**

WBSB0913 SCALE: 1/2" = 1'-0"

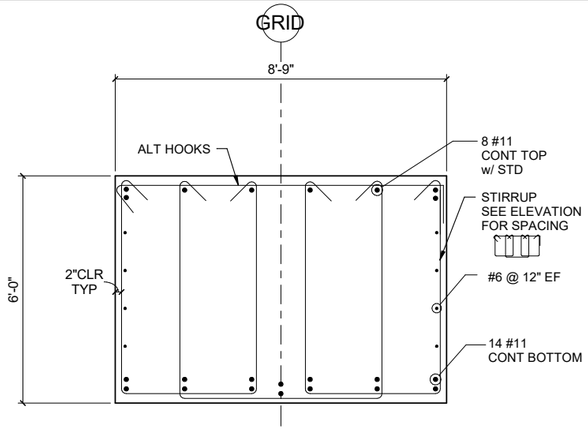


POURING SEQUENCE NOTES:

1. NUMBERS 1 & 2 INDICATE PLACING SEQUENCE OF BOTTOM SLAB, GIRDER WEB AND DIAPHRAGM CONCRETE
2. NUMBERS 2 & 3 INDICATE PLACING SEQUENCE OF TOP SLAB
3. THERE SHALL BE 12 HOUR MINIMUM INTERVAL BETWEEN ADJACENT POURS
4. SECTIONS 3 AND 4 MAY BE POURED CONSECUTIVELY BUT ONLY IN THE DIRECTION FROM 3 TO 4 AND A MINIMUM OF 12 HOURS AFTER THE ADJACENT 3 SECTION HAS BEEN POURED
5. THE CONTRACTOR SHALL SUBMIT A POUR SEQUENCE TO THE ENGINEER FOR APPROVAL PRIOR TO PLACING CONCRETE
6. AT CONTRACTOR'S OPTION OMIT JOINTS BETWEEN 1 & 2 AND 3 & 4 AND POUR CONTINUOUS

5 **POURING SEQUENCE DETAIL**

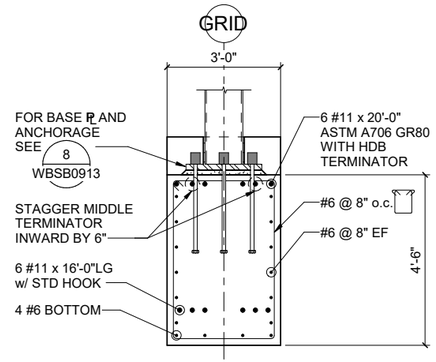
WBSB0913 SCALE: N.T.S.



G-3

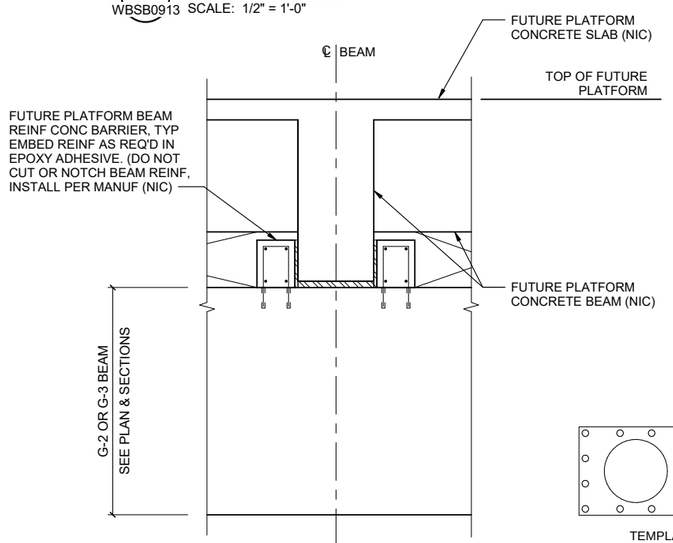
2 **DETAIL**

WBSB0913 SCALE: 1/2" = 1'-0"



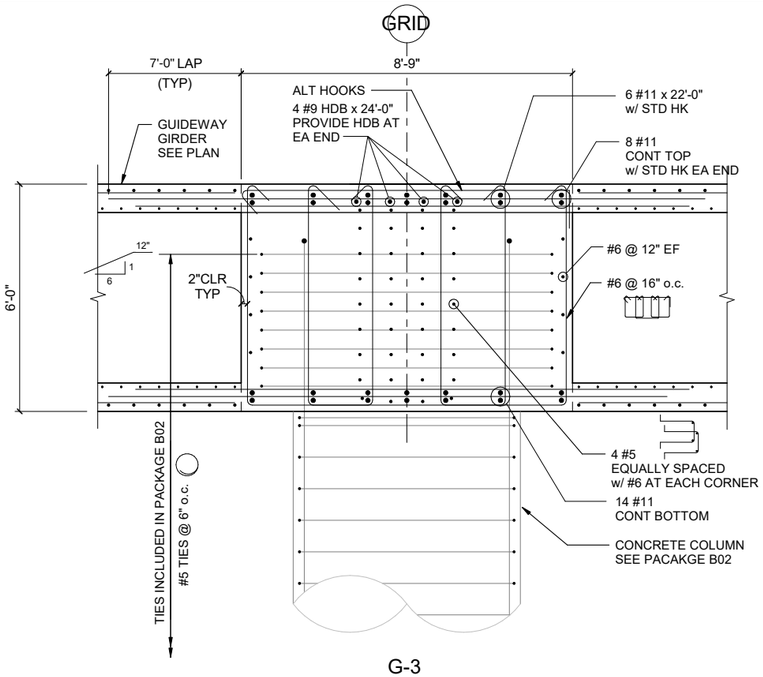
6 **SECTION**

WBSB0913 SCALE: 1/2" = 1'-0"



7 **FUTURE PLATFORM FRAMING DETAIL**

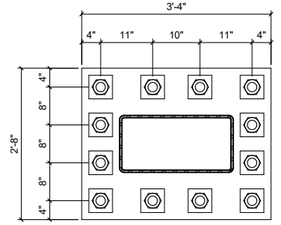
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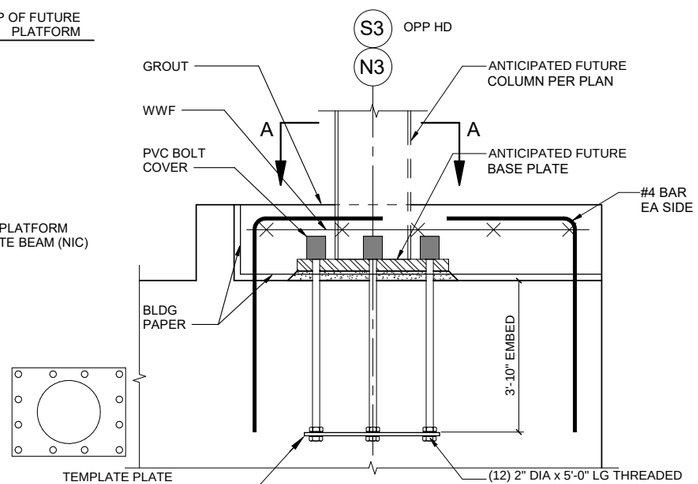
G-3

3 **DETAIL**

WBSB0913 SCALE: 1/2" = 1'-0"



A-A



8 **DETAIL**

WBSB0913 SCALE: 1" = 1'-0"

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STAGE 2 DESIGN

500 S 24TH STREET

PHOENIX, AZ 85034

PHX SKY TRAIN

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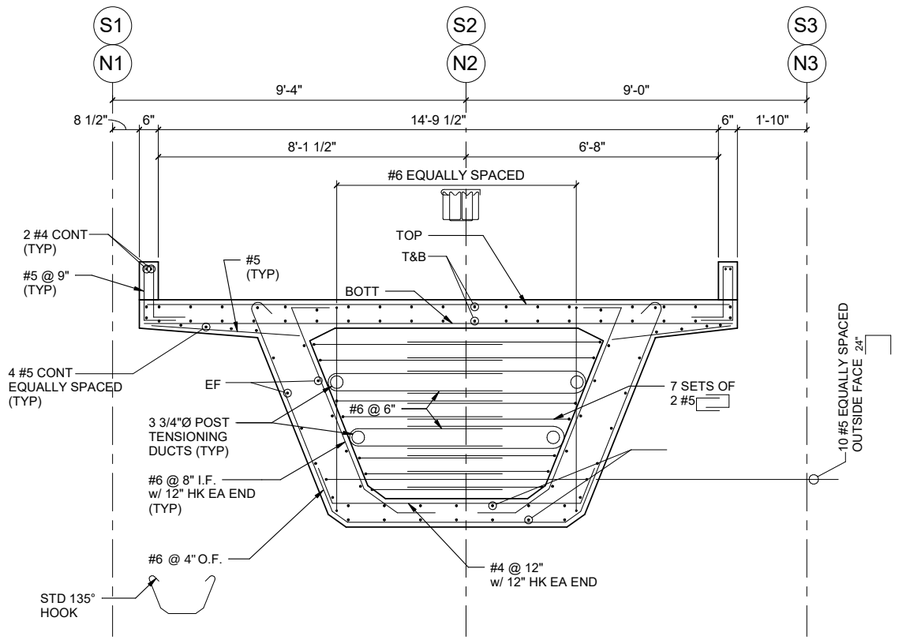
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY GIRDER DETAILS

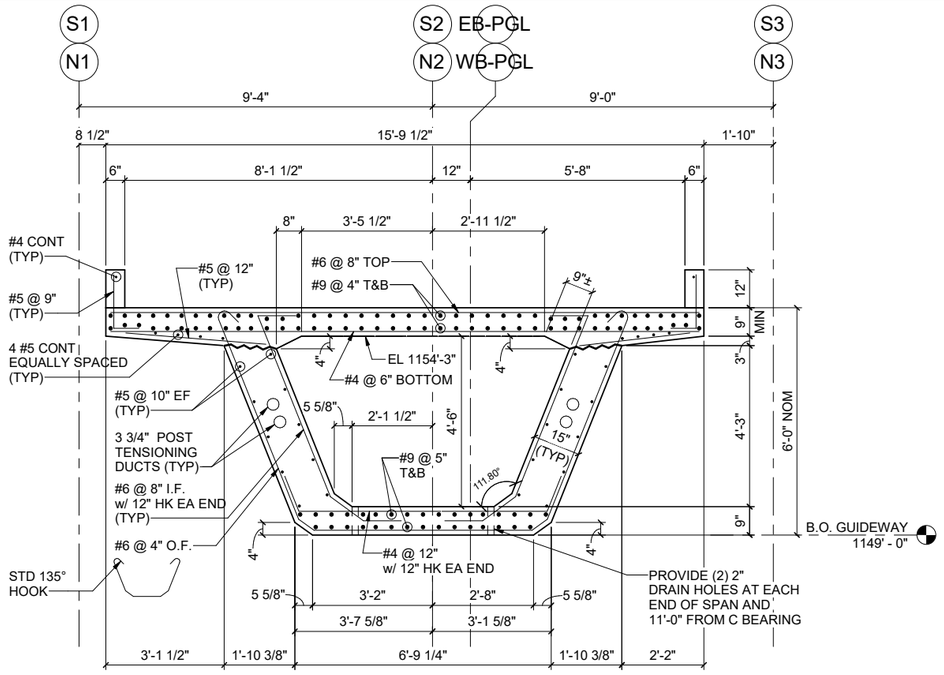
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Sheet Reference No: V6 - 204 of 260

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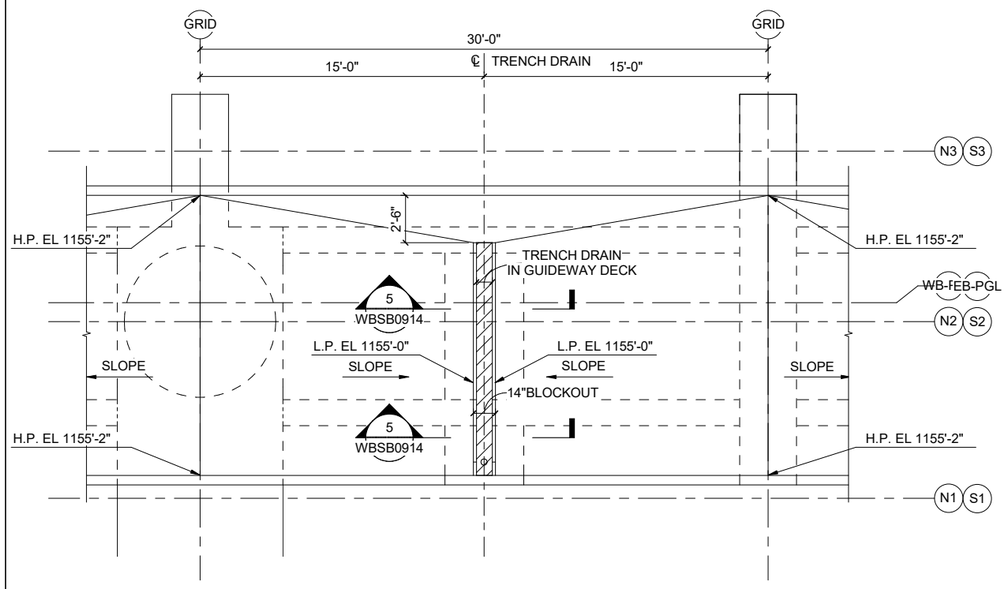


TYPICAL GUIDEWAY END



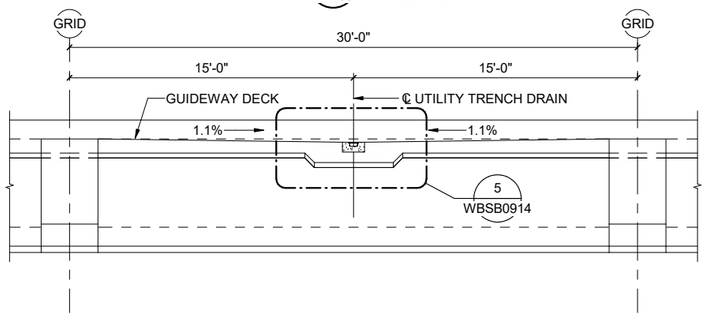
GUIDEWAY SECTION G-1

1 **DETAIL**
WBSB0914 SCALE: 1/2" = 1'-0"

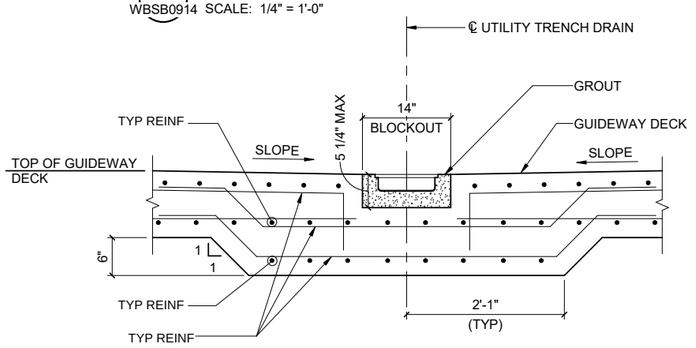


3 **DETAIL**
WBSB0914 SCALE: 1/4" = 1'-0"

2 **DETAIL**
WBSB0914 SCALE: 1/2" = 1'-0"



4 **GUIDEWAY SECTION AT TRENCH DRAIN**
WBSB0914 SCALE: 1/4" = 1'-0"



5 **TRENCH DRAIN DETAIL w/ THICKENED GUIDEWAY DECK**
WBSB0914 SCALE: 1" = 1'-0"

NOTE:

FOR GUIDEWAY NOTES SEE SHEET WBSB0910

NOTE:

* VERIFY ALL DIMENSIONS & ELEVATIONS w/ ARCHITECTURAL DRAWINGS

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

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

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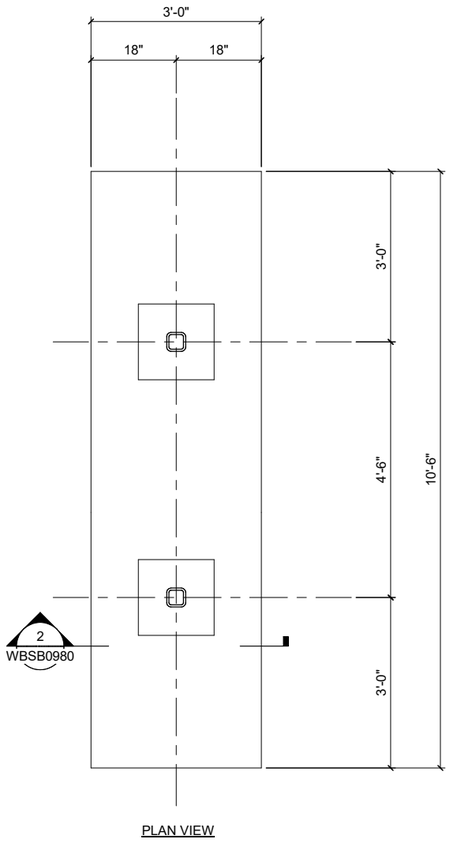
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
GUIDEWAY GIRDER DETAILS

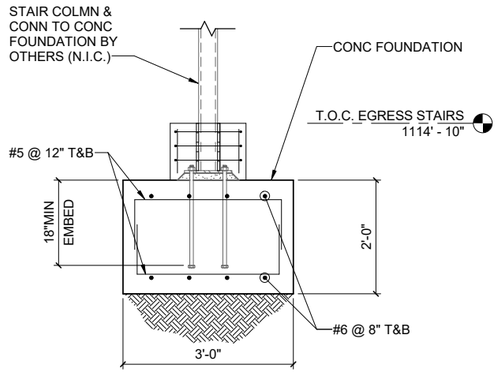
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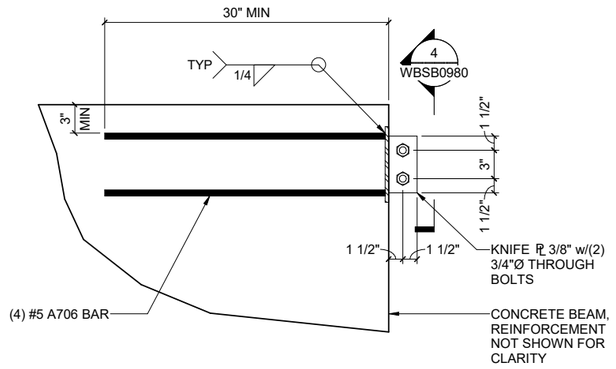
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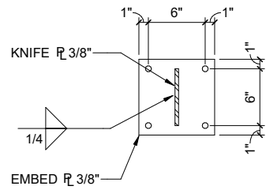
1 **STAIR FOUNDATION DETAIL**
WBSB0980 SCALE: 3/4" = 1'-0"



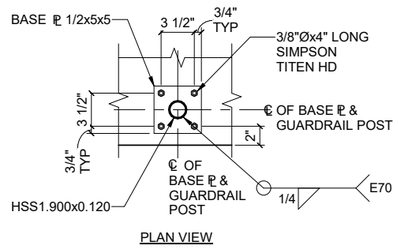
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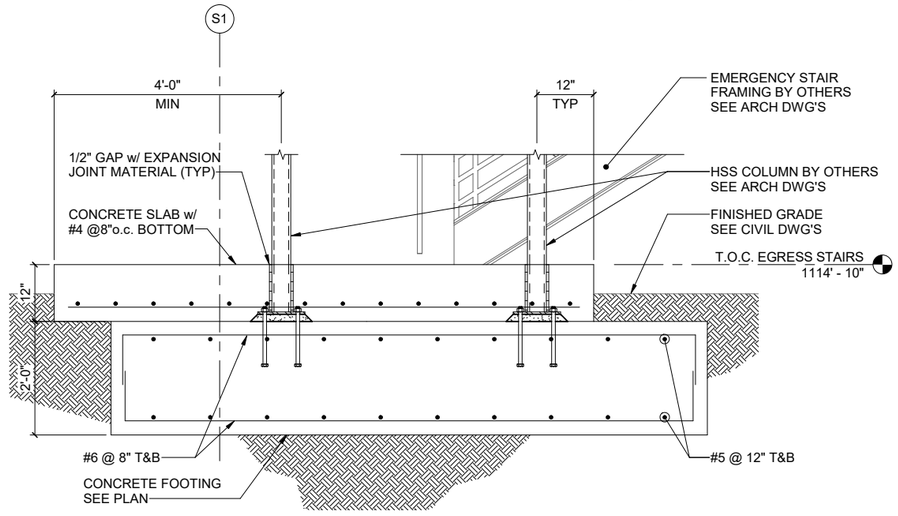
3 **LANDING BEAM CONN TO CONC BEAM**
WBSB0980 SCALE: 1 1/2" = 1'-0"



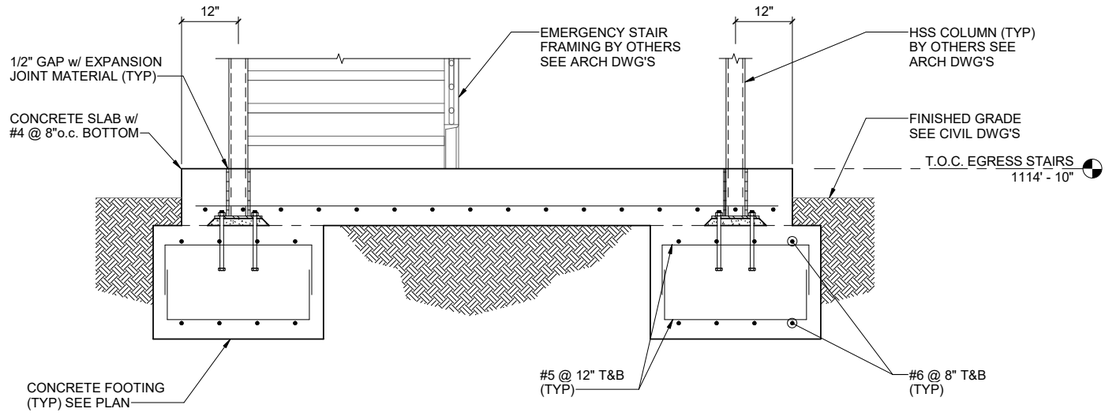
4 **EMBED PLATE**
WBSB0980 SCALE: 1 1/2" = 1'-0"



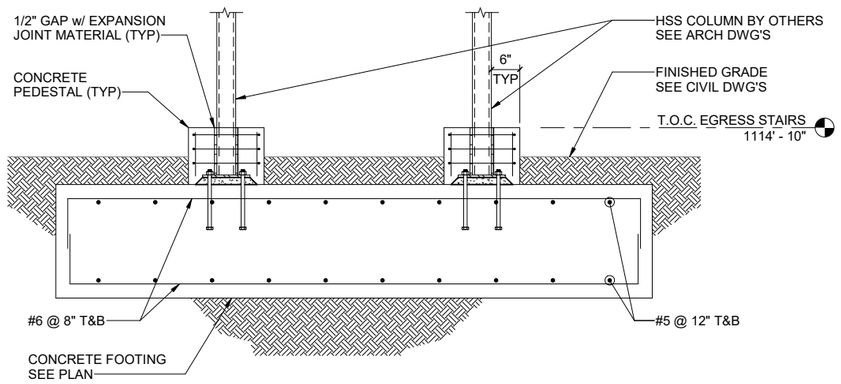
5 **GUARDRAIL BASEPLATE DETAIL**
WBSB0980 SCALE: 1 1/2" = 1'-0"



6 **DETAIL**
WBSB0980 SCALE: 3/4" = 1'-0"



7 **DETAIL**
WBSB0980 SCALE: 3/4" = 1'-0"



8 **DETAIL**
WBSB0980 SCALE: 3/4" = 1'-0"

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18

Design Sub-Consultant

Design Consultant
Gannett Fleming

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	SL
Checked by:	SES
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
STRUCTURAL
STRUCTURAL STAIR FRAMING DETAILS

Package: **B04 - WBSB0980**
Sheet Reference No: V6 - 206 of 260

Project Number: 062421
7/13/2018 5:20:56 PM
Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV100000011-S-2-WTSBXX01_R17_A360.rvt

ABBREVIATIONS

@	AT
AB	ABOVE
AD	AREA DRAIN, ACCESS DOOR
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
AST	ABOVEGROUND STORAGE TANK
AVG	AVERAGE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BDD	BACKDRAFT DAMPER, BOILER BLOWDOWN
BLW	BELOW
BTM	BOTTOM
C	COMMON
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CL	CENTER LINE
CLNG	CEILING
CM	COFFEE MAKER
CO	CLEANOUT
COL	COLUMN
COMP	COMPARTMENT
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUATION
CONT'D	CONTINUED
CP	CONDENSATE PUMP
CPVC	CHLORINATED POLYVINYL CHLORIDE
CTWS	COOLING TOWER MAKE-UP SUPPLY
CTWR	COOLING TOWER MAKE-UP RETURN
CV	CONTROL VOLUME, CHECK VALVE
CW	COLD WATER
Cx	COMMISSIONING
(D)	DEMOLISH, REMOVE
D	DRAIN
DB	DRY BULB TEMPERATURE, DECIBELS
DCW	DOMESTIC COLD WATER
DDC	DIRECT DIGITAL CONTROL
DEG, °	DEGREES
DESG	DESIGNATION
DF	DRINKING FOUNTAIN
DFU	DRAINAGE FIXTURE UNITS
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RECIRC
DIA, ø	DIAMETER
DISC	DISCONNECT
DN	DOWN
DS	DOWNSPOUT
DTW	DOMESTIC TEMPERED WATER
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
(E), EX	EXISTING
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION, ELEVATOR
(ER)	EXISTING RELOCATED
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXT	EXTERIOR
°F	DEGREES FAHRENHEIT
(F)	FUTURE
F	FIRE PROTECTION SUPPLY
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDV	FIRE DRAIN VALVE
FF	FINISHED FLOOR
FG	FUEL GAS
FHC	FIRE HOSE CABINET
FL, FLR	FLOOR
FLA	FULL LOAD AMPS
FO	FUEL OIL
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOW SWITCH
FSK	FLOOR SINK
FSP	FIRE STANDPIPE
FT, '	FOOT, FEET
FU	FIXTURE UNITS
G	GAS, GAS LINE
GA	GAUGE
GAL	GALLON, GALLONS
GDL	GUIDEWAY DRAIN LEADER
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GWH	GAS WATER HEATER
H	HEIGHT, HIGH
H2O	WATER
HB	HOSE BIB
HED	HOSE END DRAIN VALVE
HW	HOT WATER
HWH	HOT WATER HEATER
HWR	HOT WATER RECIRC
HWMV	HT WATER MIXING VALVE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HX	HEAT EXCHANGER
HZ	HERTZ (CYCLES PER SECOND)
ID	INSIDE DIAMETER
IM	ICE MAKER
IN, "	INCH, INCHES
IN WG	INCHES OF WATER GAUGE
INFO	INFORMATION
INT	INTERIOR
INV	INVERT ELEVATION
JC	JANITORS CLOSET
KW	KILOWATTS
LAV	LAVATORY
L	LEADER, LENGTH, LONG
LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
M	METER
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR, MFGR	MANUFACTURER
MIN	MINIMUM
MO	MOTOR OIL
MOD	MOTOR OPERATED DAMPER, MODULATING
MR	MOP RECEPTOR
MTD	MOUNTED
MTG	MOUNTING
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION AGENCY
NFWH	NON-FREEZE WALL HYDRANT
NG	NATURAL GAS
NIC	NOT IN CONTRACT
No	NUMBER
NO	NORMALLY OPENED
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OVERFLOW DRAIN
ODL	OVERFLOW DRAIN LEADER
OI	OIL INTERCEPTOR
OS&Y	OUTSIDE STEM & YOKE VALVE
OWS	OIL WATER SEPARATOR
P, PRESS	PRESSURE
PD	PRESSURE DROP
PLBG	PLUMBING
PNEU	PNEUMATIC
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
RDL	ROOF DRAIN LEADER
REQ'D	REQUIRED
RL	RAIN LEADER
RLA	RATED LOAD AMPS
RPZ	REDUCED PRESSURE ZONE
REF	REFRIGERATOR
RPM	REVOLUTIONS PER MINUTE
RT	RUNNING TRAP
RW	RECLAIMED WATER
RX	REMOVE EXISTING
S	SOIL
SA, SHK	SHOCK ARRESTOR
SAN	SANITARY, SOIL, WASTE
SANB	SANITARY BELOW SLAB
SD	STORM DRAIN
SF	SQUARE FEET
SH	SHOWER
SHT	SHEET
SK	SINK
SL	STORM LEADER
SP	SUMP PUMP
SQ	SQUARE
SQ FT	SQUARE FOOT, SQUARE FEET
SS	SERVICE SINK
S/S	STAINLESS STEEL
ST	STORM
STD	STANDARD
SW	STORM WATER
ΔT	TEMPERATURE DIFFERENTIAL
T, TEMP	TEMPERATURE
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TPL	TRAP PRIMING LINE
TPP	TRAP PRIMER PANEL
TW	TEMPERED WATER
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UR	URINAL
USF	UNDERGROUND SANDFILTER
V	VOLTS, VENT
VB	VACUUM BREAKER
VCO	VERTICAL CLEANOUT
VERT	VERTICAL
VTR	VENT THROUGH ROOF
W	WASTE LINE, WIDTH, WIDE
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET, WATER COLUMN
WCO	WALL CLEANOUT
WG	WATER GAUGE
WH	WATER HEATER, WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
WSFU	WATER SUPPLY FIXTURE UNITS
WT	WEIGHT
WW	WELL WATER
ZN	ZONE

PIPING, FITTINGS, AND VALVES

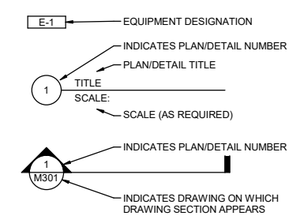
SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RECIRC/RETURN
—TW—	DOMESTIC TEMPERED WATER
—SAN—	SANITARY
	VENT
—D—	DRAIN
—CA—	COMPRESSED AIR
—CD—	CONDENSATE DRAIN
—RW—	RECLAIMED WATER
—WW—	WELL WATER
— IW —	INDUSTRIAL WASTE
— IDW —	INDIRECT WASTE
—G—	GAS
—FG—	FUEL GAS
—NG—	NATURAL GAS
— ST —	STORM WATER
—STO—	STORM WATER OVERFLOW
— F —	FIRE PROTECTION SUPPLY
—MUW—	MAKE UP WATER
—VAC—	VACUUM

SYMBOL	DESCRIPTION
	PIPING TURNING UP
	PIPING TURNING DOWN
	TEE DOWN
	PIPE BRANCH BOTTOM TAKEOFF
	PIPE BRANCH TOP TAKEOFF
	VALVE IN VERTICAL PIPE
	CAP
	FLOW DIRECTION
R/D	PIPE SLOPE RISE/DROP
	PIPE RISER UP/DOWN
	CONCENTRIC REDUCER/INCREASER
	ECCENTRIC REDUCER/INCREASER (FOB)
	UNION
	PIPE CONTINUATION
W H	EXPANSION LOOP (WxH)
	PIPE ANCHOR
	FLEXIBLE PIPE CONNECTOR
EJ	EXPANSION JOINT
	PIPE GUIDE
BFP	REDUCED PRESSURE ZONE BACKFLOW PREVENTOR
	HOSEBIB
	WALL HYDRANT
	WATER HAMMER ARRESTOR
	ROOF DRAIN
	ROOF DRAIN WITH OVERFLOW
	FLOOR DRAIN
	FLOOR CLEANOUT
CO	WALL CLEANOUT
M	WATER METER
MG	GAS METER

SYMBOL	DESCRIPTION
	SHUTOFF VALVE (BALL, GATE, BUTTERFLY)
	GATE VALVE
	GLOBE VALVE
	OUTSIDE STEM & YOKE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GAS COCK
	PRESSURE REDUCING VALVE
	CALIBRATED BALANCING VALVE
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	THREE-WAY MANUAL VALVE
S	SOLENOID VALVE
AAV	AUTOMATIC AIR VENT (EXTEND TO DRAIN)
MAV	MANUAL AIR VENT
	RELIEF/SAFETY VALVE
	STRAINER
	STRAINER WITH DRAIN VALVE AND CAP
	PRESSURE/TEMPERATURE TEST PORT
	AQUASTAT
H	PRESSURE GAUGE WITH COCK
	THERMOMETER
T	TEMPERATURE SENSOR
P	PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE TRANSDUCER
FS	FLOW SWITCH
FM	FLOW METER
WH	WATER HAMMER ARRESTOR
	PUMP

LINES AND REFERENCE SYMBOLS

SYMBOL	DESCRIPTION
	NEW WORK LINEWEIGHT
	DEMOLITION LINEWEIGHT
	EXISTING LINEWEIGHT
	FUTURE LINEWEIGHT
	CONNECTION OF NEW TO EXISTING
	TERMINATION POINT OF DEMOLITION
X	SHEET KEYED NOTE
	DRAWING REVISION NUMBER



GENERAL NOTES

1. NOT ALL ABBREVIATIONS, LINE TYPES, OR SYMBOLS MAY APPEAR ON THESE CONTRACT DOCUMENTS.
2. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE PERFORMED. THE DRAWINGS ARE NOT INTENDED TO SHOW EXACT LOCATIONS OR TO SHOW EVERY PIPE, FITTING, VALVE OR APPURTENANCE REQUIRED FOR A COMPLETE INSTALLATION. DO NOT SCALE DIMENSIONS FROM THESE DRAWINGS.
3. PROVIDE ALL LABOR AND MATERIALS REQUIRED FOR COMPLETE AND PROPERLY OPERATING PLUMBING SYSTEMS.
4. ALL MATERIALS, EQUIPMENT AND DEVICES, AS A MINIMUM, MEET THE REQUIREMENTS OF UL WHERE UL REQUIREMENTS ARE ESTABLISHED FOR THOSE ITEMS. ALL ITEMS SHALL BE CLASSIFIED BY UL AS SUITABLE FOR THE PURPOSE INTENDED.
5. CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE. PROVIDE ALL NECESSARY OFFSETS AND FITTINGS FOR A COMPLETE INSTALLATION.
6. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS.
7. COORDINATE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES. REWORK DUE TO THE LACK OF COORDINATION IS THE RESPONSIBILITY OF THE CONTRACTORS.
8. ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES, UNLESS NOTED OTHERWISE.
9. CONNECT WATER, WASTE AND VENT PIPING TO FIXTURES IN ACCORDANCE WITH SIZES INDICATED ON FIXTURE SCHEDULE.
10. RUN 2" MINIMUM SIZE WASTE PIPING BELOW GROUND INSIDE BUILDING REGARDLESS OF SIZE NOTED ON FIXTURE SCHEDULE.
11. SLOPE ALL SOIL, WASTE AND STORM WATER LINES 2 1/2" AND SMALLER AT 1/4 - INCH PER FOOT.
12. SLOPE ALL SOIL, WASTE AND STORM WATER LINES 3" AND LARGER AT 1/8 - INCH PER FOOT.
13. RUN PIPING CONCEALED, EXCEPT IN MECHANICAL ROOMS OR WHERE OTHERWISE INDICATED.
14. RUN CONCEALED PIPING, IN AREAS OF FREEZING, ON ROOM SIDE OF BUILDING INSULATION, UNLESS NOTED OTHERWISE.
15. WHERE PIPING IS RUN IN EXTERIOR WALLS OR AREAS OF POTENTIAL FREEZING PROVIDE AN ADDITIONAL 1" OF INSULATION.
16. FURNISH AND INSTALL ACCESS PANELS, WHETHER INDICATED OR NOT FOR ACCESS TO CONCEALED VALVES, TRAPS OR EQUIPMENT WHERE NO OTHER MEANS OF ACCESS IS PROVIDED. PAINT ACCESS PANELS TO MATCH WALL COVERING. PANEL SHALL BE OF TYPE TO MAINTAIN FIRE RATING OF STRUCTURE AND SIZED FOR CLEAR SERVICE ACCESS.
17. MOTOR OPERATED EQUIPMENT SHALL BE ISOLATED FROM THE BUILDING STRUCTURE BY THE INSTALLATION OF APPROVED VIBRATION HANGERS AND SUPPORTS.
18. APPROVED FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT PIPING CONNECTIONS TO MOTOR OPERATED EQUIPMENT.
19. PROVIDE EXPANSION JOINTS WHERE PIPES CROSS BUILDING EXPANSION OR SEISMIC JOINTS.
20. PROVIDE ONE PIECE PIPE ESCUTCHEONS AT ALL EXPOSED PENETRATIONS OF FLOOR, WALLS AND CEILINGS.
21. ALL EXPOSED HANGER RODS AND MISCELLANEOUS SUPPORTS SHALL BE GALVANIZED STEEL OR PLATED, INCLUDING CRAWL SPACE AND EXTERIOR INSTALLATIONS, UNLESS NOTED OTHERWISE.
22. INSTALL ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS, LOCAL, STATE AND FEDERAL.
23. UNLESS OTHERWISE NOTED, CONSTRUCTION MATERIALS AND EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF OFF THE SITE.
24. EXISTING EQUIPMENT AND MATERIALS SHALL REMAIN, UNLESS OTHERWISE NOTED.
25. COORDINATE WORK WITH EXISTING STRUCTURAL AND ARCHITECTURAL FEATURES AND PROVIDE OFFSETS AND FITTINGS AS REQUIRED.
26. PATCH ALL OPENINGS IN BUILDING CONSTRUCTION WHERE PIPING, ETC. IS REMOVED. PATCHING SHALL BE SAME MATERIAL AS SURROUNDING CONSTRUCTION. FINISH TO MATCH EXISTING TO THE EXTENT POSSIBLE.
27. WHERE EQUIPMENT, PIPING, CONDUIT, ETC. TO REMAIN IS SUPPORTED FROM EQUIPMENT AND/OR PIPING BEING REMOVED, EXTEND EXISTING HANGERS OR PROVIDE NEW HANGERS AND SUPPORTS AS REQUIRED TO RE-SUPPORT ITEMS FROM BUILDING STRUCTURE.
28. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES AND PIPING BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT OCCUR BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY UNDERGROUND UTILITIES.
29. SEAL ALL WALL AND FLOOR PENETRATIONS. SEAL ALL PENETRATIONS IN FIRE RATED WALLS AND FLOORS IN ACCORDANCE WITH UL LISTED ASSEMBLIES.

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Consultant: Gannett Fleming

Design Sub-Consultant

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	SB
Drawn by:	SB
Checked by:	HL
Date:	07/13/18
Dwg scale:	
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

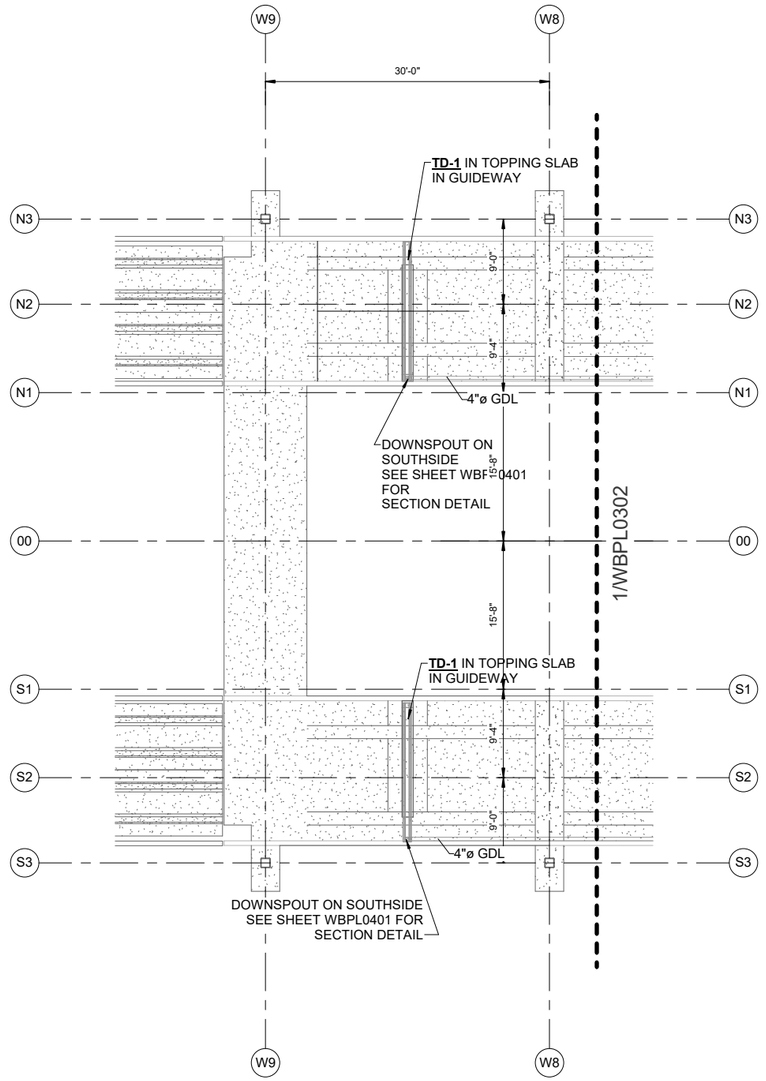
WEST TERMINAL STATION
PLUMBING
SYMBOLS LEGEND AND ABBREVIATIONS

Package: B04 - WBPL0001

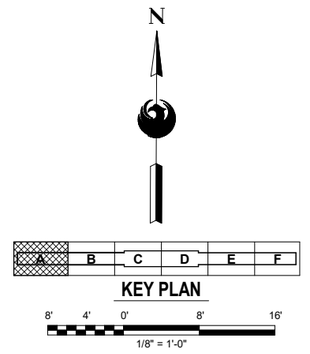
Sheet Reference No: V6 - 207 of 260

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Project Number: ##### 7/10/2018 11:46:25 AM



1 WBPL0301 **PLUMBING GUIDE WAY LEVEL - AREA A**
SCALE: 1/8" = 1'-0"



Design Consultant
Gannett Fleming

Design Sub-Consultant

66328
HITEN
SHETH
07/13/18

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	SB
Drawn by:	SB
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Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
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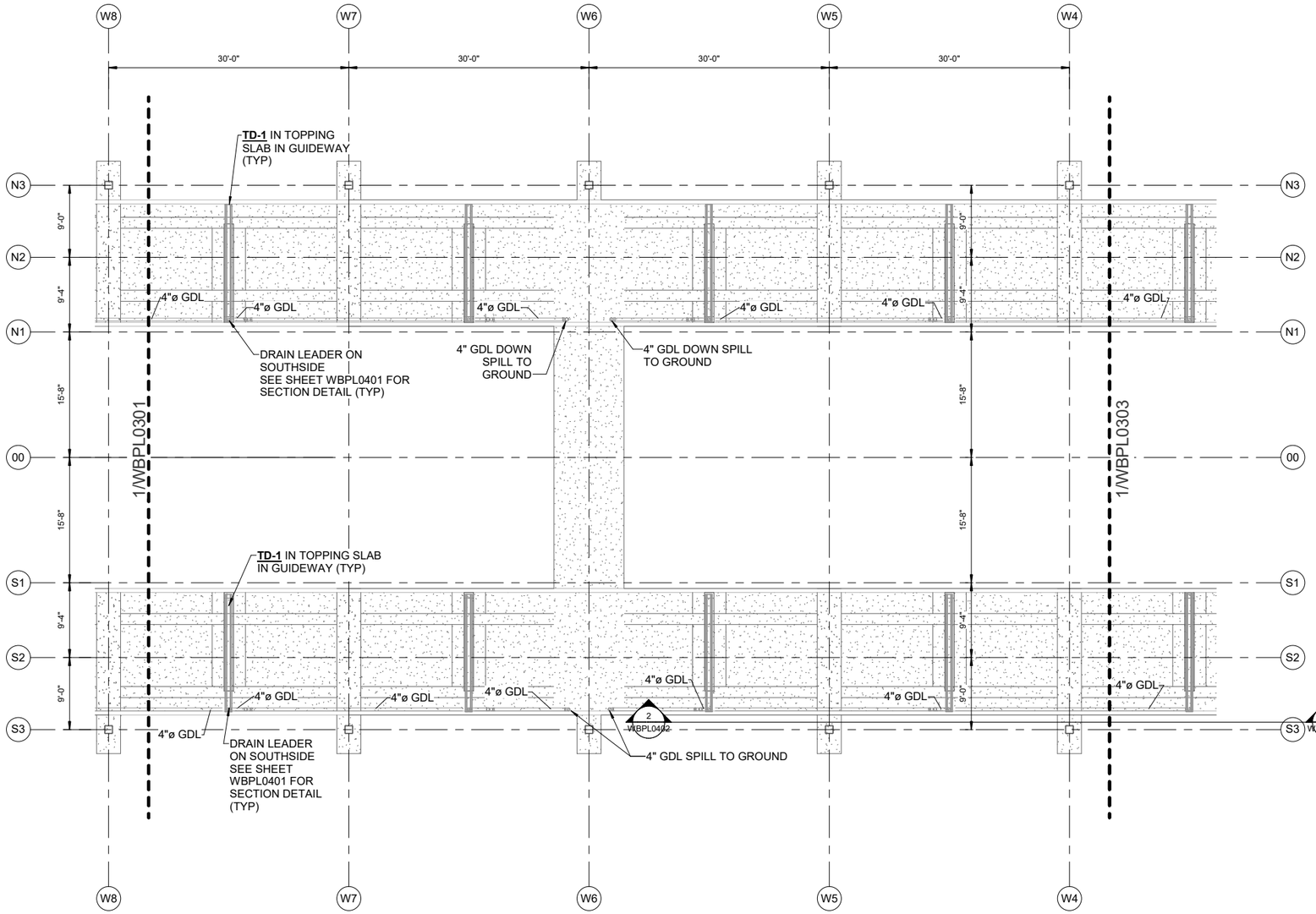
STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
PLUMBING
GUIDEWAY LEVEL AREA A

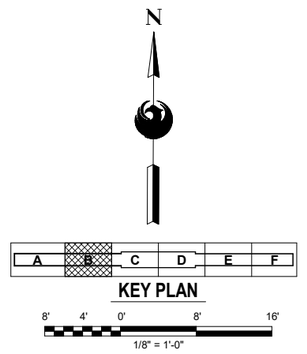
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V6 - 208 of 260

Project Number: ######
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1 WBPL0302 **PLUMBING GUIDE WAY LEVEL - AREA B**
SCALE: 1/8" = 1'-0"



Design Consultant
Gannett Fleming

Design Sub-Consultant

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	SB	Drawn by:	SB	Checked by:	HL	Date:	07/13/18
Dwg scale:	1/8" = 1'-0"	CIP No.:	AV10000011	KIVA No.:	07-5204		

STAGE 2 - B04 DESIGN SUBMISSION

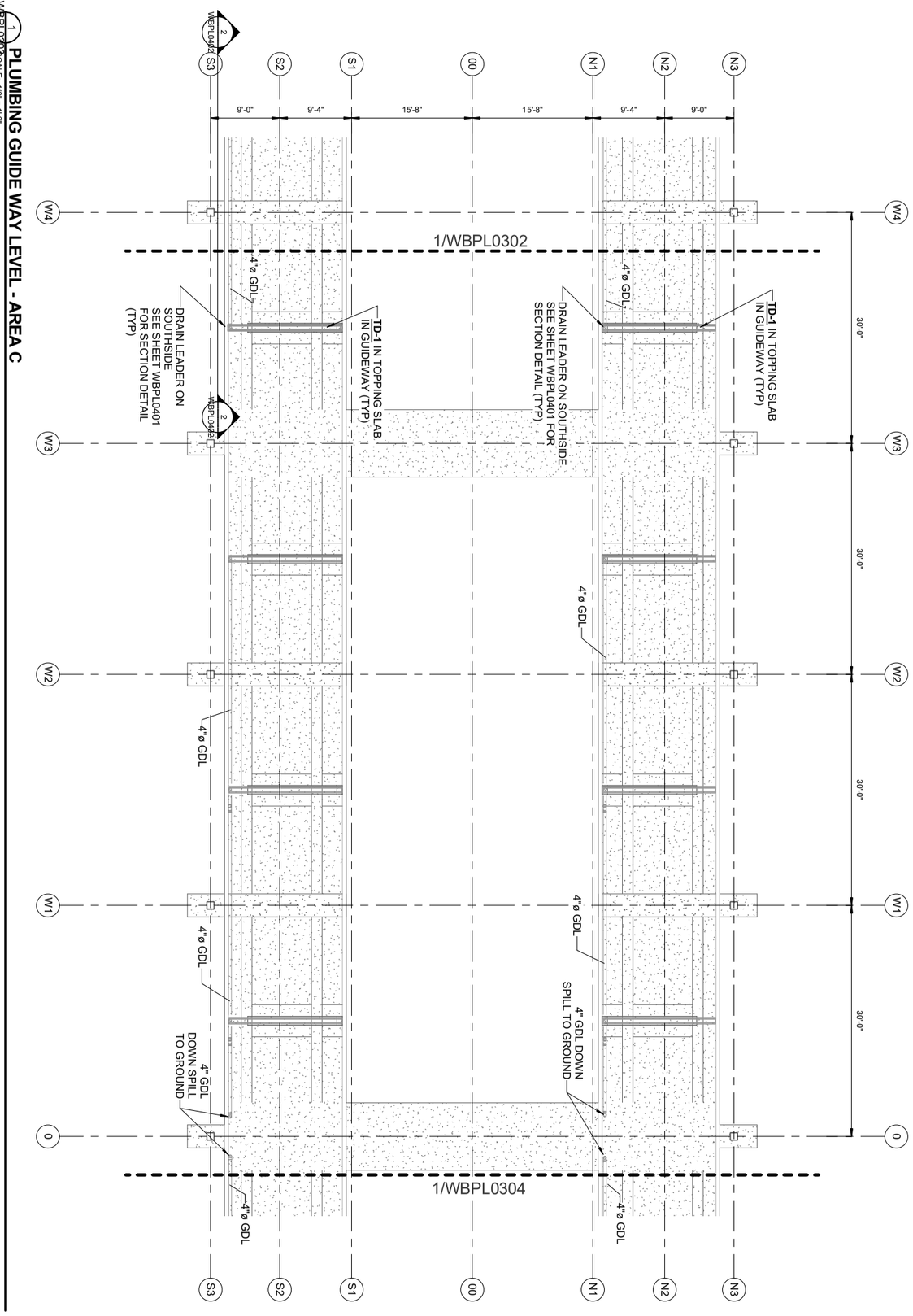
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PLUMBING
GUIDEWAY LEVEL AREA B

