Conformed Project Manual

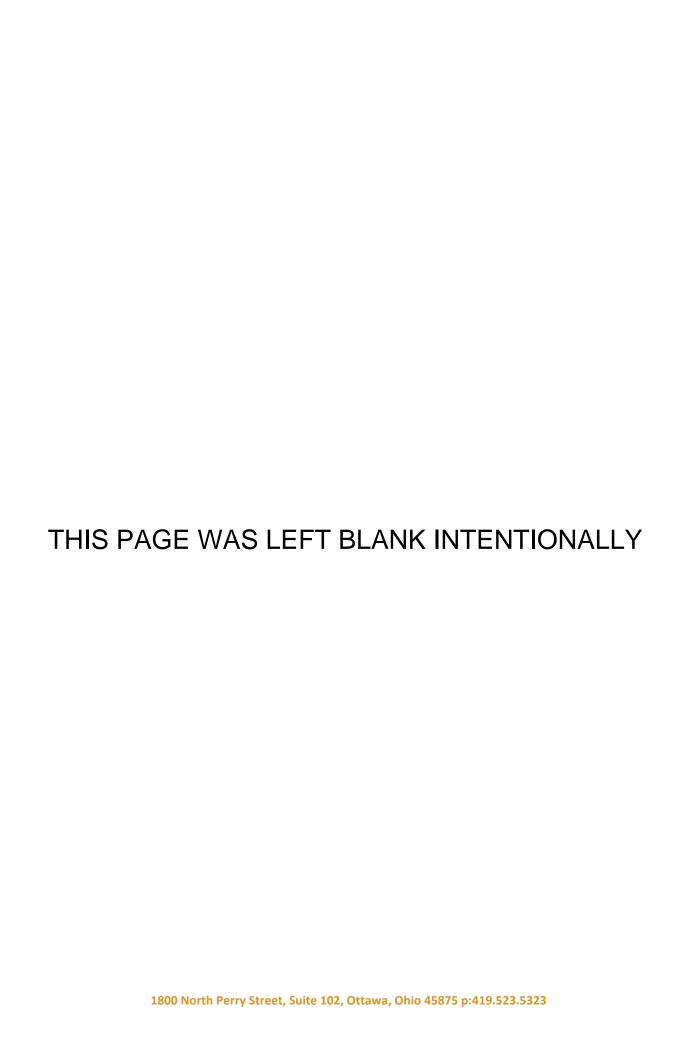
Perry ProTech – Building Renovations

1270 Flagship Drive Perrysburg, Ohio 43551

TDG Job No. 45-2902-23

February 20, 2024







Date: 12/01/2023

Project Number: 45-2902-23

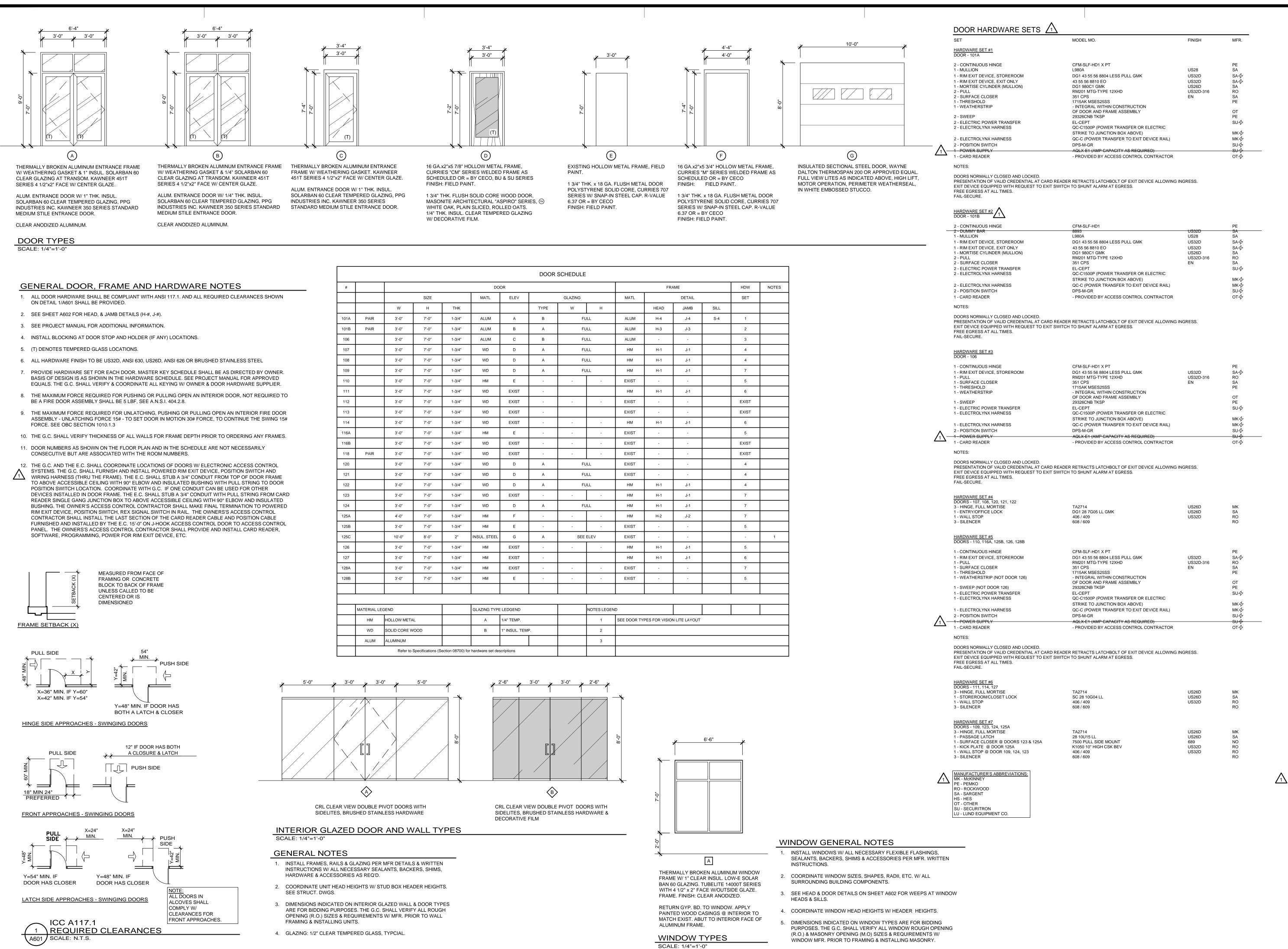
Project Name: Perry ProTech, Toledo - Building Renovations

Intent:

This Addendum provides modifications and clarifications To the Bid Documents dated **Tuesday**, **November 21**, **2023**, Bidder shall ascertain prior to submitting its Bid Form that it has received all Addenda issued and shall acknowledge receipt of each Addendum on the Bid Form.

In the event of a conflict between the terms and provisions of this Addendum and the terms and provisions of the Bidding Documents, the terms and provisions of this Addendum shall control. In all other respects, the Bidding Documents shall remain unchanged and in full force and effect.

	Additional	Cons. Doc.	
Item	Document	Reference	Description
Architect	ural:		
4		Drawing	Re-Issue: Drawing Sheet A601 with Door Hardware Sets
'		Sheet A601	Revisions (see attached).
Electrica	l:		
2		Drawing	Re-Issue: Drawing Sheet DE101 with revised demolition
		Sheet DE101	clarification notes (see attached).
3		Drawing Sheet E101	Re-Issue: Drawing Sheet E101 with revised notes relating to telecommunications and access control changes (see attached).
4		Drawing Sheet E601	Re-Issue: Drawing Sheet E601 with revised notes relating to telecommunications, access control and security changes (see attached).
5		Drawing Sheet E901	Re-Issue: Drawing Sheet E901 with revisions to telecommunication specifications (see attached).
End of A	ddendum 01		