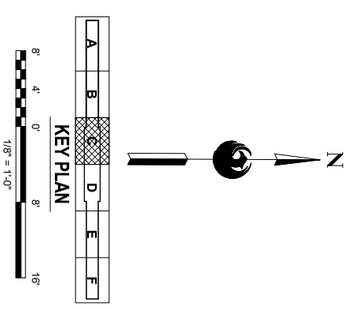
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Sheet Reference No:
V6 - 209 of 260

Project Number: #####
7/10/2018 11:46:39 AM

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Package: B04 - WBPL0303 V6 - 210 of 260	STAGE 2 - B04 DESIGN SUBMISSION	Designed by: SB Drawn by: SB Checked by: HL Date: 07/13/18 Dwg scale: 1/8" = 1'-0" CIP No.: AV10000011 KIVA No.: 07-5204	PHX DVT GYR CITY OF PHOENIX AVIATION DEPARTMENT

WEST TERMINAL STATION
PLUMBING
GUIDEWAY LEVEL AREA C

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

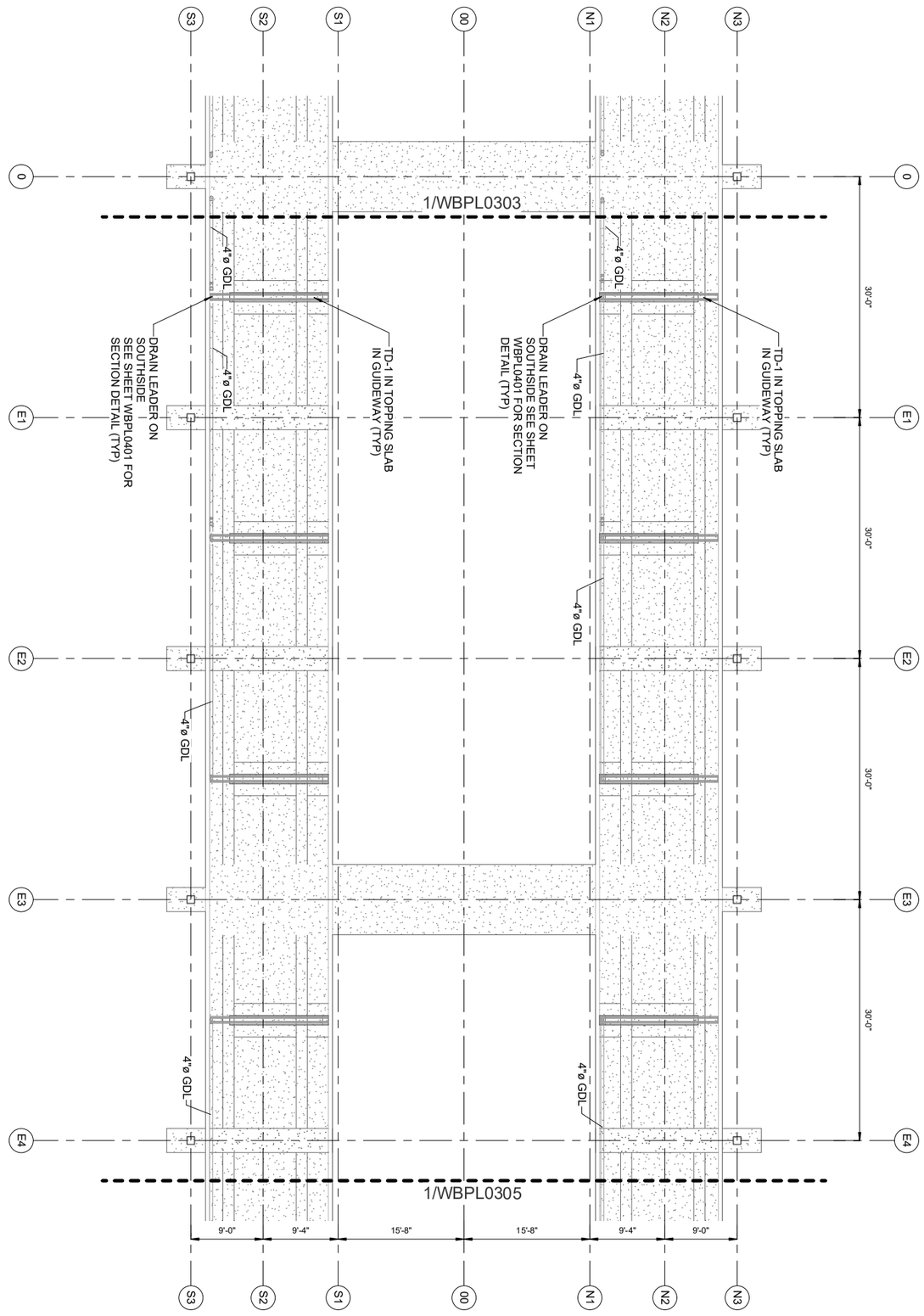
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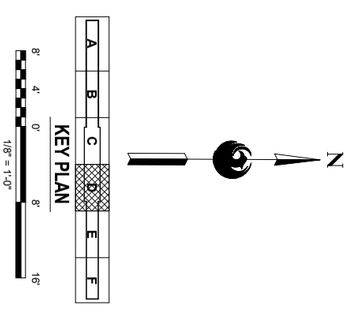
NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

REGISTERED PROFESSIONAL ENGINEER
66328
HITEN SHETH
EXPIRES: MAY 30, 18
Design Sub-Consultant
Design Consultant
Gannett Fleming

Sheet Reference No: WBPL0303

1 WBPL0304 **PLUMBING GUIDE WAY LEVEL - AREA D**
SCALE: 1/8" = 1'-0"





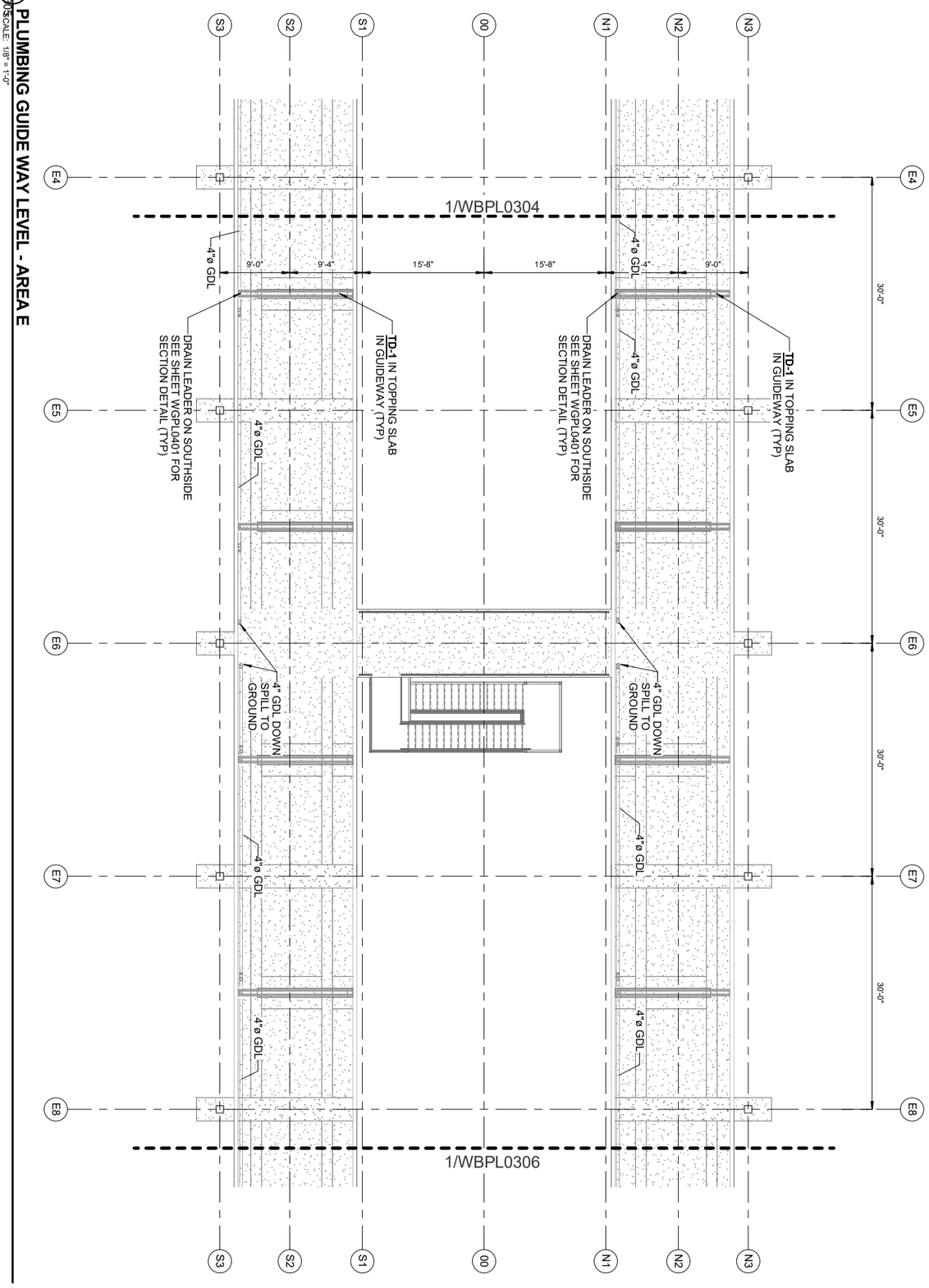
Package: B04 - WBPL0304 V6 - 211 of 260	STAGE 2 - B04 DESIGN SUBMISSION		PHX DVT GYR CITY OF PHOENIX AVIATION DEPARTMENT
Sheet Reference No:	**WEST TERMINAL STATION PLUMBING GUIDEWAY LEVEL AREA D**	Designed by: SB Drawn by: SB Checked by: HL Date: 07/13/18 Dwg scale: 1/8" = 1'-0" CIP No.: AV10000011 KIVA No.: 07-5204	PHX SKY TRAIN STAGE 2 DESIGN 500 S 24TH STREET PHOENIX, AZ 85034

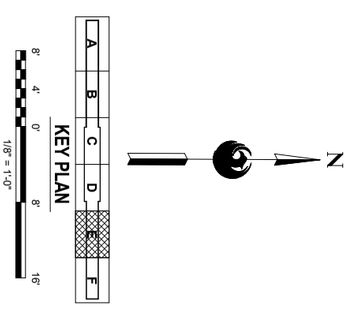
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

REGISTERED PROFESSIONAL ENGINEER
66328
HITEN SHETH
Hiten D Sheth
EXPIRES: MAY 30, 18
Design Sub-Consultant
Design Consultant
Gannett Fleming

1 WBPL0305 **PLUMBING GUIDE WAY LEVEL - AREA E**
SCALE: 1/8" = 1'-0"



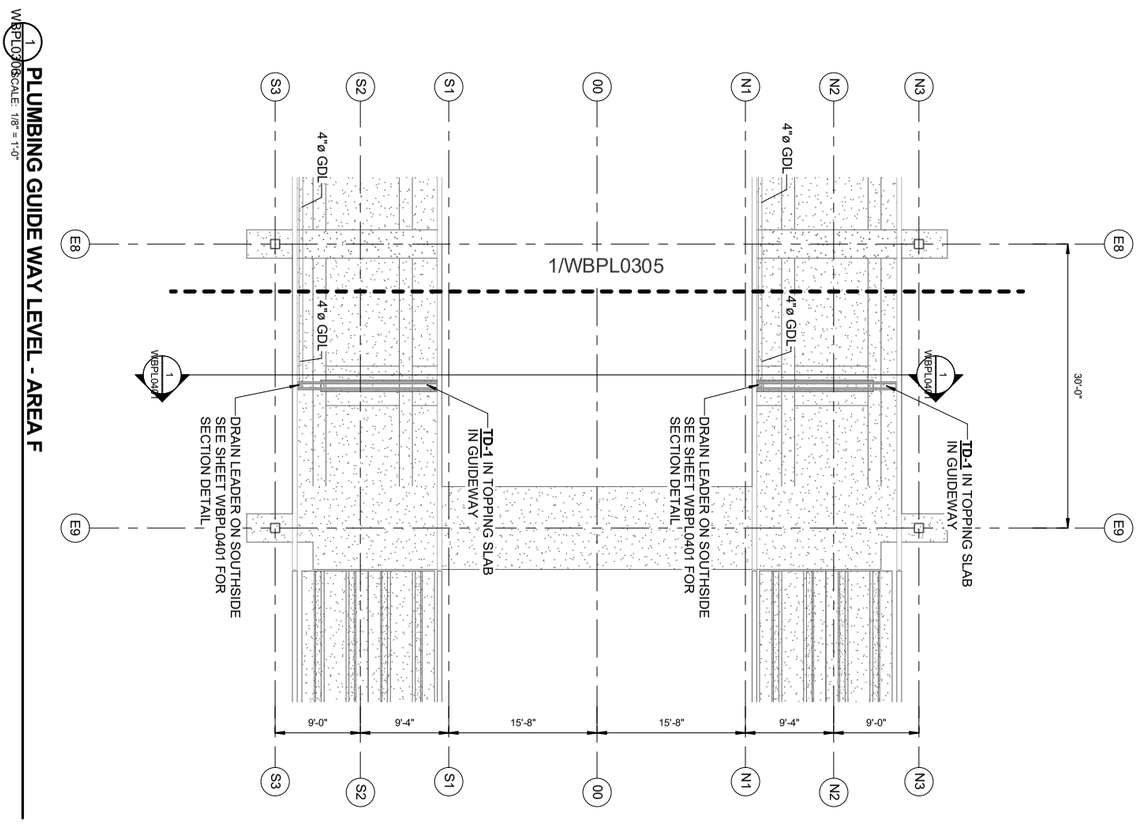


Package: **B04 - WBPL0305** Sheet Reference No: V6 - 212 of 260	STAGE 2 - B04 DESIGN SUBMISSION		PHX SKY TRAIN STAGE 2 DESIGN 500 S 24TH STREET PHOENIX, AZ 85034
	WEST TERMINAL STATION PLUMBING GUIDEWAY LEVEL AREA E	Designed by: SB Drawn by: SB Checked by: HL Date: 07/13/18 Dwg scale: 1/8" = 1'-0" CIP No.: AV10000011 KIVA No.: 07-5204	PHX DVT GYR CITY OF PHOENIX AVIATION DEPARTMENT

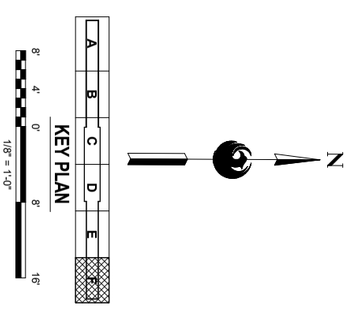
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HITEN SHETH 66328 EXPIRES: MAY 30, 18
Design Sub-Consultant
Design Consultant
Gannett Fleming



PLUMBING GUIDE WAY LEVEL - AREA F



Package: **B04 - WBPL0306**
Sheet Reference No: V6 - 213 of 260

STAGE 2 - B04 DESIGN SUBMISSION

WEST TERMINAL STATION
PLUMBING
GUIDEWAY LEVEL AREA F

Designed by:	SB
Drawn by:	SB
Checked by:	HL
Date:	07/13/18
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

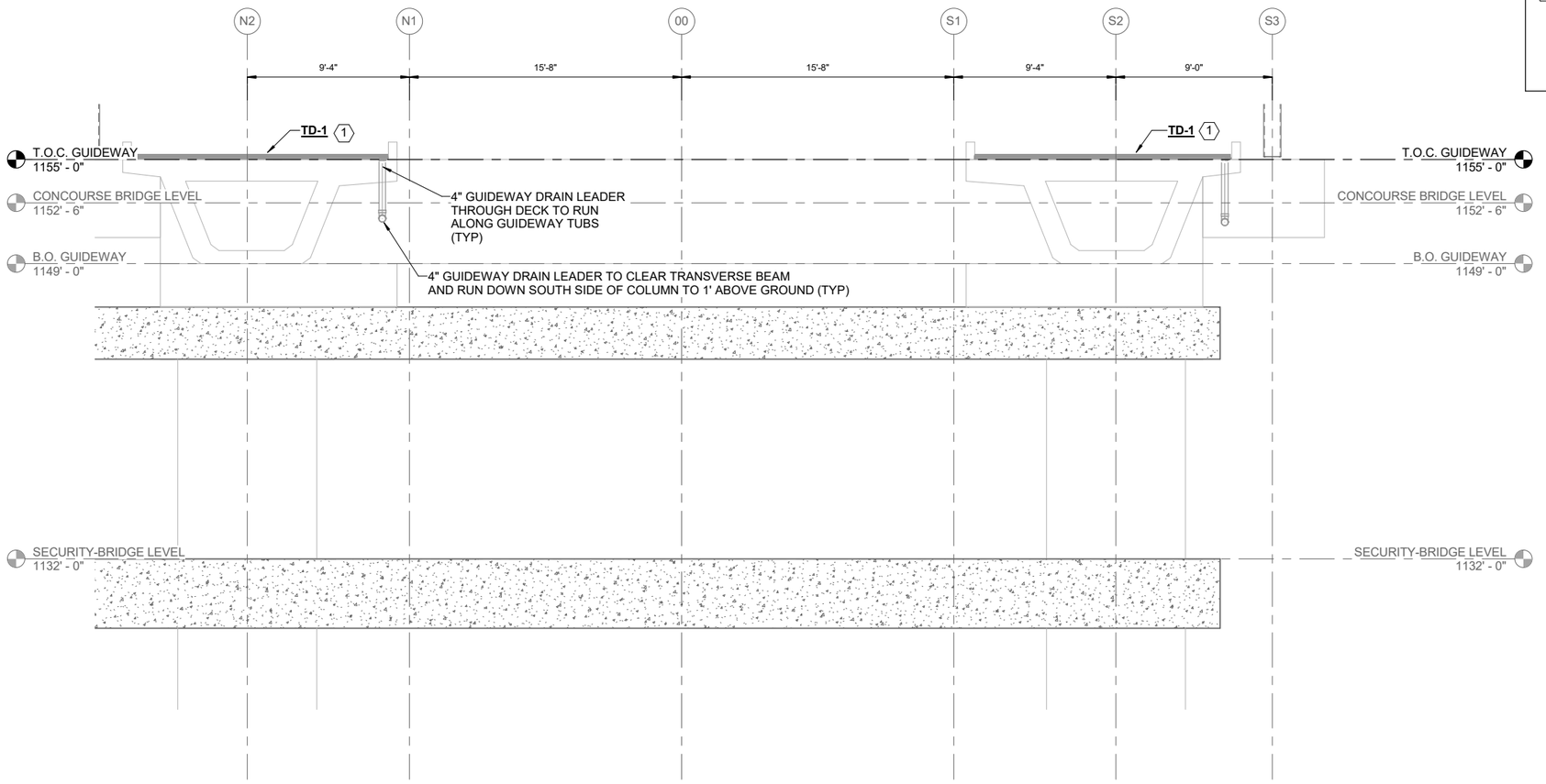
PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICAIL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

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66328
HITEN
SHETH
REGISTERED
PROFESSIONAL
ENGINEER
Hiten D Sheth
EXPIRES: 06/30/18

Design Sub-Consultant

Design Consultant
Gannett Fleming



1 **SECTION LOOKING EAST**
SCALE: 1/4" = 1'-0"

KEY NOTES

TRENCH DRAIN (TD-1):

1 TRENCH DRAIN, ZURN Z806, 6" WIDE FRP TRENCH DRAIN SYSTEM, PRESLOPED SYSTEM WITH HEAVY DUTY GALVANIZED STEEL GRATE WITH STEEL CHANNEL FRAME. TRENCH SECTIONS # 1001 AND # 1002 CUT TO LENGTH AS REQUIRED, INTERLOCKING ENDS, GRATING LOCKDOWN ATTACHMENTS, TIE-IN STRAPS AND ANCHORS, END CAPS AND BOTTOM OUTLET REQUIRED. SIZE OUTLET TO MATCH PIPING SIZED ON PLANS. TRENCH TO RUN ACROSS THE ENTIRE WIDTH OF THE GUIDEWAY.

66328
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SHETH
07/13/18
Design Sub-Consultant
Design Consultant
Gannett Fleming

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

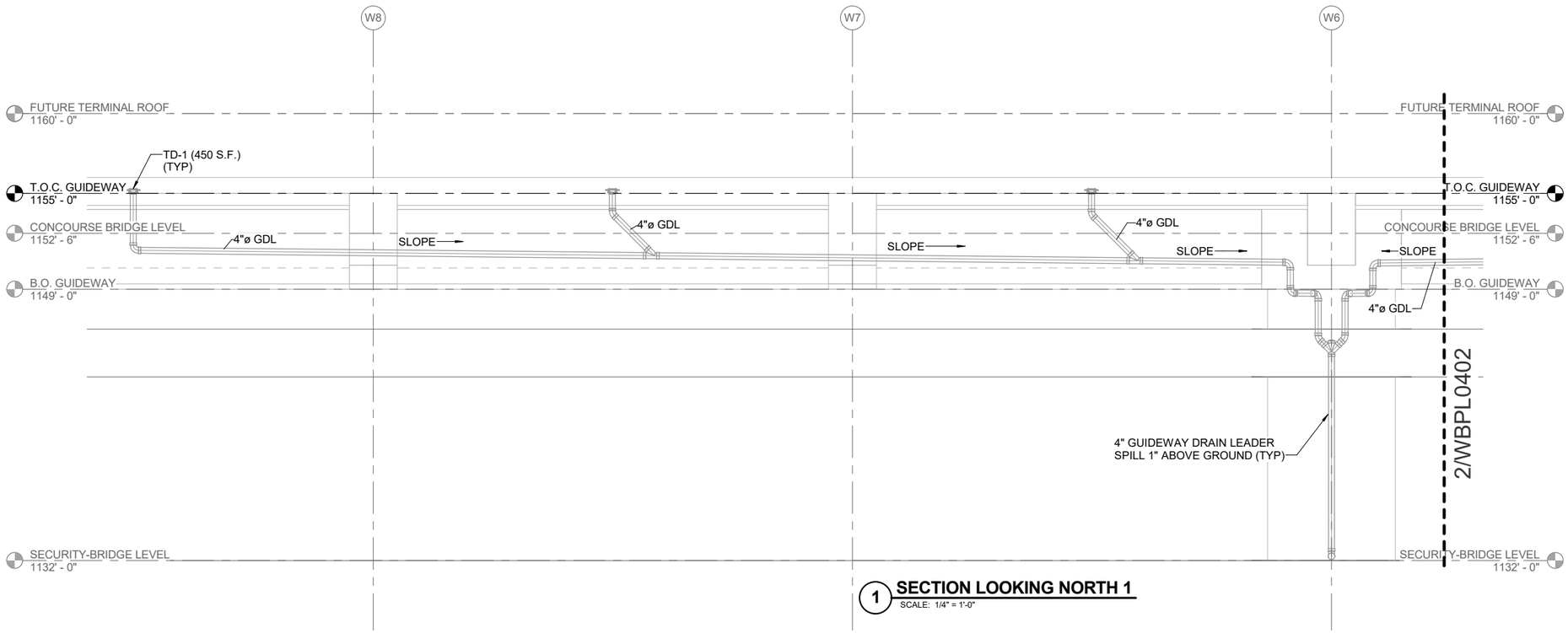
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Drawn by:	SB
Checked by:	HL
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

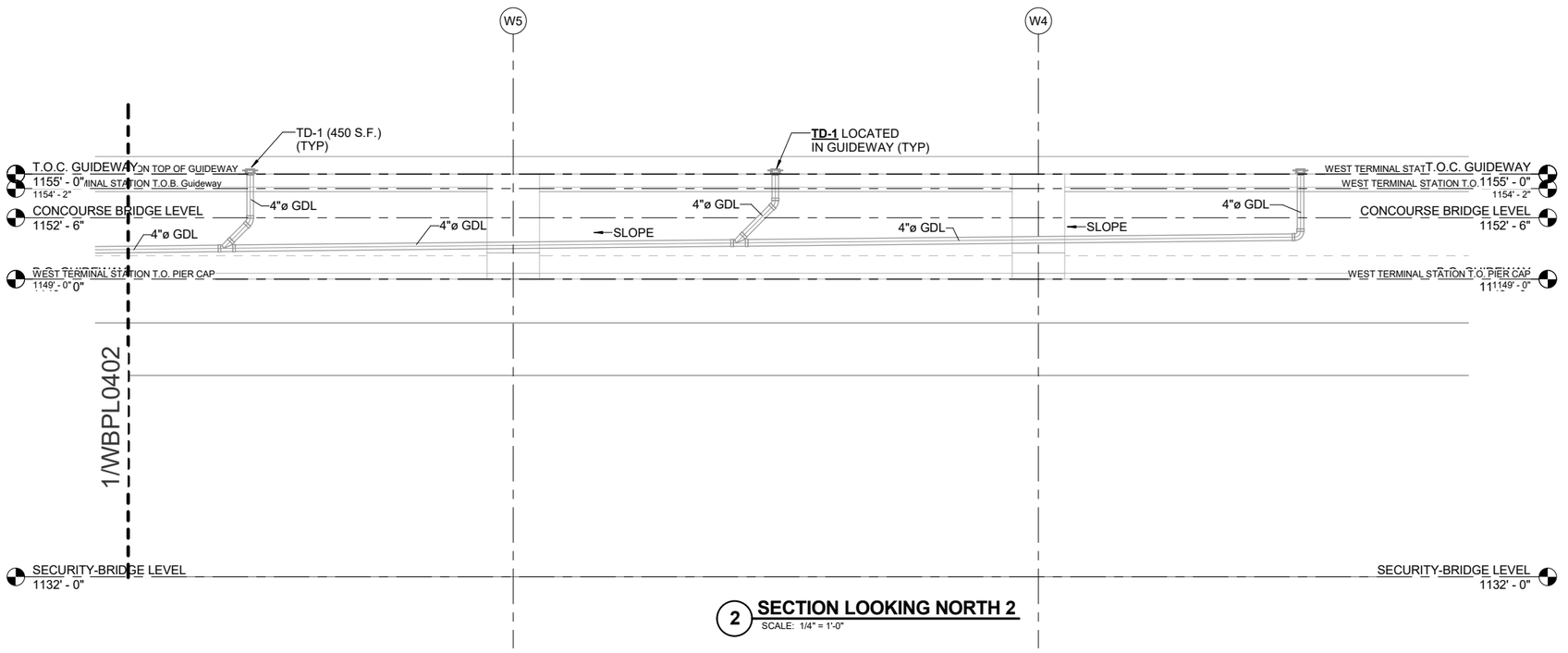
WEST TERMINAL STATION
PLUMBING
SECTIONS

Package: **B04 - WBPL0401**
Sheet Reference No:
V6 - 214 of 260

Project Number: #####
7/10/2018 11:47:10 AM
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-WTPLXX01_R17_A360.rvt



1 **SECTION LOOKING NORTH 1**
SCALE: 1/4" = 1'-0"



2 **SECTION LOOKING NORTH 2**
SCALE: 1/4" = 1'-0"

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NO.	DATE
REVISIONS / SUBMISSIONS	
SUBMITTED FOR REVIEW	04/06/18
ISSUED FOR CONSTRUCTION	07/13/18

Design Sub-Consultant

Design Consultant
Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

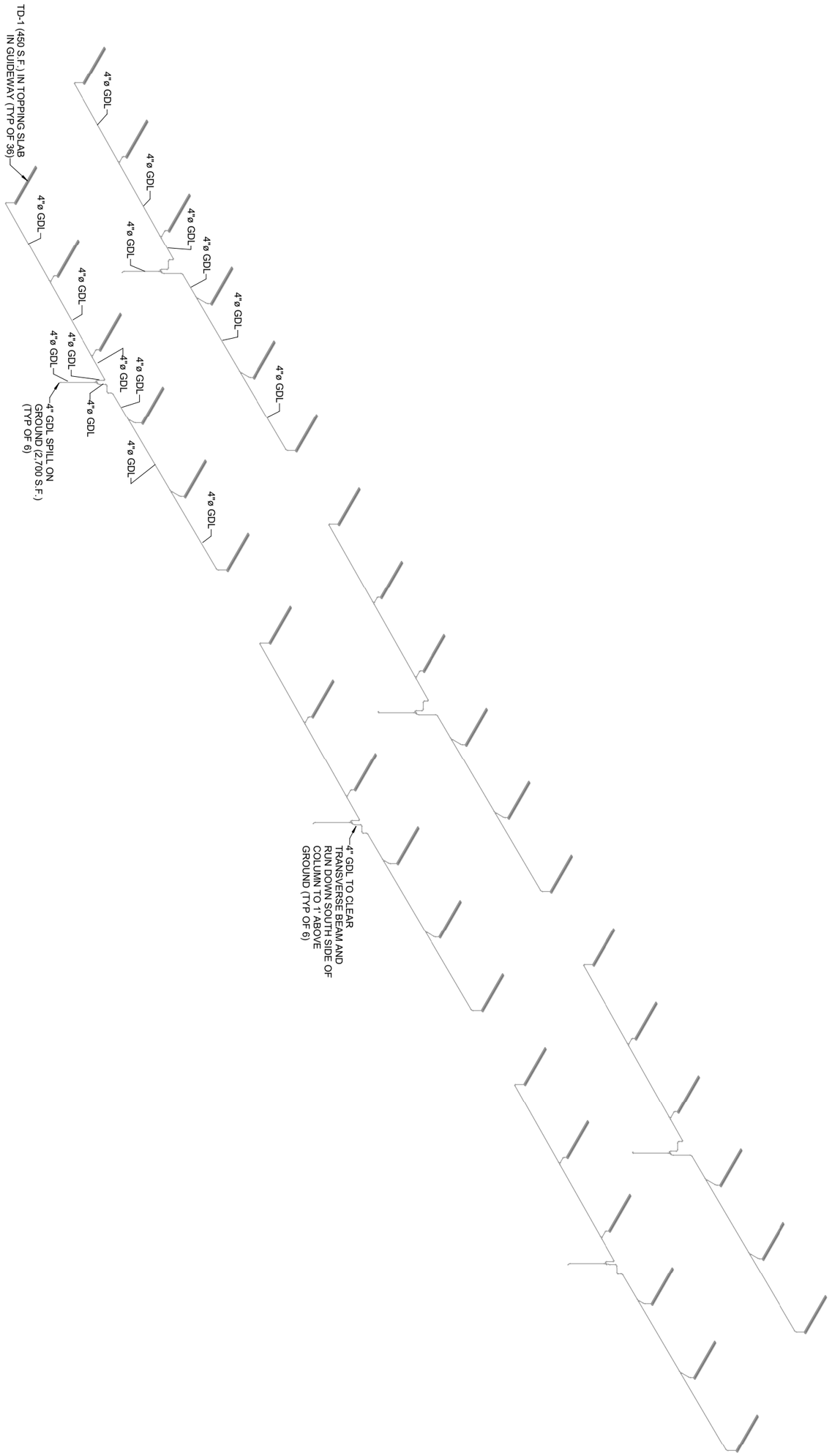
PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	SH
Drawn by:	SH
Checked by:	DT
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

WEST TERMINAL STATION
PLUMBING
SECTIONS

Package: B04 - WBPL0402
Sheet Reference No:
V6 - 215 of 260

Project Number: #####
7/10/2018 11:47:17 AM
Local File:BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-WTPLXX01_R17_A360.rvt



1 **GUIDEWAY ISOMETRIC**
SCALE:

NOTES:
1. UNLESS OTHERWISE NOTED GDL PIPING IS 4".

Package: **B04 - WBPL0501** Sheet Reference No: V6 - 216 of 260

WEST TERMINAL STATION
PLUMBING
GUIDEWAY ISOMETRIC

Designed by:	Designer
Drawn by:	Author
Checked by:	Checker
Date:	07/13/18
Dwg scale:	
CIP No.:	AV10000011
KIVA No.:	07-5204

PHX DVT GYR
CITY OF PHOENIX AVIATION DEPARTMENT

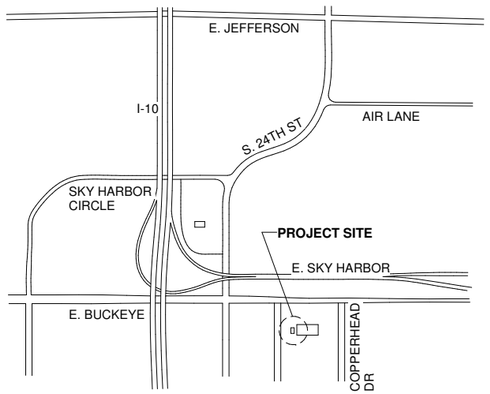
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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66328
HITEN SHETH
EXPIRES: 06/30/18
Design Sub-Consultant
Design Consultant
Gannett Fleming

VICINITY MAP



PROJECT NOTES

DRAWING NUMBERING KEY

ACAR-0301

- USER DEFINED DESIGNATOR
- SHEET / MODEL DESIGNATOR
  - 00. GENERAL NOTES, SYMBOLS, BUILDING SUMMARY
  - 03. FLOOR / ROOF PLANS
  - 12. DETAILS / SCHEDULE
- DISIPLINE DESIGNATOR
  - AR. ARCHITECTURAL
- SECTOR DESIGNATOR
  - AC. COB - CENTRAL PLANT BUILDING

FIRE CLASSIFICATION RATING

BUILDING ELEMENT	TYPE II A	TYPE II **B**
STRUCTURAL FRAME	1	**0**
BEARING WALLS		
EXTERIOR	1	**0**
INTERIOR	1	**0**
NONBEARING WALLS/PARTITIONS		
INTERIOR	0	**0**
FLOOR CONSTRUCTION		
INCLUDING SUPPORTING BEAMS AND JOISTS	1	**0**
ROOF CONSTRUCTION		
INCLUDING SUPPORTING BEAMS AND JOISTS	1	**0**

GENERAL NOTES

1. ALL THE CONSTRUCTION WORK SHALL COMPLY WITH ALL, FEDERAL, STATE AND LOCAL CODES, ORDINANCES, RULES AND REGULATIONS:
   APPLICABLE BUILDING CODES:
   2012 INTERNATIONAL BUILDING CODE W/ 2012 IECC SUPPLEMENT EDITION
   2012 INTERNATIONAL FIRE CODE
   2012 INTERNATIONAL MECHANICAL CODE
   2012 UNIFORM PLUMBING CODE
   2011 NATIONAL ELECTRICAL CODE/ NFPA-70
   2010 ASME A17.1
   2012 ICC/ANSI A117.1 2010 ADAAG
   CITY OF PHOENIX AMENDMENTS

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO PERFORMING ANY WORK. ALL DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT BEFORE OR DURING CONSTRUCTION, PRIOR TO COMMENCING WITH THE WORK.

3. ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS WILL BE RESPONSIBLE FOR PROTECTING FLOORS, WALLS, WOODWORK, AND ALL OTHER ITEMS FROM MARS, STAINS AND OTHER DAMAGE RESULTING FROM THEIR PERFORMANCE ON THIS PROJECT.

4. INSTALLATION OF GLASS SHALL CONFORM TO THE REQUIREMENTS OF SAFETY 16-CFR-120. GLASS IN LOCATIONS SUBJECT TO IMPACT SHALL MEET THE REQUIREMENTS OF SECTION 2406 OF THE 2012 I.B.C.

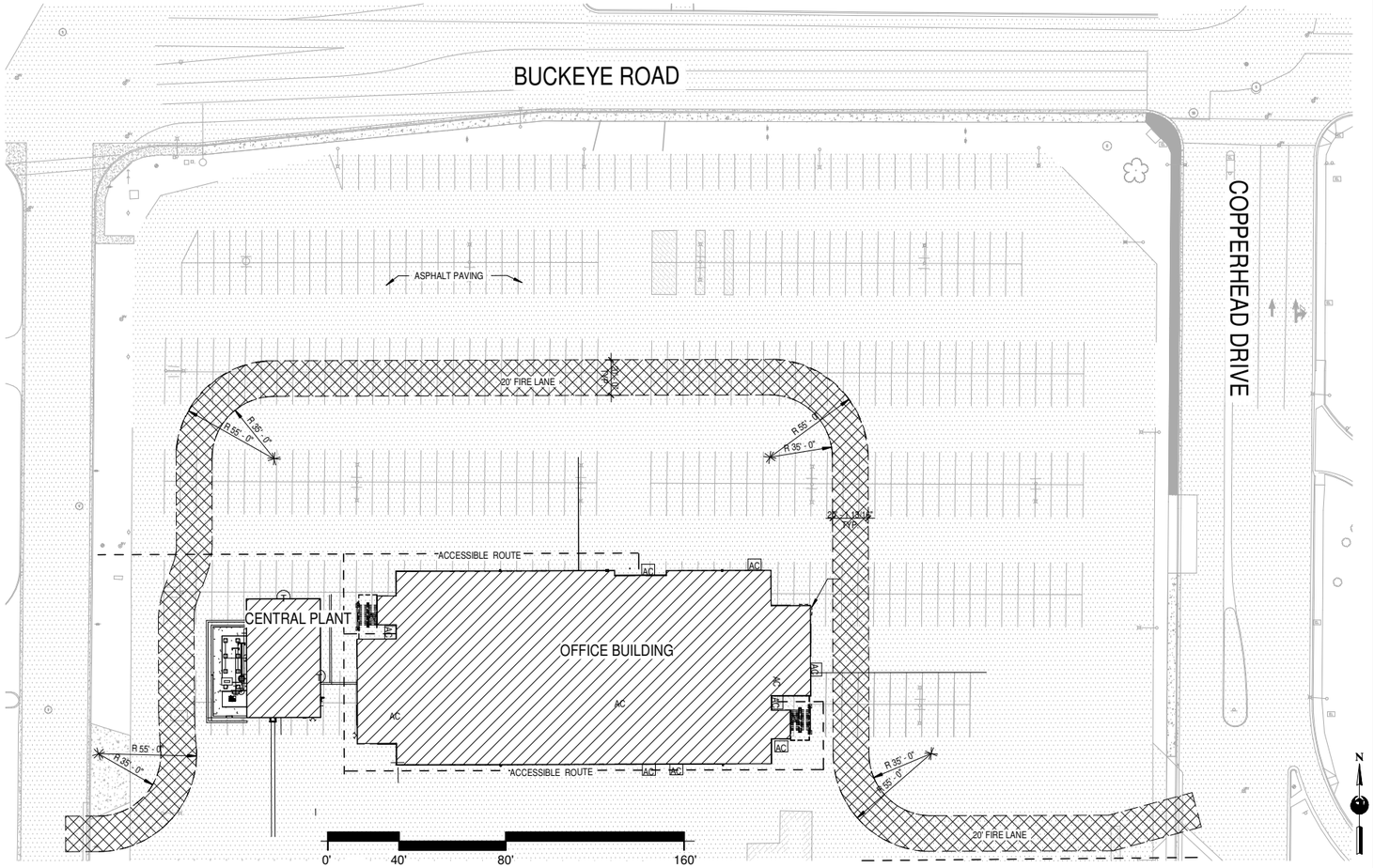
5. WALL AND CEILING FINISHES SHALL HAVE A FLAME SPREAD RATING B OF NOT GREATER THAN 75 FOR STAIRWAYS AND RATING B NOT GREATER THAN 75 IN OTHER ROOMS OR AREAS WITH SMOKE DEVELOPED RATING 0-450.

BUILDING SUMMARY

PROJECT	COB CENTRAL PLANT BUILDING
ADDRESS:	PHX. SKY HARBOR INTL. AIRPORT 2485 E. BUCKEYE ROAD PHOENIX, AZ 85034
OWNER:	PHX. SKY HARBOR INTL. AIRPORT
REPRESENTATIVE:	KYLE KOTCHOU, AVIATION DEPT. 500 S. 24TH STREET PHOENIX, AZ 85034 TEL. (602) 683-5309
ZONING:	A-1
OCCUPANCY:	B
CONST. TYPE:	II-B
OCCUPANT LOAD:	9 OCC. UTILITY - 2,635 SF / 300 = 9 OCC.
AUTOMATIC FIRE SPRINKLER:	YES
FIRE ALARM SYSTEM:	YES
ALLOWABLE BLDG. HEIGHT:	3 STORIES
ACTUAL BLDG. HEIGHT:	1 STORY - 20'
BUILDING AREA:	ALLOWABLE AREA = 23,000 SF BUILDING INTERIOR AREA: 2,635 SQ. FT. YARD AREA: 953 SQ. FT. TOTAL BLDG. AREA: 3,588 SQ. FT.

DESCRIPTION OF WORK: INSTALL NEW MAN DOOR TO THE MECHANICAL YARD AND ADD ALUMINUM LOUVERS TO SCREEN MECHANICAL EQUIPMENT

SITE PLAN



REGISTERED ARCHITECT 21349 LISA K. FOREMAN Date Signed 7/31/20

Design Sub-Consultant
FORE

Design Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

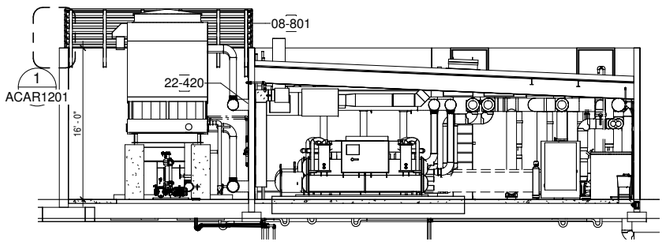
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Drawn by:	TJV	Date:	07/13/2018
Dwg scale:	As indicated	CIP No.:	AV100000011
KIVA No.:	07-5204		

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
ARCHITECTURAL
GENERAL NOTES

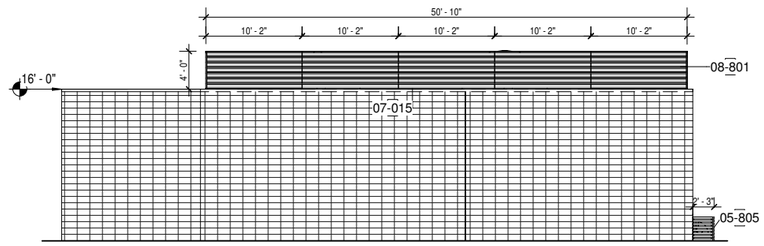
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Sheet Reference No:
V6 - 217 of 260

Project Number: NA
7/11/2018 11:06:43 AM
Local File:BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-X-2-ACARXX00_R17_A360.rvt



5 COB CENTRAL PLANT - BUILDING SECTION

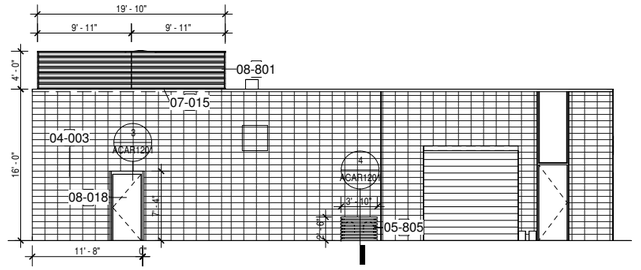
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4 EAST ELEVATION

(WEST ELEVATION SIM)

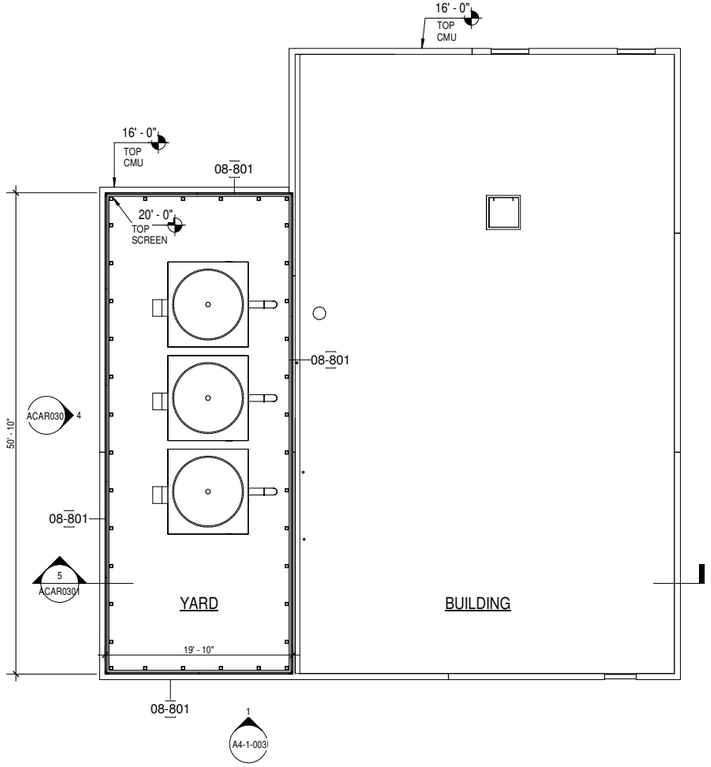
SCALE: 1/8" = 1'-0"



3 COB CENTRAL PLANT - SOUTH ELEVATION

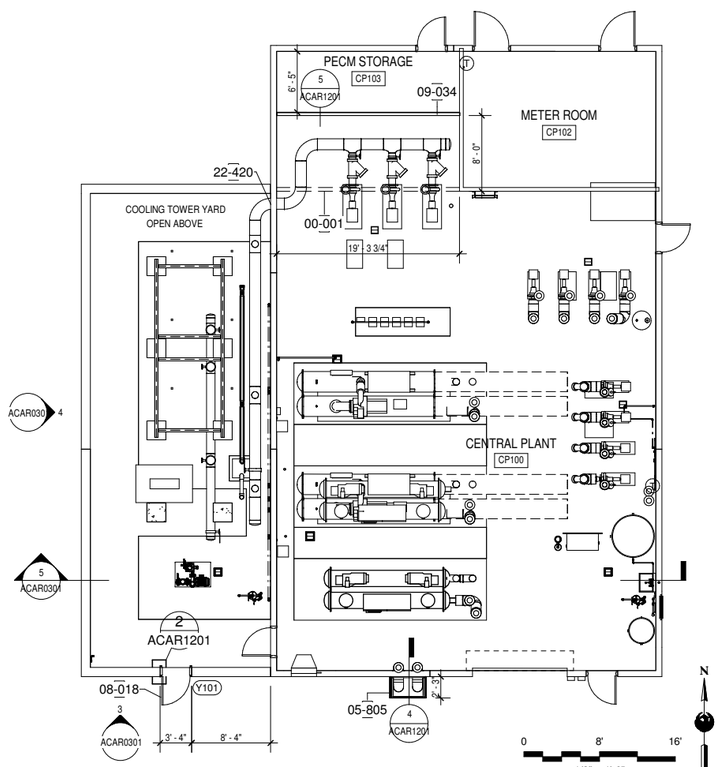
(NORTH ELEVATION SIM)

SCALE: 1/8" = 1'-0"



2 COB CENTRAL PLANT - ROOF PLAN

SCALE: 1/8" = 1'-0"



1 COB CENTRAL PLANT - FLOOR PLAN

SCALE: 1/8" = 1'-0"

KEYNOTES

00-001	REMOVE EXISTING 3-5/8" METAL STUD WALL WITH GYP. BD.
04-003	EXISTING CONCRETE MASONRY UNIT WALL - 12x8x16
05-805	STEEL ANGLE FRAMING WITH STEEL HAT CHANNELS.
07-015	EXISTING 24 GA. METAL COPING CAP TO REMAIN.
08-018	3'-0" x 7'-0" HOLLOW METAL DOOR (16 GA) AND FRAME (14GA). PAINT TO MATCH ADJACENT DOOR AND FRAME.
08-801	ALUMINUM SCREEN WALL - VAC 301: 4" BLADE (50% FREE AREA MINIMUM) BY CONSTRUCTION SPECIALTIES OR APPROVED EQUAL - FINISH TO BE NATURAL ALUMINUM.
09-034	5/8" GYP BD (EACH SIDE) ON 3-5/8" 20 GA. METAL STUD WALL @ 16" O.C.
22-420	PROVIDE ESCUTCHEON (WITH CAULKING/SEALANT) AT ALL NEW PIPING PENETRATIONS.

REGISTERED ARCHITECT 21349 LISA K FOREMAN Date Signed 07/13/18 EXPIRES 07/31/20

Design Sub-Consultant

FORE

Design Consultant

Gannett Fleming

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PHX SKY TRAIN

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	TJV
Drawn by:	TJV
Checked by:	LKF
Date:	07/13/2018
Dwg scale:	1/8" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
ARCHITECTURAL
FLOOR PLAN, ROOF PLAN, ELEVATIONS, SECTION

Package: B04 - ACAR0301

Sheet Reference No:

V6 - 218 of 260

Local File:BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-X-2-ACARXX00_R17_A360.rvt

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DOOR SCHEDULE

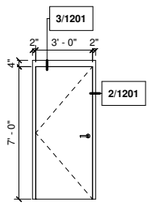
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		WIDTH	HEIGHT	ELEVATION	MATERIAL	FINISH	ELEVATION	MATERIAL	FINISH			
LEVEL 1												
Y101	0 HR	3' - 0"	7' - 0"	A	H.M.	PAINT	1	H.M.	PAINT	1		

HARDWARE SCHEDULE

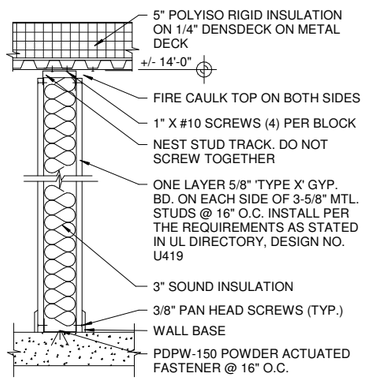
HARDWARE SET #1
DOOR Y101

TYPE	NUMBER	FINISH	MANUF.
3 EA BUTTS	CB179	626	STANLEY
1 EXIT DEVICE	ETPDLS1G/26DNS85/51976-26DR	US26D	TRILOGY
1 REMOVABLE CORE	6400	626	SARGENT
1 PERMANENT CORE	DEGREE DG2	626	SARGENT
1 CLOSER	351	626	SARGENT
1 SWEEP	315 DN	-	PEMKO
1 THRESHOLD	151A	ALUM	PEMKO
1 SET GASKETING	S88D	-	PEMKO
2 KICKPLATE	223S 12" HIGH	-	HAGER

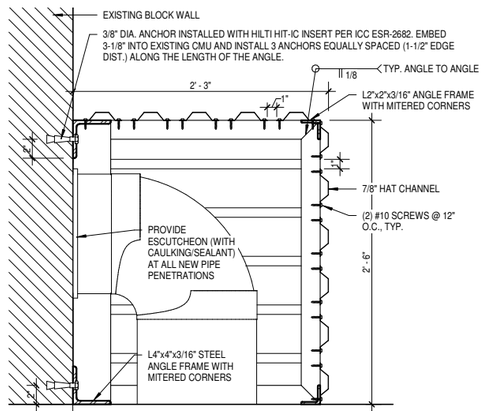
DOOR PANEL
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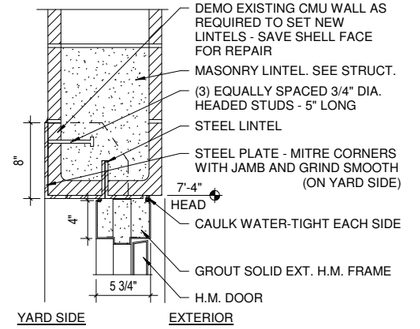
DOOR FRAME
SCALE: 1/4" = 1'-0"



STUD WALL
SCALE: 1 1/2" = 1'-0"

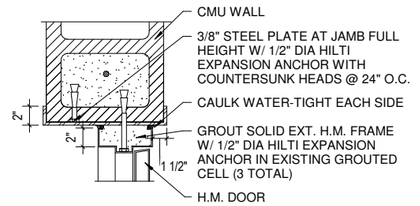


PIPE ENCLOSURE
SCALE: 1 1/2" = 1'-0"



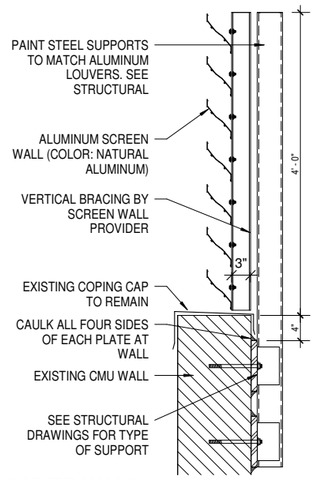
NOTE: ALL EXTERIOR H.M. DOORS TO BE INSULATED

DOOR HEAD AT CMU
SCALE: 1 1/2" = 1'-0"



NOTE: ALL EXTERIOR H.M. DOORS TO BE INSULATED

DOOR JAMB AT CMU
SCALE: 1 1/2" = 1'-0"



LOUVER WALL
SCALE: 1" = 1'-0"

Design Sub-Consultant: FORE

Design Consultant: Gannett Fleming

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	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	TJV
Drawn by:	TJV
Checked by:	LKF
Date:	07/13/2018
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
ARCHITECTURAL
DETAILS

Package: B04 - ACAR1201
Sheet Reference No: V6 - 219 of 260

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GENERAL STRUCTURAL NOTES

1.01 GENERAL:
- A. THE STRUCTURAL DRAWINGS SHOW THE COMPLETED PROJECT. THEY DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND AROUND THE JOB SITE DURING CONSTRUCTION.
- B. GENERAL NOTES AND TYPICAL DETAILS APPLY EVEN THOUGH NOT SPECIFICALLY REFERENCED ON STRUCTURAL DRAWINGS, UNLESS NOTED OTHERWISE.

1.02 COORDINATION:
- A. VERIFY ALL SITE DIMENSIONS, ELEVATIONS, AND SLOPES WITH ARCHITECTURAL, CIVIL, AND GRADING DRAWINGS. STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- B. MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DRAWINGS SHALL BE PROVIDED PRIOR TO PLACING CONCRETE. STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS AND SHOP DRAWINGS PROVIDED BY MANUFACTURERS OF EQUIPMENT.

2.01 SHOP ACTIONS:
- A. VERIFY NEW AND EXISTING DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ARCHITECT OR ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.

3.01 FIELD EXECUTION:
- A. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, SHORING, GUYING AND OTHER MEANS TO AVOID EXCESSIVE STRESSES AND HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.
- B. CONTRACTOR SHALL EXERCISE EXTREME CARE DURING THE CONSTRUCTION OF THE NEW STRUCTURE TO AVOID DAMAGE TO EXISTING STRUCTURES. CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS REQUIRED TO FACILITATE CONSTRUCTION OF THE WORK AND ENSURING THE SAFETY, STABILITY AND INTEGRITY OF ADJACENT STRUCTURES AND FACILITIES.
- C. WHEN ANCHORING, SHOOTING, DRILLING, CHIPPING OR CORING INTO CONCRETE THE AREA SHALL BE SCANNED USING GROUND PENETRATION RADAR (GPR) PRIOR TO START OF WORK. DO NOT CUT OR NICK EXISTING REINFORCING.
- D. EDGE OF ALL DRILL HOLES AND OPENINGS SHALL BE AT LEAST 4" FROM EXISTING REINFORCEMENT.

STRUCTURAL DESIGN PARAMETERS

1.01 GENERAL:
- A. CONSTRUCTION SHALL COMPLY WITH THE BUILDING CODE AND OTHER APPLICABLE CODES AND STANDARDS.
- B. BUILDING CODE: INTERNATIONAL BUILDING CODE (IBC 2012) AS ADOPTED AND AMENDED BY THE CITY OF PHOENIX.

2.01 DESIGN CRITERIA:
- A. REFERENCE STANDARDS: MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-10.
- B. SUPERIMPOSED DEAD LOADS
  - i) ROOF FRAMING = 50 PSF
  - ii) SELF-WEIGHT OF MEMBERS
- C. LIVE LOADS:
  - i) ROOF LIVE LOAD = 20 PSF, REDUCIBLE
- D. WIND LOAD PARAMETERS:
  - i) EXPOSURE CATEGORY = C
  - ii) BASIC WIND SPEED = 115 MPH
  - iii) INTERNAL PRESSURE COEFFICIENT: GC(pi) = 0.18±
- E. SEISMIC LOAD PARAMETERS:
  - i) STRUCTURAL OCCUPANCY CATEGORY = II
  - ii) SITE CLASS D
  - iii) SEISMIC DESIGN CATEGORY = B
  - iv) S(DS) = 0.185g
  - v) S(D1) = 0.091g
  - vi) I = 1. 0
  - vii) I(p) = 1.0

FOUNDATIONS

1.01 DESCRIPTION:
- A. PERFORM WORK IN ACCORDANCE WITH THE BUILDING CODE SOILS AND FOUNDATION REQUIREMENTS, CONTRACT DOCUMENTS, AND GEOTECHNICAL INVESTIGATION REPORT WHEN AVAILABLE.

1.02 COORDINATION:
- A. PERFORM WORK IN ACCORDANCE WITH EXISTING BUILDING SOILS REPORT BY SPEEDIE & ASSOCIATES, REPORT NO. 13857SD, DATED 12/10/14
- B. FOUNDATION DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES.
  - i) SOIL CLASSIFICATION = CLASS C
  - ii) VERTICAL (GRAVITY) NET BEARING PRESSURE = 2500 PSF, DEAD PLUS LIVE LOADS AND 3333 PSF INCLUDING WIND AND SEISMIC LOADS AT 2'-0" FT BELOW NATURAL GRADE
  - iii) LATERAL AT-REST PRESSURES = 60 PSF/FT
  - iv) LATERAL ACTIVE PRESSURES = 35 PSF/FT
  - v) LATERAL PASSIVE PRESSURES = 300 PSF/FT
  - vi) BASE FRICTION COEFFICIENT = 0.35
- C. UNLESS OTHERWISE SHOWN, ON ALL STRUCTURAL DRAWINGS THE FINISH GRADE AROUND STRUCTURES IS SHOWN THUS, INDICATING EITHER GROUND SURFACE, TOP OF CONCRETE SLAB, OR A.C. PAVEMENT. FOR DETAILS OR FINISH SURFACES, SEE CIVIL SITE DRAWINGS. PROVIDE CONCRETE ENCASEMENT FOR ALL UNDERGROUND PIPES BENEATH BUILDING FOUNDATIONS.
- D. CONTRACTOR SHALL SUBMIT SHORING SHOP DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR REVIEW, FOR SHORING REQUIRED TO PROTECT EXISTING STRUCTURES. SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF ARIZONA.

2.01 CONTROLLED LOW STRENGTH MATERIAL (CLSM)
- A. CLSM SHALL BE USED AS AN UNREINFORCED FILL MATERIAL TO REPLACE EXCAVATED SOIL UNDER STRUCTURE FOUNDATIONS AND AS SHOWN ON DRAWINGS.
- B. PROPORTIONS: CEMENT CONTENT = 94 LBS/CU YD (+/- 5%); SLUMP = 7 INCHES (+/- 1 INCH); COMPRESSIVE STRENGTH AT 28 DAYS= 150 PSI (+/-50 PSI).

3.01 PLACEMENT:
- A. PLACE FOUNDATION CONCRETE ONLY ON CLEAN, FIRM BEARING MATERIAL AT LEAST 2'-0" BELOW THE LOWEST ADJACENT FINISH OR NATURAL GRADE, WHICHEVER IS LOWER. VERIFY THE SUITABILITY OF THE BEARING MATERIAL WITH THE GEOTECHNICAL ENGINEER BEFORE PLACING FOUNDATIONS.
- B. PLACE DOWELS AND ANCHOR BOLTS BEFORE POURING CONCRETE. USE TEMPLATES TO ENSURE PROPER PLACEMENT.
- C. CENTER FOUNDATIONS UNDER COLUMNS AND WALLS UNLESS NOTED OTHERWISE. DRYPACK GROUT ALL COLUMN BASE PLATES BEFORE INSTALLING FRAMING ABOVE.

3.02 BACKFILL REQUIREMENTS
- A. BACKFILL MAY BE PLACED AGAINST A WALL WITHOUT THE TOP SLAB IN PLACE UP TO THE ELEVATION SPECIFICALLY NOTED ON THE DRAWINGS BUT ONLY AFTER THE WALL CONCRETE HAS REACHED 3000 PSI STRENGTH. IF ELEVATION/DEPTH IS NOT NOTED ON THE DRAWINGS, CONTACT THE STRUCTURAL ENGINEER.
- B. HEAVY EQUIPMENT IS PROHIBITED WITHIN A DISTANCE BEING EQUAL TO THE DEPTH OF THE BACKFILL PLACED, OR 10'-0", WHICHEVER IS LESS.
- C. REMAINDER OF BACKFILL (ABOVE THE ELEVATION NOTED) MAY BE PLACED AGAINST THE WALL ONLY AFTER THE TOP SLAB IS IN PLACE AND THE CONCRETE IN THE TOP SLAB HAS REACHED THE STRENGTH EQUAL TO 75% OF THE SPECIFIED STRENGTH OR 3000 PSI, WHICHEVER IS LESS.
- D. COMPACTION EQUIPMENT ALLOWED WITHIN DEPTH OF BACKFILL OR 10'-0", WHICHEVER IS LESS, IS LIMITED TO JUMPING JACKS AND/OR WALK-BEHIND COMPACTORS. A BOBCAT MAY BE USED TO PLACE AND LEVEL BACKFILL.
- E. DEGREE OF COMPACTION (AS PERCENTAGE PROCTOR DENSITY) SHALL BE TESTED AS REQUIRED BY THE GEOTECHNICAL ENGINEER.
- F. FOR WALLS HAVING FILL ON EACH SIDE, PROCEED WITH BACKFILLING OPERATIONS IN UNIFORM LIFTS. DIFFERENTIAL ELEVATION OF TOP OF LIFTS SHALL NOT EXCEED 24 INCHES.

SPECIAL INSPECTION

1.01 GENERAL:
- A. THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE SPECIAL STRUCTURAL INSPECTORS IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE.

1.02 CONTRACTOR AND INSPECTOR RESPONSIBILITIES:
- A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT ALL STRUCTURAL WORK FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY STRUCTURAL INSPECTION PROVIDED BY OTHERS DOES NOT RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY.
- B. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO STOP OR DELAY THE WORK. IF THE CONTRACTOR ELECTS TO CONTINUE WITH CERTAIN WORK AFTER BEING NOTIFIED BY THE STRUCTURAL INSPECTOR THAT SUCH WORK IS UNACCEPTABLE, THE CONTRACTOR DOES SO AT THEIR OWN RESPONSIBILITY AND RISKS CORRECTING THE WORK AT A LESS OPPORTUNE TIME.
- C. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE FACILITIES FOR THE STRUCTURAL INSPECTOR TO INSPECT THE WORK SAFELY AND EFFICIENTLY. TWENTY-FOUR (24) HOUR NOTICE IS REQUIRED PRIOR TO INSPECTION.
- D. WORK MUST BE COMPLETED AT TIME OF INSPECTION. CONTRACTOR SHALL BEAR THE EXPENSE OF ADDITIONAL INSPECTIONS THAT MAY OCCUR BECAUSE OF INCOMPLETE OR INCORRECT WORK.
- E. INSPECTION OF WORK PROVIDED BY THE CONTRACTOR SUCH AS TEMPORARY SHORING OR JACKING SYSTEMS SHALL BE PROVIDED BY THE CONTRACTOR'S DESIGN ENGINEER FOR THOSE SYSTEMS. THE CONTRACTOR/ENGINEER SHALL PROVIDE A LETTER/REPORT TO BOTH THE OWNER AND ENGINEER OF RECORD THAT THESE INSPECTIONS HAVE BEEN COMPLETED BEFORE EACH PHASE OF SUCH WORK CAN PROCEED.
- F. THE STRUCTURAL INSPECTOR IS NOT INSPECTING FOR ANY OSHA COMPLIANCE OR FOR TEMPORARY CONSTRUCTION, SUCH AS BRACING.
- G. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO DIRECT OR APPROVE CHANGES FROM THE CONTRACT DOCUMENTS. IF THE CONTRACTOR WISHES TO QUESTION THE STRUCTURAL INSPECTOR'S INTERPRETATION OF THE CONTRACT DOCUMENTS, HE MAY DO SO DIRECTLY WITH THE STRUCTURAL ENGINEER OF RECORD.

2.01 SHOP ACTIONS:
- A. SHOP FABRICATION WORK IS SUBJECT TO SPECIAL INSPECTION UNLESS THE FABRICATOR IS REGISTERED AND APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT SPECIAL INSPECTION.
- B. FABRICATOR SHALL SUBMIT CERTIFICATE OF COMPLIANCE STATING WORK PREFORMED WAS IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.

3.01 REQUIRED VERIFICATION AND SPECIAL INSPECTIONS:

INSPECTION OF STEEL CONSTRUCTION	
INSPECTION ITEM	FREQUENCY OF INSPECTION
A. HIGH STRENGTH BOLTING	
1. MATERIAL IDENTIFICATION MARKINGS	PERIODIC
2. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED	PERIODIC
3. BEARING-TYPE CONNECTIONS	PERIODIC
4. SLIP-CRITICAL CONNECTIONS	CONTINUOUS
B. WELDING OF STRUCTURAL STEEL :	
1. COMPLETE AND PARTIAL PENETRATION GROOVE WELDS	CONTINUOUS
2. MULTIPASS FILLET WELDS	CONTINUOUS
3. SINGLE-PASS FILLET WELDS > 5/16"	CONTINUOUS
4. SINGLE-PASS FILLET WELDS < 5/16"	PERIODIC
5. FLOOR AND ROOF DECKS WELDS	PERIODIC
C. STRUCTURAL STEEL FRAMING:	
1. COMPLIANCE WITH CONSTRUCTION DOCUMENT DETAILS AND SPECIFICATIONS	PERIODIC
2. MATERIALS IDENTIFICATION	PERIODIC

INSPECTION OF CONCRETE CONSTRUCTION	
INSPECTION ITEM	FREQUENCY OF INSPECTION
A. STRUCTURAL CAST-IN-PLACE CONCRETE:	
1. REINFORCING STEEL MATERIALS AND PLACEMENT	PERIODIC
2. BOLTS INSTALLED IN CONCRETE PRIOR TO AND DURING CONCRETE PLACEMENT	CONTINUOUS
3. VERIFY USE OF REQUIRED MIX DESIGN	PERIODIC
4. SAMPLING OF FRESH CONCRETE	CONTINUOUS
5. CONCRETE PLACEMENT TECHNIQUE	CONTINUOUS
6. MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	PERIODIC
7. FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS	PERIODIC

INSPECTION OF POST-INSTALLED ANCHORS AND DOWELS (RE: PRODUCT ICC-ES EVALUATION REPORT)	
INSPECTION ITEM	FREQUENCY OF INSPECTION
A. ADHESIVE ANCHORS AND REINFORCEMENT DOWELS:	
1. VERIFY DRILL BIT TYPE AND SIZE	CONTINUOUS
2. HOLE DEPTH AND CLEANING PROCEDURE	CONTINUOUS
3. PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE, DIAMETER, AND LENGTH	CONTINUOUS
4. ADHESIVE EXPIRATION DATE	CONTINUOUS
5. PROPER INSTALLATION TECHNIQUE FOR ADHESIVE ANCHORS	CONTINUOUS
B. MECHANICAL ANCHORS:	
1. VERIFY DRILL BIT TYPE AND SIZE	CONTINUOUS
2. HOLE DEPTH AND CLEANING PROCEDURE	CONTINUOUS
3. PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE, DIAMETER, AND LENGTH	CONTINUOUS
4. PROPER INSTALLATION TECHNIQUE FOR MECHANICAL ANCHORS AND TIGHTENING TORQUE	CONTINUOUS
SCREW ANCHORS:	
1. VERIFY DRILL BIT TYPE AND SIZE	CONTINUOUS
2. HOLE DEPTH AND CLEANING PROCEDURE	CONTINUOUS
3. PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE, DIAMETER, AND LENGTH	CONTINUOUS
4. PROPER INSTALLATION TECHNIQUE FOR SCREW ANCHORS AND TIGHTENING TORQUE	CONTINUOUS

INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL	
INSPECTION ITEM	FREQUENCY OF INSPECTION
A. MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK	
1. IDENTIFICATION MARKINGS TO CONFORM TO ATSM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	PERIODIC
2. MANUFACTURE'S CERTIFIED TEST REPORTS	PERIODIC
B. INSPECTION OF WELDING COLD FORMED STEEL DECK:	
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706	PERIODIC
2. REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT	CONTINUOUS
3. SHEAR REINFORCEMENT	CONTINUOUS
4. OTHER REINFORCING STEEL	PERIODIC

i) "PERIODIC" SPECIAL INSPECTION: THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF WORK.
ii) "CONTINUOUS" SPECIAL INSPECTION - THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED.
iii) ITEMS NOT SHOWN MAY REQUIRE CONTINUOUS OR PERIODIC SPECIAL STRUCTURAL INSPECTION AT THE DISCRETION OF THE ENGINEER OF RECORD. ITEMS LISTED MAY REQUIRE ALTERNATE FREQUENCIES OF INSPECTION OTHER THAN SHOWN ABOVE UNDER DIRECTION OF THE ENGINEER OF RECORD.
iv) WELDING OF REINFORCING STEEL NOT ACCEPTABLE UNLESS DIRECTED BY THE ENGINEER OF RECORD.
v) VERIFY SOILS INSPECTION REQUIREMENTS WITH PROJECT SOILS ENGINEER/CONSULTANT AS OUTLINED IN SOILS REPORT AND PROJECT SPECIFICATIONS.

CONCRETE

1.01 GENERAL:
- A. PROVIDE NORMAL WEIGHT CONCRETE (144PCF WET).

1.02 COORDINATION:
- A. INSTALL JOINTS, WATERSTOPS, AND SEALANTS IN CONCRETE WHERE APPLICABLE IN ACCORDANCE WITH OTHER SECTIONS OF THE GENERAL STRUCTURAL NOTES, PLANS, AND PROJECT SPECIFICATIONS.
- B. PATCHING OF CONCRETE SHALL BE CONSIDERED STRUCTURAL. NOTIFY THE PROGRAM/PROJECT MANAGER OF REPAIRS OF REINFORCED CONCRETE EXCEEDING ½ INCH DEEP TO RECEIVE REPAIR PROCEDURE FROM THE STRUCTURAL ENGINEER.
- C. MECHANICAL AND ELECTRICAL SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DRAWINGS SHALL BE PROVIDED PRIOR TO PLACING CONCRETE.

1.03 QUALITY ASSURANCE:
- A. PRODUCE AND DELIVER CONCRETE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS IN ACI 301 AND TOLERANCES OF ACI 117. PLACE CONCRETE IN ACCORDANCE WITH ACI 304. CONDUCT HOT WEATHER AND COLD WEATHER CONCRETING IN ACCORDANCE WITH ACI 305 AND ACI 306 RESPECTIVELY.

2.01 MIX WATER:
- A. USE POTABLE WATER FREE FROM MATERIALS THAT ARE DELETERIOUS TO CONCRETE OR STEEL (ASTM C1602).

2.02 CEMENTITIOUS MATERIALS:
- i) PORTLAND CEMENT: CONFORM TO ASTM C 150, TYPE II, EXCEPT FOR MASS CONCRETE PROVIDE TYPE IV CEMENT OR ADDITIVES OR OTHER PROVISIONS TO REDUCE THE HEAT OF HYDRATION.
- ii) FLY ASH: ACCEPTABLE FOR USE IN MIX DESIGN IF COMPLIANT WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND THE MAX RATIO OF FLY ASH TO TOTAL CEMENT AND FLY ASH DOES NOT EXCEED 25 PERCENT BY WEIGHT. CONFORM TO ASTM C 618, TYPE F. DO NOT USE FLY ASH IN COLORED CONCRETE WITHOUT WRITTEN APPROVAL.

2.03 AGGREGATE:
- A. PROVIDE A SINGLE SIZE OR A GRADATION OF AGGREGATE WITH THE MAXIMUM SIZE AS SHOWN ON THE MIX DESIGN PROPORTIONS BELOW. DO NOT USE AGGREGATES CONTAINING SOLUBLE SALTS OR OTHER SUBSTANCES SUCH AS IRON SULFIDES, PYRITE, MARCASITE, OCHRE, OR OTHER MATERIALS THAT MAY CAUSE STAINS ON EXPOSED CONCRETE SURFACES.
- B. UNLESS NOTED OTHERWISE, AGGREGATE SHALL BE NORMAL WEIGHT CONFORMING TO ASTM C33.
- C. AGGREGATE FOR LIGHTWEIGHT STRUCTURAL CONCRETE SHALL CONFORM TO ASTM C 330.

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR USE ON THIS PROJECT AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant

Design Consultant

Gannett Fleming

CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	MWK
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Date:	07/13/18
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STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING STRUCTURAL GENERAL STRUCTURAL NOTES I

Package: B04 - ACSB0001

Sheet Reference No:

V6 - 220 of 260

Local File: BIM 360://62421 - Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACSBX01_R17_A360.rvt

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2.04 ADMIXTURES:
- A. SUBMIT ADMIXTURES TO THE ENGINEER FOR REVIEW. DO NOT USE ADMIXTURES CONTAINING CALCIUM CHLORIDE. ADMIXTURES AND COMBINATIONS OF ADMIXTURES SHALL BE THE SAME AS THOSE USED IN THE FIELD OR TRIAL TEST DATA SUBMITTED.
- B. SUPERPLASTICIZERS (HIGH RANGE WATER REDUCERS) AND WATER REDUCERS: COMPLY WITH ASTM C494 TYPE A AND TYPE F. FOR PLANT- ADDED SUPERPLASTICIZERS, BATCHES ARRIVING ON SITE WITH A SLUMP OF 5" OR LESS WILL NOT BE ACCEPTED. FOR SITE-ADDED SUPERPLASTICIZERS, THE MIX SHALL BE SLUMPED AT THE JOB SITE PRIOR TO THE ADDITION OF SUPERPLASTICIZERS. PROVIDE COMPUTER BATCH RECORDS IF SUPERPLASTICIZERS ARE USED. DO NOT ADD ADDITIONAL SUPERPLASTICIZERS ON SITE.

2.05 SLUMP:
- A. TOLERANCE FOR SPECIFIED SLUMP IS +/- 1INCH BEFORE THE ADDITION OF SUPERPLASTICIZERS/WATER REDUCERS PER ACI 117. MAXIMUM SLUMP WITH SUPERPLASTICIZERS IS 8 INCHES. WATER MAY BE ADDED ON SITE FOR SLUMP ADJUSTMENT IF THE TOTAL AMOUNT ADDED IS WITHIN THE WATER/CEMENTITIOUS RATIO AND SLUMP LIMITS SPECIFIED. DO NOT ADD WATER IF SUPERPLASTICIZERS ARE USED.

2.06 MIX DESIGN PROPORTIONS (NORMAL WT CONCRETE U.N.O.)
- A. PROVIDE COMPUTERIZED BATCH RECORDS WITH ALL LOAD LOCATION

INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL					
LOCATION	MIN 28 DAY COMPRESSIVE STRENGTH	MAX W/CM RATIO	SLUMP	% AIR	MAX AGGREGATE SIZE
SIDEWALK, CURBS, GUTTERS	3000 PSI	0.50	4"	4.5	1"
SLAB ON GRADE	4000 PSI	0.45	4"	4.5	1.5"
STRUCTURAL REINFORCED CONCRETE	4000 PSI	0.45	4"	4.5	1"

2.07 NON-SHRINK GROUT:
- A. USE PLASTIC OR STIFF (DRY PACK), NON-METALLIC NON-SHRINK GROUT WITH MINIMUM 7,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. CONFORM TO THE REQUIREMENTS OF CRD-C 621 CORPS OF ENGINEERS FOR NON-SHRINK GROUT.
- B. SATURATE THE AREA WITH POTABLE WATER FOR 24 HOURS IMMEDIATELY PRIOR TO APPLICATION OF THE GROUT PER THE MANUFACTURER'S RECOMMENDATIONS. WET CURE AND APPLY CURING COMPOUNDS TO EXPOSED GROUT SURFACES.
- C. USE BASF CONSTRUCTION GROUT, EUCO DRY PACK GROUT, OR APPROVED EQUAL.

3.01 CONCRETE PLACING
- A. DO NOT PLACE CONCRETE IN CONTACT WITH ALUMINUM.
- B. DO NOT ADD WATER ON SITE OR AFTER SUPERPLASTICIZERS HAVE BEEN ADDED.
- C. THE MAXIMUM FREE DROP OF CONCRETE IS 6'-0" WITHOUT A TREMIE PIPE TO PREVENT SEGREGATION. DEPOSIT CONCRETE AS NEAR AS POSSIBLE TO ITS FINAL POSITION. DO NOT EMPLOY ANY PRACTICES CAUSING SEGREGATION SUCH AS VIBRATING CONCRETE TO SPEED CONVEYANCE.
- D. MECHANICALLY VIBRATE CONCRETE, EXCEPT SLABS ON GRADE NEED BE VIBRATED ONLY AROUND UNDER-FLOOR DUCTS AND OTHER ITEMS EMBEDDED IN THE SLAB.
- E. WAIT 28 DAYS MINIMUM AFTER CONCRETE HAS BEEN PLACED BEFORE SAND BLASTING, WATER BLASTING OR OTHER SURFACE TREATMENT.
- F. DO NOT PLACE CONCRETE IN STANDING WATER

3.02 FINISHING:
- A. PROVIDE FINISHES ON FORMED SURFACES PER ACI 301 AND FORMED SURFACE IRREGULARITIES PER ACI 117 AS FOLLOWS.
  - i) ROUGH FORM FINISH: SURFACES NOT EXPOSED TO PUBLIC VIEW. PATCH TIE HOLES, LEAVE TEXTURE IMPARTED BY FORM, REMOVE FINS GREATER THAN 1/2 INCH IN HEIGHT.
  - ii) SMOOTH FORM FINISH: SURFACES EXPOSED TO PUBLIC VIEW. REMOVE FINS GREATER THAN 1/8 INCH IN HEIGHT.
  - iii) SURFACES EXPOSED TO VIEW: CLASS B SURFACE WITH ABRUPT IRREGULARITIES LESS THAN 1/4 INCH.
- B. THE USE OF WATER OR "SPRINKLING" AS AN AID TO FINISHING UNFORMED SURFACES IS PROHIBITED.
- C. PROVIDE 3/4" X 3/4" CHAMFERS AT ALL EXPOSED CORNERS OF SLABS, WALLS, COLUMNS AND BEAMS.

3.03 CURING:
- A. CURE CONCRETE PER ACI 318 AND ACI 301 FOR 7 DAYS AFTER PLACEMENT. CURING COMPOUNDS SHALL HAVE A FUGITIVE DYE. CURING COMPOUNDS SHALL BE COMPATIBLE WITH FUTURE TOPPINGS, PAINT, WATERPROOFING AND FINISHES. APPLY TWO HEAVY COATS OF CURING COMPOUND USING A HIGH PRESSURE AIRLESS SPRAYER. APPLY THE SECOND COAT 90 DEGREES TO THE FIRST. CLEAN NOZZLES AFTER EACH USE.
- B. CURING COMPOUND SHALL MEET THE MOISTURE RETENTION REQUIREMENTS OF ASTM C-309, TYPE 1-D AT COVERAGE RATE SPECIFIED, AND PASS VOC REQUIREMENTS.
- C. COLUMNS, WALLS, GRADE BEAMS, AND FOUNDATIONS: START CURING IMMEDIATELY UPON THE REMOVAL OF FORMS AND THE COMPLETION OF FINISHING WORK. THE TOPS OF SPREAD FOUNDATIONS REQUIRE CURING COMPOUND.
- D. SLAB AND CAST-IN-PLACE FINISHED CONCRETE: START CURING IMMEDIATELY AFTER THE CONCRETE HAS SET ENOUGH TO WALK ON WITHOUT HARMING THE FINISH.

3.04 CONCRETE REPAIR OR MODIFICATION.
- A. PATCHING OF CONCRETE SHALL BE CONSIDERED STRUCTURAL. NOTIFY ENGINEER ON A CASE BY CASE BASIS.
- B. WHEN DRILLING, CHIPPING, SAWCUTTING, OR CORING INTO CONCRETE, X-RAY OR FERROSCAN EXISTING CONCRETE TO LOCATE REINFORCING. DO NOT CUT, NICK, OR OTHERWISE.

REINFORCING STEEL

1.01 GENERAL:
- A. DO NOT DAMAGE OR DISRUPT REINFORCING BARS, STEEL EMBEDS, OR CONNECTORS FROM THEIR PROPER LOCATION BY THE PLACEMENT OF EMBEDDED PIPING OR CONDUIT. PROVIDE REQUIRED CLEARANCE BETWEEN REINFORCEMENT AND EMBEDDED PIPING AND CONDUIT.

1.02 SUBMITTALS:
- A. SUBMIT ICC EVALUATION REPORTS AND LOCATIONS OF REINFORCEMENT CONNECTORS (MECHANICAL COUPLERS, ETC) AND REBAR TERMINATORS. OR HEADED DEFORMED BARS.

1.03 QUALITY ASSURANCE:
- A. TOLERANCES FOR FABRICATION, PLACEMENT, BAR BENDS, STANDARD HOOKS AND LAP SPLICES FOR REINFORCEMENT SHALL CONFORM TO ACI 117, SECTION 2 AND CRSI STANDARDS.

2.01 REINFORCEMENT MATERIALS:
- A. REINFORCING STEEL SHALL BE DEFORMED EXCEPT #2 BARS, SPIRALS, AND WELDED PLAIN WIRE FABRIC.
- B. REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS.
  - i) #2 BARS - ASTM A 663, GRADE 80
  - ii) #3 BARS AND LARGER - ASTM A 615, GRADE 60
  - iii) STIRRUPS AND COLUMN TIES - ASTM A 615, GRADE 60
  - iv) STEEL WIRE - ASTM A 1064
  - v) WELDED PLAIN (SMOOTH) WIRE FABRIC - ASTM A 1064
  - vi) WELDABLE REINFORCING STEEL - ASTM A 706
  - vii) REBAR TERMINATORS - ASTM A 576

2.02 REINFORCEMENT CONNECTORS:
- A. REINFORCEMENT CONNECTORS ARE ACCESSORIES INCLUDING MECHANICAL BUTT SPLICES, FORM SAVERS, COUPLERS, AND TERMINATORS.
- B. REINFORCEMENT CONNECTORS SHALL EXCEED THE REQUIREMENTS FOR
  - i) BOTH TENSION, AND COMPRESSION. SPLICE CAPACITY OF CONNECTORS MUST
  - ii) EXCEED 125% OF THE YIELD STRENGTH (Fy) OF THE REINFORCING BAR IN
  - iii) ACCORDANCE WITH ACI 318. INSTALL PER THE REPORT AND MANUFACTURER'S RECOMMENDATIONS
- C. SPECIAL INSPECTION WILL INCLUDE RANDOM TORQUE TESTING OF COUPLERS BEFORE AND AFTER INSTALLATION IN FORMS. IF ANY COUPLER DOES NOT PASS THE TORQUE TEST, ALL COUPLERS WILL BE TORQUED BY AN INDEPENDENT TESTING LAB AT THE CONTRACTOR'S EXPENSE. COUPLERS USED IN COLUMNS SHALL NOT BE LONGER THAN 8" OR HAVE A DIAMETER LARGER THAN 2.5 INCHES.

3.01 PLACEMENT:
- A. SECURELY TIE REINFORCING AND EMBEDDED ITEMS IN POSITION BEFORE PLACING CONCRETE OR GROUT. DO NOT STAB OR SHOVE INTO FRESHLY PLACED CONCRETE.
- B. TIE COLUMN CAGES TO FORMS AND SQUARE BEFORE PLACING CONCRETE. CAGES AND FORMS SHALL BE SQUARED UP PLUMB AND CENTERLINE LOCATIONS OF COLUMNS SHALL BE CHECKED BEFORE PLACING CONCRETE. BAR SUPPORTS AND SPACERS SHALL BE PROVIDED IN ACCORDANCE WITH ACI 301REINFORCING SHOWN ON THE DRAWINGS SHALL NOT BE BURIED ABOVE OR BELOW ITS REQUIRED POSITION AND LAYER. ADDITIONAL BARS MAY BE USED AS BURIED BAR SUPPORTS, BUT ONLY IF THEY ARE IN CONFORMANCE WITH CONCRETE COVER REQUIREMENTS.

3.02 SLAB REINFORCEMENT:
- A. THE MINIMUM QUANTITY OF REINFORCEMENT EACH WAY IN SLABS SHALL BE AS SHOWN BELOW, UNLESS NOTED OTHERWISE.

SLAB THICKNESS	REINFORCEMENT
6" SLAB	#3 @ 9" OR #4 @ 16"
8" SLAB	#3 @ 6" OR #4 @ 12"
10" SLAB	#4 @ 10"

- B. EDGE BARS: THE EDGES OF ALL SLABS SHALL BE REINFORCED WITH 2 #5 BARS CONTINUOUS.
- C. OPENINGS IN SLABS SHALL HAVE 2 #5 BARS PARALLEL TO EDGES, EXTENDING 2'-0" BEYOND EACH CORNER.
- D. SLAB REINFORCEMENT SHALL NOT BE CUT AT PLUMBING OR OTHER OPENINGS. SPREAD REINFORCEMENT AROUND OPENINGS.
- E. SUPPORT SLAB TOP REINFORCEMENT ON HIGH CHAIRS. USE #5 BARS AS SUPPORT BARS WHERE REQUIRED. BARS AND CHAIRS MUST BE SECURELY TIED TOGETHER. PROVIDE SUFFICIENT SUPPORT TO MAINTAIN CONCRETE PROTECTION AS SPECIFIED. USE NON-FERROUS CHAIRS WHERE RUST STAINS ARE UNACCEPTABLE.

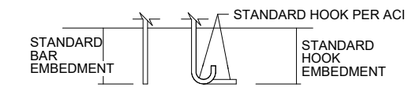
3.03 COLUMN REINFORCEMENT:
- A. HOOKS ON COLUMN TIES SHALL BE 135 DEGREES. PROVIDE 90 DEGREE HOOKS AT TERMINATION OF COLUMN VERTICAL BARS. HOOK VERTICAL REINFORCEMENT INTO SLAB OR BEAMS.

3.04 COVER:
- A. CONCRETE COVER FOR REINFORCING BARS (TO FACE OF BAR INCLUDING PRIMARY REINFORCEMENT, STIRRUPS, TIES, AND SPIRALS) UNLESS NOTED OTHERWISE ON DRAWINGS.
- B. CAST-IN-PLACE CONCRETE (NON-PRESTRESSED)
  - i) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: (1) ALL BARS - 3"
  - ii) CONCRETE CAST AGAINST FORMS AND PERMANENTLY EXPOSED TO EARTH, LIQUID, WEATHER OR BEARING ON A WORK MAT: (1) ALL BARS - 1-1/2"
  - iii) CONCRETE NOT EXPOSED TO EARTH, LIQUID OR WEATHER:(1) ALL BARS – 3/4"

3.05 SPLICES:
- A. REINFORCEMENT SHALL BE CONTINUOUS WITH FULL TENSION LAPS AND TERMINATED WITH A 90 DEGREE STANDARD HOOK, UNLESS NOTED OTHERWISE.
- B. WALL REINFORCEMENT AT CORNERS, INTERSECTIONS, AND JUNCTIONS SHALL BE CONTINUOUS AND LAPPED OR TERMINATED IN A 90 DEGREE STANDARD HOOK.
- C. DOWEL VERTICAL REINFORCEMENT TO FOUNDATIONS, UNLESS NOTED OTHERWISE ON DRAWINGS. ALL DOWELS SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCEMENT THAT IT IS SPLICED WITH, UNLESS NOTED OTHERWISE ON DRAWINGS.
- D. STAGGER END LAP SPLICES OF WELDED WIRE FABRIC AS REQUIRED FOR MAXIMUM 3 LAYERS OF FABRIC AT ANY LOCATION.
- E. PROVIDE THE SAME MINIMUM FIRE RATED COVER TO MECHANICAL SPLICE COUPLERS AS REQUIRED FOR BOTH PRIMARY AND REGULAR REINFORCEMENT. ADJUST STIRRUPS AND TIES AS NOTED IN SPECIAL DETAILS.
- F. DRAWINGS DO NOT INDICATE ALL REQUIRED BAR SPLICES. SUBMIT SPLICE LAYOUT AS A PART OF REINFORCING BAR SHOP DRAWINGS, INCLUDING SPLICES ADDED TO IMPLEMENT CONTRACTORS MEANS AND METHODS.

3.06 LAP SPLICE LENGTHS:
- A. TOP BARS ARE HORIZONTAL BARS LOCATED WHERE 12 INCHES OR MORE OF FRESH CONCRETE WILL BE PLACED BELOW THE BAR.
- B. LAP WELDED WIRE FABRIC TWO FULL SQUARES.
- C. LAP SPLICES ARE CLASS 'B' SPLICES, UNLESS NOTED OTHERWISE. MINIMUM LAP SPLICE AND EMBEDMENT LENGTHS FOR CLASS 'B' LAPS AND FOR BARS WITH CONCRETE COVER OF AT LEAST ONE BAR DIAMETER ARE GIVEN IN THE FOLLOWING SCHEDULE, UNLESS NOTED OTHERWISE. PROVIDE STANDARD HOOK PER ACI STANDARD BAR HOOK EMBEDMENT.

REINFORCEMENT LAP SPLICE AND EMBEDMENT LENGTH (f'c≥4000 PSI)							
BAR SIZE NO.	METRIC BAR SIZE NO.	BAR SPACING CENTER TO CENTER	MIN LAP LENGTH (IN)		MIN EMBEDMENT LENGTH (IN)		
			TOP BARS	OTHER BARS	STRAIGHT BARS		WITH STANDARD HOOK
			CLASS B	CLASS B	TOP BARS	OTHER BARS	
REQUIREMENTS FOR SLABS & WALLS**							
#3	#10	≥ 3db	24	19	19	15	7
#4	#13		32	25	25	19	10
#5	#16		40	31	31	24	12
#6	#19		48	37	37	29	15
#7	#22		70	54	54	42	17
#8	#25		80	62	62	48	19
#9	#29		91	70	70	54	22
#10	#32		102	79	79	61	24
#11	#36		113	87	87	67	27
REQUIREMENTS FOR BEAMS AND COLUMNS							
#3 THRU #7	#10 THRU #22	≥ 2db	SAME AS SLABS AND WALLS ABOVE				
#8	#25	2db OR LESS	121	93	93	71	19
#9	#29		136	105	105	61	22
#10	#32		153	118	118	91	24
#11	#36		170	131	131	181	27



** FOR BAR SPACING LESS THAN 3 BAR DIAMETER, ADD 50% TO LAP AND STRAIGHT EMBEDMENT LENGTHS.

3.07 WELDING:
- A. DO NOT WELD REINFORCING STEEL EXCEPT WHERE SUCH WELDING HAS BEEN SUBMITTED TO THE OWNER'S AGENT FOR REVIEW BY THE STRUCTURAL ENGINEER.
- B. WELDING WILL NOT BE ACCEPTED AS A SUBSTITUTE FOR TIE WIRES OR TO AID IN SUPPORTING REINFORCING STEEL.
- C. WELD REINFORCING BARS IN CONFORMANCE WITH AWS D1.4 USING ELECTRODE E8018-X.
- D. SUBMIT WELDER CERTIFICATIONS AND WELDING PROCEDURES PER AWS D1.4.

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Design Consultant
Gannett Fleming

Design Sub-Consultant

48434 SHANE E. SWEETEN
ARIZONA, U.S.A.
Date Signed 6/30/18
EXPIRES 6/30/19
Registered Professional Engineer (Structural)

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR CITY USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX AVIATION — CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ACK
Drawn by:	MWK
Checked by:	SES
Date:	07/13/18
Dwg scale:	12" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
GENERAL STRUCTURAL NOTES II

Package: B04 - ACSB0002
Sheet Reference No: V6 - 221 of 260

CONSTRUCTION JOINTS

1.01 DESCRIPTION:
- A. LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE AS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER. SUBMIT CONSTRUCTION JOINT LOCATIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS TO THE ENGINEER FOR REVIEW.
- B. UNLESS NOTED OTHERWISE ON DRAWINGS CONSTRUCTION JOINTS FOR CONCRETE GRADE BEAMS, BEAMS AND SLABS SHALL BE IN THE MIDDLE THIRD OF THE SPAN

1.02 COORDINATION:
- A. PROVIDE AND INSTALL POLYVINYLCHLORIDE (PVC) AND HYDROPHILIC VINYLESTER WATERSTOPS WHERE SHOWN ON DRAWINGS AND AT ALL CONSTRUCTION JOINTS IN WATERBEARING, AND PARTIALLY AND FULLY UNDERGROUND SLABS AND WALLS (INCLUDING ELEVATOR AND ESCALATOR PITS, AND CHEMICAL CONTAINMENT AREAS). WATERSTOPS ARE NOT REQUIRED IN WALLS AND SLABS WHEN THERE IS WATER ON BOTH SIDES UNLESS NOTED OTHERWISE.
- B. PROVIDE AND INSTALL PREFORMED JOINT MATERIAL IN EXPANSION AND ISOLATION JOINTS WHERE NOTED ON DRAWINGS. PROVIDE ELASTOMERIC JOINT SEALANT AND ALL NECESSARY ACCESSORIES SUCH AS BACKER ROD AND BOND BREAKER TAP WHERE EXPANSION JOINT IS TO BE SUBMERGED FOR ANY AMOUNT OF TIME OR WHERE ON DRAWINGS AS NOTED "CAULK AND SEAL".

1.03 SUBMITTALS:
- A. SUBMIT THE FOLLOWING PRIOR TO START OF WORK.
  - i) LAYOUT OF CONSTRUCTION AND EXPANSION JOINTS
  - ii) MANUFACTURER'S PRODUCT SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR WATERSTOPS AND JOINT FILLER MATERIAL AND ACCESSORIES.

2.01 MATERIALS:
- A. PROVIDE WATERSTOPS AND JOINT SEALANT SUITABLE FOR THEIR CONDITION OF USE SUCH AS MOVEMENT AND/OR CHEMICAL ATTACK, FOR EXAMPLE, WATER CONTAMINATED WITH SOLVENTS AND HYDROCARBONS).
- B. PROVIDE PREFORMED JOINT FILLER IN ACCORDANCE WITH ASTM D 1752 TYPE I (FOAM RUBBER) OR TYPE II (CORK) AT INTERIOR EXPANSION JOINTS AND AS NOTED ON DRAWINGS. PROVIDE PREFORMED BITUMINOUS JOINT FILLER IN ACCORDANCE WITH ASTM D 1751 FOR EXTERIOR ISOLATION JOINTS AND AS NOTED ON DRAWINGS.

3.01 ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED FOR BOND. CAULK AND SEAL JOINTS PER JOB SPECIFICATIONS AND WHERE NOTED ON DRAWINGS.

3.02 SEE TYPICAL DETAILS FOR INSTALLATION OF CONSTRUCTION JOINTS AND WATERSTOPS IN NEW CONSTRUCTION AND BETWEEN EXISTING AND NEW CONSTRUCTION.

3.03 FOR NON-WATERBEARING SLABS-ON-GRADE, PLACE JOINTS AT MAXIMUM SPACING OF 10'-0" AND IN RATIOS NOT TO EXCEED 2:1. TIMING OF JOINT SAWING IS CRITICAL. JOINTS SHOULD BE SAWN AS SOON AS THE CONCRETE IS HARD ENOUGH THAT THE SAWING DOES NOT RAVEL JOINT EDGES OR DISLODGE COURSE AGGREGATE PARTICLES. PROVIDE SAWCUTS IN A RECTANGULAR PATTERN AS SHOWN ON PLANS. WHERE A PATTERN IS NOT SHOWN, SAWCUT ON COLUMN LINES, AT EQUAL SPACES BETWEEN COLUMNS LINES TO PRODUCE THE MAXIMUM SPACING, AND AT ALL RE-ENTRANT CORNERS AND SLAB CHANGES. PROVIDE ISOLATION JOINTS IN A DIAMOND PATTERN AROUND COLUMNS. SUBMIT JOINT LAYOUT PLAN PRIOR TO STARTING WORK

STRUCTURAL STEEL

1.01 GENERAL:
- A. CONTRACTOR SHALL FIELD VERIFY ALL FLOOR TO SOFFIT DIMENSIONS BEFORE START OF STRUCTURAL STEEL FABRICATION. THE EXISTING SLOPING FINISH CONCRETE SOFFIT ELEVATIONS VARIES THROUGH OUT

1.02 QUALITY ASSURANCE:
- A. STEEL CONSTRUCTION SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS AS CONTAINED IN THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL, INCLUDING THE COMMENTARY AND SUPPLEMENTS.
- B. DO NOT USE "JET" WELDING RODS (E8024) FOR ANY STRUCTURAL WELDING.
- C. FABRICATOR'S QUALIFICATIONS:
  - i) A FABRICATOR ON THE APPROVED FABRICATOR LIST FROM THE AUTHORITY HAVING JURISDICTION OR CERTIFIED BUILDING FABRICATOR, CATEGORY BU, BY THE AISC CERTIFICATION PROGRAM. CERTIFICATION MUST APPLY TO THE FABRICATOR PERFORMING THE WORK.
- D. ERECTOR QUALIFICATIONS: A CERTIFIED STEEL ERECTOR, CATEGORY CSE, BY THE AISC CERTIFICATION PROGRAM.

2.01 MATERIALS SHALL CONFORM TO THE FOLLOWING STANDARDS, UNLESS NOTED OTHERWISE ON DRAWINGS:
- A. W-SHAPES - ASTM A992, FY=50 KSI
- B. OTHER ROLLED SECTIONS (ANGLES, CHANNELS, PLATES, ETC.) - ASTM A36, FY=36 KSI
- C. WHERE NOTED 50 KSI ON DRAWINGS - ASTM A572, FY=50 KSI
- D. STEEL PIPE - ASTM A53, TYPE E, GR.B, FY=35KSI
- E. STRUCTURAL ROUND (HSS) - ASTM A500, GR.B, FY=42KSI
- F. STRUCTURAL TUBES (HSS) - ASTM A500, GR B, FY=46KSI
- G. STRUCTURAL BOLTS U.N.O. - ASTM A325 (TYPE N CONNECTION)
- H. ANCHOR RODS/BOLTS - ASTM F1554, GRADE 36,
- I. SHEET STEEL - ASTM A1011 GR36
- J. WELDING RODS - E-70XX SERIES LOW HYDROGEN

2.02 ANCHOR RODS:
- A. PROVIDE HEADED OR THREADED AND NUTTED ANCHOR RODS. HOOKED ANCHOR RODS ARE NOT ACCEPTABLE.
- B. FOR THREADED ANCHOR RODS, PROVIDE A SINGLE HEAVY HEX NUT. TACK WELD THE BOTTOM OF THE NUT TO THE ROD AT THE EMBEDDED END, UNLESS NOTED OTHERWISE. THE TOP OF THE EMBEDDED HEAD OR NUT IS THE BASIS FOR MEASUREMENT OF EMBEDMENT. PROVIDE A RIGID TEMPORARY STEEL TEMPLATE TO LOCATE ANCHOR RODS DURING CONCRETE PLACEMENT.
- C. DO NOT HEAT OR BEND ANCHOR RODS.

2.03 HEADED ANCHOR STUDS (HAS)/SHEAR CONNECTOR STUDS:
- A. NELSON HEADED STUDS TYPE-B ICC-ES EVALUATION REPORT #ESR-2856 (Fy=65 KSI) OR APPROVED EQUAL. STUDS SHALL BE AUTOMATICALLY END WELDED WITH SUITABLE STUD WELDING EQUIPMENT.
- B. USE 3/4" MINIMUM DIAMETER STUDS. STUDS SHALL BE AT LEAST 3" LONG, AND SHALL EXTEND AT LEAST 1 1/2" ABOVE THE TOP FLUTE OF THE ADJACENT METAL DECK. STUDS SHALL BE EQUALLY SPACED ACROSS BEAM OR SPACED AS SHOWN ON DRAWINGS. STUDS MAY BE HAMMER TESTED BY BENDING 15 DEGREES FROM THE VERTICAL.
- C. WELDING AND INSPECTION SHALL BE IN ACCORDANCE WITH AWS D1.1.
- D. CONTRACTOR TO VERIFY SOUND WELDS BY 100% ACOUSTICAL TESTING. CONTRACTOR TO REPLACE STUDS OR REPAIR DEFICIENT WELDS IN ACCORDANCE WITH AWS D1.1.

2.04 FINISHES:
STEEL COMPLETELY ENCASED IN CONCRETE SHALL NOT BE PAINTED AND AT THE TIME THE CONCRETE IS PLACED, SHALL BE CLEAN AND FREE FROM ANY SUBSTANCE THAT MIGHT IMPAIR THE BOND BETWEEN THE STEEL AND THE CONCRETE.

3.01 FIELD WELDING:
- A. FIELD WELDING, CUTTING AND GRINDING OF STEEL INSIDE THE PUBLIC OCCUPIED BUILDING SHALL NOT BE ALLOWED WITHOUT OWNERS APPROVAL. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND THE STEEL ERECTOR THE LOCATIONS, THE TIME OF DAY, SMOKE-FIRE ALARM SYSTEMS CONTROLS AND OTHER FIELD CONDITIONS UNDER WHICH WORK AY OCCUR INSIDE THE PUBLIC OCCUPIED BUILDING DURING ALL PHASED CONSTRUCTION WORK.
- B. PROVIDE HOT WORK PERMITS. HOT WORK IS ANY WORK INVOLVING WELDING, TORCH CUTTING,GRINDING, OPEN-FLAME SOLDERING, BRAZING OR SIMILAR OPERATIONS CAPABLE OF INITIATING FIRES OR EXPLOSIONS.
- C. WELDING SHALL CONFORM TO THE FOLLOWING AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODES AS APPLICABLE.
  - i) AWS D1.1 STRUCTURAL WELDING CODE-STEEL.
  - ii) AWS D1.3 STRUCTURAL WELDING CODE-SHEET STEEL
- D. WELDERS SHALL HOLD VALID CERTIFICATES ISSUED BY AN ACCEPTED TESTING AGENCY WITHIN THE LAST 12 MONTHS. IF ANY CERTIFICATE IS MORE THAN 12 MONTHS OLD SUBMIT DETAILS OF COMPANY QUALITY CONTROL
- E. WELDERS SHALL SUBMIT WELDER QUALIFICATIONS AND WELDING PROCEDURE SPECIFICATIONS (WPS) TO THE ENGINEER FOR REVIEW PRIOR TO THE START OF WORK. QUALIFICATIONS AND WPS SHALL BE AVAILABLE ON SITE FOR REVIEW.
- F. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE USE OF SHOP AND FIELD WELDS. SPLICES OF STEEL MEMBERS NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE START OF WORK.
- G. GRIND SMOOTH ALL EXPOSED WELDS AND CUT EDGES. FINAL APPROVAL IS BY THE ARCHITECT.
- H. WELDING SHALL BE BY EITHER THE SHIELDED METAL ARC WELDING (SMAW) METHOD OR SHALL CONFORM TO AWS CODE FOR ARC AND GAS WELDING CONSTRUCTION.
  - i) MECHANICAL PROPERTIES FOR THE IN-PLACE WELD (FILLER MATERIAL) SHALL HAVE CHARPY V-NOTCH IMPACT TOUGHNESS OF AT LEAST 20 FOOT-POUNDS AT 0 DEGREES.
  - ii) FIELD WELDS MAY NOT BE APPLIED OVER SHOP WELDS UNLESS A MANUFACTURER APPROVED COMPATIBLE ELECTRODE IS USED IN BOTH THE SHOP AND FIELD.
  - iii) CONTRACTOR SHALL BE RESPONSIBLE FOR THE JOINT PREPARATION AND WELDING PROCEDURES, BUT NOT LIMITED TO: REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS VALUES, AND TAPERS AND TRANSITIONS OF UNEQUAL PARTS.
- I. PROVIDE MINIMUM WELD SIZES PER AISC SPECIFICATIONS FOR GENERAL PROVISIONS FOR CONNECTIONS, JOINTS AND FASTENERS UNLESS SHOWN OTHERWISE ON DRAWINGS.
- J. FILLER MATERIAL OF LOW HYDROGEN CLASSIFICATION(S) SHALL BE STORED IN ACCORDANCE WITH AWS REQUIREMENTS AND PARAMETERS. LOW HYDROGEN ELECTRODES SHALL BE USED WITHIN 4 HOURS OF OPENING THEIR THERMETICALLY SEALED CONTAINERS. ELECTRODES THAT HAVE BEEN WET SHALL NOT BE USED AND SHALL BE REMOVED FROM THE SITE.

POST-INSTALLED ANCHORS AND DOWELS

1.01 GENERAL:
- A. DO NOT USE POST-INSTALLED ADHESIVE ANCHOR OR DOWELS SYSTEMS TO RESIST GRAVITY LOADS IN FIRE RATED CONSTRUCTION.
- B. POST INSTALLED ANCHORS AND DOWELS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE ENGINEER OF RECORD PRIOR TO INSTALLING ANY STRUCTURAL POST INSTALLED ANCHORS OR DOWELS THAT MAY BE USED TO REPLACE MISSING OR MISPLACED CAST-IN-PLACE ANCHORS OR DOWELS.

1.02 QUALITY ASSURANCE:
- A. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH THE APPLICABLE ICC-ES REPORT, THE BUILDING CODE, AND THE GENERAL STRUCTURAL NOTES.
- B. INSTALL ALL ADHESIVE ANCHORS, DOWELS AND MECHANICAL ANCHORS PER ADHESIVE MANUFACTURER'S REQUIREMENTS.

1.03 ANCHOR SUBSTITUTION:
- A. SUBSTITUTION REQUESTS FOR POST-INSTALLED CONCRETE ANCHORS OTHER THAN THOSE SPECIFIED ON DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTE PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND OR STANDARDS AS REQUIRED BY THE BUILDING CODE. SUBSTITUTE MECHANICAL ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI-355.2 AND ICC-ES AC193 FOR CRACKED CONCRETE. SUBSTITUTED ADHESIVE ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI-355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE.
- B. SUBSTITUTION REQUESTS FOR POST-INSTALLED MASONRY ANCHORS OTHER THAN THOSE SPECIFIED ON DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTE PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND OR STANDARDS AS REQUIRED BY THE BUILDING CODE. SUBSTITUTE MECHANICAL ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106 AS APPROPRIATE. SUBSTITUTED ADHESIVE ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58 OR AC60 AS APPROPRIATE.
- C. ENGINEER RESERVE THE RIGHT TO REJECT ALL REQUESTS. DO NOT ORDER MATERIAL UNTIL REQUEST IS APPROVED.

2.01 ANCHORS RODS, BOLTS, AND SLEEVES:
- A. SUBMERGED, EXTERIOR, OR BURIED CONDITIONS: PROVIDE ASTM F593 AISI TYPE 316 STAINLESS STEEL ANCHOR BOLTS WITH ASTM F594 STAINLESS STEEL NUTS.
- B. INTERIOR CONDITIONS: PROVIDE ASTM A307 CARBON STEEL ANCHOR RODS (U.N.O.).

2.02 MECHANICAL ANCHORS FOR GROUT FILLED MASONRY (CMU):
- A. KWIK BOLT 3 EXPANSION ANCHOR BY HILTI (ICC-ES REPORT #ESR-1385) (STAINLESS STEEL BODY FOR EXTERIOR OR DAMP EXPOSURE)
- B. WEDGE-ALL ANCHOR BY SIMPSON (ICC-ES REPORT #ESR-1396), (STAINLESS STEEL BODY FOR EXTERIOR OR DAMP EXPOSURE)
- C. OR APPROVED EQUAL.

2.03 MECHANICAL ANCHORS FOR CONCRETE:
- A. KWIK BOLT TZ EXPANSION ANCHOR BY HILTI (ICC-ES REPORT #ESR-1917) (USE STAINLESS STEEL ANCHORS FOR EXTERIOR OR DAMP EXPOSURE) U.N.O.
- B. STRONG-BOLT WEDGE ANCHOR BY SIMPSON (ICC-ES REPORT #ESR-3037) (DRY INTERIOR LOCATIONS ONLY),
- C. OR APPROVED EQUAL.

2.04 ADHESIVES FOR ANCHORS AND DOWELS IN GROUT FILLED MASONRY (CMU):
- A. HIT HY 70 MAX BY HILTI (ICC-ES REPORT #ESR-2682),
- B. OR APPROVED EQUAL.

2.05 ADHESIVES FOR ANCHORS AND DOWELS IN CONCRETE:
- A. HIT-RE 500 V3 BY HILTI (ICC-ES REPORT #ESR-3814),
- B. SET-XP BY SIMPSON (ICC-ES REPORT #ESR-2508),
- C. OR APPROVED EQUAL.

2.06 SCREW ANCHORS FOR CRACKED AND UN-CRACKED CONCRETE:
- A. ANCHORS SHALL NOT BE USED TO SUPPORT FIRE-RESISTANCE-RATED CONSTRUCTION UNLESS SPECIAL FIRE PROTECTED DETAILS HAVE BEEN DEVELOPED USING APPROVED FIRE-RESISTANCE-RATE MATERIALS.
- B. DO NOT INSTALL SCREW ANCHORS UNTIL THE CONCRETE MEMBER/ELEMENT HAS REACHED ITS ACCEPTABLE F'c DESIGN STRENGTH.
- C. DO NOT USE CARBON STEEL SCREW ANCHORS AT EXTERIOR LOCATIONS OR IN WET ENVIRONMENTS.
- D. REUSE SCREW ANCHORS SHALL NOT BE ALLOWED. NOTIFY ENGINEER OF RECORD BEFORE REUSING ANY EXISTING DRILLED AND TAPPED HOLES WITH NEW SCREW ANCHORS.
- E. SCREW ANCHORS SHALL BE INSTALLED IN A CLEANED PRE-DRILLED HOLE USING A CALIBRATED POWERED IMPACT WRENCH OR INSTALLED WITH A CALIBRATED TORQUE WRENCH UNTIL THE PROPER NOMINAL EMBEDMENT DEPTH IS OBTAINED AND MAXIMUM INSTALLATION TORQUE HAS BEEN REACHED.
- F. ACCEPTABLE SCREW ANCHORS FOR CRACKED AND UN-CRACKED CONCRETE:
  - i) KWIK HUS-EZ (KH-EZ) SCREW ANCHORS BY HILTI (ICC-ES REPORT #ESR-3027).
  - ii) TITEN HD SCREW ANCHORS BY SIMPSON (ICC-ES REPORT #ESR-2713).
  - iii) OR APPROVED EQUAL.

2.07 SCREW ANCHORS FOR SOLID COARSE GROUTED UN-CRACKED MASONRY:
- A. ANCHORS SHALL NOT BE USED TO SUPPORT FIRE-RESISTANCE-RATED CONSTRUCTION UNLESS SPECIAL FIRE PROTECTED DETAILS HAVE BEEN DEVELOPED USING APPROVED FIRE-RESISTANCE-RATE MATERIALS.
- B. MASONRY SHALL BE FULLY GROUTED CLOSED-END CONCRETE MASONRY UNITS CONFORMING TO ASTM C-90, GRADE-N, TYPE-II, DESIGNED F'm = 1500 PSI STRENGTH.
- C. DO NOT INSTALL SCREW ANCHORS UNTIL GROUT HAS REACHED DESIGN STRENGTH OF 2000 PSI.
- D. DO NOT USE CARBON STEEL SCREW ANCHORS AT EXTERIOR LOCATIONS OR IN WET ENVIRONMENTS.
- E. REUSE SCREW ANCHORS SHALL NOT BE ALLOWED. NOTIFY ENGINEER OF RECORD BEFORE REUSING ANY EXISTING DRILLED AND TAPPED HOLES WITH NEW SCREW ANCHORS.
- F. SCREW ANCHORS SHALL BE INSTALLED IN A CLEANED PRE-DRILLED HOLE USING A POWERED IMPACT WRENCH OR INSTALLED WITH A TORQUE WRENCH UNTIL THE PROPER NOMINAL EMBEDMENT DEPTH IS OBTAINED.
- G. ACCEPTABLE SCREW ANCHORS FOR SOLID COURSE GROUTED UN-CRACKED MASONRY:
  - i) TITEN HD SCREW ANCHORS BY SIMPSON (ICC-ES REPORT #ESR-1056).
  - ii) OR APPROVED EQUAL.

3.01 FIELD INSTALLATION:
- A. INSTALL ANCHORS ONLY AFTER CONCRETE HAS REACHED ITS MINIMUM SPECIFIED STRENGTH.
- B. LOCATE ANCHORS TO AVOID DAMAGE TO REINFORCEMENT. USE GROUND PENETRATING RADAR (GPR) CONCRETE TO LOCATE THE EXISTING REINFORCING. MARK REINFORCING LOCATIONS ON THE CONCRETE SURFACE. COORDINATE LOCATIONS OF HOLES TO BE DRILLED WITH MARKS TO CLEAR THE EXISTING REINFORCING.
- C. INSTALL ANCHORS IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS. SEE SPECIAL INSPECTION REQUIREMENTS AND PRODUCT ICC-ES EVALUATION REPORT FOR INSPECTION REQUIREMENTS.
- D. CLEAN DRILLED HOLES USING WIRE BRUSH AND COMPRESSED AIR AS REQUIRED TO REMOVE PARTICULATE DEBRIS AND TO ACHIEVE A DUST FREE SURFACE.
- E. TORQUE ADHESIVE ANCHORS UPON INSTALLING BASE MATERIAL, BUT ONLY AFTER ADHESIVE IS FULLY CURED AND LOAD TEST HAVE BEEN PERFORMED.

3.02 CONNECTION OF NEW STEEL PLATES TO EXISTING CONCRETE:
- A. SHIP CONNECTION PLATES TO THE JOBSITE WITHOUT HOLES.
- B. USE GROUND PENETRATING RADAR (GPR) TO LOCATE THE EXISTING REINFORCING. MARK REINFORCING LOCATIONS ON CONCRETE. MARK CONNECTION PLATE LOCATIONS ON THE CONCRETE SURFACE. DO NOT CUT EXISTING REINFORCING.
- C. DRILL HOLES PER THE MARKS. PLACE TO MISS EXISTING REINFORCING. DO NOT CUT EXISTING REINFORCING.
- D. PLACE CONNECTION PLATES OR TEMPLATE AGAINST EXISTING CONCRETE AND MARK HOLES LOCATIONS ON PLATES FROM MARKS PLACED ON THE CONCRETE SURFACE. VERIFY MARKS WITH DRILLED HOLES.
- E. REMOVE CONNECTION PLATE OR TEMPLATE FROM CONCRETE SURFACE AND FIELD DRILL HOLES.
- F. PLACE EXISTING PLATES AGAINST CONCRETE AND ALIGN HOLES IN PLATES WITH HOLES IN CONCRETE AND INSTALL ANCHORS.

3.03 LOAD TEST FOR ADHESIVE ANCHORS AND DOWELS REQUIREMENTS:
- A. THE CONTRACTOR SHALL INCLUDE IN THEIR BID THE TESTING BY AN INDEPENDENT LABORATORY OF A MINIMUM OF 5% CHOSEN AT RANDOM BY THE TESTING LABORATORY AND CONFIRMED BY THE STRUCTURAL ENGINEER (BUT NO LESS THAN 15) OF EACH TYPE OF ANCHOR INSTALLED. IF ANY ANCHOR FAILS, THE TESTING SHALL BE INCREASED TO 20% (BUT NO LESS THAN 30) AND MAY BE FURTHER INCREASED AFTER REVIEW BY THE STRUCTURAL ENGINEER.
- B. FOR ANCHORS REQUIRING LOAD TESTING, APPLY TENSION LOAD OBTAINED FROM THE STRUCTURAL ENGINEER. SUSTAIN THE TENSION TEST LOAD FOR 5 MINUTES WITH NO DISCERNABLE MOVEMENT FROM THE ANCHOR.

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Sub-Consultant

Design Consultant

Gannett Fleming

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ACK
Drawn by:	MWK
Checked by:	SES
Date:	07/13/18
Dwg scale:	12" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
GENERAL STRUCTURAL NOTES III

Package: B04 - ACSB0003

Sheet Reference No:
V6 - 222 of 260

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Project Number: ######
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3.02 CONNECTION OF NEW STEEL PLATES TO EXISTING CONCRETE:
- A. SHIP CONNECTION PLATES TO THE JOBSITE WITHOUT HOLES.
- B. USE GROUND PENETRATING RADAR (GPR) TO LOCATE THE EXISTING REINFORCING. MARK REINFORCING LOCATIONS ON CONCRETE. MARK CONNECTION PLATE LOCATIONS ON THE CONCRETE SURFACE. DO NOT CUT EXISTING REINFORCING.
- C. DRILL HOLES PER THE MARKS. PLACE TO MISS EXISTING REINFORCING. DO NOT CUT EXISTING REINFORCING.
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- E. REMOVE CONNECTION PLATE OR TEMPLATE FROM CONCRETE SURFACE AND FIELD DRILL HOLES.
- F. PLACE EXISTING PLATES AGAINST CONCRETE AND ALIGN HOLES IN PLATES WITH HOLES IN CONCRETE AND INSTALL ANCHORS.

3.03 LOAD TEST FOR ADHESIVE ANCHORS AND DOWELS REQUIREMENTS:
- A. THE CONTRACTOR SHALL INCLUDE IN THEIR BID THE TESTING BY AN INDEPENDENT LABORATORY OF A MINIMUM OF 5% CHOSEN AT RANDOM BY THE TESTING LABORATORY AND CONFIRMED BY THE STRUCTURAL ENGINEER (BUT NO LESS THAN 15) OF EACH TYPE OF ANCHOR INSTALLED. IF ANY ANCHOR FAILS, THE TESTING SHALL BE INCREASED TO 20% (BUT NO LESS THAN 30) AND MAY BE FURTHER INCREASED AFTER REVIEW BY THE STRUCTURAL ENGINEER.
- B. FOR ANCHORS REQUIRING LOAD TESTING, APPLY TENSION LOAD OBTAINED FROM THE STRUCTURAL ENGINEER. SUSTAIN THE TENSION TEST LOAD FOR 5 MINUTES WITH NO DISCERNABLE MOVEMENT FROM THE ANCHOR.

3.04 TORQUE TEST FOR MECHANICAL ANCHORS, SCREW ANCHORS, & UNDERCUT ANCHORS:
- A. THE CONTRACTOR SHALL INCLUDE IN HIS BID TESTING BY AN INDEPENDENT LABORATORY OF A MINIMUM OF 5% CHOSEN AT RANDOM BY THE TESTING LABORATORY AND CONFIRMED BY THE STRUCTURAL ENGINEER (BUT NO LESS THAN 15) OF EACH TYPE OF ANCHOR INSTALLED. IF ANY ANCHOR FAILS, THE TESTING SHALL BE INCREASED TO 20% (BUT NO LESS THAN 30) AND MAY BE FURTHER INCREASED AFTER REVIEW BY THE STRUCTURAL ENGINEER.

ABBREVIATIONS

AB	-ANCHOR BOLT(S)
ABC	-AGGREGATE BASE COURSE
ACI	-AMERICAN CONCRETE INSTITUTE
A.F.F.	-ABOVE FINISH FLOOR
AISC	-AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	-ALTERNATE
ALUM	-ALUMINUM
APPROX	-APPROXIMATE
AR	-ANCHOR ROD(S)
ARCH	-ARCHITECT OR ARCHITECTURAL DOCUMENTS
ASTM	-AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	-AMERICAN WELDING SOCIETY
AVG	-AVERAGE
BLDG	-BUILDING
BLK	-BLOCK
BM	-BEAM
BOTT	-BOTTOM
BRG	-BEARING
BTWN	-BETWEEN
CALCS	-CALCULATIONS
℄ TO ℄	-CENTER TO CENTER
CHKD PL	-CHECKERED PLATE
CLG	-CEILING
CIP	-CAST IN PLACE
CJ	-CONTROL JOINT OR CONSTRUCTION JOINT
CLR	-CLEAR
CMU	-CONCRETE MASONRY UNIT
C/L	-CENTER LINE
COL	-COLUMN
CONC	-CONCRETE
CONN	-CONNECTION
CONSTR	-CONSTRUCTION
CONT	-CONTINUE OR CONTINUOUS
DBL	-DOUBLE
DEPR	-DEPRESSION
DIA, ø	-DIAMETER
DIAG	-DIAGONAL
DIM	-DIMENSION
DL	-DEAD LOAD
DN	-DOWN
DP	-DEEP OR DEPTH
DTL	-DETAIL
DWG(S)	-DRAWING(S)
DWL(S)	-DOWEL(S)
E (PSI)	-MODULUS OF ELASTICITY
EA	-EACH
EF	-EACH FACE
EJ	-EXPANSION JOINT
ELEC	-ELECTRICAL
EL	-ELEVATION
EQ	-EQUAL
EQUIP	-EQUIPMENT
ES	-EACH SIDE
EW	-EACH WAY
EXP	-EXPANSION
EXT	-EXTERIOR
FB	-FLAT BAR
FF	-FAR FACE
FDN	-FOUNDATION
FIN	-FINISH
FLG	-FLANGE
FLR	-FLOOR
FRMG	-FRAMING
FS	-FAR SIDE
FT	-FOOT,FEET
FTG	-FOOTING
FY	-YIELD STRESS OF STEEL
GA	-GAGE OR GAUGE
GALV	-GALVANIZED
GPR	-GROUND PENETRATING RADAR
GSN	-GENERAL STRUCTURAL NOTES
HAS	-HEADED ANCHOR STUD
HK	-HOOK
HORIZ	-HORIZONTAL
H.P.	-HIGH POINT
HS	-HIGH STRENGTH
HSS	-HOLLOW STRUCTURAL SECTION
HT	-HEIGHT
I (in^4)	-MOMENT OF INERTIA
IBC	-INTERNATIONAL BUILDING CODE
ICC	-INTERNATIONAL CODE COUNCIL
ID	-INSIDE DIAMETER
I.F.	-INSIDE FACE
IN	-INCH
INFO	-INFORMATION
INT	-INTERIOR
JT	-JOINT
K	-KIP = 1000 LBS.
LBF	-POUND-FORCE
LBS	-POUND(S)
LG	-LONG
LL	-LIVE LOAD
LLH	-LONG LEG HORIZONTAL
LLV	-LONG LEG VERTICAL
L.P.	-LOW POINT
LWC	-LIGHT WEIGHT CONCRETE
MAS	-MASONRY
MATL	-MATERIAL
MAX	-MAXIMUM
MCJ	-MASONRY CONTROL JOINT
MECH	-MECHANICAL
MEJ	-MASONRY EXPANSION JOINT
MEZZ	-MEZZANINE
MFR	-MANUFACTURER
MID	-MIDDLE
MIN	-MINIMUM
MISC	-MISCELLANEOUS
M.O.	-MASONRY OPENING
MPE	-MECHANICAL, PLUMBING & ELECTRICAL
MTL	-METAL
NAAMM	-NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
NF	-NEAR FACE
NIC	-NOT IN CONTRACT
NO., #	-NUMBER
NS	-NEAR SIDE
NTS	-NOT TO SCALE
o.c.	-ON CENTER (LOWERCASE)
OD	-OUTSIDE DIAMETER
O.F.	-OPENING
OUT/OUT	-OUT TO OUT
OH	-OVERHANG
OPP	-OPPOSITE
OPP HD	-OPPOSITE HAND
PCI	-PRESTRESSED CONCRETE INSTITUTE
PC	-PRECAST PRECAST DOUBLE TEE PRECAST INVERTED TEE BEAM
PCF	-POUNDS PER CUBIC FOOT
PEN	-PENETRATION
PERP	-PERPENDICULAR
PGL	-PROFILE GRADE LINE
PJP	-PARTIAL JOINT PENETRATION
PL ℄	-PROPERTY LINE, PLATE
PL OR	-PLATE
PLF	-POUNDS PER LINEAL FOOT
PRELIM	-PRELIMINARY
PROJ	-PROJECTION
PSI	-POUNDS PER SQUARE INCH
PT, P/T	-POST-TENSIONED
R, RAD	-RADIUS
R	-RISER (STAIR)
REINF	-REINFORCED OR REINFORCING
REQ'D	-REQUIRED
R/W	-REINFORCED WITH
R.O.	-ROUGH OPENING
RTU	-ROOF TOP UNIT
SCHED	-SCHEDULE
SGC	-SAND, GRAVEL, COBBLES SOIL LAYER
SHT	-SHEET
SIM	-SIMILAR
SJI	-STEEL JOIST INSTITUTE
SLV	-SLEEVE OR SHORT LEG VERTICAL
SLH	-SHORT LEG HORIZONTAL
SOG	-SLAB ON GRADE
SPA	-SPACES
SPEC	-SPECIFICATION
SQ	-SQUARE
S.S.	-STAINLESS STEEL
STD	-STANDARD
STIFF	-STIFFENER
STL	-STEEL
STRUC	-STRUCTURE OR STRUCTURAL
SYMM	-SYMMETRICAL
T	-TREAD (STAIR)
T&B	-TOP AND BOTTOM
THK	-THICK OR THICKNESS
TL	-TOTAL LOAD
TOC	-TOP OF CONCRETE
TOG	-TOP OF GROUT
TOS	-TOP OF STEEL
TOW	-TOP OF WALL
TYP	-TYPICAL
UNO	-UNLESS NOTED OTHERWISE
U/S	-UNDERSIDE
UT	-ULTRASONIC TESTING
VERT	-VERTICAL
w/	-WITH (LOWERCASE)
w/o	-WITHOUT (LOWERCASE)
WD	-WOOD
WP	-WORK POINT
WWF	-WELDED WIRE FABRIC
X-BRACE	-CROSS BRACING
X-STRONG	-EXTRA STRONG
XX-STRONG	-DOUBLE EXTRA STRONG
&	-AND
@	-AT
#	-NUMBER
%	-PERCENT
ø	-DIAMETER

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Registered Engineer (Structural)
48434
SHANE E. SWEETEN
ARIZONA U.S.A.
EXPIRES 9/30
Date Signed: 7/13/18
Design Sub-Consultant
Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

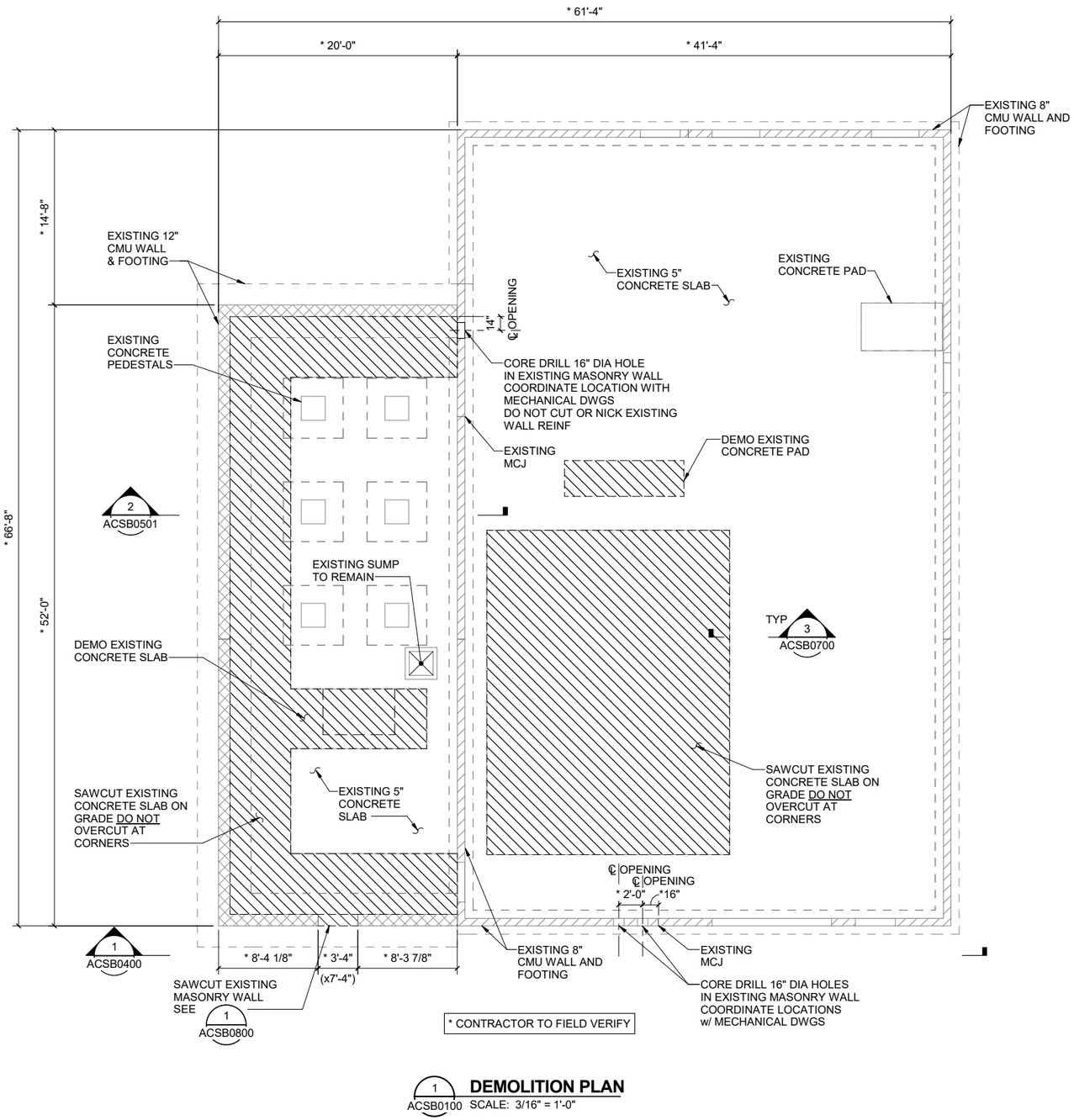
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KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
GENERAL STRUCTURAL NOTES IV

Package: B04 - ACSB0004
Sheet Reference No:
V6 - 223 of 260

Project Number: #####
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1 ACSB0100 **DEMOLITION PLAN**
SCALE: 3/16" = 1'-0"

N

6' 4' 2' 0' 5' 10'
3/16" = 1'-0"

Project Number: #####
7/12/2018 2:10:05 PM

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Design Consultant
Gannett Fleming

Design Sub-Consultant

48434 SHANE E. SWEETEN — Date Signed 7/12/18 — REGISTERED PROFESSIONAL ENGINEER (Structural) — ARIZONA U.S.A. — EXPIRES 9/30

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

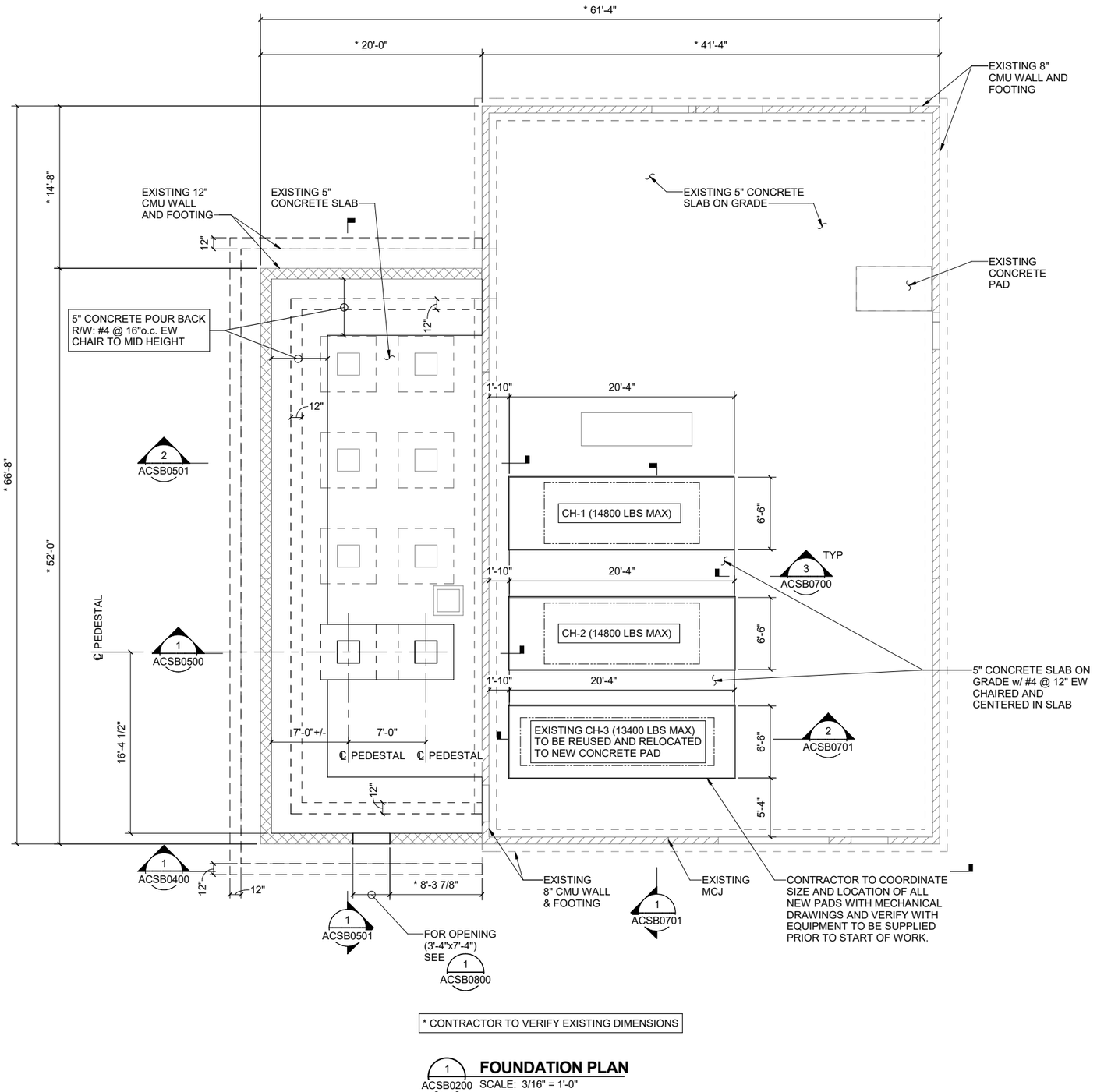
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

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STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
DEMOLITION PLAN

Package: B04 - ACSB0100
Sheet Reference No:
V6 - 224 of 260



* CONTRACTOR TO VERIFY EXISTING DIMENSIONS

1 ACSB0200 **FOUNDATION PLAN**
SCALE: 3/16" = 1'-0"

6' 4' 2' 0' 5' 10'
3/16" = 1'-0"

N

Registered Engineer (Structural)
48434
SHANE E. SWEETEN
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EXPIRES 9/30

Design Sub-Consultant

Design Consultant
Gannett Fleming

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CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
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Date:	07/13/18
Dwg scale:	3/16" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

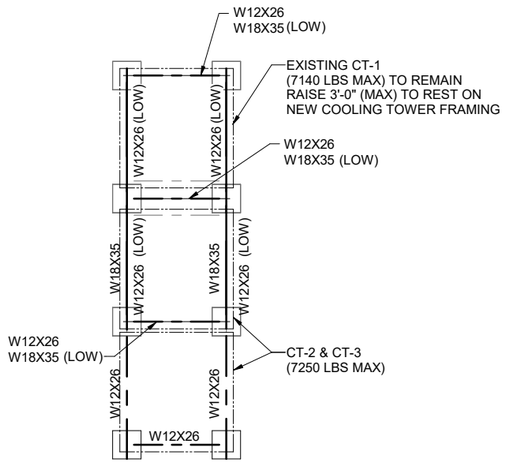
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COB - CENTRAL PLANT BUILDING
STRUCTURAL
FOUNDATION PLAN

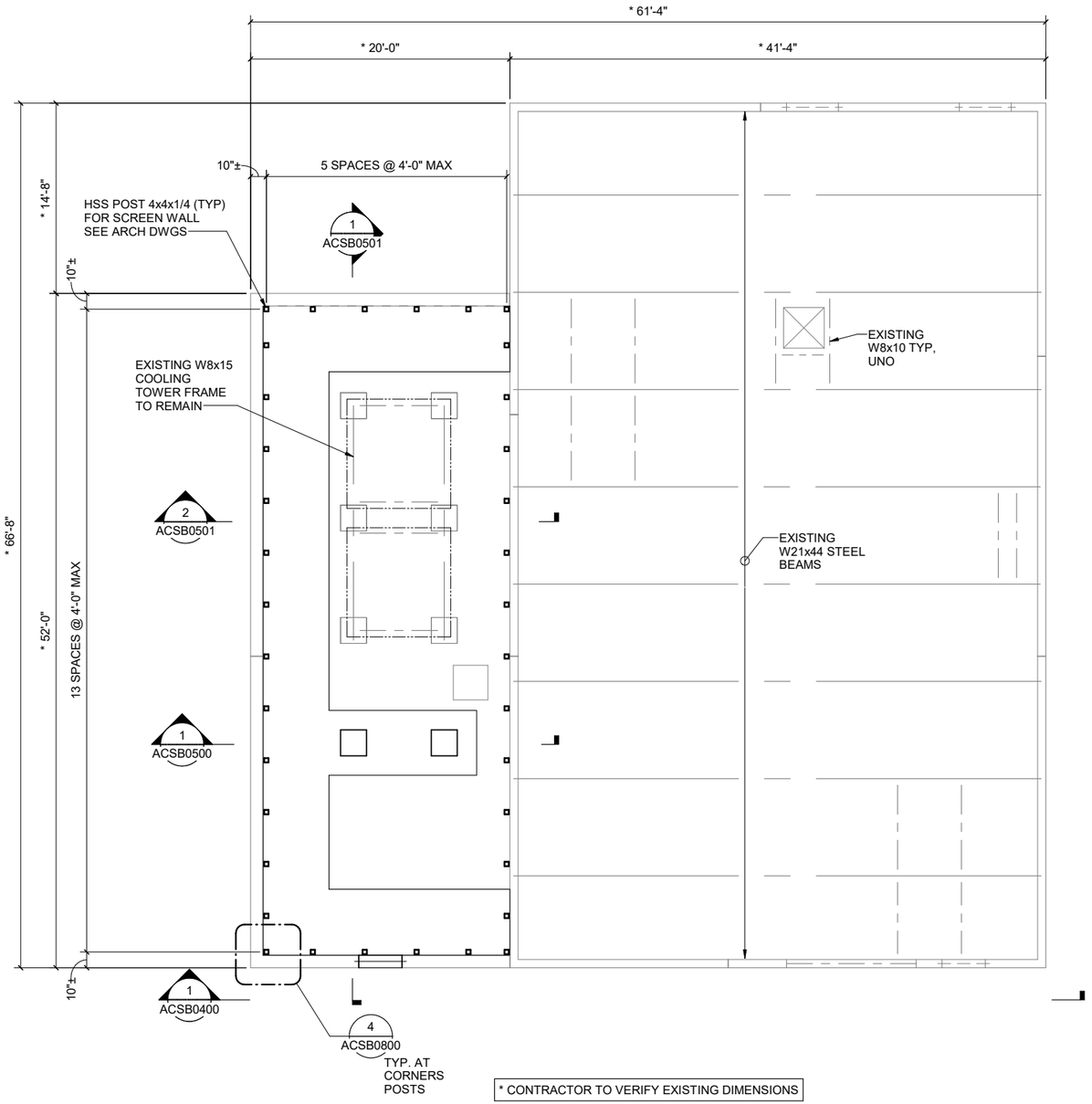
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Sheet Reference No:
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2 ACSB0300 **COOLING TOWER FRAMING PLAN**
SCALE: 3/16" = 1'-0"



* CONTRACTOR TO VERIFY EXISTING DIMENSIONS

1 ACSB0300 **FRAMING PLAN**
SCALE: 3/16" = 1'-0"

6' 4' 2' 0' 5' 10'
3/16" = 1'-0"

N

Design Consultant
Gannett Fleming

Design Sub-Consultant

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SHANE E.
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ARIZONA U.S.A.
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EXPIRES 9/30
Registered Professional Engineer (Structural)

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	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	ACK
Drawn by:	MWK
Checked by:	SES
Date:	07/13/18
Dwg scale:	3/16" = 1'-0"
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KIVA No.:	07-5204

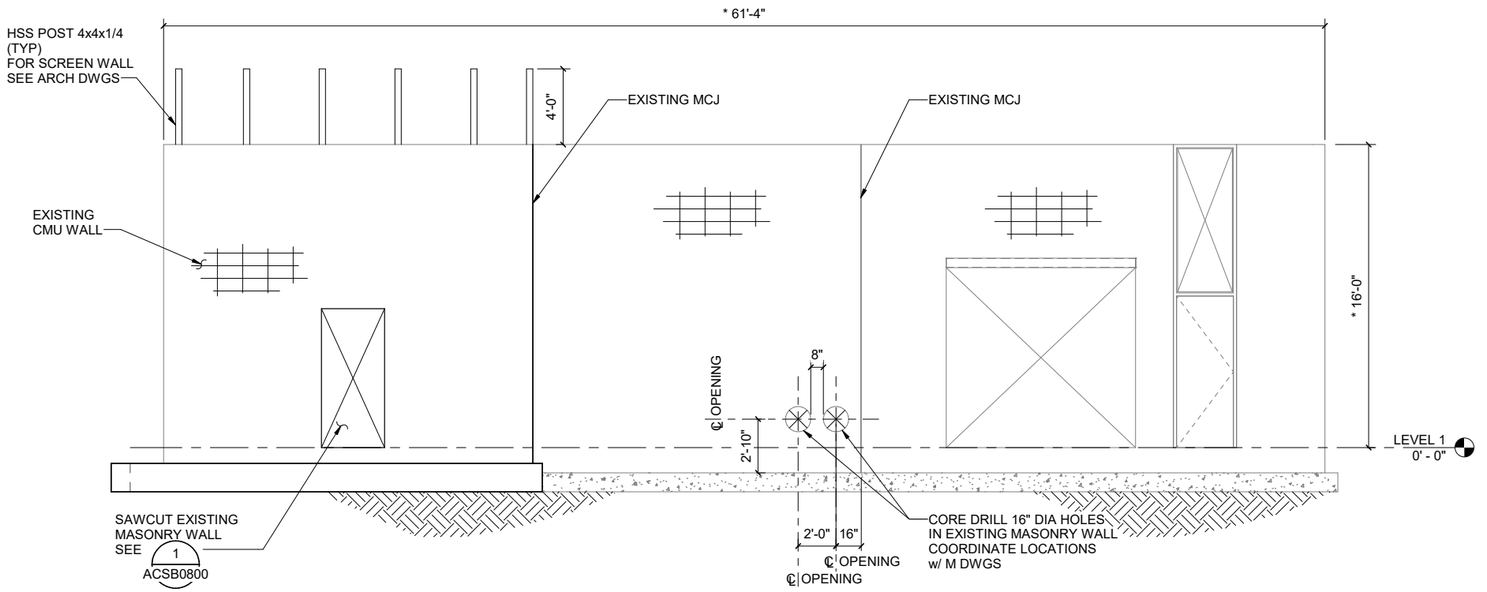
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
FRAMING PLAN

Package: B04 - ACSB0300
Sheet Reference No:
V6 - 226 of 260

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1 ACSB0400 **SOUTH ELEVATION**
SCALE: 1/4" = 1'-0"

* CONTRACTOR TO VERIFY EXISTING DIMENSIONS

Project Number: #####
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Professional Engineer (Structural)
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SHANE E.
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ARIZONA, U.S.A.
Date Signed: 7/13/18
EXPIRES 9/30

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Design Consultant
Gannett Fleming

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	SUBMITTED FOR REVIEW	04/06/18

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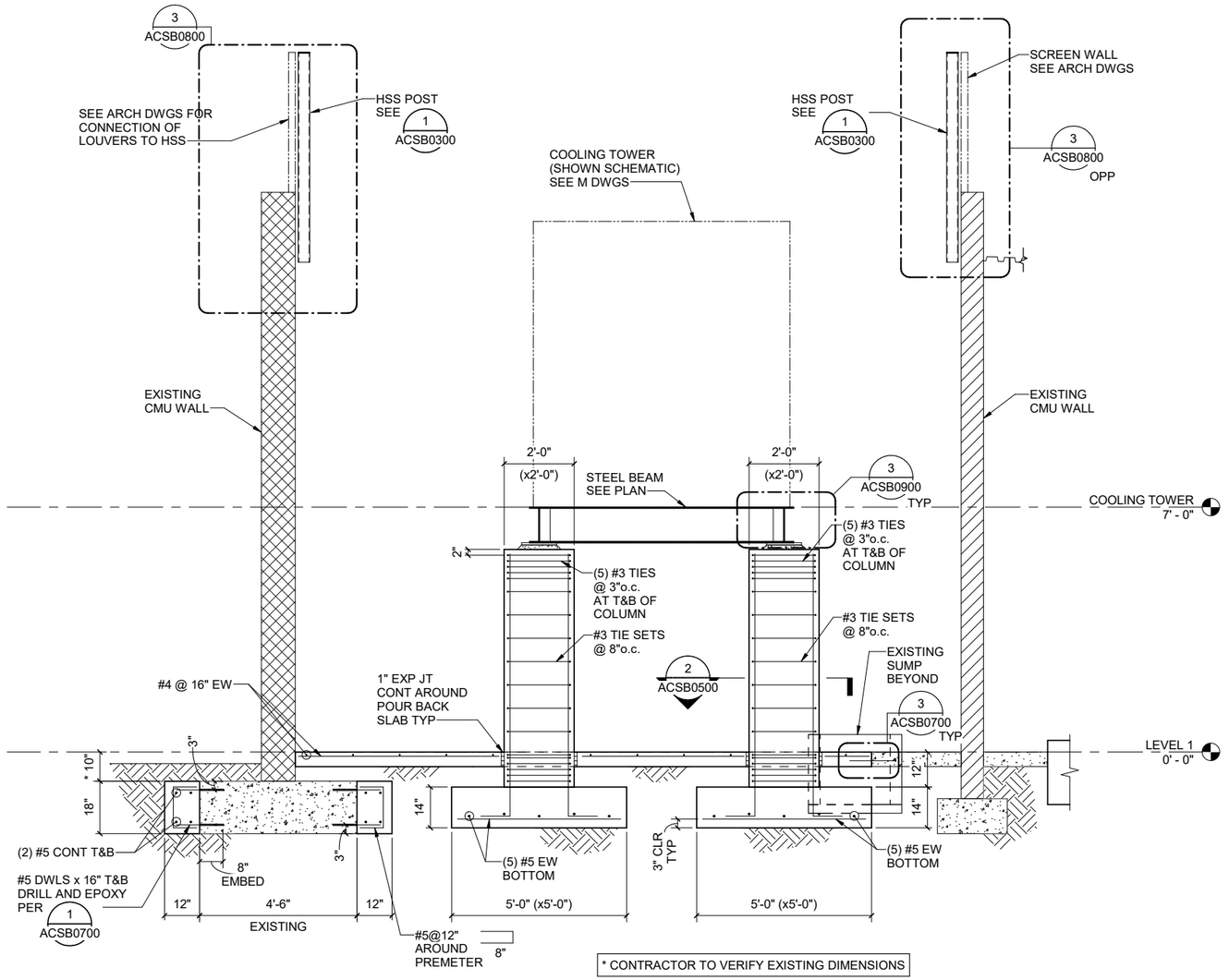
PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	ACK
Drawn by:	MWK
Checked by:	SES
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

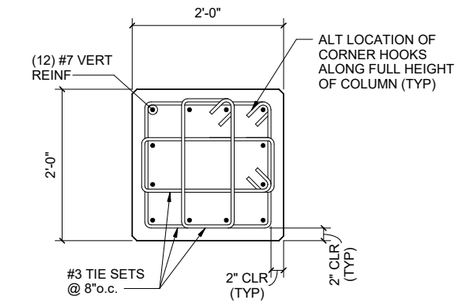
COB - CENTRAL PLANT BUILDING
STRUCTURAL
FULL HEIGHT SECTION

Package: B04 - ACSB0400
Sheet Reference No:
V6 - 227 of 260



* CONTRACTOR TO VERIFY EXISTING DIMENSIONS

1 ACSB0500 **COOLING TOWER SECTION** SCALE: 1/2" = 1'-0"



CONCRETE PEDESTAL REINFORCEMENT

2 ACSB0500 **SECTION** SCALE: 1" = 1'-0"

Project Number: #####
7/12/2018 2:10:07 PM

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Design Consultant: Gannett Fleming

Design Sub-Consultant

Registered Engineer (Structural) 48434 SHANE E. SWEETEN Date Signed 9/30/18 Expires 9/30

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	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

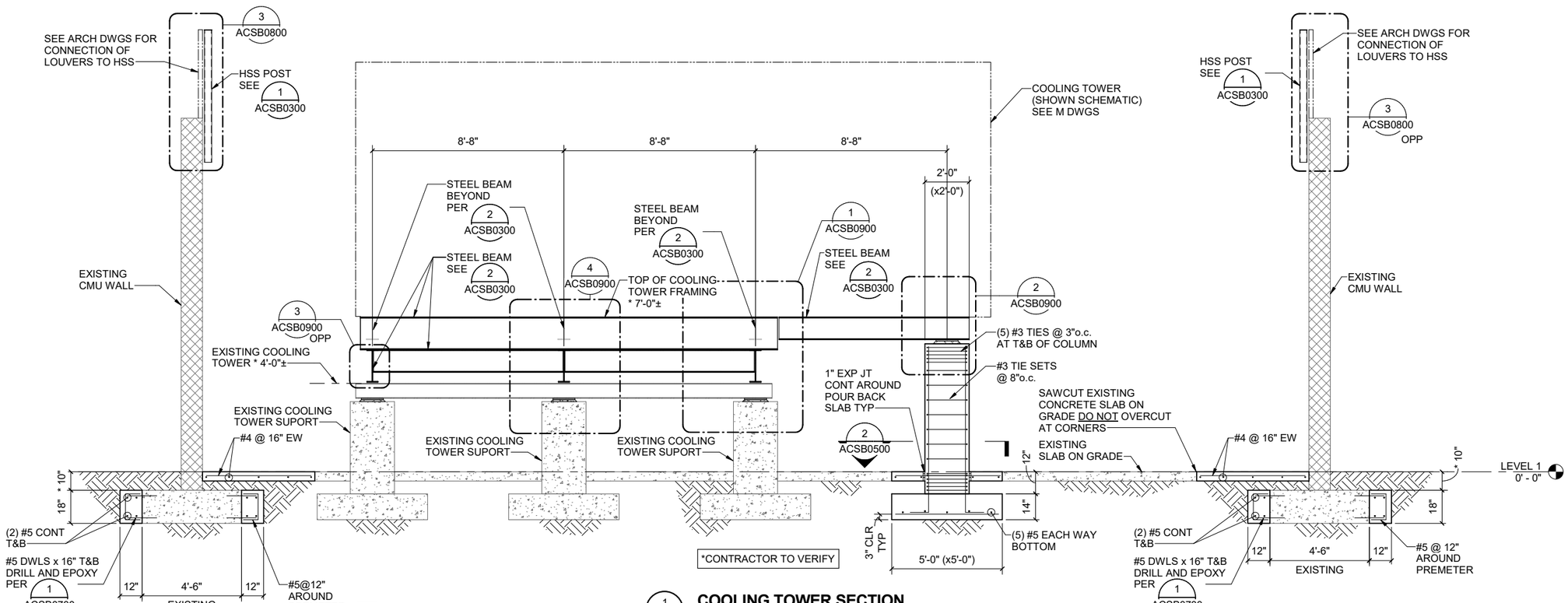
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Drawn by:	MWK
Checked by:	SES
Date:	07/13/18
Dwg scale:	As indicated
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
COOLING TOWER SECTIONS

Package: **B04 - ACSB0500**

Sheet Reference No:
V6 - 228 of 260



Local File BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACSBXX01_R17_A360.rvt

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Design Consultant: Gannett Fleming

Design Sub-Consultant

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX DVT EYR
CITY OF PHOENIX AVIATION DEPARTMENT

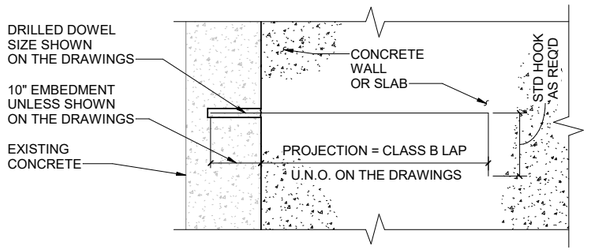
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STRUCTURAL
COOLING TOWER SECTIONS

Package: B04 - ACSB0501

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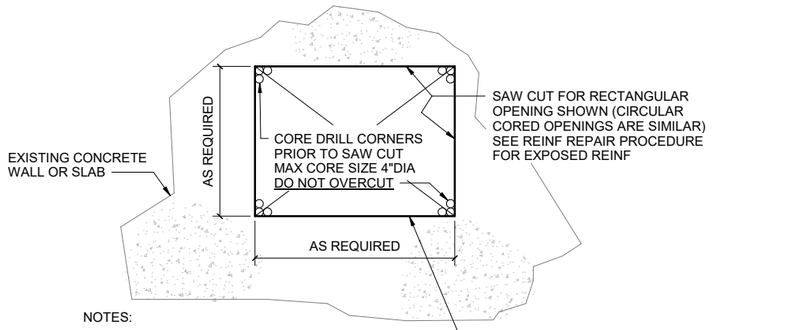


DRILLED DOWEL NOTES

1. USE ROTARY PERCUSSION DRILL TO AVOID CUTTING EXISTING REINFORCING BARS. DO NOT USE CORE DRILL.
2. DRILL HOLE DIAMETER OF SIZE PER ADHESIVE MANUFACTURER'S INSTRUCTIONS AND ICC-ES REPORT.
3. THOROUGHLY CLEAN HOLE AND INSTALL DWLS PER ADHESIVE MANUFACTURER'S INSTRUCTIONS AND ICC-ES REPORT.
4. ADHESIVE SHALL BE HILTI HIT-RE 500-V3 (ICC REPORT ESR 3814) OR APPROVED EQUAL)
5. DO NOT CUT EXISTING REINFORCING.

DRILLED IN DOWEL

1 ACSB0700 **DETAIL** SCALE: 1" = 1'-0"

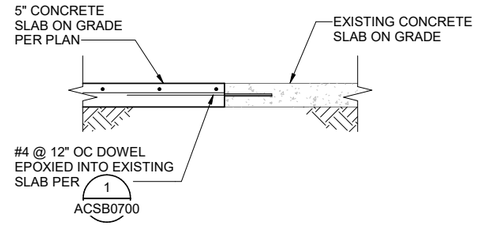


NOTES:

1. SIZES AND LOCATIONS OF ALL OPENINGS MUST BE APPROVED BY ENGINEER PRIOR TO BEGINNING CUTTING OPERATION.
2. REPAIR AND EXTEND EXISTING CONCRETE LINERS AND COATINGS TO MATCH EXISTING CONSTRUCTION.
3. RECTANGULAR OPENING IS SHOWN. PROVIDE SIMILAR PROCEDURE FOR CORED CIRCULAR OPENINGS.

OPENING IN EXISTING
CONCRETE WALL OR SLAB

2 ACSB0700 **DETAIL** SCALE: 1" = 1'-0"



NEW SLAB AT EXISTING SLAB

3 ACSB0700 **DETAIL** SCALE: 3/4" = 1'-0"

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Gannett Fleming

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STAGE 2 - B04 DESIGN SUBMISSION

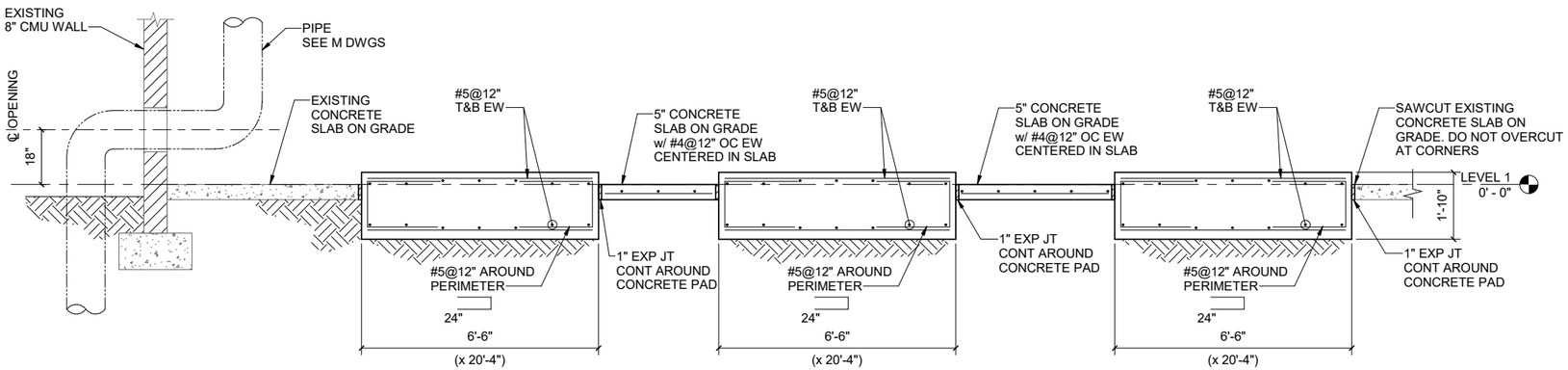
COB - CENTRAL PLANT BUILDING
STRUCTURAL
CONCRETE DETAILS

Package: **B04 - ACSB0700**

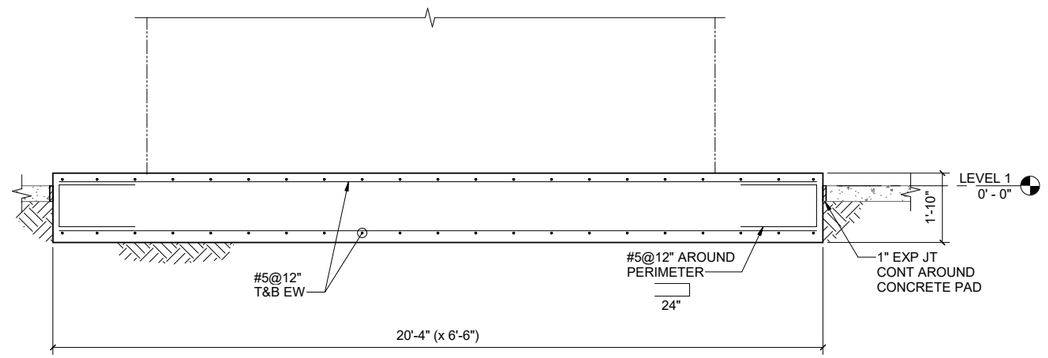
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V6 - 230 of 260

Project Number: #####
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1 ACSB0701 **SECTION**
SCALE: 1/2" = 1'-0"



2 ACSB0701 **SECTION**
SCALE: 1/2" = 1'-0"

NOTE:
CONTRACTOR TO COORDINATE SIZE AND LOCATION OF ALL NEW PADS WITH MECHANICAL EQUIPMENT PRIOR TO START OF WORK.

Project Number: #####
7/12/2018 2:10:09 PM

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Design Consultant
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Design Sub-Consultant

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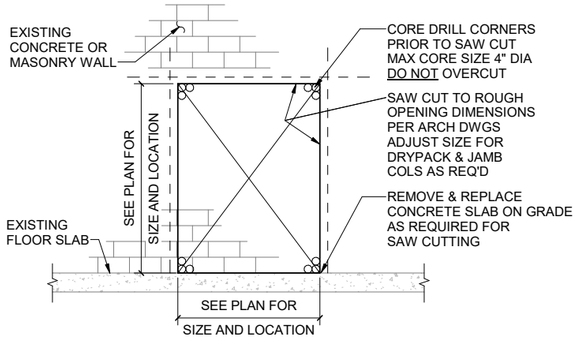
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STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
CONCRETE SECTIONS

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Package: **B04 - ACSB0701**
Sheet Reference No:
V6 - 231 of 260



TYPICAL SAWCUT OPENING IN EXISTING WALL SEQUENCE:

1. SEE ARCHITECTURAL & MECHANICAL DWGS FOR SIZES & LOCATIONS OF ALL NEW OPENINGS IN EXISTING CONCRETE OR MASONRY WALLS
2. PROVIDE SHORING AS REQUIRED

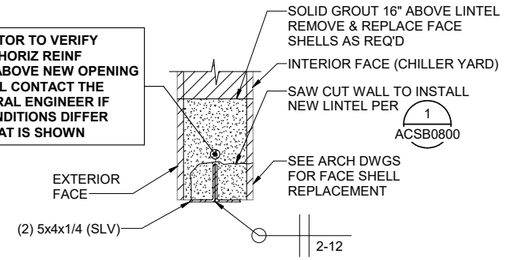
NEW SAWCUT OPENING IN CONCRETE OR MASONRY WALL

1 ACSB0800 **DETAIL** SCALE: 1" = 1'-0"

NEW OPENING IN EXISTING CMU WALL CONSTRUCTION SEQUENCE

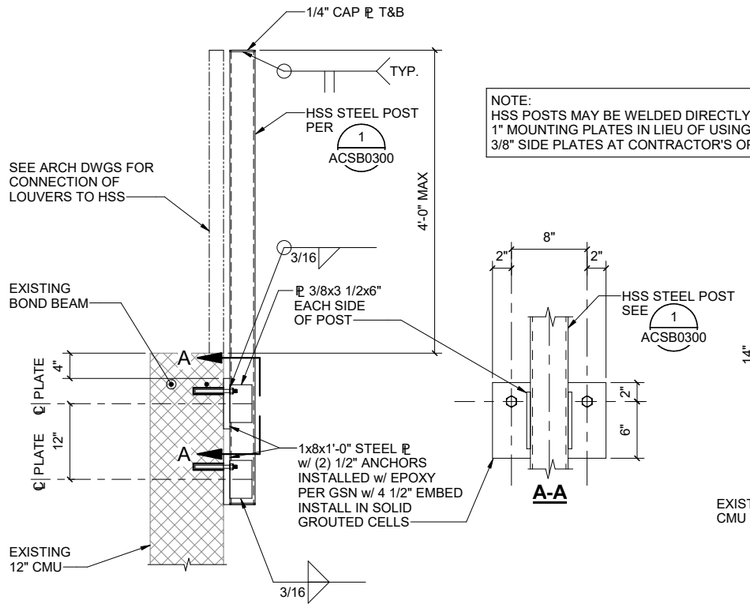
1. SAWCUT NEW OPENING PER 1 ACSB0800
2. INSTALL HEADER ANGLES PER 2 ACSB0800
3. BREAK OUT GROUT HOLES IN EXISTING BLOCK & GROUT SOLID JAMB CELL EACH SIDE OF OPENING & HEADER AROUND NEW OPENING. IF EXISTING JAMB CELL IS SOLID GROUTED THEN CELL DOES NOT HAVE TO BE BROKEN OUT

CONTRACTOR TO VERIFY EXISTING HORIZ REINF OCCURS ABOVE NEW OPENING AND SHALL CONTACT THE STRUCTURAL ENGINEER IF FIELD CONDITIONS DIFFER FROM WHAT IS SHOWN



NEW STEEL LINTEL AT EXISTING CMU WALL

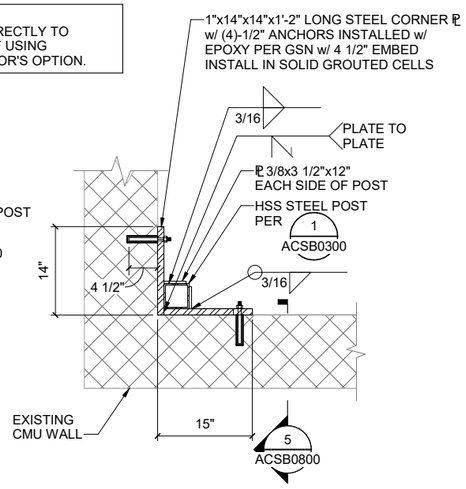
2 ACSB0800 **DETAIL** SCALE: 1" = 1'-0"



NOTE:
HSS POSTS MAY BE WELDED DIRECTLY TO
1" MOUNTING PLATES IN LIEU OF USING
3/8" SIDE PLATES AT CONTRACTOR'S OPTION.

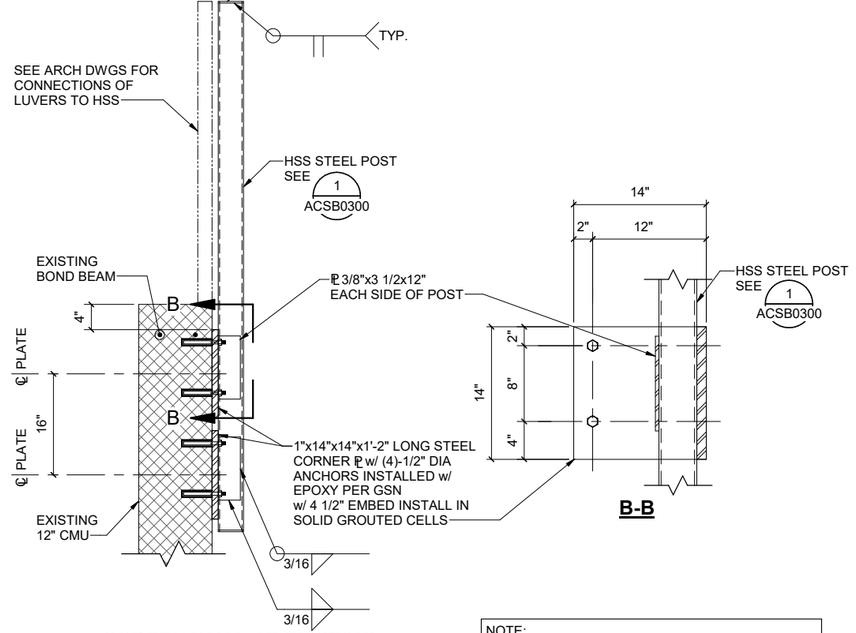
SCREEN WALL AT EXISTING CMU

3 ACSB0800 **DETAIL** SCALE: 1" = 1'-0"



PLAN VIEW-CORNER POST SUPPORT AT EXISTING CMU

4 ACSB0800 **DETAIL** SCALE: 1" = 1'-0"



SCREEN WALL AT EXISTING CMU CORNER CONDITION

5 ACSB0800 **DETAIL** SCALE: 1" = 1'-0"

NOTE:
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1" MOUNTING PLATES IN LIEU OF USING
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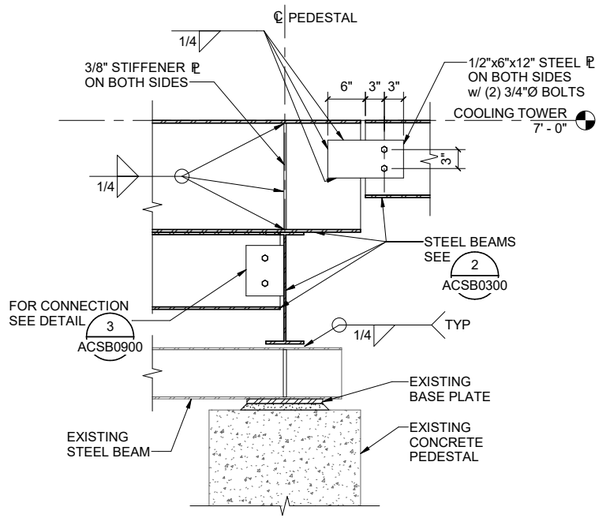
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STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
STRUCTURAL
MASONRY TYPICAL DETAILS

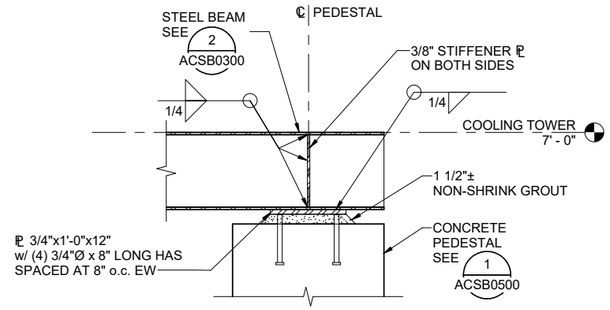
Package: B04 - ACSB0800

Sheet Reference No:
V6 - 232 of 260



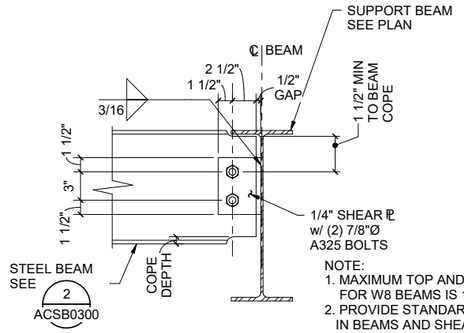
STEEL BEAM AT EXISTING STEEL BEAMS

1 **DETAIL**
ACSB0900 SCALE: 1" = 1'-0"



STEEL BEAM AT CONCRETE PEDESTAL

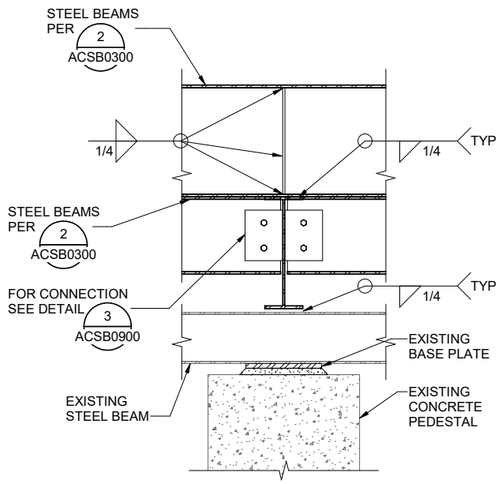
2 **DETAIL**
ACSB0900 SCALE: 1" = 1'-0"



NOTE:
1. MAXIMUM TOP AND BOTTOM COPE DEPTH FOR W8 BEAMS IS 1"
2. PROVIDE STANDARD SIZE HOLES FOR BOLTS IN BEAMS AND SHEAR PLATES EXCEPT HORIZONTAL SHORT SLOTTED HOLES (SSL) MAY BE PROVIDED IN SHEAR PLATE ON ONE SIDE ONLY

TYPICAL STEEL BEAM
TO SUPPORT CONNECTION

3 **DETAIL**
ACSB0900 SCALE: 1 1/2" = 1'-0"



STEEL BEAM AT EXISTING STEEL BEAMS

4 **DETAIL**
ACSB0900 SCALE: 1" = 1'-0"

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COB - CENTRAL PLANT BUILDING
STRUCTURAL
STEEL TYPICAL DETAILS

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Sheet Reference No:
V6 - 233 of 260

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7/12/2018 2:10:11 PM
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ABBREVIATIONS

@	AT	°F	DEGREES FAHRENHEIT	%	PERCENT
A	AIR	(F)	FUTURE	P	PUMP
AAV	AUTOMATIC AIR VENT	FSD	COMBINATION FIRE/SMOKE DAMPER	PC	PUMPED CONDENSATE
ABV	ABOVE	FD	FLOOR DRAIN, FIRE DAMPER	PCR	PUMP (STEAM) CONDENSATE RETURN
AC	AIR CONDITIONING	FDC	FIRE DEPARTMENT CONNECTION	PD	PRESSURE DROP
ACU	AIR CONDITIONING UNIT	FDR	FLOOR DRAIN	PH	PHASE
ACCU	AIR COOLED CONDENSING UNIT	FF	FINISHED FLOOR	PLBG	PLUMBING
AD	ACCESS DOOR, AIR DRYER	FG	FUEL GAS	PNEU	PNEUMATIC
ADJ	ADJUST, ADJUSTABLE	FLR	FLOOR	POS	POSITION
ADA	AMERICANS WITH DISABILITIES ACT	FLA	FULL LOAD AMPS	PROP	PROPELLER
AF	AIRFOIL, ANTI-FREEZE	FLEX	FLEXIBLE	PRESS	PRESSURE
AFF	ABOVE FINISHED FLOOR	FO	FUEL OIL	PRV	PRESSURE REDUCING VALVE
AFMS	AIR FLOW MONITORING STATION	FOB	FLAT ON BOTTOM	PS	PRESSURE SWITCH
AHU	AIR HANDLING UNIT	FOF	FUEL OIL FILL	PSI	POUNDS PER SQUARE INCH
AI	ANALOG INPUT	FOG	FUEL OIL GAUGE	PSIG	POUNDS PER SQUARE INCH GAUGE
ALUM	ALUMINUM	FOR	FUEL OIL RETURN	PVC	POLYVINYL CHLORIDE
AO	ANALOG OUTPUT	FOS	FUEL OIL SUPPLY		
AP	ACCESS PANEL	FOT	FLAT ON TOP	(RX)	REMOVE EXISTING
APD	AIR PRESSURE DROP	FOV	FUEL OIL VENT	R	RISE
APPROX	APPROXIMATELY	FRP	FIBERGLASS REINFORCED PLASTIC	RA	RETURN AIR
ARCH	ARCHITECTURAL	FPM	FEET PER MINUTE	RD	ROOF DRAIN
ARU	AIR ROTATION UNIT	FPS	FEET PER SECOND	REF	REFRIGERANT
AS	AIR SEPARATOR	FS	FLOW SWITCH	REQ'D	REQUIRED
ASHP	AIR SOURCE HEAT PUMP	FM	FLOW METER	RH	RELATIVE HUMIDITY
AST	ABOVEGROUND STORAGE TANK	FT, '	FOOT, FEET	RL	REFRIGERANT LIQUID
ATC	AUTOMATIC TEMPERATURE CONTROL	FT HD	FEET OF HEAD	RLA	RATED LOAD AMPS
ATV	ATMOSPHERIC VENT	FZ	FREEZE, FREEZSTAT	RM	ROOM
AV	ANALOG VALVE			RPM	REVOLUTIONS PER MINUTE
AVG	AVERAGE	GA	GAUGE	RS	REFRIGERANT SUCTION
		GAL	GALLON, GALLONS		
BAS	BUILDING AUTOMATION SYSTEM	GALV	GALVANIZED	S	SWITCH
BBD	BOILER BLOW DOWN	GEN	GENERATOR	SM	SHEET METAL
BDD	BACKDRAFT DAMPER, BOILER BLOWDOWN	GPH	GALLONS PER HOUR	SA	SUPPLY AIR
		GPM	GALLONS PER MINUTE	SAN	SANITARY
BF	BOILER FEED	GWR	GLYCOL WATER RETURN	SAT	SUPPLY AIR TEMPERATURE
BFP	BACKFLOW PREVENTER	GWS	GLYCOL WATER SUPPLY	SD	SMOKE DETECTOR, SMOKE DAMPER
BLW	BELOW			SENS	SENSIBLE
BLDG	BUILDING	H	HEIGHT	SF	SUPPLY FAN, SQUARE FEET
BMS	BUILDING MANAGEMENT SYSTEM	H2O	WATER	SHT	SHEET
BOD	BOTTOM OF DUCT, BASIS OF DESIGN	HB	HOSE BIB	SL	SOUND LINING
BOL	BOTTOM OF LOUVER	HC	HEATING COIL	SP	STATIC PRESSURE
BOT	BOTTOM	HCU	HUMIDIFICATION CONTROL UNIT	SPR	SPRINKLER
BTU	BRITISH THERMAL UNIT	HGB	HOT GAS BYPASS	SPEC	SPECIFICATION
BTUH	BRITISH THERMAL UNITS PER HOUR	HORIZ	HORIZONTAL	SQ	SQUARE
		HP	HORSEPOWER	SQ FT	SQUARE FOOT, SQUARE FEET
C	COMMON	HPS	HIGH PRESSURE STEAM	S/S	START/STOP
CA	COMPRESSED AIR	HTG	HEATING	SS	STAINLESS STEEL
CC	COOLING COIL	HUM	HUMIDIFIER	STD	STANDARD
CD	CONDENSATE DRAIN	HWR	HOT WATER RETURN	STL	STEEL
CFM	CUBIC FEET PER MINUTE	HWS	HOT WATER SUPPLY		
CH	CHILLER	HX	HEAT EXCHANGER	ΔT	TEMPERATURE DIFFERENTIAL
CHWR	CHILLED WATER RETURN	HZ	HERTZ (CYCLES PER SECOND)	TEMP	TEMPERATURE, TEMPORARY
CHWS	CHILLED WATER SUPPLY			TD	TRANSFER DUCT
CI	CAST IRON	ID	INSIDE DIAMETER	TG	TRANSFER GRILLE
CL	CENTER LINE	IGV	INLET GUIDE VANE	TOD	TOP OF DUCT
CLG	COOLING	IN, "	INCH, INCHES	TOL	TOP OF LOUVER
CLNG	CEILING	IN WG	INCHES OF WATER GAUGE	TSP	TOTAL STATIC PRESSURE
CNG	COMPRESSED NATURAL GAS	INFO	INFORMATION	TYP	TYPICAL
CO	CLEANOUT, CARBON MONOXIDE	INT	INTERIOR		
CO2	CARBON DIOXIDE	INV	INVERT ELEVATION	UC	UNDERCUT DOOR
COL	COLUMN	ISOL	ISOLATION	UH	UNIT HEATER
CONC	CONCRETE	IW	INDUSTRIAL WASTE	UL	UNDERWRITERS LABORATORIES
CONN	CONNECTION			UON	UNLESS OTHERWISE NOTED
CONT	CONTINUATION	KW	KILOWATTS	UTR	UP THROUGH ROOF
CONT'D	CONTINUED				
CP	CONDENSATE PUMP, CONTROL PANEL	L	LENGTH, LONG	V	VOLTS, VENT
CPVC	CHLORINATED POLYVINYL CHLORIDE	LAT	LEAVING AIR TEMPERATURE	VAR	VARIABLE
CRAC	COMPUTER ROOM AIR CONDITIONER	LAV	LAVATORY	VAV	VARIABLE AIR VOLUME
CRAH	COMPUTER ROOM AIR HANDLER	LBS	POUNDS	VCO	VERTICAL CLEAN OUT
CV	CONTROL VOLUME, CHECK VALVE	LBS/HR	POUNDS PER HOUR	VD	VOLUME DAMPER
CT	COOLING TOWER	LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN	VEL	VELOCITY
CW	COLD WATER			VENT	VENTILATION
CWR	CONDENSER WATER RETURN	LP	LIQUID PROPANE	VERT	VERTICAL
CWS	CONDENSER WATER SUPPLY	LPS	LOW PRESSURE STEAM	VFD	VARIABLE FREQUENCY DRIVE
Cx	COMMISSIONING	LRA	LOAD RATED AMPS	VIB	VIBRATION
CxA	COMMISSIONING AUTHORITY	LWT	LEAVING WATER TEMPERATURE	VRF	VARIABLE REFRIGERANT FLOW
				VSD	VARIABLE SPEED DRIVE
(D)	DEMOLISH, REMOVE	M	METER	VTR	VENT THROUGH ROOF
D	DRAIN, DEPTH	MA	MIXED AIR		
DAT	DISCHARGE AIR TEMPERATURE	MAV	MANUAL AIR VENT	W	WIDTH, WIDE
DB	DRY BULB TEMPERATURE, DECIBELS	MAX	MAXIMUM	W/	WITH
DCW	DOMESTIC COLD WATER	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR	W/O	WITHOUT
DDC	DIRECT DIGITAL CONTROL			WB	WET BULB TEMPERATURE
DEG, °	DEGREES	MCA	MINIMUM CIRCUIT AMPACITY	WC	WATER COLUMN
DEH	DEHUMIDIFIER	MECH	MECHANICAL	WG	WATER GAUGE
DEPT	DEPARTMENT	MFR	MANUFACTURER	WH	WATER HEATER
DESG	DESIGNATION	MO	MOTOR OIL	WMS	WIRE MESH SCREEN
DI	DIGITAL INPUT	MOD	MOTOR OPERATED DAMPER, MODULATING	WPD	WATER PRESSURE DROP
DIA, ø	DIAMETER			WSHP	WATER SOURCE HEAT PUMP
DIFF	DIFFERENTIAL, DIFFERENCE	MIN	MINIMUM	WT	WEIGHT
DISC	DISCONNECT	MPCR	MEDIUM PRESSURE CONDENSATE RETURN		
DN	DOWN			ZN	ZONE
DO	DIGITAL OUTPUT	MPS	MEDIUM PRESSURE STEAM		
DP	DIFFERENTIAL PRESSURE	MTD	MOUNTED		
DTWR	DUAL TEMPERATURE WATER RETURN	MTG	MOUNTING		
DTWS	DUAL TEMPERATURE WATER SUPPLY	MUW	MAKE UP WATER		
DV	DIGITAL VALVE				
DWG	DRAWING	N/A	NOT APPLICABLE		
DX	DIRECT EXPANSION	NC	NORMALLY CLOSED, NOISE CRITERIA		
		NIC	NOT IN CONTRACT		
(ER)	EXISTING RELOCATED	NFPA	NATIONAL FIRE PROTECTION AGENCY		
(EX)	EXISTING TO REMAIN				
EA	EXHAUST AIR	NG	NATURAL GAS		
EAT	ENTERING AIR TEMPERATURE	No	NUMBER		
EF	EXHAUST FAN	NO	NORMALLY OPENED		
EFF	EFFICIENCY	NOM	NOMINAL		
EJ	EXPANSION JOINT	NTS	NOT TO SCALE		
EL	ELEVATION				
ELEC	ELECTRIC, ELECTRICAL	OA	OUTSIDE AIR		
ELEV	ELEVATOR	OAT	OUTSIDE AIR TEMPERATURE		
EMS	ENERGY MANAGEMENT SYSTEM	OC	ON CENTER		
(ER)	EXISTING RELOCATED	OED	OPEN ENDED DUCT		
ESP	EXTERNAL STATIC PRESSURE	OFD	OVERFLOW DRAIN		
ET	EXPANSION TANK	OI	OIL INTERCEPTOR		
EWB	ENTERING WET BULB TEMPERATURE	OSD	OPEN SITE DRAIN		
EWT	ENTERING WATER TEMPERATURE	OS&Y	OUTSIDE STEM AND YOKE VALVE		
EXT	EXTERIOR	OVH	OVERHEAD		
		OWS	OIL WATER SEPARATOR		

DUCTWORK

SYMBOL DOUBLE LINE	SYMBOL SINGLE LINE	DESCRIPTION
20x12	20x12	DUCTWORK, SIZE AS INDICATED
20x12	20x12	DUCTWORK, WITH SOUNDLINING
		VANED ELBOW
		UN-VANED ELBOW
		VANED TEE
		UN-VANED TEE
		SUPPLY DUCT TURNING UP AND DOWN
		RETURN DUCT TURNING UP AND DOWN
		EXHAUST DUCT TURNING UP AND DOWN
R/D	R/D	DUCT RISE/DROP IN AIRFLOW DIRECTION
		DUCT TRANSITION, SQUARE TO SQUARE
		DUCT TRANSITION, SQUARE TO ROUND
		DUCT CAPPED
		45 DEGREE TAP
		CONICAL TAP
		SPUN-IN RUNOUT FITTING W/ FLEX. & VD
		FLEXIBLE DUCT
		FLEXIBLE CONNECTION
		MANUAL VOLUME DAMPER
		FIRE DAMPER
		SMOKE DAMPER
		COMBINATION FIRE/SMOKE DAMPER
BDD	BDD	BACKDRAFT DAMPER
MD	MD	MOTORIZED DAMPER
BD	BD	BAROMETRIC DAMPER
		DUCT CONTINUATION
		SUPPLY AIR FLOW DIRECTION
OA		OUTSIDE AIR FLOW DIRECTION
		RETURN/EXHAUST AIR FLOW DIRECTION
		RETURN, EXHAUST GRILLE OR REGISTER
		SUPPLY AIR DIFFUSER, 4-WAY BLOW
		SUPPLY AIR DIFFUSER, 3-WAY BLOW
		SUPPLY AIR DIFFUSER, 2-WAY BLOW
		SUPPLY AIR DIFFUSER, 1-WAY BLOW
		LINEAR SLOT DIFFUSER
UC		UNDERCUT DOOR
DL 12x12		DOOR LOUVER
AD	AD	DUCT ACCESS DOOR
T	T	THERMOSTAT, MASTER THERMOSTAT
TS		TEMPERATURE SENSOR
H		HUMIDISTAT
FZ		FREEZESTAT
HS		HUMIDITY SENSOR
S		DUCT SMOKE DETECTOR
CO2		CARBON DIOXIDE SENSOR
CO		CARBON MONOXIDE SENSOR
SP		STATIC PRESSURE SENSOR
AFMS		AIR FLOW MEASURING STATION
S		SWITCH OR TOGGLE SWITCH
TM		MANUAL TIMER SWITCH
HOA		HAND/OFF/AUTO SWITCH
1 2		STATIC PRESSURE CLASSIFICATION DESIGNATION (IN. W.G.)

PIPING, FITTINGS, AND VALVES

SYMBOL	DESCRIPTION
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CNG	COMPRESSED NATURAL GAS
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
FOF	FUEL OIL FILL
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
G	GAS
GWR	GLYCOL WATER RETURN
GWS	GLYCOL WATER SUPPLY
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HPS	HIGH PRESSURE STEAM
LWS	LOOP WATER SUPPLY
LWR	LOOP WATER RETURN
LPS	LOW PRESSURE STEAM
MUW	MAKE UP WATER
MPS	MEDIUM PRESSURE STEAM
NG	NATURAL GAS
PSC	PUMPED STEAM CONDENSATE RETURN
RD	REFRIGERANT DISCHARGE
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
SC	STEAM CONDENSATE RETURN
STM	STEAM
	PIPING TURNING UP
	PIPING TURNING DOWN
	TEE DOWN
	PIPE BRANCH BOTTOM TAKEOFF
	PIPE BRANCH TOP TAKEOFF
	VALVE IN VERTICAL PIPE
	CAP
	FLOW DIRECTION
R/D	PIPE SLOPE RISE/DROP
	PIPE RISER UP/DOWN
	CONCENTRIC REDUCER/INCREASER
	ECCENTRIC REDUCER/INCREASER (FOB)
	UNION
	PIPE CONTINUATION
W H	EXPANSION LOOP (WxH)
	PIPE ANCHOR
	FLEXIBLE PIPE CONNECTOR
EJ	EXPANSION JOINT
	PIPE GUIDE
	STEAM TRAP
	BLIND FLANGE

SYMBOL	DESCRIPTION
	GEN. SHUTOFF VALVE (BALL, GATE, BUTTERFLY)
	GATE VALVE
	GLOBE VALVE
	OUTSIDE STEM & YOKE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GAS COCK
	PRESSURE REDUCING VALVE
	CALIBRATED BALANCING VALVE
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	CONTROL VALVE, THREE-WAY (ELECTRIC)
	THREE-WAY MANUAL VALVE
	SOLENOID VALVE
AAV	AUTOMATIC AIR VENT (EXTEND TO DRAIN)
MAV	MANUAL AIR VENT
	RELIEF/SAFETY VALVE
	STRAINER
	STRAINER WITH DRAIN VALVE AND CAP
	PRESSURE/TEMPERATURE TEST PORT
	AQUASTAT
	PRESSURE GAUGE WITH COCK
	THERMOMETER
T	TEMPERATURE SENSOR
P	PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE TRANSDUCER
FS	FLOW SWITCH
FM	FLOW METER
	VENTURI FLOW METER
	PUMP

LINES AND REFERENCE SYMBOLS

SYMBOL	DESCRIPTION
	NEW WORK LINEWEIGHT
	DEMOLITION LINEWEIGHT
	EXISTING LINEWEIGHT
	FUTURE LINEWEIGHT
	CONNECTION OF NEW TO EXISTING
	TERMINATION POINT OF DEMOLITION
X	SHEET KEYED NOTE
	DRAWING REVISION NUMBER

E-1 — EQUIPMENT DESIGNATION

TYPE / DIM / CFM — DIFFUSER, REGISTER, OR GRILLE AIRFLOW TAG

1 — TITLE / SCALE: SCALE (AS REQUIRED) — INDICATES PLAN/DETAIL NUMBER; PLAN/DETAIL TITLE

1 / M301 — INDICATES PLAN/DETAIL NUMBER; INDICATES DRAWING ON WHICH DRAWING SECTION APPEARS

GENERAL NOTES

1. THE MECHANICAL DRAWINGS CANNOT BE FULLY AND CORRECTLY INTERPRETED WITHOUT REFERENCE TO THE ENTIRE SET OF BID DOCUMENTS INCLUDING SPECIFICATIONS, SYMBOLS, ABBREVIATIONS, SCHEDULES, DETAILS AND SCHEMATICS.
2. ANY SYMBOLS OR ABBREVIATIONS SHOWN ON THE MECHANICAL COVER SHEET MAY APPEAR ON THE DRAWINGS; NOT ALL WILL NECESSARILY APPEAR. USE ONLY THOSE PERTAINING TO THESE DOCUMENTS.
3. THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE CAPACITY, SIZE, APPROXIMATE LOCATION AND GENERAL ARRANGEMENT, NOT THE SPECIFIC DETAILS OF CONSTRUCTION AND INTERCONNECTION OF SYSTEMS.
4. THE LOCATIONS OF DUCTWORK, EQUIPMENT, AND PIPING ETC SHOWN ON THE DRAWINGS IS APPROXIMATE AND IS NOT INTENDED TO SHOW EXACT LOCATIONS.
5. CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE. PROVIDE ALL NECESSARY OFFSETS AND FITTINGS FOR A COMPLETE INSTALLATION.
6. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS.
7. COORDINATE HVAC WORK WITH THE WORK OF ALL OTHER TRADES. REWORK DUE TO THE LACK OF COORDINATION IS THE RESPONSIBILITY OF THE CONTRACTOR.
8. ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES, UNLESS NOTED OTHERWISE.
9. RUN PIPING AND DUCTWORK CONCEALED, EXCEPT IN MECHANICAL ROOMS OR WHERE OTHERWISE INDICATED.
10. WHERE PIPING IS RUN IN EXTERIOR WALLS OR AREAS OF POTENTIAL FREEZING PROVIDE 1 INCH OF ADDITIONAL INSULATION.
11. FURNISH AND INSTALL ACCESS PANELS WHERE REQUIRED FOR ACCESS TO ALL CONCEALED VALVES, DAMPERS OR EQUIPMENT WHERE NO OTHER MEANS IS PROVIDED. FINISH ACCESS PANELS TO MATCH WALL COVERING.
12. RUN CONCEALED PIPING ON ROOM SIDE OF BUILDING INSULATION, UNLESS NOTED OTHERWISE.
13. INSTALL ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS, LOCAL, STATE AND FEDERAL.
14. SEAL ALL WALL AND FLOOR PENETRATIONS. SEAL ALL PENETRATIONS IN FIRE RATED WALLS AND FLOORS IN ACCORDANCE WITH UL LISTED ASSEMBLIES.
15. ALL WORK TO COMPLY WITH THE 2012 INTERNATIONAL MECHANICAL CODE, 2012 INTERNATIONAL ENERGY CONSERVATION CODE, AND ALL CITY OF PHOENIX ADOPTED CODES AND AMENDMENTS, I.B.C. 107.2.
16. MECHANICAL DESIGN IS INTENDED SO THE AIR CONDITIONING SYSTEM WILL OPERATE CONTINUOUSLY TO MAINTAIN VENTILATION REQUIREMENTS DURING OCCUPANCY.I.M.C. 403.2, 403.3, 405.1.
17. CALL FOR INSPECTION OF ALL MECHANICAL SYSTEMS PRIOR TO COVER OR CONCEALMENT, I.B.C. 107.2.
18. ALL MECHANICAL AIR CONDITIONING EQUIPMENT TO HAVE A MINIMUM EER RATING PER 2012 IECC, TABLE C403.2.3. SUBMIT MECHANICAL AC EQUIPMENT TO OWNER OR ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDER.
19. SUBMIT FINAL AIR BALANCE REPORT TO BUILDING INSPECTOR FOR FINAL REVIEW AND APPROVAL, I.M.C. 403.7.
20. SMOKE DETECTORS TO CONNECT TO FIRE ALARM SYSTEM AND ACTIVATE A SUPERVISORY ALARM UPON ACTIVATION.
21. CONDENSATE DRAIN PIPE MATERIAL SHALL ALL BE COPPER TYPE-M OR OTHER APPROVED MATERIALS CALLED OUT IN PLUMBING SPECIFICATIONS. NO PLASTIC PIPE SHALL BE USED FOR OUTDOOR EXPOSED PIPE.

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

Design Consultant: Gannett Fleming

Design Sub-Consultant

REGISTERED PROFESSIONAL ENGINEER — CERTIFICATE NO. 66328 — HITEN SHETH — EXPIRES 03/31/20 — Date Signed 7/13/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HS
Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	AS NOTED
CIP No.:	AV100000011
KIVA No.:	07-5204

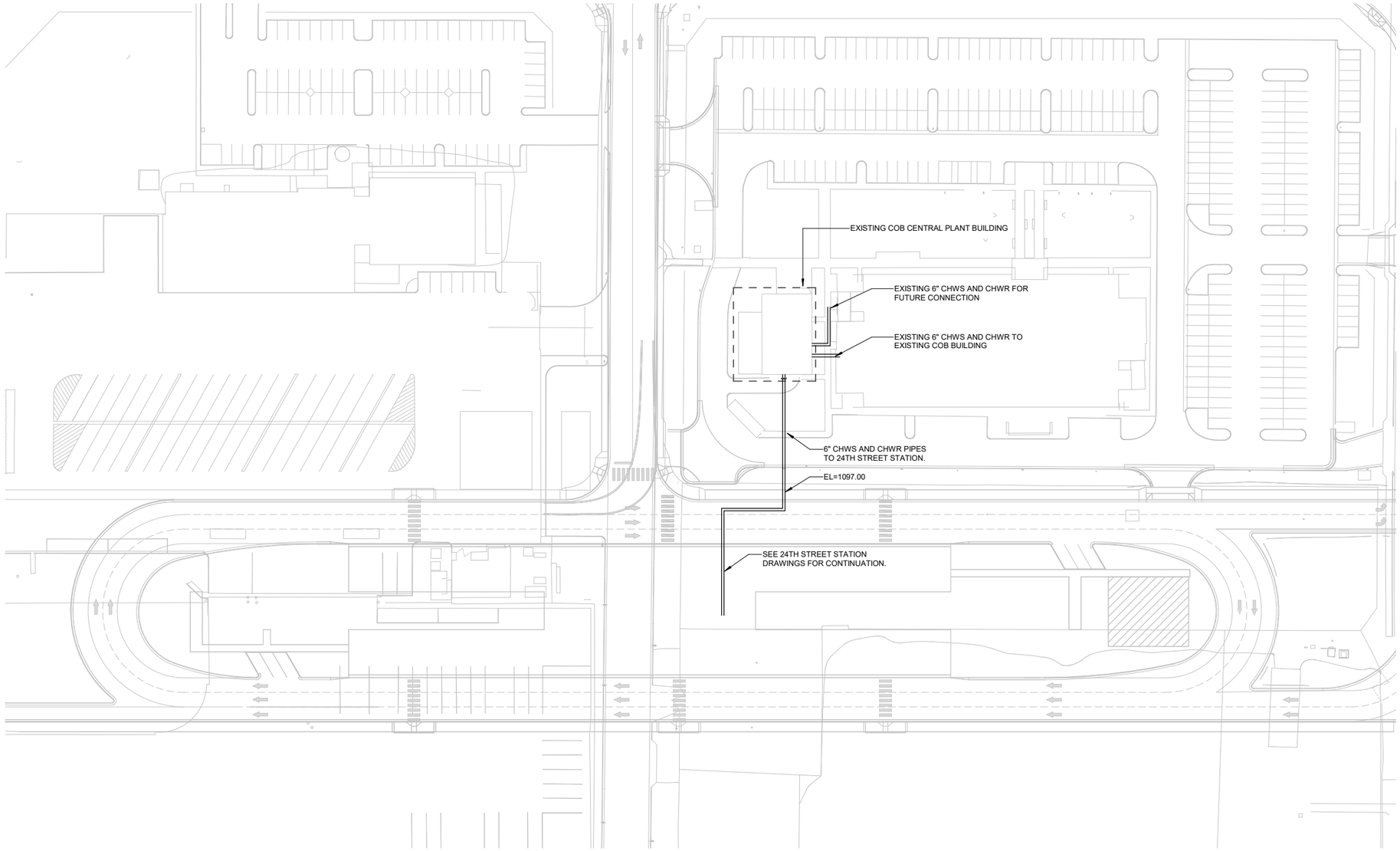
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
SYMBOLS LEGEND AND ABBREVIATIONS

Package: B04 - ACME0001

Sheet Reference No: V6 - 234 of 260

Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-ACMEXX01_R17_A360.rvt
Project Number: ##### 7/11/2018 3:42:19 PM



1 MECHANICAL OVERALL SITE PLAN
SCALE: 1/4" = 1'-0"

4' 2' 0' 4' 8'
1/4" = 1'-0"

N

Project Number: ######
7/11/2018 3:42:26 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt

Design Consultant
Gannett Fleming

Design Sub-Consultant

REGISTERED ENGINEER
66328
HITEN N. SHETH
Date Signed
EXPIRES 03/31/20

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HS
Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

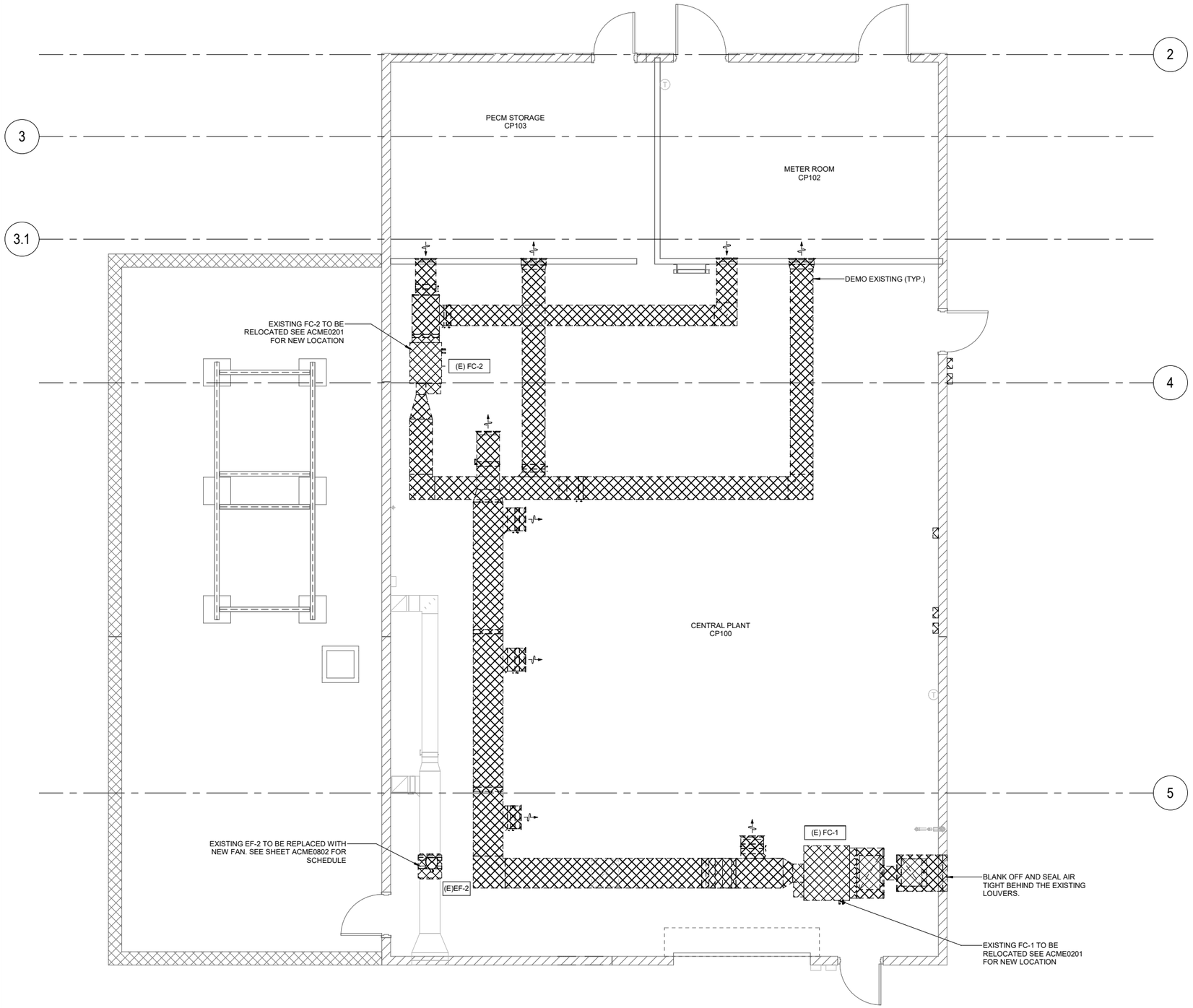
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
SITE PLAN

Package: B04 - ACME0101
Sheet Reference No:
V6 - 235 of 260

HVAC DEMOLITION NOTES

1. REMOVE EXISTING MECHANICAL ITEMS AS PER HATCHING. ALL ASSOCIATED SUPPORTS, BRACES, HANGERS, ANCHORS, AND ACCESSORIES SHALL BE REMOVED.
2. RELOCATE EXISTING FANCOIL UNITS. REMOVE ASSOCIATED DUCTWORK AND ACCESSORIES. SEE ACME0201 FOR NEW LOCATIONS AND LAYOUT.
3. REMOVE ALL EXISTING VFD; AND RETURN TO PHOENIX AVIATION.



1 **MECHANICAL HVAC DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"

4' 2' 0' 4' 8'
1/4" = 1'-0"

N

Design Consultant
Gannett Fleming

REGISTERED PROFESSIONAL ENGINEER 66328 HITEN SHETH Date Signed 10/31/19
EXPIRES 03/31/20

Design Sub-Consultant

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PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

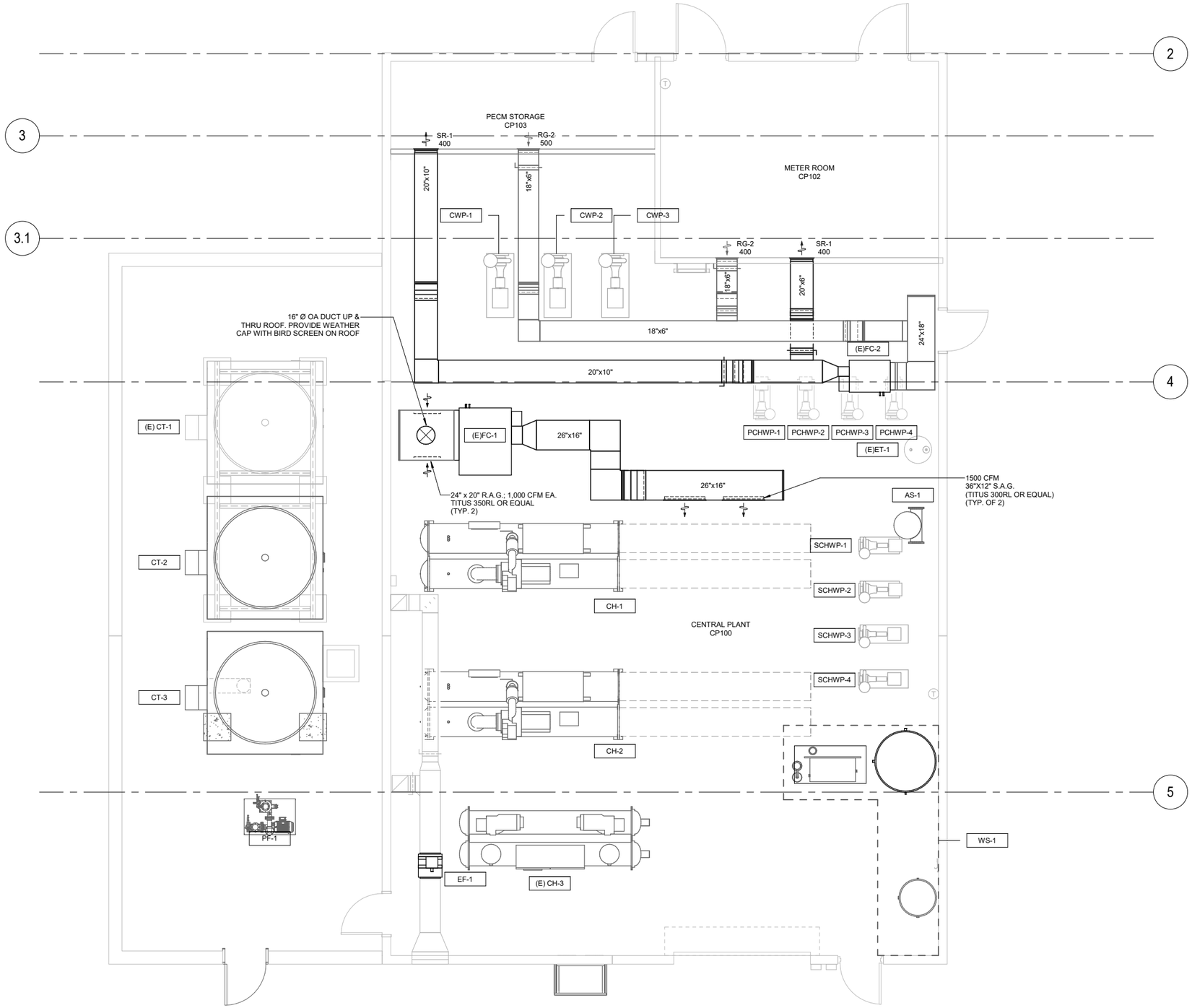
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Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
HVAC DEMOLITION PLAN

Package: **B04 - ACMED0201**
Sheet Reference No:
V6 - 236 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt
Project Number: ######
7/11/2018 3:44:00 PM



1 **MECHANICAL HVAC PLAN**
SCALE: 1/4" = 1'-0"

4' 2' 0' 4' 8'
1/4" = 1'-0"

Project Number: ######
7/11/2018 3:42:27 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt

Design Consultant
Gannett Fleming

Design Sub-Consultant

REGISTERED ENGINEER
66328
HITEN N. SHETH
Date Signed
EXPIRES 03/31/20

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HS
Drawn by:	GM
Checked by:	HS
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CIP No.:	AV10000011
KIVA No.:	07-5204

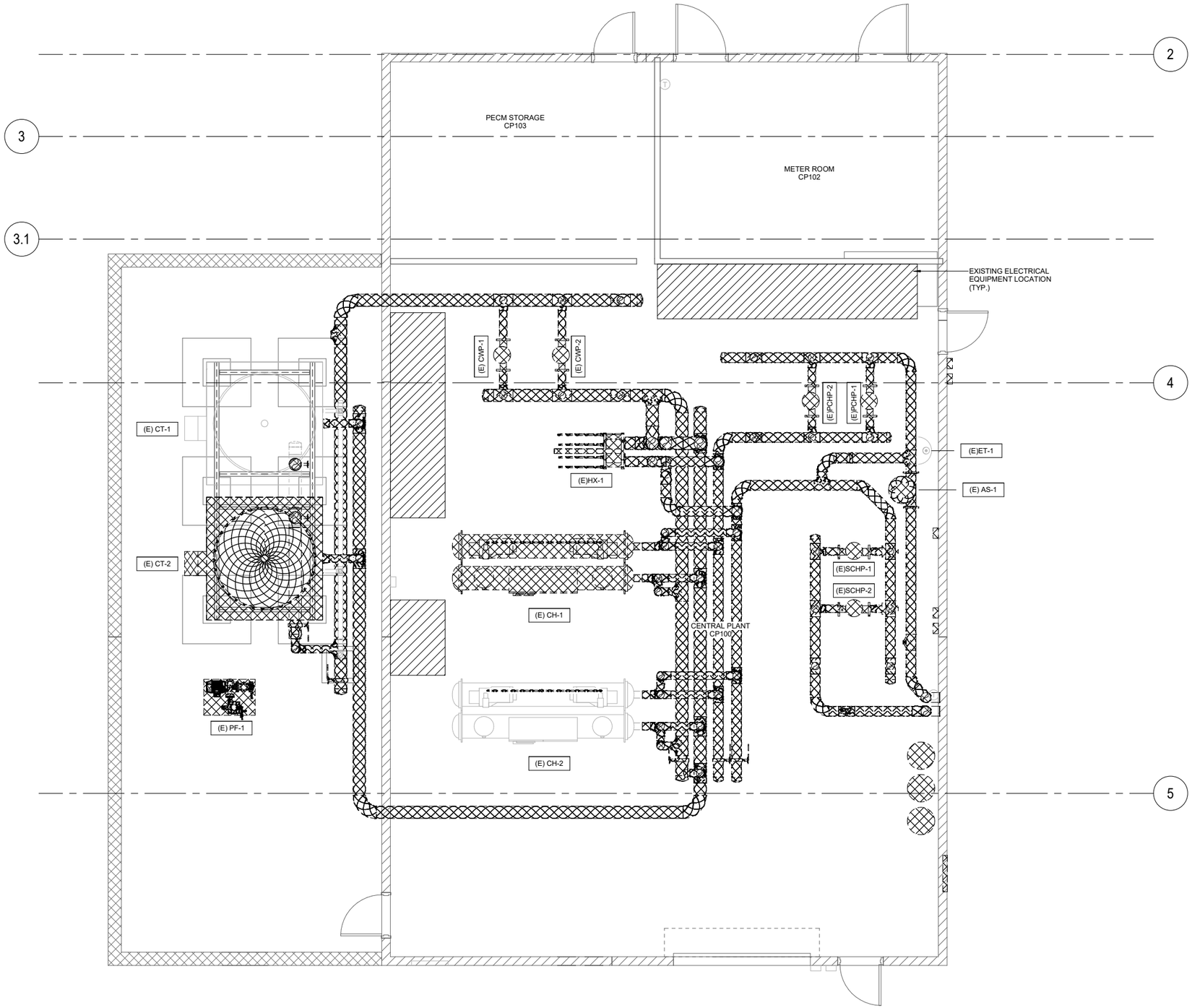
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
HVAC PLAN

Package: **B04 - ACME0201**
Sheet Reference No:
V6 - 237 of 260

PIPING DEMOLITION NOTES

1. DEMO ALL EXISTING CHILLED WATER AND CONDENSER WATER PIPING INCLUDING VALVES, SUPPPORTS, AND ACCESSORIES.
2. REMOVE EXISTING WATER FILTRATION SYSTEM.
3. REMOVE EXISTING PARTICAL FILTER SYSTEM.
4. REMOVE EXISTING PUMPS AND RETURN TO PHOENIX AVIATION.
5. EXISTING CHILLER CH-2 TO REMAIN. TO BE RELOCATED ON NEW PAD AS PER REMODEL DRAWINGS ACME0201 & ACME0301.
7. EXISTING CHILLER TO BE INSPECTED BY MANUFACTURER AND CLEANED BY MECH CONTRACTOR BEFORE RELOCATING TO NEW LOCATION.
8. REMOVE EXISTING COOLING TOWER, CT-1, TEMPORARILY; AND RELOCATE ON THE ELEVATED STRUCTURAL SUPPORTS.
9. REMOVE EXISTING HEAT EXCHANGER AND ASSOCIATED PIPING.



1 **MECHANICAL PIPING DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"

4' 2' 0' 4' 8'
1/4" = 1'-0"

Design Consultant
Gannett Fleming

Design Sub-Consultant

REGISTERED PROFESSIONAL ENGINEER
66328
HITEN N. SHETH
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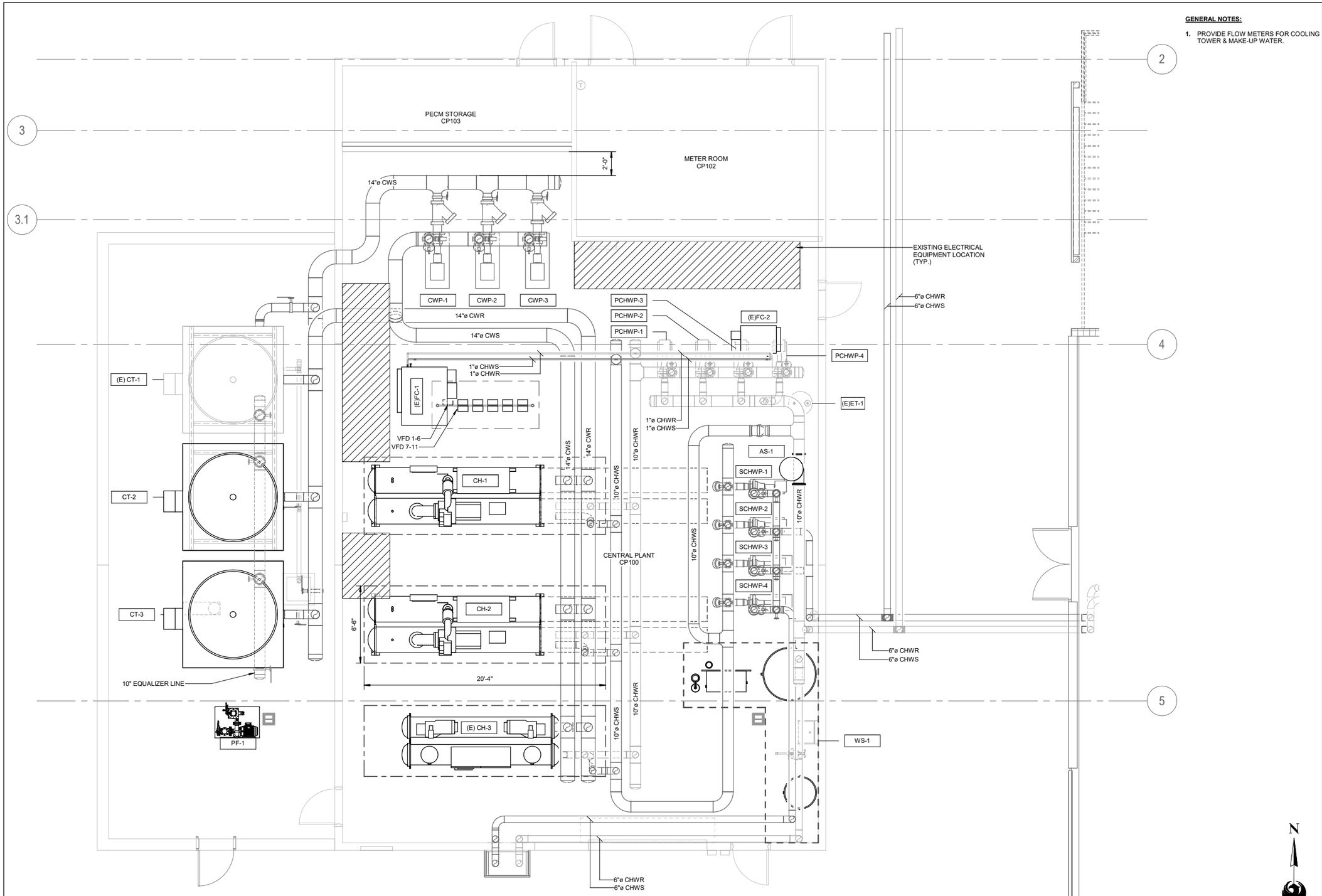
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
PIPING DEMOLITION PLAN

Package: **B04 - ACMED0301**
Sheet Reference No:
V6 - 238 of 260

Project Number: ######
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Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-ACMEX01_R17_A360.rvt



GENERAL NOTES:

1. PROVIDE FLOW METERS FOR COOLING TOWER & MAKE-UP WATER.

1 **MECHANICAL PIPING PLAN**
SCALE: 1/4" = 1'-0"

Design Consultant
Gannett Fleming

Design Sub-Consultant

REGISTERED ENGINEER
66328
HITEN N. SHETH
Date Signed
EXPIRES 03/31/20

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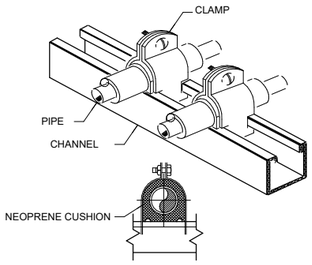
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
PIPING PLAN

Package: **B04 - ACME0301**
Sheet Reference No:
V6 - 239 of 260

Project Number: ######
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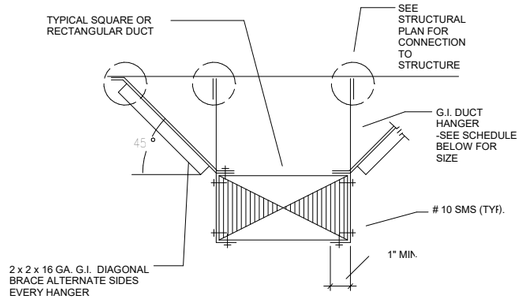
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NOTES:

1. USE GRINNELL PS SERIES POWER-STRUT CHANNEL WITH PS1400 PIPE AND CONDUIT CLAMPS OR EQUIVALENT. CLAMPS TO HAVE CAPTIVE MACHINE SCREW/NYLON LOCKNUT AND A THERMOPLASTIC RUBBER INSERT.
2. REFRIGERANT PIPING TO BE SECURED AS NECESSARY TO PREVENT MOVEMENT, VIBRATION, AND NOISE. MAXIMUM DISTANCE BETWEEN ANCHORAGE POINTS = 6'-0".
3. USE GRINNELL SERIES PS 684 BEAM CLAMPS OR EQUIVALENT TO ATTACH CHANNELS TO ROOF/FLOOR SUPPORT BEAMS.
4. USE EXPANSION TYPE FASTENERS APPROVED FOR USE IN BASE MATERIAL FOR ATTACHING CHANNELS TO INTERIOR WALLS.

6 CONDENSATE AND REFRIGERANT PIPE SUPPORT DETAIL
SCALE: NTS



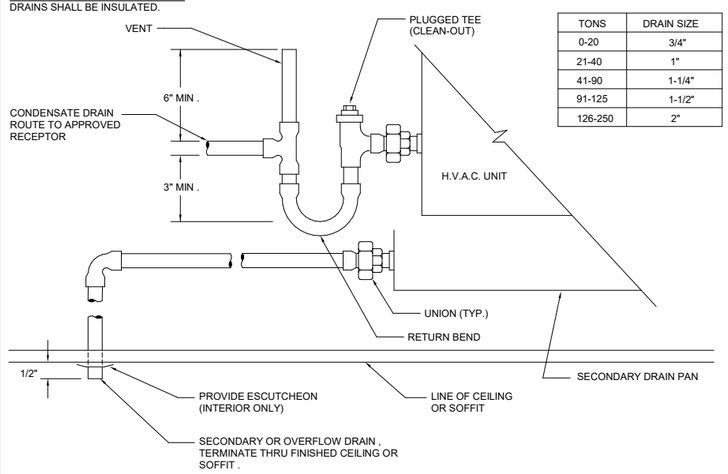
NOTE:

1. WHERE DUCT IS 6 SF. OR LARGER IN CROSS SECTIONAL AREA - USE 2 1/2 x 2 1/2 x 16 GA. VERTICAL ANGLE IN PLACE OF HANGER AT SEISMIC BRACE.

MAX. HALF OF DUCT PERIMETER	MAX. LOAD EACH HANGER	HANGER SIZE	HANGER SPACING
P/2 = 30"	260 LBS	1" x 22 GA.	10'-0" O/C
P/2 = 72"	420 LBS	1" x 18 GA.	10'-0" O/C
P/2 = 96"	700 LBS	1" x 16 GA.	10'-0" O/C
P/2 = 120"	1100 LBS	1 1/2" x 16 GA.	10'-0" O/C

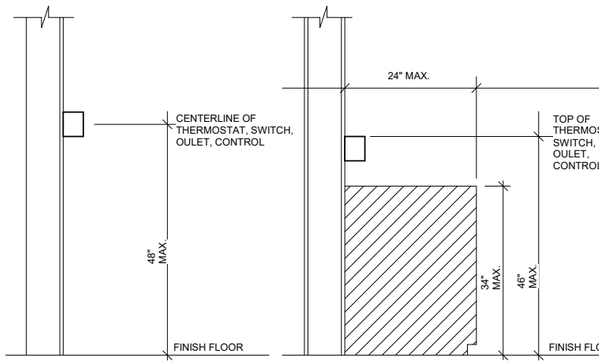
4 RECTANGULAR DUCT HANGING DETAIL
SCALE: NTS

NOTE: ALL INTERIOR CONDENSATE DRAINS SHALL BE INSULATED.



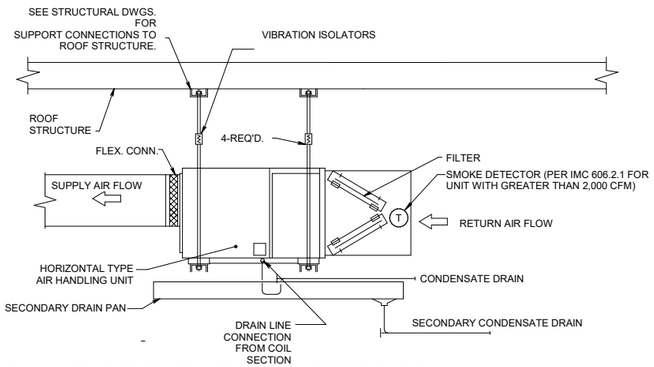
TONS	DRAIN SIZE
0-20	3/4"
21-40	1"
41-90	1-1/4"
91-125	1-1/2"
126-250	2"

2 CONDENSATE DRAIN DETAIL
SCALE: NTS



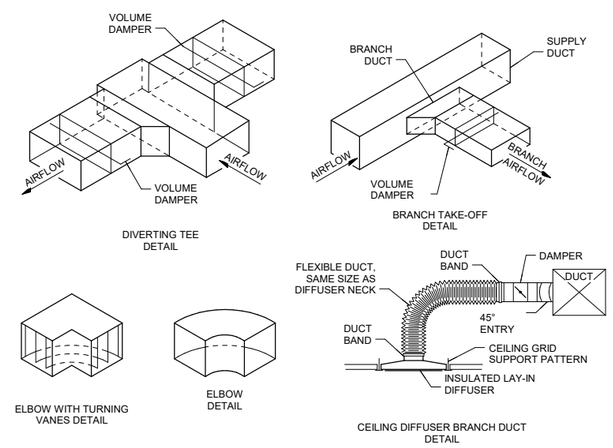
NOTES: PROVIDE VANDALISM PROTECTION ON ALL THERMOSTATS AND TEMPERATURE TRANSMITTERS BY SAFETY TECHNOLOGY INTERNATIONAL, INC.

5 THERMOSTAT MOUNTING DETAIL
SCALE: NTS



NOTE:
1. PROVIDE CONTROL TO SHUT DOWN THE UNIT UPON SMOKE DETECTION FROM THE SMOKE DETECTOR.
2. PROVIDE CODE APPROVED DUCT SMOKE DETECTOR UPSTREAM OF AIR FILTERS.
3. THE DUCT SMOKE DETECTOR SHALL BE CONNECTED TO FIRE ALARM SYSTEM TO ACTIVATE VISIBLE AND AUDIBLE ALARM UPON SMOKE DETECTION.
4. PROVIDE WALL MOUNTED STAND-ALONE 7 DAY PROGRAMMABLE WIRED CONTROLLER WITH DISPLAY AND CONTROLS KIT.
5. PROVIDE SECONDARY DRAIN PAN.

3 CEILING SUSPENDED FAN COIL UNIT DETAIL
SCALE: NTS



1 TYPICAL DUCT DETAILS
SCALE: NTS

Design Consultant
Gannett Fleming
Design Sub-Consultant
REGISTERED ENGINEER 66328 HITEN N. SHETH Date Signed 03/31/20 EXPIRES 03/31/20

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

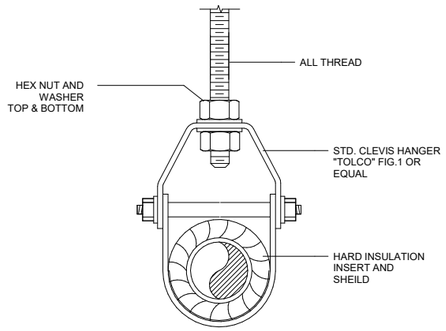
Designed by:	HS
Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
DETAILS

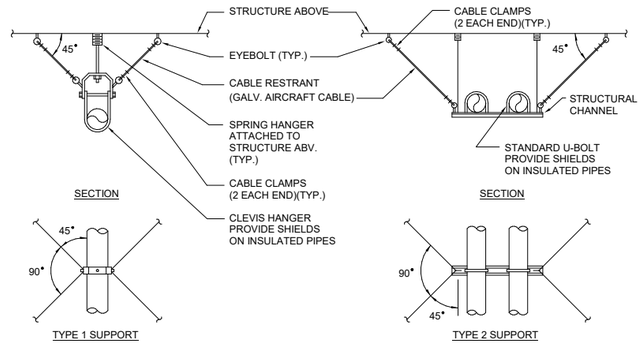
Package: B04 - ACME0501
Sheet Reference No: V6 - 240 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt
Project Number: ######
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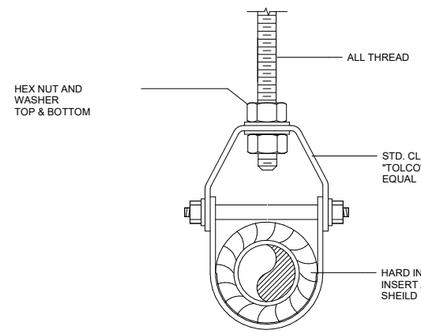
INSULATED STEEL PIPE
3" THRU 24" (EXCEPT CHW & STEAM SYSTEMS)

4 HANGER DETAIL (PIPE DIAMETER 3" THRU 24")
SCALE: NTS



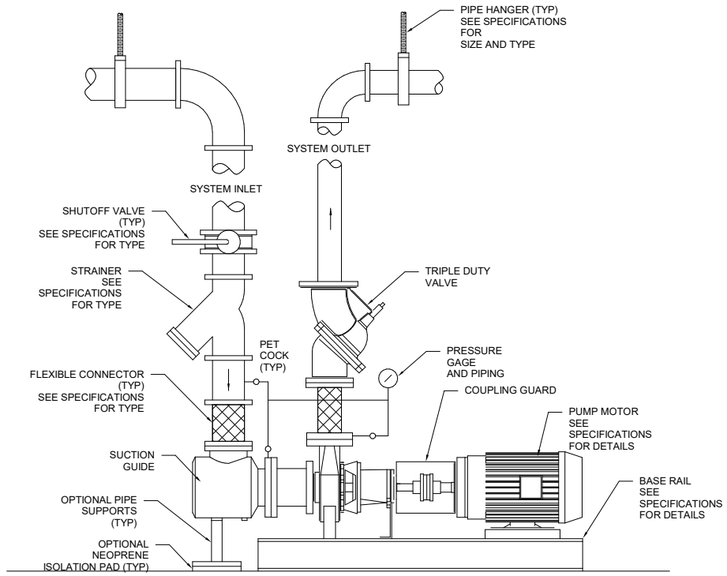
NOTES:
1. CABLE SIZE IS DETERMINED ASSUMING TOTAL LOAD ON ONE CABLE .
2. ANCHOR BOLTS ARE KWIK-BOLT CONCRETE INSERTS (OR EQUAL)
3. BOLT SIZE IS DETERMINED ASSUMING TOTAL LOAD ON ONE BOLT OR BOLT GROUP .
4. SIZES SHOWN ARE MINIMUM.
5. CABLE TO BE SLACK & ALLOW 1/4" MOVEMENT BEFORE BECOMING TAUT .
6. TRAPEZE CHANNELS REQUIRE WEB STIFFENERS 1/4" MINIMUM .
7. SUPPORTS TO BE CONSTRUCTED PER SMACNA STANDARDS.

2 PIPE SUPPORT DETAIL
SCALE: NTS



INSULATED COPPER PIPE 3/4" THRU 2-1/2"
(CHW SYSTEMS & STEAM CR SYTEMS)

3 HANGER DETAIL (PIPE DIAMETER 3/4" THRU 2-1/2")
SCALE: NTS



1 TYPICAL BASE MOUNTED END SUCTION PUMP INSTALLATION
SCALE: NTS

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Registration Expires 03/31/20
66328
HITEN
SHETH
Date Signed
Design Sub-Consultant
Design Consultant
Gannett Fleming

NO.	DATE
ISSUED FOR CONSTRUCTION	07/13/18
SUBMITTED FOR REVIEW	04/06/18
REVISIONS / SUBMISSIONS	

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	HS
Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	NTS
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
DETAILS

Package: B04 - ACME0502
Sheet Reference No: V6 - 241 of 260

Project Number: ######
7/11/2018 3:43:08 PM
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1 HYDROBOOSTER DETAIL

SCALE: NTS

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NO.	DATE
ISSUED FOR CONSTRUCTION	07/13/18
SUBMITTED FOR REVIEW	04/06/18
REVISIONS / SUBMISSIONS	DATE

Registered Professional Engineer
CERTIFICATE NO.
66328
HELEN SHETH
Date Signed
EXPIRES 03/31/20

Design Consultant
Gannett Fleming

Design Sub-Consultant

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	HS
Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	NTS
CIP No.:	AV100000011
KIVA No.:	07-5204

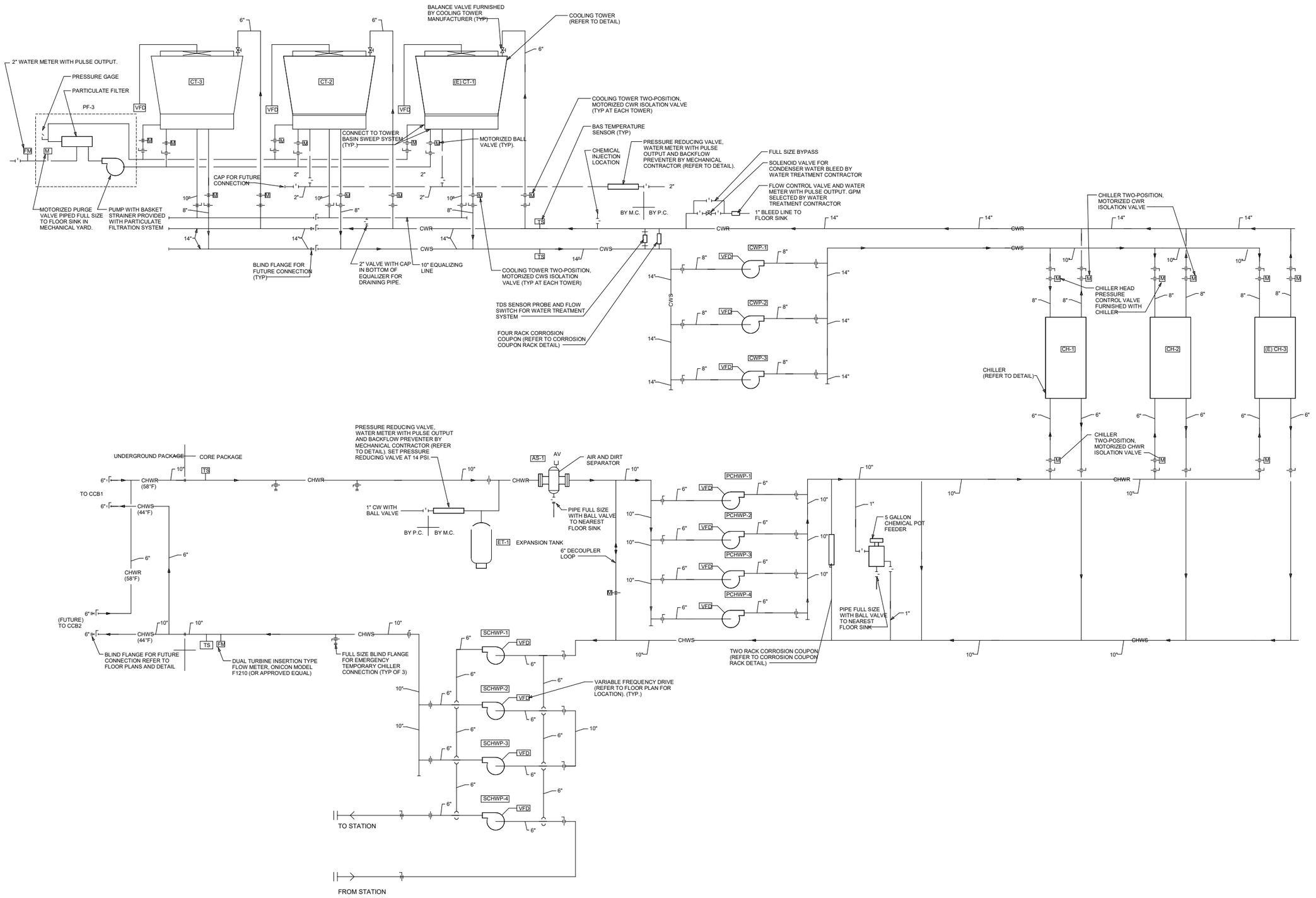
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
DETAILS

Package: **B04 - ACME0503**

Sheet Reference No:

Project Number: ######
7/11/2018 4:24:36 PM
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-ACMEXX01_R17_A360.rvt



1 PIPING SCHEMATIC COB

SCALE: 12" = 1'-0"

Project Number: ######
7/11/2018 3:43:18 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt

Design Consultant

Gannett Fleming

Design Sub-Consultant

REGISTERED PROFESSIONAL ENGINEER
66328
HIREN SHETH
Date Signed
EXPIRES 03/31/20

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

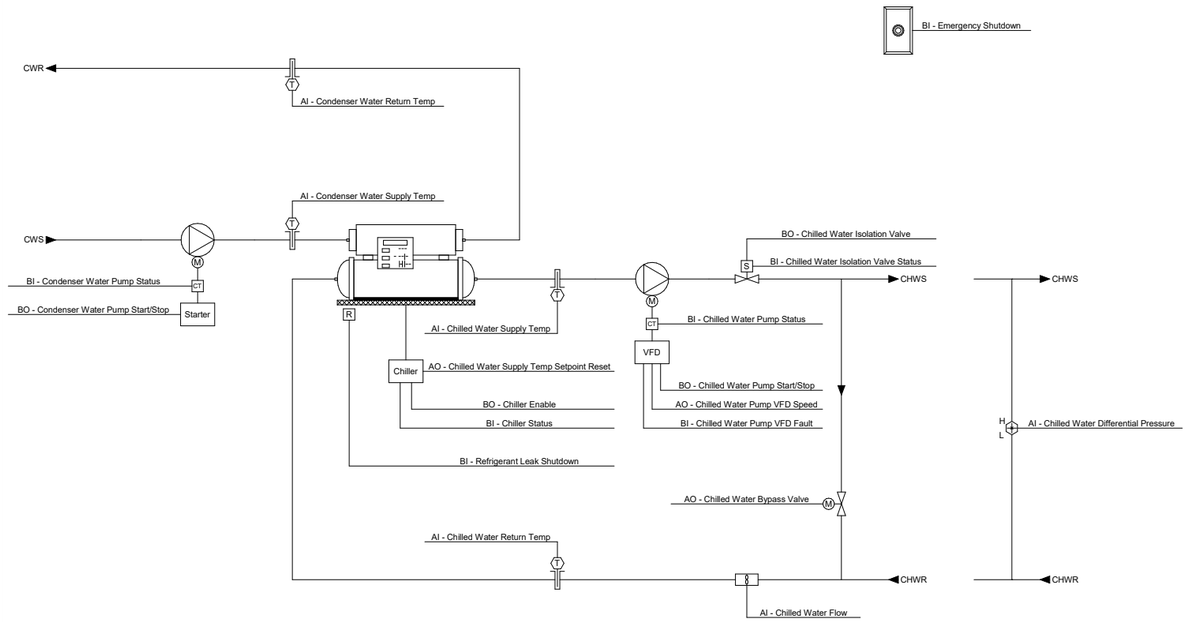
Designed by:	HS
Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	12" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
PIPING SCHEMATIC

Package: **B04 - ACME0601**

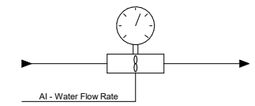
Sheet Reference No:



Point Name	Hardware Points AI	AO	BI	BO	Software Points AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Chilled Water Differential Pressure	x								x		x
Chilled Water Flow	x								x		x
Chilled Water Return Temp	x								x		x
Chilled Water Supply Temp	x								x		x
Condenser Water Return Temp	x								x		x
Condenser Water Supply Temp	x								x		x
Chilled Water Bypass Valve		x							x		x
Chilled Water Pump VFD Speed		x							x		x
Chilled Water Supply Temp Setpoint Reset		x							x		x
Chilled Water Isolation Valve Status			x						x		x
Chilled Water Pump Status			x						x		x
Chilled Water Pump VFD Fault			x							x	x
Chiller Status			x						x		x
Condenser Water Pump Status			x						x		x
Emergency Shutdown			x						x	x	x
Refrigerant Leak Shutdown			x						x	x	x
Chilled Water Isolation Valve				x							x
Chilled Water Pump Start/Stop				x					x		x
Chiller Enable				x					x		x
Condenser Water Pump Start/Stop				x					x		x
Chilled Water Differential Pressure Setpoint					x				x		x
Chilled Water Flow Setpoint					x				x		x
Outside Air Temp					x						x
Chilled Water Isolation Valve Failure										x	
Chilled Water Isolation Valve in Hand										x	
Chilled Water Isolation Valve Runtime Exceeded										x	
Chilled Water Pump Failure										x	
Chilled Water Pump Running in Hand										x	
Chilled Water Pump Runtime Exceeded										x	
Chiller Failure										x	
Chiller Running in Hand										x	
Chiller Runtime Exceeded										x	
Condenser Water Pump Failure										x	
Condenser Water Pump Running in Hand										x	
Condenser Water Pump Runtime Exceeded										x	
High Chilled Water Differential Pressure										x	
High Chilled Water Supply Temp										x	
High Condenser Water Return Temp										x	
High Condenser Water Supply Temp										x	
Low Chilled Water Differential Pressure										x	
Low Chilled Water Flow										x	
Low Chilled Water Supply Temp										x	
Low Condenser Water Return Temp										x	
Low Condenser Water Supply Temp										x	
Totals	**6**	**3**	**7**	**4**	**3**	**0**	**0**	**0**	**20**	**24**	**23**
Total Hardware (20)									**Total Software (47)**		

1 CHILLER - CONTROLS

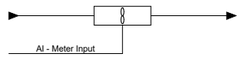
SCALE: 12" = 1'-0"



Point Name	Hardware Points AI	AO	BI	BO	Software Points AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Water Flow Rate	x										
Demand									x		x
Peak Month-to-Date									x		x
Peak Today									x		x
Peak Year-to-Date									x		x
Usage Month-to-Date									x		x
Usage Today									x		x
Usage Year-to-Date									x		x
Meter Failure										x	
Totals	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**1**	**7**
Total Hardware (1)									**Total Software (8)**		

2 WATER FLOW METER - CONTROLS

SCALE: 12" = 1'-0"



Point Name	Hardware Points AI	AO	BI	BO	Software Points AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Meter Input	x										
Demand					x				x		x
Peak Month-to-Date									x		x
Peak Today									x		x
Peak Year-to-Date									x		x
Usage Month-to-Date									x		x
Usage Today									x		x
Usage Year-to-Date									x		x
Meter Failure										x	
Totals	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**7**	**1**	**7**
Total Hardware (1)									**Total Software (9)**		

3 BTU METER - CONTROLS

SCALE: 12" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
66328
HITEN K. SHETH
Date Signed
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant

Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by: HS
Drawn by: GM
Checked by: HS
Date: 07/13/18
Dwg scale: 12" = 1'-0"
CIP No.: AV10000011
KIVA No.: 07-5204

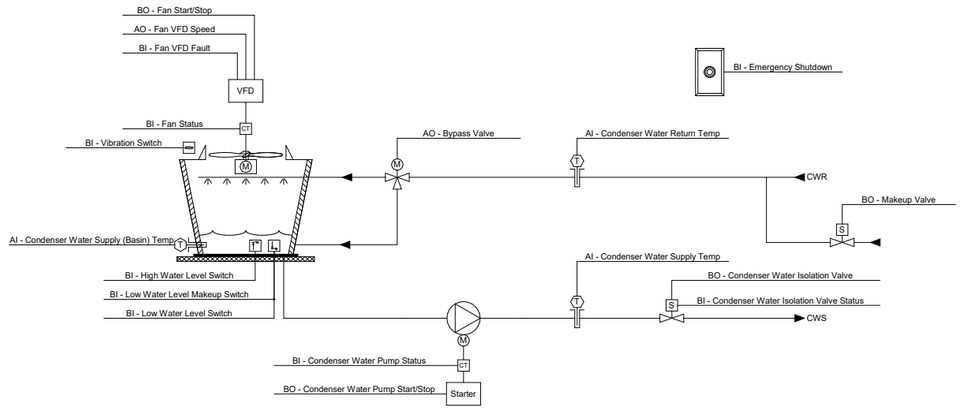
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING MECHANICAL CONTROLS

Package: B04 - ACME0701

Sheet Reference No: V6 - 244 of 260

Project Number: ######
7/11/2018 3:43:24 PM
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEX01_R17_A360.rvt



	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Condenser Water Return Temp	x								x		x
Condenser Water Supply (Basin) Temp	x								x		x
Condenser Water Supply Temp	x								x		x
Bypass Valve Output		x							x		x
Fan VFD Speed		x							x		x
Condenser Water Isolation Valve Status			x						x		x
Condenser Water Pump Status			x						x		x
Emergency Shutdown			x						x	x	x
Fan Status			x						x		x
Fan VFD Fault			x							x	x
High Water Level Switch			x						x	x	x
Low Water Level Makeup Switch			x						x		x
Low Water Level Switch			x						x	x	x
Vibration Status			x						x	x	x
Condenser Water Isolation Valve				x							x
Condenser Water Pump Start/Stop				x					x		x
Fan Start/Stop				x							x
Makeup Valve				x					x		x
Outside Air Temp					x						x
Condenser Water Isolation Valve Failure										x	
Condenser Water Isolation Valve in Hand										x	
Condenser Water Isolation Valve Runtime Exceeded										x	
Condenser Water Pump Failure										x	
Condenser Water Pump Running in Hand										x	
Condenser Water Pump Runtime Exceeded										x	
Fan Failure										x	
Fan in Hand										x	
Fan Runtime Exceeded										x	
High Condenser Water Return Temp										x	
High Condenser Water Supply (Basin) Temp										x	
High Condenser Water Supply Temp										x	
Low Condenser Water Return Temp										x	
Low Condenser Water Supply (Basin) Temp										x	
Low Condenser Water Supply Temp										x	
Makeup Valve Runtime Exceeded										x	
Totals	**3**	**2**	**9**	**4**	**1**	**0**	**0**	**0**	**15**	**21**	**19**
Total Hardware (18)					**Total Software (37)**						

1 COOLING TOWER - CONTROLS

SCALE: 12" = 1'-0"

Project Number: ######
7/11/2018 3:43:30 PM

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Design Consultant

Gannett Fleming

Design Sub-Consultant

REGISTERED PROFESSIONAL ENGINEER
66328
HITEN N. SHETH
Date Signed
EXPIRES 03/31/20

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
CONTROLS

Designed by: Designer	Date: 07/13/18
Drawn by: Author	Dwg scale: 12" = 1'-0"
Checked by: Checker	CIP No.: AV10000011
	KIVA No.: 07-5204

Package: **B04 - ACME0702**

Sheet Reference No:
V6 - 245 of 260

COOLING TOWER SCHEDULE

MARK	HEAT REJECTION TONNAGE	FAN HP	EWT (F)	LWT (F)	AMBIENT TEMP WB (F)	FLOW RATE (GPM)	MAX LIFT (FT)	CFM	# OF FANS	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
										VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
(E) CT-1	260	10	95	85	73	790	10.2	43960	1	460	3	60	MARLEY	MD5008NAF2L	7140	
CT-2	300	20	95	85	73	900	10.2	53420	1	460	3	60	MARLEY	MD5008QAF2L	7280	
CT-3	300	20	95	85	73	900	10.2	53420	1	460	3	60	MARLEY	MD5008QAF2L	7280	

NOTES:

1. COOLING TOWER TO BE ALL 316 STAINLESS STEEL; FULL STAINLESS STEEL CASING AND BASINS.
2. PROVIDE TOWER AND VIBRATION CUT-OUT SWITCH.
3. PROVIDE WITH ABB VFD.
4. FOR EXISTING COOLING TOWER, CT-1, THE EXISTING ACCESS LADDER SHALL BE MODIFIED AND EXTENDED LENGTH TO GRADE BY MECH CONTRACTOR.
5. FOR NEW COOLING TOWERS, CT-2 & CT-3, PROVIDE A COMMON PLATFORM AND A SINGLE LADDER. ACCESS LADDER SHALL BE EXTENDED LENGTH TO GRADE.
6. PROVIDE WITH FACTORY INSTALLED SUMP SWEEPER PIPING WITH HIGH FLOW EDUCTORS. COORDINATE WITH LAKOS BASIN CLEANING SYSTEM.
7. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

WATER COOLED CENTRIFUGAL CHILLER SCHEDULE

MARK	TONS	EVAPORATOR					CONDENSER					REFRIG TYPE	REFRIG CHARG (LBS)	MAX (KW/TON)	IPLV	ELECTRICAL DATA					BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
		EWT (F)	LWT (F)	GPM	WPD (FT H20)	NO. OF PASSES	EWT (F)	LWT (F)	GPM	WPD (FT H20)	NO. OF PASSES					VOLTS	PHASE	HERTZ	MCA	MOCP	MANUFACTURER	MODEL		
CH-1	300	58	44	513	16.30	2	85	94	900	19.80	2	R134A	331/331	0.630	0.3760	460	3	60	285	400	YORK	YMC2-S1055AA	14797	
CH-2	300	58	44	513	16.30	2	85	94	900	19.80	2	R134A	331/311	0.630	0.3760	460	3	60	285	400	YORK	YMC2-S1055AA	14797	
(E) CH-3	200	58	44	345	6.00	2	85	95	600	9.60	2	R134A	276/276	0.642	0.429	460	3	60	195	225	YORK	YVWAM2MEEEAE0200SA	13400	

NOTES:

1. PROVIDE WITH SINGLE POINT OF CONNECTION.
2. PROVIDE WITH EPOXY COATING ON BOTH EVAPORATOR & CONDENSER WITH ANODES FOR CORROSION PROTECTION AND HINGED BELL ENDS FOR BOTH EVAPORATOR & CONDENSER BY MANUFACTURER.
3. PROVIDE WITH ABB INTERFACE FOR INTEGRATION.
4. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

PUMP SCHEDULE

MARK	SERVICE	GPM	FT HEAD	REQUIRED NPSH	RPM	PUMP HP	Pump Type	ELECTRICAL DATA			BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
								VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
CWP-1	CONDENSER WATER	1350	31	11.7	1200	15	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	6E e-1510	858	
CWP-2	CONDENSER WATER	1350	31	11.7	1200	15	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	6E e-1510	858	
CWP-3	CONDENSER WATER	1350	31	11.7	1200	15	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	6E e-1510	858	
PCHWP-1	PRIMARY LOOP	513	20	6.9	1200	5	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	4 EB e-1510	429	
PCHWP-2	PRIMARY LOOP	513	20	6.9	1200	5	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	4 EB e-1510	429	
PCHWP-3	PRIMARY LOOP	513	20	6.9	1200	5	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	4 EB e-1510	429	
PCHWP-4	PRIMARY LOOP	513	20	6.9	1200	5	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	4 EB e-1510	429	
SCHWP-1	SECONDARY LOOP STANDBY	435	40	5.9	1200	7.5	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	4 EB e-1510	569	
SCHWP-2	FUTURE	435	40	5.9	1200	7.5	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	4 EB e-1510	569	
SCHWP-3	COB	435	40	5.9	1200	7.5	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	4 EB e-1510	569	
SCHWP-4	24TH ST	350	79	6.7	1800	15	BASE MOUNTED END SUCTION	460	3	60	Bell & Gossett	3BD e-1531	290	

NOTES:

1. PROVIDE SHUT-OFF VALVE, LOW PRESSURE DROP STRAINER AND SUCTION DIFFUSER PRIOR TO INLET OF PUMP.
2. PROVIDE TRIPLE DUTY VALVE AND SHOUT-OFF VALVE AT UPSTREAM OF PUMP.
3. PROVIDE WITH VFD.
4. ALL MOTORS DRIVEN BY VFD SHALL BE GROUNDED.
5. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

WATER TREATMENT SYSTEM

Mark	MAX FLOW RATE (GPH)	FAC CAPACITY (LBS/DAY)	ELECTRICAL DATA				BASIS OF DESIGN		REMARKS
			MCA	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL	
WS-1	19.0	15	30.0	208	1	60	MIOX	M VAULT 15	

NOTES:

1. PROVIDE ALL REQUIRED CONTROLS AND ACCESSORIES.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

VARIABLE FREQUENCY DRIVE SCHEDULE

Mark	SERVING	ELECTRICAL DATA				BASIS OF DESIGN		REMARKS
		HP	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL	
VFD-1	PCHWP-1	5	460	3	60	ABB	ACH-550-VCR-08A8-4	
VFD-2	PCHWP-2	5	460	3	60	ABB	ACH-550-VCR-08A8-4	
VFD-3	PCHWP-3	5	460	3	60	ABB	ACH-550-VCR-08A8-4	
VFD-4	PCHWP-4	15	460	3	60	ABB	ACH550-VCR-023A-4	
VFD-5	SCHWP-4	7.5	460	3	60	ABB	ACH550-VCR-012A-4	
VFD-6	SCHWP-3	7.5	460	3	60	ABB	ACH550-VCR-012A-4	
VFD-7	SCHWP-2	7.5	460	3	60	ABB	ACH550-VCR-012A-4	
VFD-8	SCHWP-1	7.5	460	3	60	ABB	ACH550-VCR-012A-4	
VFD-9	CWP-3	15	460	3	60	ABB	ACH550-VCR-023A-4	
VFD-10	CWP-2	15	460	3	60	ABB	ACH550-VCR-023A-4	
VFD-11	CWP-1	15	460	3	60	ABB	ACH550-VCR-023A-4	

NOTES:

1. PROVIDE WITH E-CLIPSE BY-PASS, CIRCUIT BREAKER AND NEMA-1 ENCLOSURE.
2. COMPATIBLE WITH BACNET PROTOCOL.
3. COMPLY WITH ALL SERVICE AND MAINTENANCE ACCESS REQUIRMENTS.
4. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

Registration Expires: 03/31/20
66328 HITEN N. SHETH
Design Consultant
Design Sub-Consultant
Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HS
Drawn by:	GM
Checked by:	HS
Date:	07/13/18
Dwg scale:	
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
SCHEDULES

Package: **B04 - ACME0801**

Sheet Reference No: V6 - 246 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-ACMEXX01_R17_A360.rvt
Project Number: ######
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FAN COIL UNIT SCHEDULE (EXISTING TO BE REUSED)

MARK	AIRFLOW (CFM)	E.S.P. (IN WG)	CHILLED WATER COIL							ELECTRICAL DATA				ELECTRIC HEATER				BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
			TOTAL MBH	SENS. MBH	EA DB (F)	EA WB (F)	EWT (F)	GPM	WPD (FT H2O)	HP	VOLTS	PHASE	HERTZ	CAP (KW)	TYPE	V	PH	MANUFACTURER	MODEL		
(E)FC-1	3000	0.50	80.00	67.00	88.0	66.7	44	15.0	4.50	1.5	460	3	60	18	SCR	460	3	EXISTING	EXISTING	505	ARI Default
(E)FC-2	800	0.40	26.10	19.60	80.0	67.0	44	3.7	1.80	0.5	460	3	60	NONE	-	-	-	EXISTING	EXISTING	289	ARI Default

NOTES:

1. PROVIDE NEW AIR DISTRIBUTION SYSTEMS AND MODIFY EXISTING DUCTWORK AS NEEDED FOR RELOCATED FC-1 & FC-2.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

FAN SCHEDULE

MARK	AIRFLOW (CFM)	Fan RPM	ESP (IN WC)	DRIVE TYPE	ELECTRICAL DATA				BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
					FAN HP	VOLTS	PHASE	HERTZ	MANUFACTURER	MODEL		
EF-1	1000/1820	1578	0.50	BELT	0.75	115	1	60	GREENHECK	BSQ-130-7	140	

NOTES:

1. PROVIDE REQUIRED TRANSITIONS AT IN AND OUT OF FAN. MODIFY EXISTING DUCTWORK AS NEEDED.
2. TO BE USED FOR REFRIGERATION MACHINERY ROOM VENTILATION SYSTEM WITH TWO SPEEDS; ONE FOR NORMAL VENTILATION AND THE OTHER FOR EMERGENCY.
3. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

PARTICULATE FILTER SCHEDULE

Mark	MAX FLOW RATE (GPM)	ELECTRICAL DATA				BASIS OF DESIGN		APPROX. OPERATING WEIGHT (LBS)	REMARKS
		PUMP HP	FLA	VOLTS	PHASE	MANUFACTURER	MODEL		
PF-1	243.0	7.5	9.4	460	3	LAKOS	ETCX-0310-SRV	1189	

NOTES:

1. PROVIDE SKID MOUNTED BASIN CLEANING SYSTEM WITH EHTX-0140-V SEPARATOR, SRV-833 PURGE EQUIPMENT, STRAINER, SUCTION DIFFUSER, CONTROL BOX, ALL REQUIRED CONTROLS AND ACCESSORIES.
2. PROVIDE WITH DRY ELECTRIC CONTACT TO INTEGRATE WITH BAS.
3. THE FILTRATION PERFORMANCE: REMOVE 98% OF SOLIDS 44-MICRON AND LARGER IN A SINGLE PASS, AND 99% OF SOLIDS 25-MICRON AND LARGER IN RECIRCULATING APPLICATIONS.
4. COORDINATE WITH MARLEY FOR REQUIRED SUMP SWEEPER PIPING WITH HIGH FLOW EDUCTORS.
5. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

AIR SEPARATOR

MARK	FLOW (GPM)	PIPE CONN SIZE (IN)	BASIS OF DESIGN		REMARKS
			MANUFACTURER	MODEL	
AS-1	1600	10	TACO	ACT10-125	

NOTES:

1. PROVIDE WITH 10" DIA. FLANGE CONNECTIONS.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

EXPANSION TANK SCHEDULE (EXISTING TO BE REUSED)

MARK	ACCEPTED VOLUME (GAL)	DIA (IN)	H (IN)	BASIS OF DESIGN		REMARKS
				MANUFACTURER	MODEL	
(E)ET-1	53	24	37	TACO	EXISTING	

NOTES:

1. RELOCATE PER PLAN.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.

REFRIGERATION MACHINERY ROOM VENILATION PER 2012 IMC 1100

1105.6.3.1	0.5 CFM PER GROSS SQUARE FOOT
	Q = 0.5 A
	Q = 0.5 x 2,000 S.F.
	Q = 1,000 CFM
1105.6.3.2	AIRFLOW QUANTITY - EMERGENCY CONDITIONS
	Q = 100 √G
	Q = 100 √313 LBS
	Q = 1,820 CFM

REGISTERED PROFESSIONAL ENGINEER
66328
HITEN N. SHETH
Date Signed
EXPIRES 03/31/20
Design Consultant
Design Sub-Consultant
Gannett Fleming

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PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HS
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STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
MECHANICAL
SCHEDULES

Package: B04 - ACME0802

Sheet Reference No: V6 - 247 of 260

Project Number: ######
7/11/2018 3:43:47 PM
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ELECTRICAL NOTES:

1. DUE TO THE REQUIREMENTS TO INTERFACE WITH EXISTING FACILITIES AND UTILITIES. IT IS RECOMMENDED THAT THE CONTRACTOR VISIT THE SITE TO DETERMINE EXISTING CONDITIONS PRIOR TO BID.
2. VERIFY THE EXACT LOCATION AND ELEVATION OF ALL ELECTRICAL EQUIPMENT PRIOR TO ROUGH-IN. FINAL CONNECTIONS OF EQUIPMENT SHALL BE PER MANUFACTURERS APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. THE ELECTRICAL CONTRACTOR SHALL PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
3. ALL WIRE SHALL BE COPPER AND A MINIMUM #10 UNLESS OTHERWISE NOTED.
4. APPEARANCE AND WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY AND STANDARDS.
5. PROVIDE PHYSICAL SEPARATION OF LIFE SAFETY SYSTEMS (NEC 700) FROM OPTIONAL STANDBY (NEC 701) AND LEGALLY REQUIRED (NEC 702) SYSTEMS PER 2017 NEC.
6. FURNISH ALL LABOR, MATERIALS, TOOLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE WORKING ELECTRICAL SYSTEM.
7. ALL FLUORESCENT LUMINAIRES WITH DOUBLE ENDED LAMPS, PROVIDE DISCONNECTING MEANS PER NEC 430.73(G).
8. ALL UNDERGROUND CONDUIT SHALL BE WRAPPED RIGID STEEL WITH THREADED COUPLINGS AND CONNECTORS, AND/OR PVC SCHEDULE 40. ALL CONDUIT PENETRATING CONCRERE OR GRADE SHALL BE WRAPPED IN RIGID STEEL.
9. ALL RECEPTACLES SHALL MATCH THE MALE PLUG CONNECTOR OF ALL EQUIPMENT PROVIDED. VERIFY PRIOR TO PURCHASE.
10. ALL PANEL BOARDS, SWITCHES, MOTOR STARTERS AND SWITCHBOARD CIRCUIT BREAKERS SHALL HAVE ENGRAVED MICARTA NAMEPLATES.
11. ALL EMERGENCY SYSTEMS SHALL BE INSTALLED PER 2017 NEC.
12. PROVIDE ALL TRENCHING, EXCAVATION, BACK FILLING, SHORING. PUMPING, COMP ACTION TEST ETC. THAT ARE REQUIRED FOR THE SCOPE OF ELECTRICAL WORK.
13. ELECTRICAL CONTRACTOR SHALL GUARANTEE THE ELECTRICAL WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
14. VERIFY EXACT LOCATION OF ALL RECEPTACLES. ABOVE OR ADJACENT TO COUNTERS, FIXTURES, MIRRORS OUTDOOR FIXTURES AND MOUNTING HEIGHTS AND LOCATIONS OF ALL FIXTURES & BOXES PRIOR TO ROUGH-IN. NO EXTRA COSTS WILL BE ALLOWED FOR FAILURE TO COMPLY.
15. ALL ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE STATE, COUNTY AND LOCAL CODES AND ORDINANCES, AS WALL AS ALL CURRENT STANDARDS, CODES AND PRACTICES AS REQUIRED BY NEC, NEMA, ANSI, NFPA, UBC, UL, IEEE, AND UTILITY COMPANY STANDARDS.
16. ORDER AND/OR RELEASE ORDERED MATERIALS PROMPTLY AFTER SUBMITTAL APPROVAL. NO SUBSTITUTIONS OR ALTERNATE METHODS OF INSTALLATION WILL BE ACCEPTED FOR FAILURE TO ORDER MATERIALS IN A TIMELY FASHION.
17. ALL EQUIPMENT, MATERIALS AND WORK SHOWN ARE NEW UNLESS SPECIFICALLY NOTED AS EXISTING OR NOTED OTHERWISE ON OTHER SHEETS.
18. TYPE MC OR TYPE AC CABLE SHALL ONLY BE USED WITH THE SPECIFIC WRITTEN PERMISSION OF THE PROGRAM/PROJECT MANAGER. ENT TYPE CONDUIT IS NOT ALLOWED.
19. CONDUIT/ CONDUCTOR RUNS SHOWN ARE DIAGRAMMATICAL ONLY. THE BEST FINAL CONDUIT ROUTING SHALL BE AS DETERMINED BY THE ELECTRICAL CONTRACTOR AT THE TIME OF CONSTRUCTION.
20. PRIOR TO PURCHASE OF ANY PANEL, PROTECTIVE DEVICES, SWITCH, STARTER, CONDUIT, WIRE, ETC., TO FEED ANY PIECE OF MECHANICAL EQUIPMENT VERIFY THE VOLTAGE, PHASE, AND LOAD OF THAT ITEM IN THE FIELD AND/OR WITH THE PARTICULAR ENTITY INVOLVED IN THE FURNISHING THE ITEM SUCH THAT THE PROPER SIZE & RATING OF THE MATERIALS ARE PURCHASED. NO EXTRAS WILL BE ALLOWED FOR FAILURE TO COMPLY. THIS APPLIES TO ALL EQUIPMENT UNDER OTHER SECTIONS & BY THE OWNER.
21. ALL ELBOWS AND EXPOSED RISERS SHALL BE RIGID STEEL CONDUIT.
22. PROVIDE ALL PANEL BOARDS WITH TYPED DIRECTORIES INSTALLED UNDER A CLEAR PLASTIC COVER. SUBMIT DIRECTORY INFORMATION TO THE OWNER FOR APPROVAL PRIOR TO FINALIZATION.
23. SERIES RATING OF UPSTREAM OR DOWNSTREAM CIRCUIT BREAKERS OR FUSES IS PROHIBITED. ONLY FULLY RATED SYSTEM COMPONENTS WILL BE ACCEPTED.
24. PULL ROPES: PROVIDE 300 POUND PULL WIRE OR NYLON EQUIVALENT IN ALL INTERIOR EMPTY CONDUIT RUNS. PROVIDE 1/4" DIA NYLON PULL ROPE IN EACH EMPTY EXTERIOR CONDUIT OR DUCT.
25. ELECTRICAL EQUIPMENT WITHIN PROPULSION POWER SUBSTATIONS SHALL NOT BE OIL FILLED.
26. ALL CONDUIT SHALL BE ROUTED UNDER FOOTINGS WHERE APPLICABLE. REFER TO STRUCTURAL DETAILS.
27. ALL MULTIPLE POLE CIRCUITS SHALL BE PROVIDED WITH HANDLE TIES AS REQUIRED BY NEC.
28. ALL EQUIPMENT SERVED BY MORE THAN ONE SOURCE SHALL BE LABELED AS REQUIRED BY THE CODE.
29. COORDINATE WITH MECHANICAL CONTRACTOR TO AVOID CONFLICTS BETWEEN DUCT WORK, SUPPLY & EXHAUST DIFFUSERS AND LIGHTING, SOUND SYSTEMS & FIRE ALARM SYSTEM FIXTURES.
30. OBTAIN WRITTEN APPROVAL FROM THE ENGINEER OF ALL SHOP DRAWINGS AND MANUFACTURERS DATA FOR PANEL BOARDS, TRANSFORMERS, WIRING DEVICES, ETC. BEFORE RELEASING ORDERED MATERIALS. SUBMITTAL DATA SHALL INDICATE THAT THE CONTRACTOR HAS REVIEWED THE INFORMATION THEREIN AND THAT THE PROPOSED EQUIPMENT WILL MEET THE PHYSICAL CONSTRAINTS AT THE JOB SITE. ANY SUBSTITUTIONS SHALL BE OF THE EQUIVALENT OR BETTER QUALITY THAN THE SPECIFIED COMPONENTS.
31. ANY POWER OUTAGE OF ANY CIRCUIT SHALL BE APPROVED BY THE OWNER IN WRITING A MINIMUM OF TWO WEEKS PRIOR TO OUTAGE. ALL OUTAGES SHALL BE DONE EXACTLY WHEN DETERMINED BY THE OWNER AND DONE BEFORE OR AFTER WORKING HOURS AND ON WEEKENDS. NO SINGLE OUTAGE SHALL REQUIRE MORE THAN 4 HOURS. PROVIDE TEMPORARY POWER, HEAT & COOLING IS REQUIRED DURING OUTAGE.
32. ALL EQUIPMENT AND REQUIREMENTS OF CITY OF PHOENIX AVIATION DEPARTMENT DESIGN MANUAL SHALL BE MET.
33. ALL EXISTING AND NEW FACILITIES SHALL BE PROVIDED WITH EMERGENCY BACKUP POWER AT ALL TIMES DURING SWITCH OVER. BOTH FACILITIES (NEW AND EXISTING) SHALL HAVE REDUNDANCY PROVIDED TO MATCH THAT OF FINAL CONDITIONS. PROVIDE ALL REQUIRED EQUIPMENT AND PATHWAYS NECESSARY.
34. REFER TO MECHANICAL CONTROLS DIAGRAMS SHEETS FOR ADDITIONAL POWER AND EQUIPMENT REQUIREMENTS NOT SHOWN ON THE ELECTRICAL DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE PRODUCTS OF COMBUSTION DETECTORS (POCD) FOR ALL MECHANICAL UNITS AS REQUIRED BY CODE AND CONTROLS POWER. COORDINATE WITH MECHANICAL CONTRACTOR FOR ALL POWER REQUIREMENTS FOR A COMPLETE SYSTEM.
35. COLOR ALL CONDUIT AS REQUIRED BY CITY OF PHOENIX AVIATION DEPARTMENT DESIGN MANUAL UNLESS OTHERWISE NOTED ON PLANS.
    a. ELECTRICAL: RACEWAY SUPPLIED COLOR
    b. COMMUNICATIONS: YELLOW
    c. FIRE ALARM: RED
    d. HVAC CONTROL: WHITE
36. ALL UNDERGROUND CONDUIT SHALL BE INCASED IN RED CONCRETE.
37. ALL CIRCUITS SHALL BE PROVIDED WITH DEDICATED NEUTRAL UNLESS OTHERWISE NOTED.
38. ALL FIRE ALARM EQUIPMENT REQUIRES A LOCK-ON DEVICE, SHALL HAVE RED IDENTIFICATION, AND IDENTIFIED AS FIRE ALARM CIRCUIT PER NEC 760.41 (A) & (B) AND NFPA 72.

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-ACEL0001.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) CERTIFICATE NO. 49025 PETER M. SYNTAX Date Signed 07/13/18 ARIZONA, USA Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
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PHX DVT GYR — CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by: MLB
Drawn by: MLB
Checked by: MAC
Date: 07/13/18
Dwg scale: N.T.S.
CIP No.: AV10000011
KIVA No.: 07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
ELECTRICAL
NOTES

Package: Sheet Reference No:
B04- ACEL0001

ELECTRICAL SYMBOLS:

- CONDUIT RUN IN OR ON CEILING OR WALL
- CONDUIT RUN IN OR UNDER FLOOR OR UNDERGROUND
- HASH MARKS INDICATE NUMBER OF #12 AWG CONDUCTORS IN CONDUIT. NO MARKS INDICATE 2 #12'S. DOES NOT INCLUDE GROUND WIRE. IF NON-METALLIC OR EMT CONDUIT ADD GROUND PER NEC.
- LONG SLASH WITH HASH MARKS AS SHOWN INDICATES GROUND WIRE FOR ISOLATED GROUNDING SYSTEM. SIZE PER N.E.C.
- LA-1 — HOMERUN TO PANEL WITH PANEL AND CIRCUIT INDICATED
- LA-(1,3,5) — HOMERUN TO PANEL WITH CIRCUIT NUMBER IN BRACKETS INDICATING MULTI-POLE BREAKER.
- P — PRIMARY UTILITY LINE
- S — SECONDARY UTILITY LINE
- OH — OVERHEAD UTILITY LINE
- RACEWAY UP
- RACEWAY DOWN
- FLEX CONDUIT TO LAY-IN FIXTURE IN CEILING
- ON HA-6 — "ON" INDICATES CIRCUITING IS SPLIT AT DIFFERENT LOCATIONS
- FLUORESCENT FIXTURE – SEE FIXTURE SCHEDULE FOR MOUNTING
- FLUORESCENT FIXTURE – LAY-IN
- FLUORESCENT FIXTURE – RECESSED
- FLUORESCENT FIXTURE – STRIP LIGHT
- NL NL — FLUORESCENT FIXTURE – TO BE USED FOR NIGHT LIGHT ON UNSWITCHED CIRCUIT
- INCANDESCENT OR H.I.D. FIXTURE – CEILING OR WALL MOUNTED SEE FIXTURE SCHEDULE
- INCANDESCENT OR H.I.D. FIXTURE – RECESSED
- H.I.D. FIXTURE WITH QUARTZ RESTRIKE.
- EXIT LIGHT – WITH OR WITHOUT DIRECTIONAL ARROWS AS INDICATED (SHADED PORTION INDICATES ILLUMINATED SURFACE) – ON UNSWITCHED CIRCUIT
- EMERGENCY BATTERY UNIT WITH TWIN HEADS ON UNSWITCHED CIRCUIT
- POLE MOUNTED LIGHT FIXTURE
- HIGH MAST POLE LIGHT FIXTURE
- FLOOD LIGHT
- $ — SINGLE POLE SWITCH +48" AFF
- $$ — DUAL LEVEL SWITCHING FOR 3 OR 4 LAMP FLUORESCENT FIXTURES. ONE SWITCH TO CONTROL OUTBOARD LAMPS, ONE SWITCH TO CONTROL IN BOARD LAMPS. PROVIDE 3 #12'S IN FLEX TO LAYIN FIXTURES.
- $3 — THREE-WAY SWITCH +48" AFF
- $4 — FOUR-WAY SWITCH +48" AFF
- $D — DIMMER SWITCH +48" AFF
- $K — KEY OPERATED SWITCH +48" AFF
- $L — SINGLE POLE TOGGLE SWITCH WITH LIGHTED HANDLE +48" AFF
- $M — FRACTIONAL HORSEPOWER MOTOR MANUAL STARTER
- $MOM — MOMENTARY CONTACT SWITCH +48" AFF
- $W — AUTOMATIC WALL SWITCHES, WATT STOPPER CAT. WS 120/277. +48" AFF
- $W2 — DUAL LEVEL AUTOMATIC WALL SWITCHES, WATT STOPPER CAT NO. WI-300 120/277. +48"AFF
- $T — INTELSWITCH DIGITAL TIME SWITCH, WATT STOPPER CAT NO. TS-200. +48" AFF
- F — DISCONNECT SWITCH (30A/3P UNLESS INDICATED ON DWGS) "F" INDICATES FUSES PER MANUFACTURERS NAMEPLATE RATING
- PEDS — PASSENGER EMERGENCY AND DURESS SYSTEM (PEDS)

ELECTRICAL SYMBOLS (CONTINUED):

- MAGNETIC MOTOR STARTER (SIZE AS INDICATED ON DRAWINGS)
- COMBINATION STARTER / FUSED DISCONNECT SWITCH (SIZE AS INDICATED ON DRAWINGS – FUSES SIZED PER MANUFACTURER'S NAMEPLATE RATING)
- 120V DUPLEX CONVENIENCE RECEPTACLE +18" AFF
- 120V DUPLEX CONVENIENCE RECEPTACLE +48" AFF
- 120V DOUBLE DUPLEX CONVENIENCE RECEPTACLE +18" AFF
- 120V DOUBLE DUPLEX RECEPTACLE W/ DEDICATED CIRCUIT & ISOLATED GROUND +18" AFF
- 120V DOUBLE DUPLEX RECEPTACLE FLUSH FLOOR MOUNTED
- 208V – 1~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 208V – 3~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 480V – 1~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF
- 480V – 3~ SPECIAL PURPOSE OUTLET (AMPS AS NOTED) +18" AFF

(TO MATCH MALE PLUG CONNECTOR ON EQUIPMENT FURNISHED)

- 120V DUPLEX CONVENIENCE OUTLET – FLUSH FLOOR TYPE
- PM — PLUG MOLD – SURFACE MOUNTED
- JUNCTION BOX AS REQUIRED BY NATIONAL ELECTRICAL CODE
- JUNCTION BOX – FLUSH FLOOR TYPE – AS REQUIRED BY NATIONAL ELECTRICAL CODE
- ELECTRICAL PANELBOARD – SURFACE MOUNTED
- ELECTRICAL PANELBOARD – FLUSH MOUNTED
- FUSED BREAKER
- SERVICE OR DISTRIBUTION EQUIPMENT
- T — TRANSFORMER
- AUXILIARY SYSTEM TERMINAL CABINET
- PRECAST CONCRETE PULLBOX (SIZE AS INDICATED)
- X — EXISTING WIRE AND/OR CONDUIT TO BE REMOVED OR ABANDONED
- E — EXISTING WIRE AND/OR CONDUIT TO REMAIN
- DASHED DEVICES, LIGHT FIXTURES, ETC. EXISTING TO BE REMOVED
- "E" ADJACENT TO DEVICES, LIGHT FIXTURES, ETC. INDICATES EXISTING TO REMAIN
- K — K — KIRK KEY INTERLOCK
- 1 — SHEET NOTE
- A / 90 — LIGHT FIXTURE DESIGNATION & WATTAGE. SEE FIXTURE SCHEDULE
- AC / 1 — MECHANICAL EQUIPMENT DESIGNATION. SEE MECHANICAL & PLUMBING PLANS
- 2 — FEEDER – SIZE AS INDICATED ON SINGLE LINE DIAGRAM
- ~ — DETAIL DESIGNATION – "~" INDICATES DETAIL # ON SHEET
- A100 — ROOM NUMBER
- PQM — POWER QUALITY METER
- * — NOTE: ALL MOUNTING HEIGHTS AS INDICATED UNLESS NOTED OTHERWISE. ALL SYMBOLS MAY NOT BE USED.
- M — MOTOR

ELECTRICAL ABBREVIATIONS:

AC	ABOVE COUNTER. INSTALL 4" ABOVE SPLASH COUNTER OR AT HEIGHT AS INDICATED ON DRAWINGS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
℄	CENTERLINE
CU	COPPER
DA	DAMPER ACTUATOR
EC	EMPTY CONDUIT WITH PULL WIRE
EDF	ELECTRIC DRINKING FOUNTAIN
EWC	ELECTRIC WATER COOLER
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHER SECTION
GFI/GFCI	GROUND FAULT INTERRUPTING
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NL	NIGHTLIGHT
PNL	PANEL
S/N	SWITCHED NEUTRAL
SPD	SURGE PROTECTION DEVICE
TL	TWISTLOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UNO	UNLESS NOTED OTHERWISE
UNSW	UNSWITCHED
W/	WITH
WP	WEATHERPROOF (NEMA 3R)
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

Registered Professional Engineer (Electrical) — CERTIFICATE NO. 49025 — PETER M. SYNTAX — Date Signed 07/13/18 — ARIZONA USA

Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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PHX DVT BYR — CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S. 24TH STREET
PHOENIX, AZ 85034

Designed by:	MLB
Drawn by:	MLB
Checked by:	MAC
Date:	07/13/18
Dwg scale:	N.T.S.
CIP No.:	AV10000011
KIVA No.:	07-5204

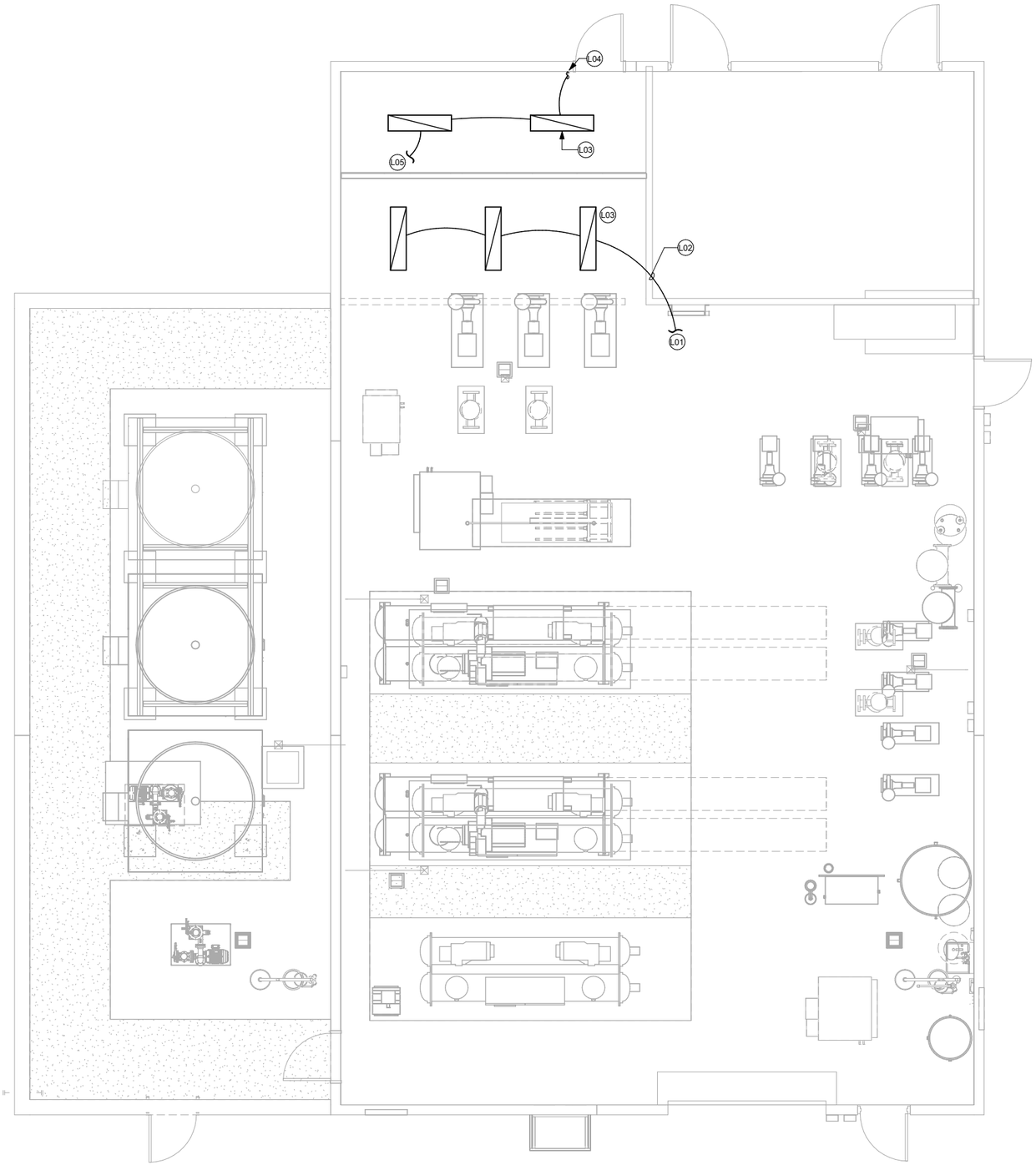
STAGE 2 – B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
ELECTRICAL SYMBOLS
AND ABBREVIATIONS

Package: B04 — Sheet Reference No: **ACEL0002**

V6 - 249 of 260

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0667867\AV10000011-S-2-ACEL0001.dwg Daniel.Thompson



1 **COB BUILDING ELECTRICAL LIGHTING FLOOR PLAN**
SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

CONSTRUCTION NOTES

L01 TIE NEW LIGHTS INTO EXISTING LIGHTING CIRCUITS AND EXISTING LIGHTING CONTROLS SERVING ROOM.

L02 PROVIDE (2)#10 AND (1)#10 GND IN 1" CONDUIT TO SERVE LIGHTING.

L03 PROVIDE NEW 1'x4' FIXTURE TO MATCH EXISTING FIXTURES. FIXTURES SHALL BE MOUNTED TO EXISTING STRUCTURE.

L04 PROVIDE NEW WALL MOUNTED SWITCH TO CONTROL STORE ROOM LIGHTS.

L05 RECONNECT EXISTING CIRCUIT SERVING STORE ROOM TO NEW LIGHTS.

GENERAL NOTES

1. ALL LIGHTING EXISTING UNLESS OTHERWISE NOTED.

Registered Professional Engineer
Electrical
Peter M. Syntax
49025
Date Signed
Expires 12-31-2020
Design Sub-Consultant
Kimley»Horn
Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
1	PDD COMMENTS	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
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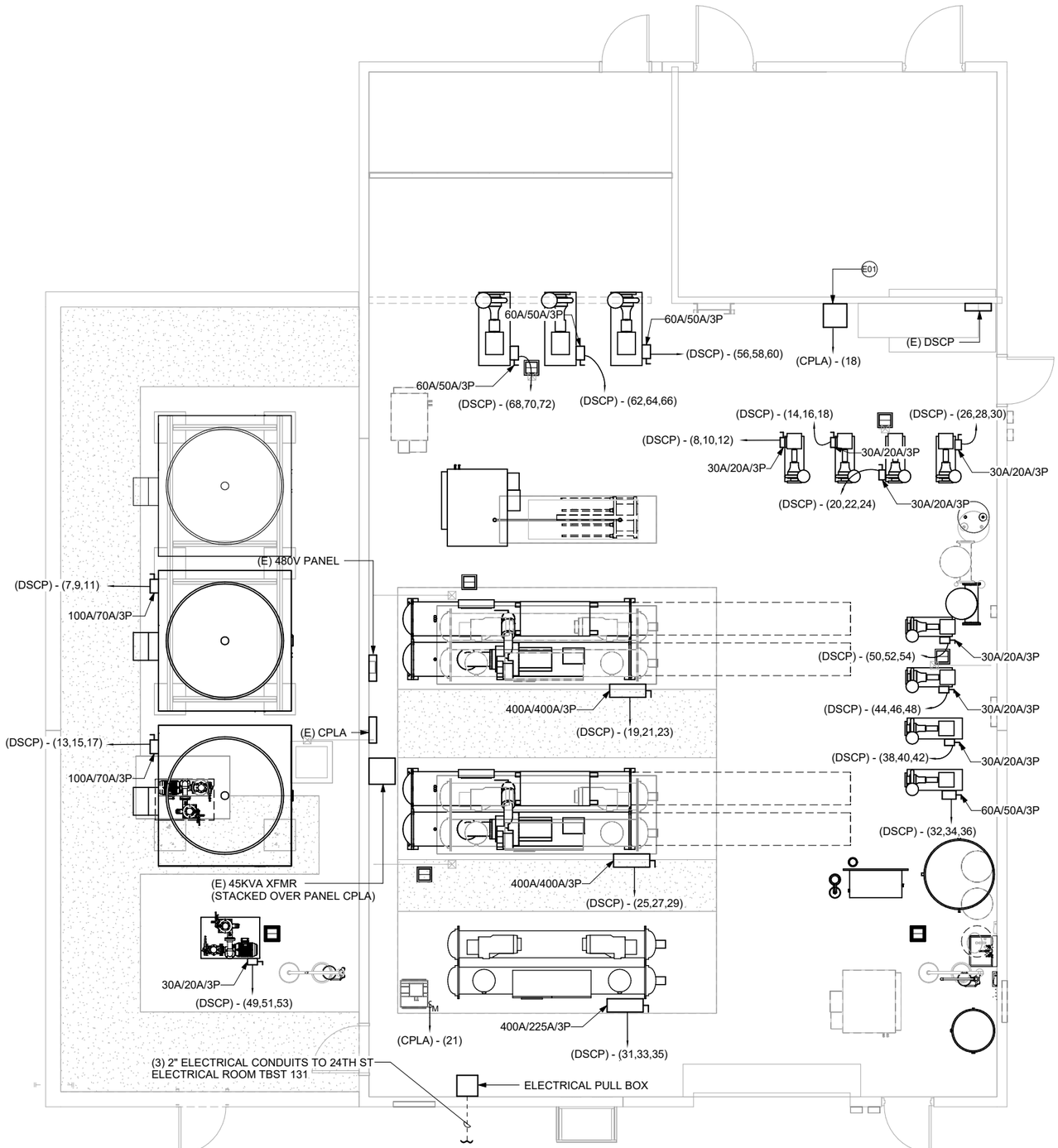
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CIP No.:	AV10000011
KIVA No.:	XX-XXXX

STAGE 2 - B04 DESIGN SUBMISSION

COB CENTRAL PLANT BUILDING
LIGHTING FLOOR PLAN
ELECTRICAL

Package: **B04 - ACEL0301**
Sheet Reference No:
V6 - 250 of 260

Project Number: Project Number
7/13/2018 4:39:39 PM
Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACELXX00_R17_A360.rvt



1 **COB BUILDING ELECTRICAL POWER FLOOR PLAN**
SCALE: 1/4" = 1'-0"

CONSTRUCTION NOTES

E01 PROVIDE MULTIPOINT METER FOR ALL PUMPS AS IDENTIFIED ON ONE-LINE.

GENERAL NOTES

1. WIRE SIZES SHOWN ON SINGLE LINE SHEET B04-ACEL1002.
2. REFER TO BUILDING GROUNDING PLAN ON SHEET B04-ACEL0402.
3. UNLESS OTHERWISE SHOWN ALL EQUIPMENT IS EXISTING.

Registered Professional Engineer - Electrical - 49025 - PETER M. SYNYAK - Date Signed - Not Valid Without Signature and Original Seal - STATE OF ARIZONA
Expires 12-31-2020

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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CITY OF PHOENIX AVIATION DEPARTMENT

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STAGE 2 DESIGN
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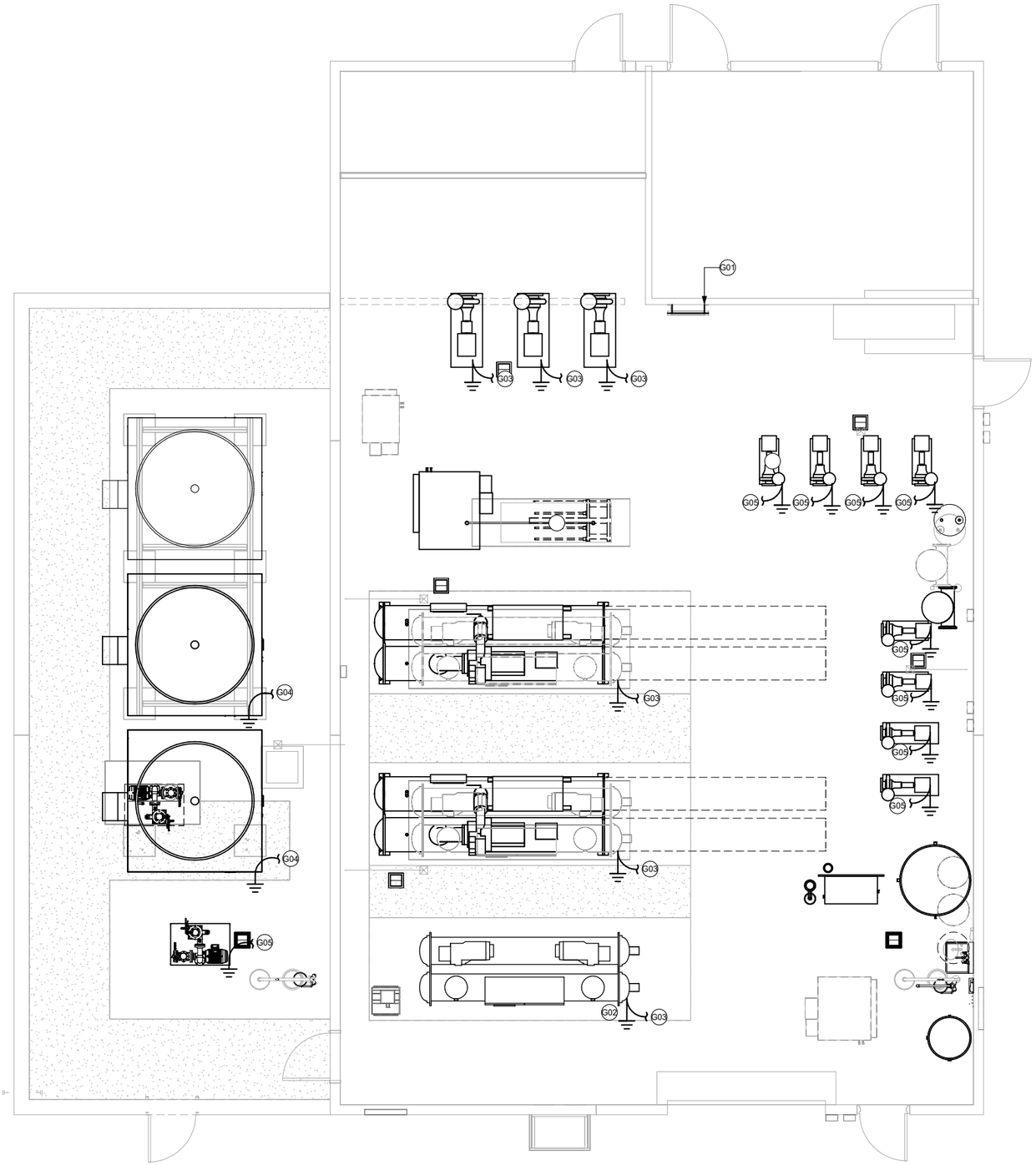
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Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	XX-XXXX

STAGE 2 - B04 DESIGN SUBMISSION

COB CENTRAL PLANT BUILDING POWER FLOOR PLAN ELECTRICAL

Package:
Sheet Reference No:
B04 - ACEL0401
V6 - 251 of 260

Project Number: Project Number
7/13/2018 4:39:51 PM
Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACELXX00_R17_A360.rvt



CONSTRUCTION NOTES

G01 PROVIDE NEW 24"x4" GROUND BUS BAR. GROUND BUS BAR SHALL BE TIED INTO WATER, BUILDING STEEL, GAS, FIRE PROTECTION, AND EXISTING SERVICE GROUND.

G02 PROVIDE NEW 3/4"x10' GROUND ROD FOR NEW FOUNDATION.

G03 BOND EQUIPMENT TO GROUND ROD. EXTEND #3/0 TO GROUND BUS BAR.

G04 BOND EQUIPMENT TO GROUND ROD. EXTEND #1 TO BUS BAR.

G05 BOND EQUIPMENT TO GROUND ROD. EXTEND #4 TO BUS BAR.

1 COB BUILDING ELECTRICAL GROUNDING FLOOR PLAN
SCALE: 1/4" = 1'-0"

Registered Professional Engineer - Electrical - 49025 - PETER M. SYNTAX - State of Arizona
Expires 12-31-2020

Design Sub-Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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STAGE 2 - B04 DESIGN SUBMISSION

COB CENTRAL PLANT BUILDING GROUNDING FLOOR PLAN

Package: B04 - ACEL0402
Sheet Reference No:
V6 - 252 of 260

Project Number: Project Number
7/13/2018 4:40:10 PM

Local File: BIM 360://82421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACELXX00_R17_A360.rvt

PANEL: EXISTING DSCP

VOLTAGE: 277/480 — PANEL BUS: 1200 AMPS
PHASE, WIRES: 3ø, 4W — MAIN: MLO
SCCR (AMPS): 42,000
SOURCE: SES-CCB1

DESCRIPTION	KVA	CB	CKT	A	B	C	CKT	CB	KVA	DESCRIPTION
	3.72		1	28			2		4.16	
CT-1 (E)	3.72	25/3	3		28		4	15/3	4.16	CURRENT METER (E)
	3.72		5			28	6		4.16	
	7.17		7	33			8		2.01	
CT-2	7.17	70/3	9		33		10	20/3	2.01	VFD-1 (PCHWP-1)
	7.17		11			33	12		2.01	
	7.17		13	33			14		2.01	
CT-3	7.17	70/3	15		33		16	20/3	2.01	VFD-2 (PCHWP-2)
	7.17		17			33	18		2.01	
	60.6		19	226			20		2.01	
CH-1	60.6	400/3	21		226		22	20/3	2.01	VFD-3 (PCHWP-3)
	60.6		23			226	24		2.01	
	60.6		25	226			26		2.01	
CH-2	60.6	400/3	27		226		28	20/3	2.01	VFD-4 (PCHWP-4)
	60.6		29			226	30		2.01	
	54.0		31	215			32		5.58	
CH-3 (RELOCATED)	54.0	225/3	33		215		34	50/3	5.58	VFD-5 (SCHWP-4)
	54.0		35			215	36		5.58	
	19.2		37	80			38		2.92	
PANEL CPHA (E)	19.2	125/3	39		80		40	30/3	2.92	VFD-6 (SCHWP-3)
	19.2		41			80	42		2.92	
	13.33		43	59			44		2.92	
DIST. PANEL 1DPHM (E)	13.33	600/3	45		59		46	30/3	2.92	VFD-7 (SCHWP-2)
	13.33		47			59	48		2.92	
	2.50		49	20			50		2.92	
PF-1	2.50	20/3	51		20		52	30/3	2.92	VFD-8 (SCHWP-1)
	2.50		53			20	54		2.92	
	0.00		55	20			56		5.58	
SPACE	0.00		57		20		58	50/3	5.58	VFD-9 (CWP-3)
	0.00		59			20	60		5.58	
	0.00		61	20			62		5.58	
SPACE	0.00		63		20		64	50/3	5.58	VFD-10 (CWP-2)
	0.00		65			20	66		5.58	
	0.00		67	20			68		5.58	
SPACE	0.00		69		20		70	50/3	5.58	VFD-11 (CWP-1)
	0.00		71			20	72		5.58	
	0.00		73	0			74		0.00	
SPACE	0.00		75		0		76		0.00	SPACE
	0.00		77			0	78		0.00	
			TOTALS	980	980	980	AMPS			

LOAD CALCULATIONS: SUBTOTAL (KVA): 814
+25% LARGEST MOTOR LOAD PER NEC (KVA): 45
TOTAL (KVA): 860 @ 480V, 3Ø = 1034.8 AMPS

PANEL: EXISTING CPLA

VOLTAGE: 120/208 — PANEL BUS: 200 AMPS
PHASE, WIRES: 3ø, 4W — MAIN: 150A BREAKER
SCCR (AMPS): 10,000
SOURCE: T-CPLA

DESCRIPTION	VA	CB	CKT	A	B	C	CKT	CB	VA	DESCRIPTION
REC - CP102, CP103 (E)	1080	20/1	1	20			2	20/1	1260	REC-CENTRAL PLANT, EXTERIOR (E)
REC - CENTRAL PLANT (E)	720	20/1	3		20		4	20/1	1656	EF-2 (E)
IWH-1 (E)	4160	50/2	5			36	6	20/1	120	IRRIGATION CONTROLLER (E)
	4160		7	36			8	20/1	100	TRAP PRIMER (E)
FAPB-CP (E)	480	20/1	9		8		10	20/1	500	LTS, REC-AH CCB1-B (E)
BMS - CENTRAL PLANT (E)	480	20/1	11			6	12	20/1	200	IONIZ. FILTER-CCB1 (E)
MOV - CENTRAL PLANT (E)	200	20/1	13	6			14	20/1	500	LTS, REC-AH CCB1-A (E)
MOV - CENTRAL PLANT (E)	200	20/1	15		3		16	20/1	200	IONIZ. FILTER-CCB1-A (E)
WS-1	2496	60/2	17			29	18	20/1	1000	EATON POWER METER
	2496		19	21			20	20/1	0.00	SPARE
EF-1	1587	30/1	21		13		22	20/1	0.00	SPARE
SPARE	0.00	20/1	23			0	24	20/1	0.00	SPARE
SPARE	0.00	20/1	25	0			26	20/1	0.00	SPARE
SPARE	0.00	20/1	27		0		28	20/1	0.00	SPARE
SPACE	0.00		29			0	30		0.00	SPACE
SPACE	0.00		31	0			32		0.00	SPACE
SPACE	0.00		33		0		34		0.00	SPACE
SPACE	0.00		35			0	36		0.00	SPACE
SPACE	0.00		37	0			38		0.00	SPACE
SPACE	0.00		39		0		40		0.00	SPACE
SPACE	0.00		41			0	42		0.00	SPACE
			TOTALS	81.6	44.5	70.5	AMPS			

LOAD CALCULATIONS: SUBTOTAL (VA): 23595
+25% PER NEC (VA): 5899
TOTAL (VA): 29494 @ 208V, 3Ø = 82 AMPS

1 COB BUILDING PANEL SCHEDULES

SCALE: NTS

CONDUIT (RMC)			CONDUCTORS/ CABLE		OCPD	EQUIPMENT NAME	VOLTAGE	PHASE	HP	FLA
PATH NO.	SIZE	SETS	QTY	TYPE						
E01	2"	2	3	#3/0 AWG	400A	CH-1	460	3	141	228
			1	#3 AWG GND						
E02	2"	2	3	#3/0 AWG	400A	CH-2	460	3	141	228
			1	#3 AWG GND						
E03	1 1/4"	1	3	#4 AWG	70A	CT-2	460	3	20	27
			1	#8 AWG GND						
E04	1 1/4"	1	3	#4 AWG	70A	CT-3	460	3	20	27
			1	#8 AWG GND						
E05	1/2"	1	3	#12 AWG	20A	VFD-1	460	3	5	7.6
			1	#12 AWG GND						
E06	1/2"	1	3	#12 AWG	20A	VFD-2	460	3	5	7.6
			1	#12 AWG GND						
E07	1/2"	1	3	#12 AWG	20A	VFD-3	460	3	5	7.6
			1	#12 AWG GND						
E08	1/2"	1	3	#12 AWG	20A	VFD-4	460	3	5	7.6
			1	#12 AWG GND						
E09	1"	1	3	#6 AWG	50A	VFD-5	460	3	15	21
			1	#10 AWG GND						
E10	1/2"	1	3	#10 AWG	30A	VFD-6	460	3	7.5	11
			1	#10 AWG GND						
E11	1/2"	1	3	#10 AWG	30A	VFD-7	460	3	7.5	11
			1	#10 AWG GND						
E12	1/2"	1	3	#10 AWG	30A	VFD-8	460	3	7.5	11
			1	#10 AWG GND						
E13	1"	1	3	#6 AWG	50A	VFD-9	460	3	15	21
			1	#10 AWG GND						
E14	1"	1	3	#6 AWG	50A	VFD-10	460	3	15	21
			1	#10 AWG GND						
E15	1"	1	3	#6 AWG	50A	VFD-11	460	3	15	21
			1	#10 AWG GND						
E16	1/2"	1	3	#12 AWG	20A	PF-1	460	3	7.5	9.4
			1	#12 AWG GND						
E17	1"	1	2	#4 AWG	60A	WS-1	208	2	6	24
			1	#10 AWG GND						
E18	1/2"	1	2	#10 AWG	30A	EF-1	115	1	0.75	13.8
			1	#10 AWG GND						
E19	2 1/2"	1	3	(3)#4/0 AWG	225A	CH-3	460	3	129	156
			1	#2 AWG GND						

2 COB BUILDING CONDUIT AND CONDUCTOR SCHEDULE

SCALE: NTS

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673603\B04 - TBEL1001.dwg Daniel.Thompson

Registered Professional Engineer (Electrical) — CERTIFICATE NO. 49025 — PETER M. SYNTAX — Date Signed 07/13/18 — ARIZONA U.S.A.

Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
	PDD COMMENTS	07/13/18
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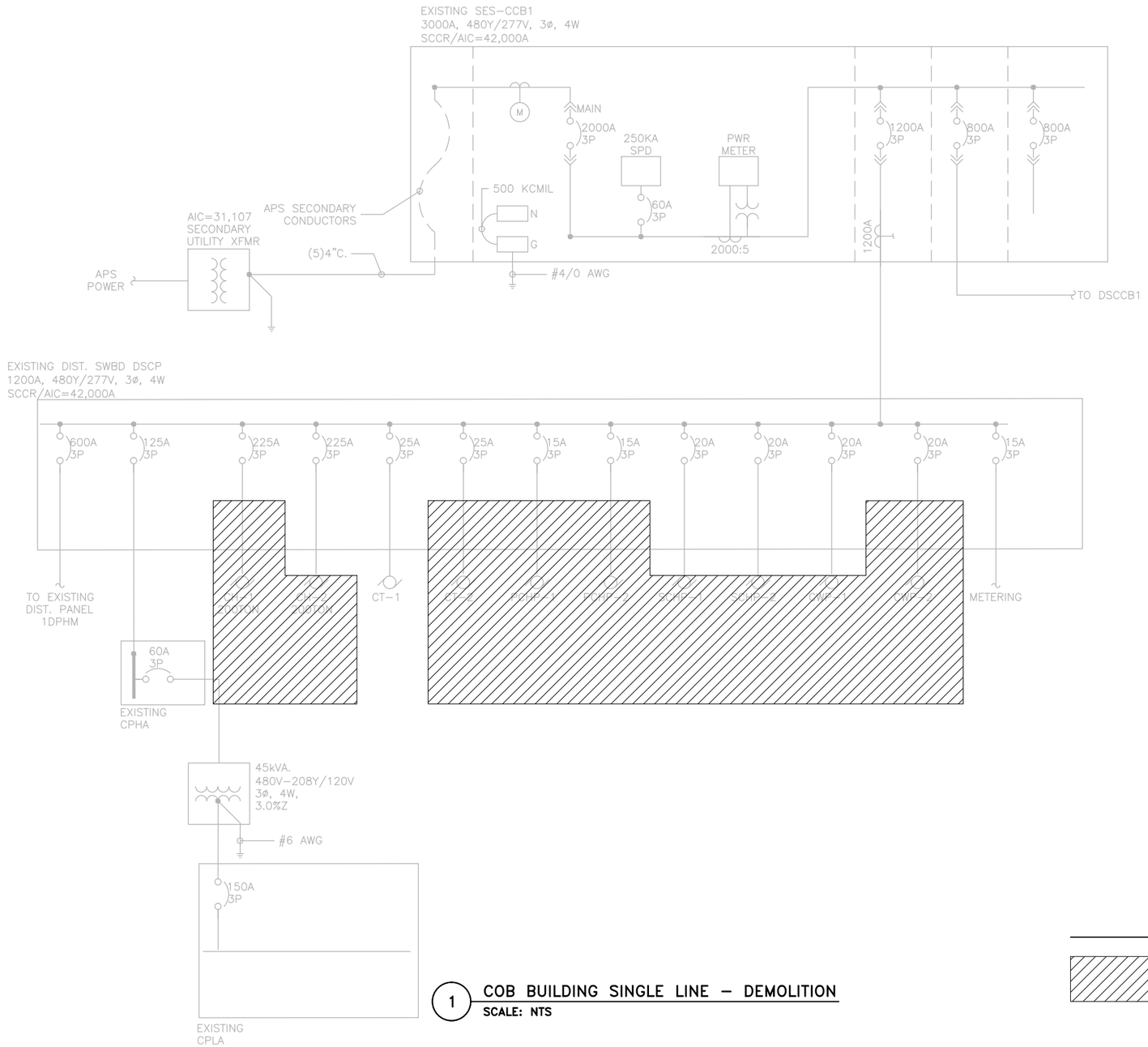
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STAGE 2 – B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDNG
ELECTRICAL
PANEL SCHEDULE

Package: B04 — Sheet Reference No: ACEL0901



1 COB BUILDING SINGLE LINE – DEMOLITION
SCALE: NTS

LEGEND

EXISTING ELECTRICAL EQUIPMENT, CONDUIT AND CONDUCTORS TO BE DEMOLISHED

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA, USA

Exp. Date 12/31/20

Design Sub–Consultant
Kimley»Horn

Design Consultant
Gannett Fleming

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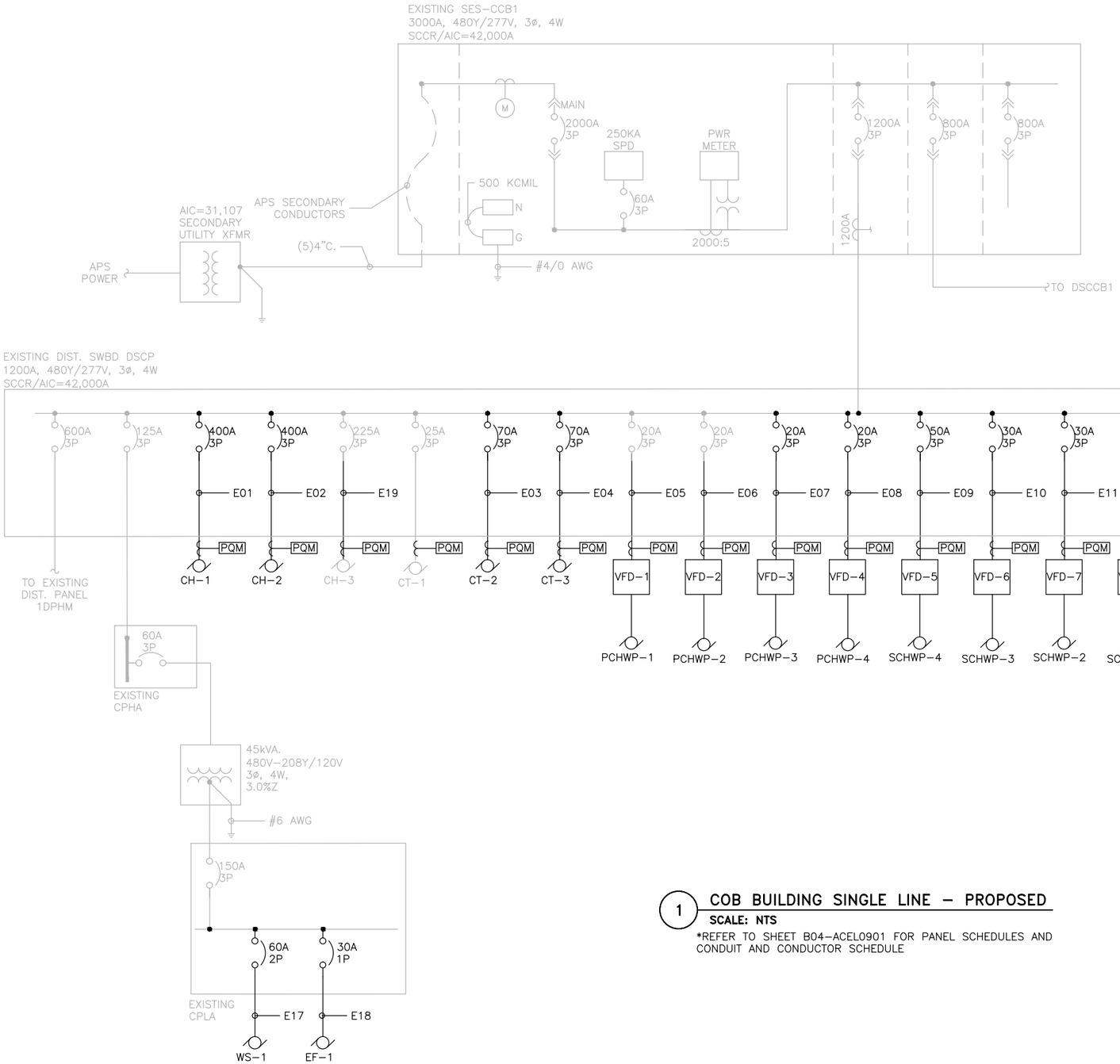
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STAGE 2 – B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
ELECTRICAL
SINGLE LINE DIAGRAM - DEMOLITION

Package: B04 - ACEL1001
Sheet Reference No:
V6 - 254 of 260

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673603\B04 – TBEL1001.dwg Daniel.Thompson



1 COB BUILDING SINGLE LINE – PROPOSED

SCALE: NTS

*REFER TO SHEET B04-ACEL0901 FOR PANEL SCHEDULES AND CONDUIT AND CONDUCTOR SCHEDULE

2 FAULT CURRENT CALCULATION

LOAD CALCUALTION

EXISTING SES LOAD*	= 115000	VA
ADDED LOAD	= 859254	VA
+25% SAFETY	= 243564	VA
TOTAL NEW LOAD	= 1217818	VA
AMPS(480V,3PH)	= 1466	AMPS

3 LOAD SUMMARY

*EXISTING LOAD PER PEAK DEMAND OVER LAST 12 MONTHS.

GENERAL NOTES

1. PROVIDE EATON POWER XPERT MULTIPOINT METER OR APPROVED EQUAL. TIE INTO EXISTING AVIATION MONITORING NETWORK.

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 49025
PETER M. SYNTAX
Date Signed 07/13/18
ARIZONA, USA

Exp. Date 12/31/20

Design Sub-Consultant: Kimley»Horn

Design Consultant: Gannett Fleming

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STAGE 2 – B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING ELECTRICAL SINGLE LINE DIAGRAM - PROPOSED

Package: B04

Sheet Reference No: B04-ACEL1002

V6 - 255 of 260

PLOT DATE: Jul 13, 2018 FILE PATH: C:\pwworking\gfpw01\daniel.thompson@kimley-horn.com\d0673603\B04 – TBEL1001.dwg Daniel.Thompson

ABBREVIATIONS

@	AT
AB	ABOVE
AD	AREA DRAIN, ACCESS DOOR
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
AST	ABOVEGROUND STORAGE TANK
AVG	AVERAGE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BDD	BACKDRAFT DAMPER, BOILER BLOWDOWN
BLW	BELOW
BTM	BOTTOM
C	COMMON
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CL	CENTER LINE
CLNG	CEILING
CM	COFFEE MAKER
CO	CLEANOUT
COL	COLUMN
COMP	COMPARTMENT
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUATION
CONT'D	CONTINUED
CP	CONDENSATE PUMP
CPVC	CHLORINATED POLYVINYL CHLORIDE
CTWS	COOLING TOWER MAKE-UP SUPPLY
CTWR	COOLING TOWER MAKE-UP RETURN
CV	CONTROL VOLUME, CHECK VALVE
CW	COLD WATER
Cx	COMMISSIONING
(D)	DEMOLISH, REMOVE
D	DRAIN
DB	DRY BULB TEMPERATURE, DECIBELS
DCW	DOMESTIC COLD WATER
DDC	DIRECT DIGITAL CONTROL
DEG, °	DEGREES
DESG	DESIGNATION
DF	DRINKING FOUNTAIN
DFU	DRAINAGE FIXTURE UNITS
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RECIRC
DIA, ø	DIAMETER
DISC	DISCONNECT
DN	DOWN
DS	DOWNSPOUT
DTW	DOMESTIC TEMPERED WATER
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
(E), EX	EXISTING
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION, ELEVATOR
(ER)	EXISTING RELOCATED
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXT	EXTERIOR
°F	DEGREES FAHRENHEIT
(F)	FUTURE
F	FIRE PROTECTION SUPPLY
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDV	FIRE DRAIN VALVE
FF	FINISHED FLOOR
FG	FUEL GAS
FHC	FIRE HOSE CABINET
FL, FLR	FLOOR
FLA	FULL LOAD AMPS
FO	FUEL OIL
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOW SWITCH
FSK	FLOOR SINK
FSP	FIRE STANDPIPE
FT, '	FOOT, FEET
FU	FIXTURE UNITS
G	GAS, GAS LINE
GA	GAUGE
GAL	GALLON, GALLONS
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GWH	GAS WATER HEATER
H	HEIGHT, HIGH
H2O	WATER
HB	HOSE BIB
HED	HOSE END DRAIN VALVE
HW	HOT WATER
HWH	HOT WATER HEATER
HWR	HOT WATER RECIRC
HWMV	HT WATER MIXING VALVE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HX	HEAT EXCHANGER
HZ	HERTZ (CYCLES PER SECOND)
ID	INSIDE DIAMETER
IM	ICE MAKER
IN, "	INCH, INCHES
IN WG	INCHES OF WATER GAUGE
INFO	INFORMATION
INT	INTERIOR
INV	INVERT ELEVATION
JC	JANITORS CLOSET
KW	KILOWATTS
LAV	LAVATORY
L	LEADER, LENGTH, LONG
LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
M	METER
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR, MFGR	MANUFACTURER
MIN	MINIMUM
MO	MOTOR OIL
MOD	MOTOR OPERATED DAMPER, MODULATING
MR	MOP RECEPTOR
MTD	MOUNTED
MTG	MOUNTING
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION AGENCY
NFWH	NON-FREEZE WALL HYDRANT
NG	NATURAL GAS
NIC	NOT IN CONTRACT
No	NUMBER
NO	NORMALLY OPENED
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OI	OIL INTERCEPTOR
OS&Y	OUTSIDE STEM & YOKE VALVE
OWS	OIL WATER SEPARATOR
P, PRESS	PRESSURE
PD	PRESSURE DROP
PLBG	PLUMBING
PNEU	PNEUMATIC
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
REQ'D	REQUIRED
RL	RAIN LEADER
RLA	RATED LOAD AMPS
RPZ	REDUCED PRESSURE ZONE
REF	REFRIGERATOR
RPM	REVOLUTIONS PER MINUTE
RT	RUNNING TRAP
RW	RECLAIMED WATER
RX	REMOVE EXISTING
S	SOIL
SA, SHK	SHOCK ARRESTOR
SAN	SANITARY, SOIL, WASTE
SANB	SANITARY BELOW SLAB
SD	STORM DRAIN
SF	SQUARE FEET
SH	SHOWER
SHT	SHEET
SK	SINK
SL	STORM LEADER
SP	SUMP PUMP
SQ	SQUARE
SQ FT	SQUARE FOOT, SQUARE FEET
SS	SERVICE SINK
S/S	STAINLESS STEEL
ST	STORM
STD	STANDARD
SW	STORM WATER
ΔT	TEMPERATURE DIFFERENTIAL
T, TEMP	TEMPERATURE
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TPL	TRAP PRIMING LINE
TPP	TRAP PRIMER PANEL
TW	TEMPERED WATER
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UR	URINAL
USF	UNDERGROUND SANDFILTER
V	VOLTS, VENT
VB	VACUUM BREAKER
VCO	VERTICAL CLEANOUT
VERT	VERTICAL
VTR	VENT THROUGH ROOF
W	WASTE LINE, WIDTH, WIDE
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET, WATER COLUMN
WCO	WALL CLEANOUT
WG	WATER GAUGE
WH	WATER HEATER, WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
WSFU	WATER SUPPLY FIXTURE UNITS
WT	WEIGHT
WW	WELL WATER
ZN	ZONE

PIPING, FITTINGS, AND VALVES

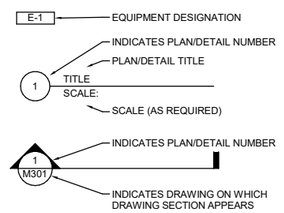
SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RECIRC/RETURN
—TW—	DOMESTIC TEMPERED WATER
—SAN—	SANITARY
	VENT
—D—	DRAIN
—CA—	COMPRESSED AIR
—CD—	CONDENSATE DRAIN
—RW—	RECLAIMED WATER
—WW—	WELL WATER
—IW—	INDUSTRIAL WASTE
—IDW—	INDIRECT WASTE
—G—	GAS
—FG—	FUEL GAS
—NG—	NATURAL GAS
—ST—	STORM WATER
—STO—	STORM WATER OVERFLOW
—F—	FIRE PROTECTION SUPPLY
—MUW—	MAKE UP WATER
—VAC—	VACUUM

SYMBOL	DESCRIPTION
	PIPING TURNING UP
	PIPING TURNING DOWN
	TEE DOWN
	PIPE BRANCH BOTTOM TAKEOFF
	PIPE BRANCH TOP TAKEOFF
	VALVE IN VERTICAL PIPE
	CAP
	FLOW DIRECTION
R/D	PIPE SLOPE RISE/DROP
	PIPE RISER UP/DOWN
	CONCENTRIC REDUCER/INCREASER
	ECCENTRIC REDUCER/INCREASER (FOB)
	UNION
	PIPE CONTINUATION
W H	EXPANSION LOOP (WxH)
	PIPE ANCHOR
	FLEXIBLE PIPE CONNECTOR
EJ	EXPANSION JOINT
	PIPE GUIDE
BFP	REDUCED PRESSURE ZONE BACKFLOW PREVENTOR
	HOSEBIB
	WALL HYDRANT
	WATER HAMMER ARRESTOR
	ROOF DRAIN
	ROOF DRAIN WITH OVERFLOW
	FLOOR DRAIN
	FLOOR CLEANOUT
CO	WALL CLEANOUT
M	WATER METER
MG	GAS METER

SYMBOL	DESCRIPTION
	SHUTOFF VALVE (BALL, GATE, BUTTERFLY)
	GATE VALVE
	GLOBE VALVE
	OUTSIDE STEM & YOKE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GAS COCK
	PRESSURE REDUCING VALVE
	CALIBRATED BALANCING VALVE
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	CONTROL VALVE, TWO-WAY (ELECTRIC)
	THREE-WAY MANUAL VALVE
S	SOLENOID VALVE
AAV	AUTOMATIC AIR VENT (EXTEND TO DRAIN)
MAV	MANUAL AIR VENT
	RELIEF/SAFETY VALVE
	STRAINER
	STRAINER WITH DRAIN VALVE AND CAP
	PRESSURE/TEMPERATURE TEST PORT
	AQUASTAT
H	PRESSURE GAUGE WITH COCK
	THERMOMETER
T	TEMPERATURE SENSOR
P	PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE TRANSDUCER
FS	FLOW SWITCH
FM	FLOW METER
WH	WATER HAMMER ARRESTOR
	PUMP

LINES AND REFERENCE SYMBOLS

SYMBOL	DESCRIPTION
	NEW WORK LINEWEIGHT
	DEMOLITION LINEWEIGHT
	EXISTING LINEWEIGHT
	FUTURE LINEWEIGHT
	CONNECTION OF NEW TO EXISTING
	TERMINATION POINT OF DEMOLITION
X	SHEET KEYED NOTE
	DRAWING REVISION NUMBER



GENERAL NOTES

1. NOT ALL ABBREVIATIONS, LINE TYPES, OR SYMBOLS MAY APPEAR ON THESE CONTRACT DOCUMENTS.
2. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE PERFORMED. THE DRAWINGS ARE NOT INTENDED TO SHOW EXACT LOCATIONS OR TO SHOW EVERY PIPE, FITTING, VALVE OR APPURTENANCE REQUIRES FOR A COMPLETE INSTALLATION. DO NOT SCALE DIMENSIONS FROM THESE DRAWINGS.
3. PROVIDE ALL LABOR AND MATERIALS REQUIRED FOR COMPLETE AND PROPERLY OPERATING PLUMBING SYSTEMS.
4. ALL MATERIALS, EQUIPMENT AND DEVICES, AS A MINIMUM, MEET THE REQUIREMENTS OF UL WHERE UL REQUIREMENTS ARE ESTABLISHED FOR THOSE ITEMS. ALL ITEMS SHALL BE CLASSIFIED BY UL AS SUITABLE FOR THE PURPOSE INTENDED.
5. CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE. PROVIDE ALL NECESSARY OFFSETS AND FITTINGS FOR A COMPLETE INSTALLATION.
6. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS.
7. COORDINATE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES. REWORK DUE TO THE LACK OF COORDINATION IS THE RESPONSIBILITY OF THE CONTRACTORS.
8. ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES, UNLESS NOTED OTHERWISE.
9. CONNECT WATER, WASTE AND VENT PIPING TO FIXTURES IN ACCORDANCE WITH SIZES INDICATED ON FIXTURE SCHEDULE.
10. RUN 2" MINIMUM SIZE WASTE PIPING BELOW GROUND INSIDE BUILDING REGARDLESS OF SIZE NOTED ON FIXTURE SCHEDULE.
11. SLOPE ALL SOIL, WASTE AND STORM WATER LINES 2 1/2" AND SMALLER AT 1/4 - INCH PER FOOT.
12. SLOPE ALL SOIL, WASTE AND STORM WATER LINES 3" AND LARGER AT 1/8 - INCH PER FOOT.
13. RUN PIPING CONCEALED, EXCEPT IN MECHANICAL ROOMS OR WHERE OTHERWISE INDICATED.
14. RUN CONCEALED PIPING, IN AREAS OF FREEZING, ON ROOM SIDE OF BUILDING INSULATION, UNLESS NOTED OTHERWISE.
15. WHERE PIPING IS RUN IN EXTERIOR WALLS OR AREAS OF POTENTIAL FREEZING PROVIDE AN ADDITIONAL 1" OF INSULATION.
16. FURNISH AND INSTALL ACCESS PANELS, WHETHER INDICATED OR NOT FOR ACCESS TO CONCEALED VALVES, TRAPS OR EQUIPMENT WHERE NO OTHER MEANS OF ACCESS IS PROVIDED. PAINT ACCESS PANELS TO MATCH WALL COVERING. PANEL SHALL BE OF TYPE TO MAINTAIN FIRE RATING OF STRUCTURE AND SIZED FOR CLEAR SERVICE ACCESS.
17. MOTOR OPERATED EQUIPMENT SHALL BE ISOLATED FROM THE BUILDING STRUCTURE BY THE INSTALLATION OF APPROVED VIBRATION HANGERS AND SUPPORTS.
18. APPROVED FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT PIPING CONNECTIONS TO MOTOR OPERATED EQUIPMENT.
19. PROVIDE EXPANSION JOINTS WHERE PIPES CROSS BUILDING EXPANSION OR SEISMIC JOINTS.
20. PROVIDE PIPE ESCUTCHEONS AT ALL EXPOSED PENETRATIONS OF FLOOR, WALLS AND CEILINGS.
21. ALL EXPOSED HANGER RODS AND MISCELLANEOUS SUPPORTS SHALL BE GALVANIZED STEEL OR PLATED, INCLUDING CRAWL SPACE AND EXTERIOR INSTALLATIONS, UNLESS NOTED OTHERWISE.
22. INSTALL ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS, LOCAL, STATE AND FEDERAL.
23. UNLESS OTHERWISE NOTED, CONSTRUCTION MATERIALS AND EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF OFF THE SITE.
24. EXISTING EQUIPMENT AND MATERIALS SHALL REMAIN, UNLESS OTHERWISE NOTED.
25. COORDINATE WORK WITH EXISTING STRUCTURAL AND ARCHITECTURAL FEATURES AND PROVIDE OFFSETS AND FITTINGS AS REQUIRED.
26. PATCH ALL OPENINGS IN BUILDING CONSTRUCTION WHERE PIPING, ETC. IS REMOVED. PATCHING SHALL BE SAME MATERIAL AS SURROUNDING CONSTRUCTION. FINISH TO MATCH EXISTING TO THE EXTENT POSSIBLE.
27. WHERE EQUIPMENT, PIPING, CONDUIT, ETC. TO REMAIN IS SUPPORTED FROM EQUIPMENT AND/OR PIPING BEING REMOVED, EXTEND EXISTING HANGERS OR PROVIDE NEW HANGERS AND SUPPORTS AS REQUIRED TO RE-SUPPORT ITEMS FORM BUILDING STRUCTURE.
28. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES AND PIPING BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT OCCUR BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY UNDERGROUND UTILITIES.
29. SEAL ALL WALL AND FLOOR PENETRATIONS. SEAL ALL PENETRATIONS IN FIRE RATED WALLS AND FLOORS IN ACCORDANCE WITH UL LISTED ASSEMBLIES.

REGISTERED PROFESSIONAL ENGINEER
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HEIDI N. SHETH
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE COPYRIGHTED AND MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HS
Drawn by:	SB
Checked by:	HS
Date:	07/13/18
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
PLUMBING
SYMBOLS LEGEND ABBREVIATIONS

Package: B04 - ACPL0001

Sheet Reference No:
V6 - 256 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt
Project Number: #####
7/11/2018 3:44:22 PM

GENERAL NOTES

1. PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES INDICATED ON THIS DRAWING ARE TYPICAL. PLUMBING DRAWINGS MAY NOT INDICATE ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS DRAWING.

2. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE WORK TO BE PERFORMED. THE DRAWINGS ARE NOT INTENDED TO SHOW EXACT LOCATIONS OR TO SHOW EVERY PIPE, FITTING, VALVE OR APPURTENANCE REQUIRED FOR A COMPLETE INSTALLATION. DO NOT SCALE DIMENSIONS FROM THESE DRAWINGS.

3. THE SCOPE OF WORK SHALL INCLUDE PROVIDING ALL WORK INDICATED, AND COORDINATION WITH ALL TRADES. SCOPE OF WORK IS INDICATED ON THE CONTRACT DOCUMENTS INCLUDING THE DRAWINGS AND THE SPECIFICATIONS, WHICH ARE COMPLIMENTARY. WORK INDICATED IN ANY CONTRACT DOCUMENT SHALL BE CONSIDERED PART OF THE SCOPE OF WORK. IN GENERAL, WORK REQUIREMENTS ARE NOT INDICATED IN BOTH DOCUMENTS. WHERE DOCUMENTS CONFLICT WITHIN THEMSELVES OR WITH CODES AND REGULATIONS, PROVIDE THE HIGHER QUANTITY AND QUALITY AND FOLLOW THE STRICTER REQUIREMENTS.

   3.A. CHECK ARCH, ELEC, MECH, & FP DRAWINGS FOR WORK SHOWN TO BE DONE BY PC.
   3.B. COORDINATE PLUMBING WORK WITH OTHER DISCIPLINES, SEE SPECIFICATIONS FOR INFORMATION REGARDING COORDINATION DRAWINGS.

      3.B.a. PROVIDE DEDUCTIONS FOR ANY OWNER AGREED REDUCTIONS IN PIPING RUNS.
      3.B.b. COORDINATE ROUGH-IN INFORMATION WITH FIXTURES AND EQUIPMENT SUPPLIERS.
      3.B.c. COORDINATE PLUMBING FIXTURE LOCATIONS WITH ARCHITECTURAL PLANS.COORDINATE ALL BELOW GRADE PLUMBING PIPING WITH FOUNDATION ELEVATIONS AND SITE UTILITY INVERTS. VERIFY EXISTING ELEVATIONS AND INVERTS PRIOR TO CONSTRUCTION.

4. THE ENTIRE PLUMBING SYSTEM SHALL BE IN CONFORMANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS.

   4.A. APPLICABLE PLUMBING CODE IS THE 2009 INTERNATIONAL PLUMBING CODE.
   4.B. CONFORM TO APPLICABLE BUILDING CODES AND THE OWNER'S INSURANCE AGENCY.
   4.C. PROCURE ALL LICENSES, PERMITS, CERTIFICATIONS, AND AGENCY APPROVALS PRIOR TO COMMENCING FABRICATION OR INSTALLATION.
   4.D. PROVIDE ALL REQUIRED DOCUMENTS, CALCULATIONS AND DRAWINGS.

5. PLUMBING SYSTEMS SHALL NOT BE LOCATED IN ELEVATOR SHAFTS AND ELEVATOR PIT ROOMS EXCEPT FLOOR DRAINS, SUMP PUMPS AND SUMP PUMP DISCHARGE PIPING DEDICATED TO THE SHAFT AND LOCATED AT THE BASE OF THE SHAFT.

6. PLUMBING SYSTEMS SHALL NOT BE LOCATED IN ELECTRICAL EQUIPMENT ROOMS, TRANSFORMER VAULT, ELECTRICAL CLOSETS, TELE DATA ROOMS OR SIMILAR AREAS CONTAINING ELECTRICAL EQUIPMENT.

   6.A. DO NOT INSTALL PIPING OVER, AROUND, IN FRONT OF, BEHIND OR DIRECTLY BELOW ELECTRICAL EQUIPMENT, SWITCHES, TERMINALS OR SIMILAR ELECTRICAL EQUIPMENT.
   6.B. MAINTAIN 42" IN FRONT OF 480 VAC EQUIPMENT AND 36" IN FRONT OF 240 VAC EQUIPMENT.
   6.C. CONFORM TO NEC.

7. NO PLUMBING SYSTEMS SHALL PENETRATE INTO OR PASS THROUGH STAIRWAYS UNLESS IT IS FOR SERVICING THE STAIRWAY.

8. INSTALL PIPING IN A CONCEALED MANNER, STRAIGHT, PLUMB, AND FORM RIGHT ANGLES PARALLEL WITH BUILDING WALLS. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER. PIPE WILL BE LOCATED TO PERMIT ACCESS FOR SERVICE VALVES.

9. CONCRETE PADS AND PITS FOR PLUMBING EQUIPMENT SHALL BE AS INDICATED ON THE STRUCTURAL AND ARCHITECTURAL PLANS.

10. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY FLOW, STATIC AND RESIDUAL PRESSURE BY PERFORMING A HYDRANT FLOW TEST OF THE EXISTING STREET MAIN AT THE POINT OF NEW CONNECTION OR AS CLOSE AS POSSIBLE.

11. COORDINATE PLUMBING SYSTEM SHUT DOWN REQUIREMENTS WITH OWNER. NOTIFY OWNER A MINIMUM OF 48 HOURS PRIOR TO SYSTEM SHUT DOWN.

12. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

13. ONLY CAST IRON PIPING FOR SANITARY AND VENTING SHALL BE INSTALLED IN PLENUM SPACES. THE PLUMBING CONTRACTOR SHALL VERIFY / COORDINATE THE EXACT PLENUM SPACES WITH THE MECHINCAL PLANS AND CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

14. PROVIDE PIPING PENETRATIONS WITH FIRE RATINGS EQUAL TO OR GREATER THAN, THE FIRE RATING OF THE WALL OR FLOOR PENETRATED.

   14.A. COORDINATE PIPE PENETRATIONS WITH CONCRETE CONSTRUCTION.
   14.B. PROVIDE CORE DRILLED PENETRATIONS AT ALL LOCATIONS WHERE CONCRETE OR MASONRY WALLS OR FLOORS HAVE BEEN CONSTRUCTED PRIOR TO PLUMBING PIPING INSTALLATION.
   14.C. CORING SIZES AND LOCATIONS SHALL BE APPROVED BY THE ARCHITECT/ENGINEER.
   14.D. EXTEND SLEEVES 2" ABOVE FLOOR SLAB IN ALL WET AREAS SUCH AS MECHANICAL ROOMS AND WASH AREA.

15. PROVIDE FLUSH TYPE ACCESS DOORS OR PANELS FOR ALL VALVES OR APPARATUS LOCATED IN CHASES, WALLS, NON ACCESSIBLE CEILINGS OR FLOOR.

GENERAL NOTES CONT.

16. PROVIDE CLEANOUTS FOR ALL HORIZONTAL STORM AND SANITARY PIPING AT EVERY CHANGE IN DIRECTION GREATER THAN 45-DEGREES AND AT THE BASE OF ALL STACKS.

17. PROVIDE PIPE IDENTIFICATION LABELS WITH DIRECTIONAL FLOW ARROWS ON ALL HORIZONTAL RUNS EVERY 20 FT.

18. PROVIDE TRAP PRIMERS WITH 1/2" PIPING FOR ALL FLOOR DRAINS WITHOUT SUFFICIENT WATER TO MAINTAIN TRAP SEAL OR A BARRIER TYPE TRAP SEAL PROTECTION DEVICE COMPLYING WITH ASSE 1072.

19. SUPPORT ALL PIPING IN CONFORMANCE WITH SPECIFICATIONS AND THE PLUMBING CODE.

   19.A. SEE PLUMBING CODE FOR SPACING REQUIREMENTS.
   19.B. CONFORM TO THE BUILDING CODE AND MSS SP-127 FOR SEISMIC, WIND AND DYNAMIC FORCES.

PLUMBING FIXTURES:

FLOOR SINK (FS-1): J.R. SMITH MODEL 320-13, SANIFLOOR RECEPTOR. 12"x12"x6" DEEP CAST IRON BOX WITH WHITE ACID RESISTANT PORCELIN. PROVIDE WITH 3/4 HEELPROOF GRATE AND DEEP SEAL TRAP. ROUTE TRAP PRIMER PIPING FROM EXISTING SINK.

GENERAL DEMOLITION NOTES

1. REMOVE ALL EXISTING FIXTURES, FIXTURE SUPPORTS, SANITARY AND VENT PIPING, DOMESTIC WATER, PURE WATER, MEDICAL GAS PIPING, SUPPORTS, VALVES, FITTINGS AND INSULATION AND ALL OTHER RELATED PLUMBING EQUIPMENT UNLESS NOTED OR SHOWN OTHERWISE ON FLOOR PLANS.

2. UNLESS OTHERWISE NOTED, PIPING TO BE DEMOLISHED SHALL BE REMOVED BACK TO ACTIVE MAIN AND CAPPED AIR/WATER TIGHT. CAP PIPING AS NOT TO CREATE DEAD LEGS.

3. THE DRAWINGS ARE PRIMARILY INTENDED TO SHOW GENERAL PLUMBING DEMOLITION WORK AND SCOPE OF DEMOLITION. EXISTING WORK WHICH IS TO BE DEMOLISHED IS SHOWN DARK OR AS NOTED.

4. COORDINATE ALL DEMOLITION REQUIREMENTS WITH THE OWNER. SECURE OPEN FLAME PERMITS FROM THE OWNER SO ALARM SYSTEMS AND FIRE WATCH PERSONNEL CAN BE EMPLOYED AS NECESSARY.

5. ANY SHUTDOWNS OF EXISTING PLUMBING SYSTEMS SHALL BE COORDINATED WITH THE OWNER'S FACILITIES MANAGEMENT OFFICE AND SHALL BE BRIEF, OCCUR WHEN USAGE IS NONEXISTENT OR VERY LIGHT, OR METHODS SHALL BE EMPLOYED WHICH PERMIT SYSTEMS TO STAY IN OPERATION AVOIDING SHUTDOWNS ALTOGETHER. THE OWNER SHALL DETERMINE WHEN AND IF AN EXISTING SYSTEM MAY BE SHUTDOWN.

6. ALL PLUMBING FIXTURES, BACKFLOW PREVENTERS, VALVES, OR EQUIPMENT INDICATED TO BE DEMOLISHED SHALL FIRST BE OFFERED TO THE OWNER. THE SCOPE OF DEMOLITION WORK, HOWEVER, SHALL INCLUDE THE DISPOSAL OF ALL DEMOLISHED EQUIPMENT. THE DISPOSAL SHALL BE OFF-SITE AND IN A SAFE & LEGAL MANNER.

7. WHERE EXISTING CEILINGS REMAIN, CAREFULLY REMOVE AND REINSTALL EXISTING CEILING TILES, AS REQUIRED, IN ORDER TO GAIN ACCESS TO DEMOLITION WORK. REPLACE DAMAGED TEE BARS, TILE ETC. IF DAMAGED.

8. REFER TO AND COORDINATE PLUMBING DEMOLITION WORK WITH ALL OTHER DISCIPLINES AS SHOWN ON ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DEMOLITION DRAWINGS.

9. WHERE EQUIPMENT AND PIPING ETC. IS TO REMAIN, AND IS SUPPORTED FROM ITEMS BEING REMOVED, EXTEND EXISTING HANGERS OR PROVIDE NEW HANGERS AND SUPPORTS AS REQUIRED TO RE-SUPPORT ITEMS FROM BUILDING STRUCTURE.

10. CAP THE OPEN END OF EXISTING PIPING AND EQUIPMENT IMMEDIATELY AFTER OPENING PIPE/EQUIPMENT CONNECTIONS TO PREVENT DEBRIS FROM CONTAMINATING EXISTING-TO-REMAIN ITEMS AND TO PREVENT SEWER GASES FROM ENTERING INTO THE INTERIOR OF THE BUILDING.

11. PROVIDE CUTTING OF ANY SHAFT, CEILING, FLOOR OR WALL AS REQUIRED FOR THE REMOVAL OF PIPING AND EQUIPMENT. ANY SHAFT, CEILING, FLOOR OR WALL OPENING CREATED TO IMPLEMENT PIPE DEMOLITION OR CREATED BY REMOVED PIPE OR FIXTURES SHALL BE REPAIRED BY THE CONTRACTOR. FILL OPENINGS WITH THE SAME MATERIAL AS THE WALL OR FLOOR. FINISH FLUSH TO THE EXISTING SURFACE.

12. WHERE PIPING LOCATED ON THE ROOF IS TO BE REMOVED, ALL PIPING SUPPORTS SHALL BE REMOVED. A CERTIFIED ROOFING CONTRACTOR SHALL PROVIDE THE ROOF REPAIR WORK AS REQUIRED TO MAINTAIN AND CERTIFY THE EXISTING WARRANTY.

13. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT PLUMBING AND BUILDING CODES.

14. PROVIDE BACKFLOW PREVENTION DEVICES ON ALL WATER CONNECTIONS TO HVAC EQUIPMENT AND IRRIGATION SYSTEMS.

15. PROVIDE WATER HAMMER ARRESTORS ON SUPPLY LINES TO FLUSH VALVES, SOLENOID VALVES AND AUTOMATIC VALVES, IN CONFORMANCE WITH PDI AND LOCAL ORDINANCES. INSTALL IN ACCESSIBLE LOCATIONS OR PROVIDE ACCESS PANEL FOR MAINTENANCE.

16. PROVIDE SHUT-OFF VALVES, WITHIN 2 FT. OF MAINS, ON ALL BRANCH PIPING SERVING PLUMBING FIXTURES, EQUIPMENT OR CASEWORK, CONNECT SERVICE BRANCHES TO TOP OF MAINS.

17. PROVIDE DRAIN VALVES AND HOSE CONNECTIONS AT ALL LOW POINTS IN SERVICE PIPING SYSTEM.

18. SLOPE ALL PIPING IN CONFORMANCE WITH SPECIFICATIONS AND THE PLUMBING CODE.

19. PROVIDE WHITE CLOSED CELL MOLDED VINYL INSULATION ON EXPOSED LAVATORY DRAINS AND SUPPLIES FOR HANDICAPPED.

20. PROVIDE PIPING MATERIAL IN CONFORMANCE WITH THE SPECIFICATIONS AND THE PLUMBING CODE.

21. TEST ALL PLUMBING SYSTEMS IN CONFORMANCE WITH THE SPECIFICATIONS AND THE PLUMBING CODE.

22. DISINFECT DOMESTIC WATER SYSTEM IN CONFORMANCE WITH THE SPECIFICATIONS AND THE PLUMBING CODE.

23. INSTALL PLUMBING FIXTURES AND EQUIPMENT IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THE PLUMBING CODE.

24. PROVIDE PIPE SLEEVES THROUGH CONCRETE BEAMS WHERE REQUIRED, COORDINATE WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.

25. PROVIDE HEAT TRACING FOR PIPING LOCATED IN UNHEATED AREAS. PROVIDE 1" INSULATION AND JACKET AROUND ALL PIPE WITH HEAT TRACING.

26. PROVIDE RETENTION STRAPES ON ALL ABOVE GROUND CAST IRON NO-HUB FITTINGS AT CHANGE OF DIRECTION IN PIPES OF 5" AND LARGER AS REQUIRED BY CISPI 301.

Gannett Fleming

Design Consultant

Design Sub-Consultant

66328 HITEN SHETH
EXPIRES 03/31/20

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NO.	REVISIONS / SUBMISSIONS	DATE
	SUBMITTED FOR REVIEW	04/06/18
	ISSUED FOR CONSTRUCTION	07/13/18

PHX DVT EYR
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

Designed by:	HS
Drawn by:	SB
Checked by:	HS
Date:	07/13/18
Dwg scale:	NTS
CIP No.:	AV10000011
KIVA No.:	07-5204

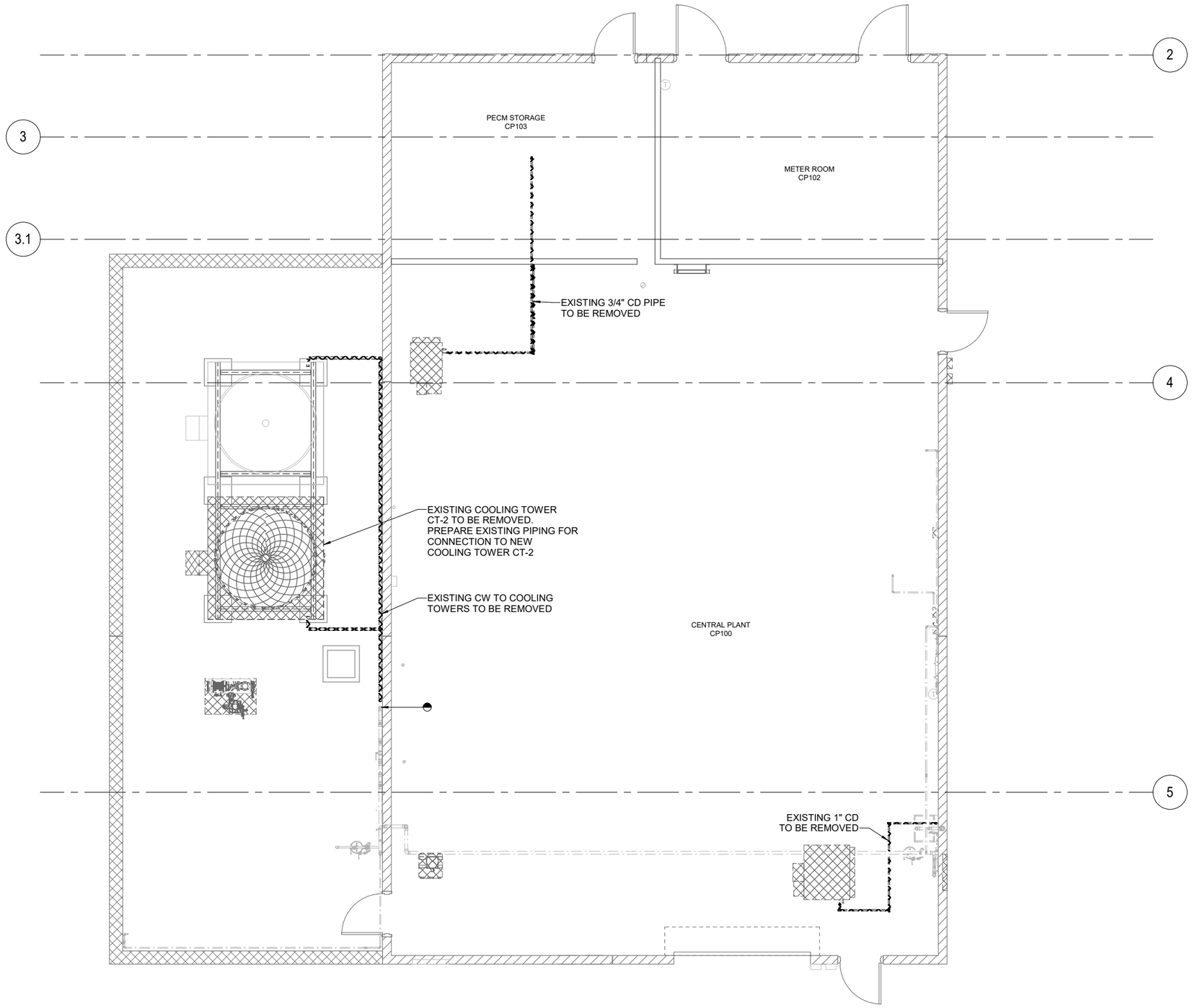
STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
PLUMBING
GENERAL AND DEMOLITION NOTES

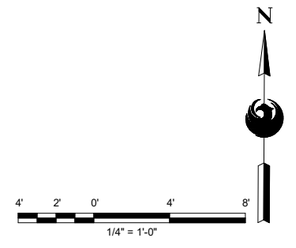
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Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt
Project Number: ####
7/11/2018 3:44:39 PM



1 **PLUMBING DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"



Project Number: ######
7/11/2018 3:45:12 PM

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV10000011-S-2-ACMEXX01_R17_A360.rvt



Design Sub-Consultant

Design Consultant
Gannett Fleming

PER CITY OF PHOENIX ORDINANCE G-4396, THESE PLANS ARE FOR OFFICIAL USE ONLY AND MAY NOT BE SHARED WITH OTHRES EXCEPT AS REQUIRED TO FULFILL THE OBLIGATION OF YOUR CONTRACT WITH THE CITY OF PHOENIX

NO.	DATE
ISSUED FOR CONSTRUCTION	07/13/18
SUBMITTED FOR REVIEW	04/06/18
REVISIONS / SUBMISSIONS	

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

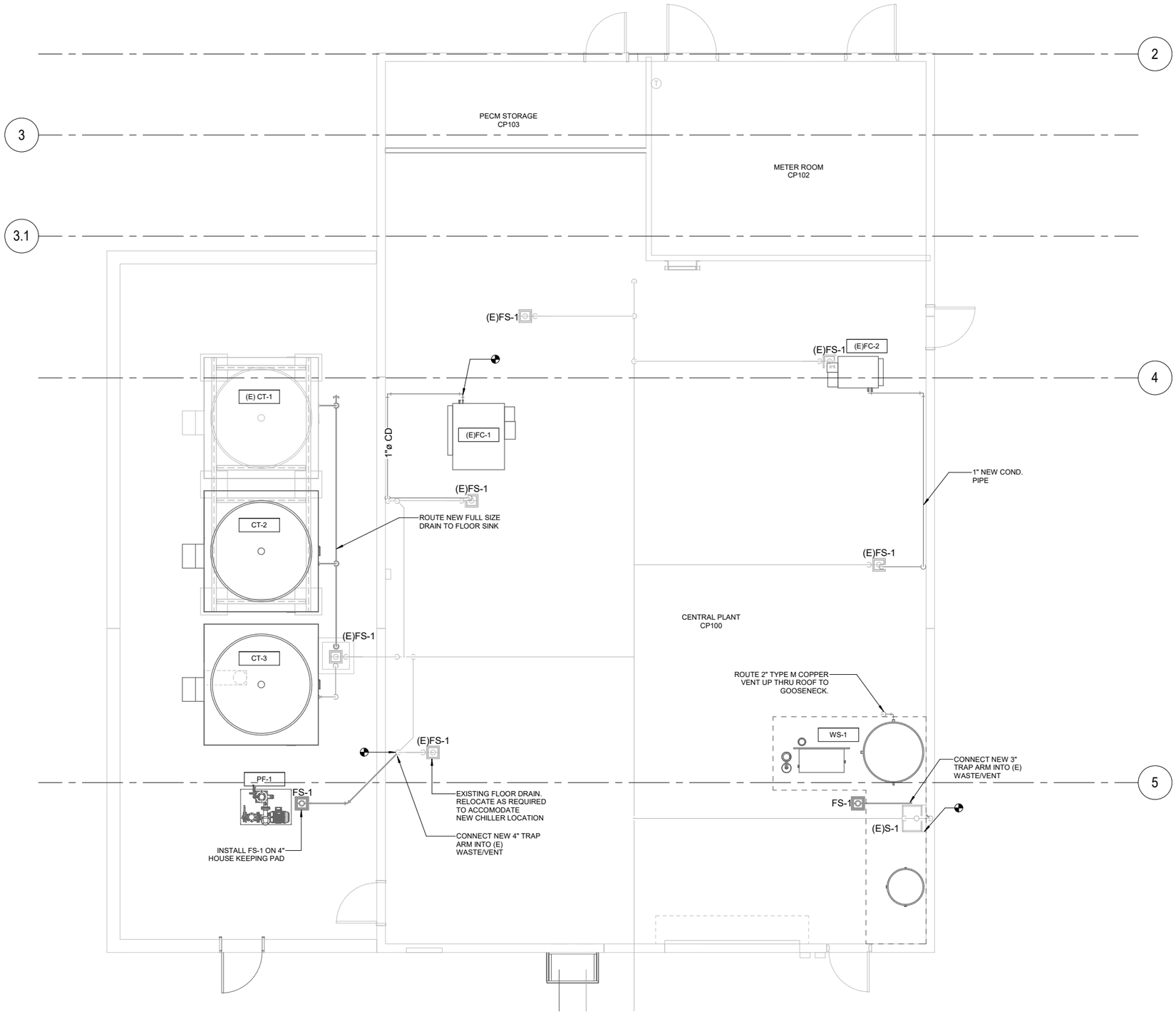
Designed by:	HS
Drawn by:	SB
Checked by:	HS
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV10000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
PLUMBING
DEMOLITION PLAN

Package:
B04 - ACPLD0201

Sheet Reference No:
V6 - 258 of 260



1 PLUMBING WASTE AND VENT PLAN

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

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REGISTERED ENGINEER
66328
HITEN N. SHETH
Arizona U.S.A.
EXPIRES 03/31/20
Design Sub-Consultant
Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

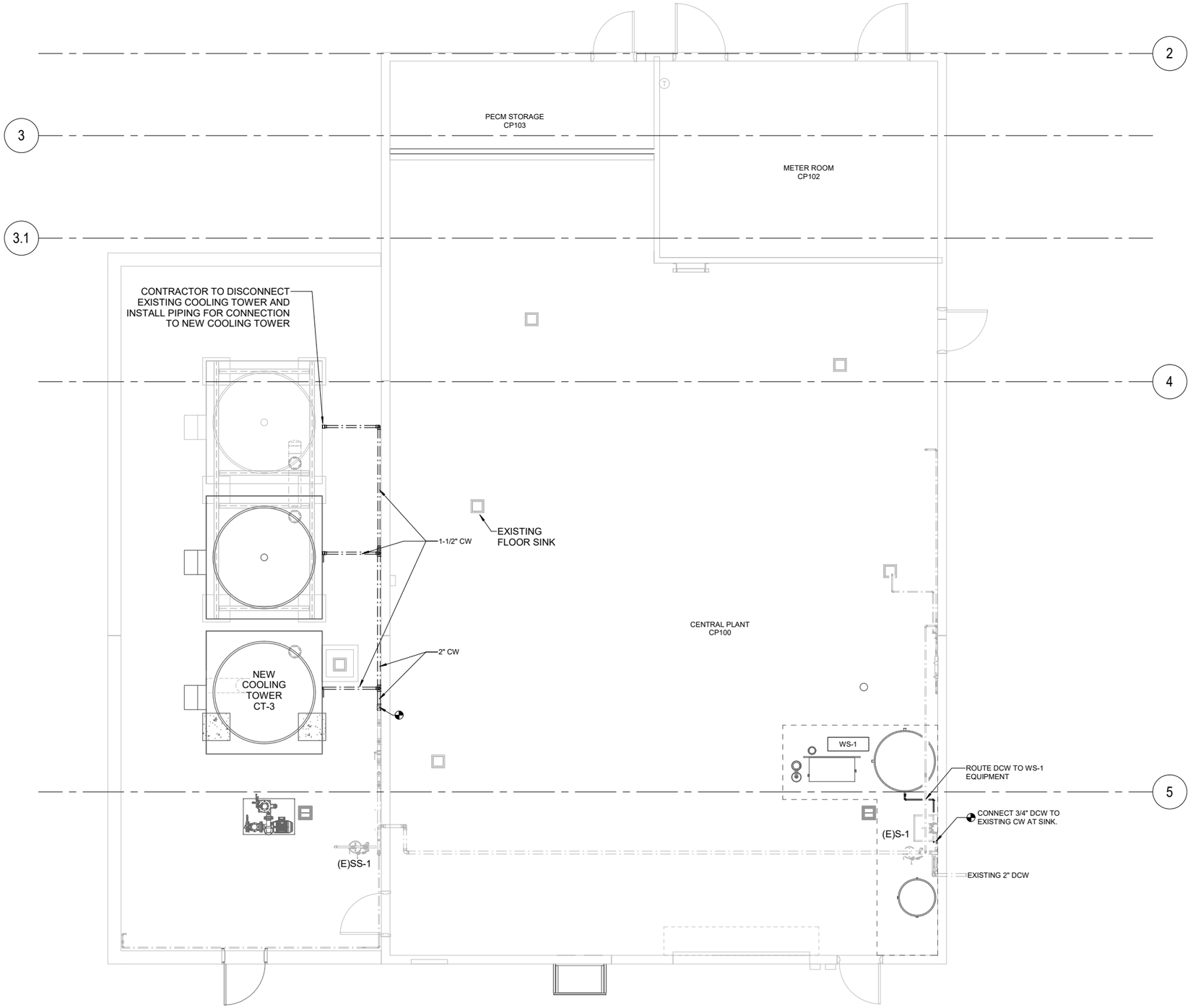
Designed by: Designer	Dwg scale: 1/4" = 1'-0"
Drawn by: Author	CIP No.: AV100000011
Checked by: Checker	KIVA No.: 07-5204
Date: 07/13/18	

STAGE 2 - B04 DESIGN SUBMISSION

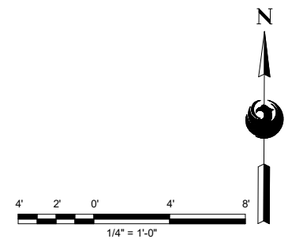
COB - CENTRAL PLANT BUILDING
PLUMBING
WASTE AND VENT FLOOR PLAN

Package: B04 - ACPL0201
Sheet Reference No:
V6 - 259 of 260

Project Number: ######
7/11/2018 3:44:48 PM
Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-ACMEXX01_R17_A360.rvt



1 **PLUMBING DOMESTIC SERVICES PLAN**
SCALE: 1/4" = 1'-0"



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REGISTERED ENGINEER
66328
HITEN N. SHETH
Date Signed
EXPIRES 03/31/20

Design Sub-Consultant

Design Consultant
Gannett Fleming

NO.	REVISIONS / SUBMISSIONS	DATE
	ISSUED FOR CONSTRUCTION	07/13/18
	SUBMITTED FOR REVIEW	04/06/18

PHX SKY TRAIN
STAGE 2 DESIGN
500 S 24TH STREET
PHOENIX, AZ 85034

PHX SKY TRAIN
CITY OF PHOENIX AVIATION DEPARTMENT

Designed by:	HS
Drawn by:	SB
Checked by:	HS
Date:	07/13/18
Dwg scale:	1/4" = 1'-0"
CIP No.:	AV100000011
KIVA No.:	07-5204

STAGE 2 - B04 DESIGN SUBMISSION

COB - CENTRAL PLANT BUILDING
PLUMBING
DOMESTIC SERVICES FLOOR PLAN

Package: **B04 - ACPL0202**
Sheet Reference No:
V6 - 260 of 260

Local File:BIM 360://62421 – Phoenix Sky Train Project – Stage 2/AV100000011-S-2-ACMEXX01_R17_A360.rvt
Project Number: ######
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