GILLIAN

STECHSCHULTE

1516394

Gillian Stechschulte

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PERRY PROTECH 270 FLAGSHIP DRIVE ERRYSBURG, OH 435

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DOOR & FRAME TYPES DOOR SCHEDULE & DOOR HARDWARE WINDOW TYPES

ISSUED DATE
11-21-23 BIDDING & PERMITS
12-01-23 ADDENDUM #01

DRAWN BY: ANP

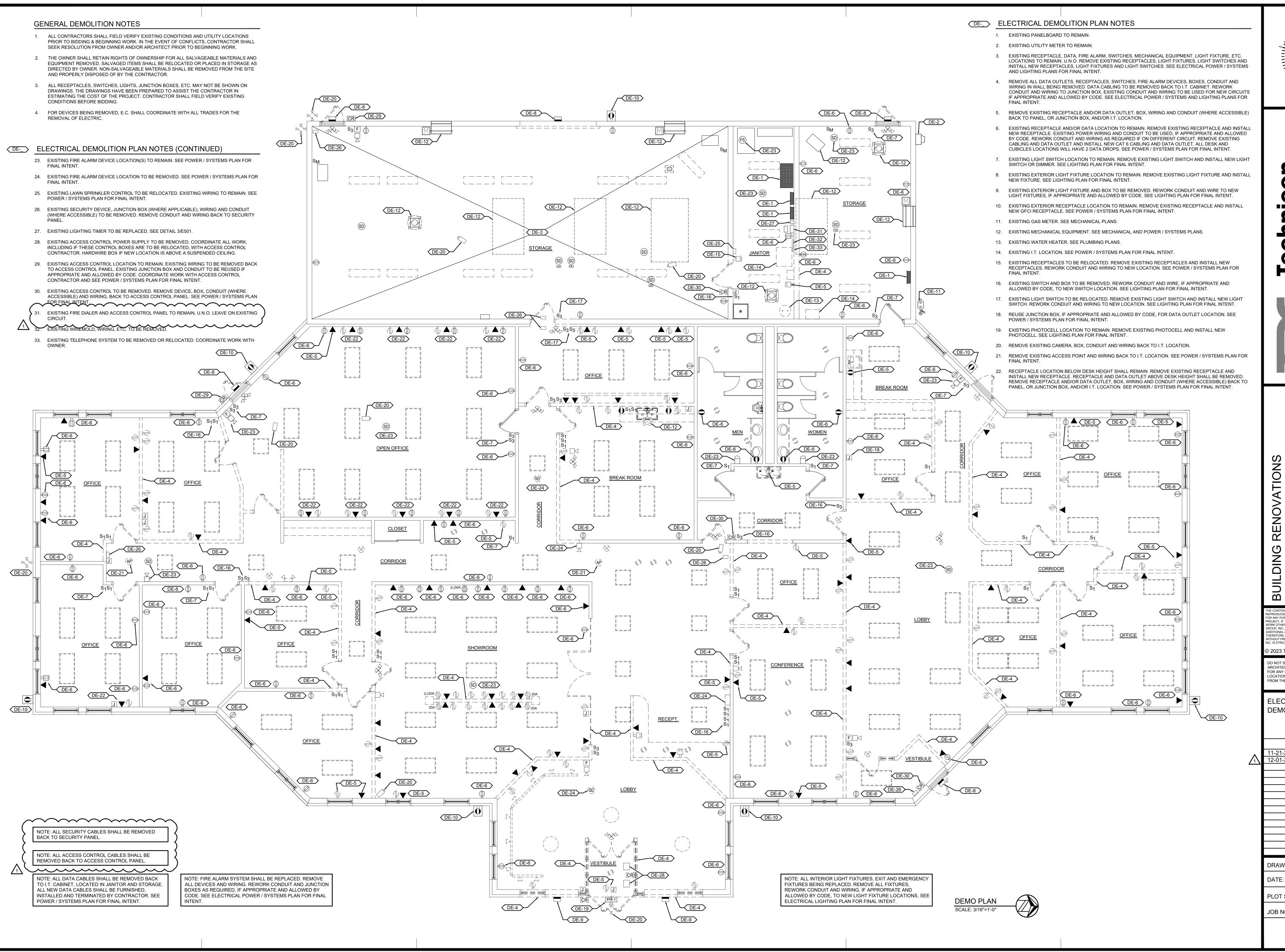
DATE: 08-23

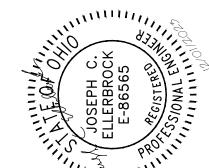
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SHEET **A601**

45-2902-23

JOB NO.





Technicon

Design Group

A R C H I T E C T U F 1800 N PERRY STREET

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ELECTRICAL DEMOLITION PLAN

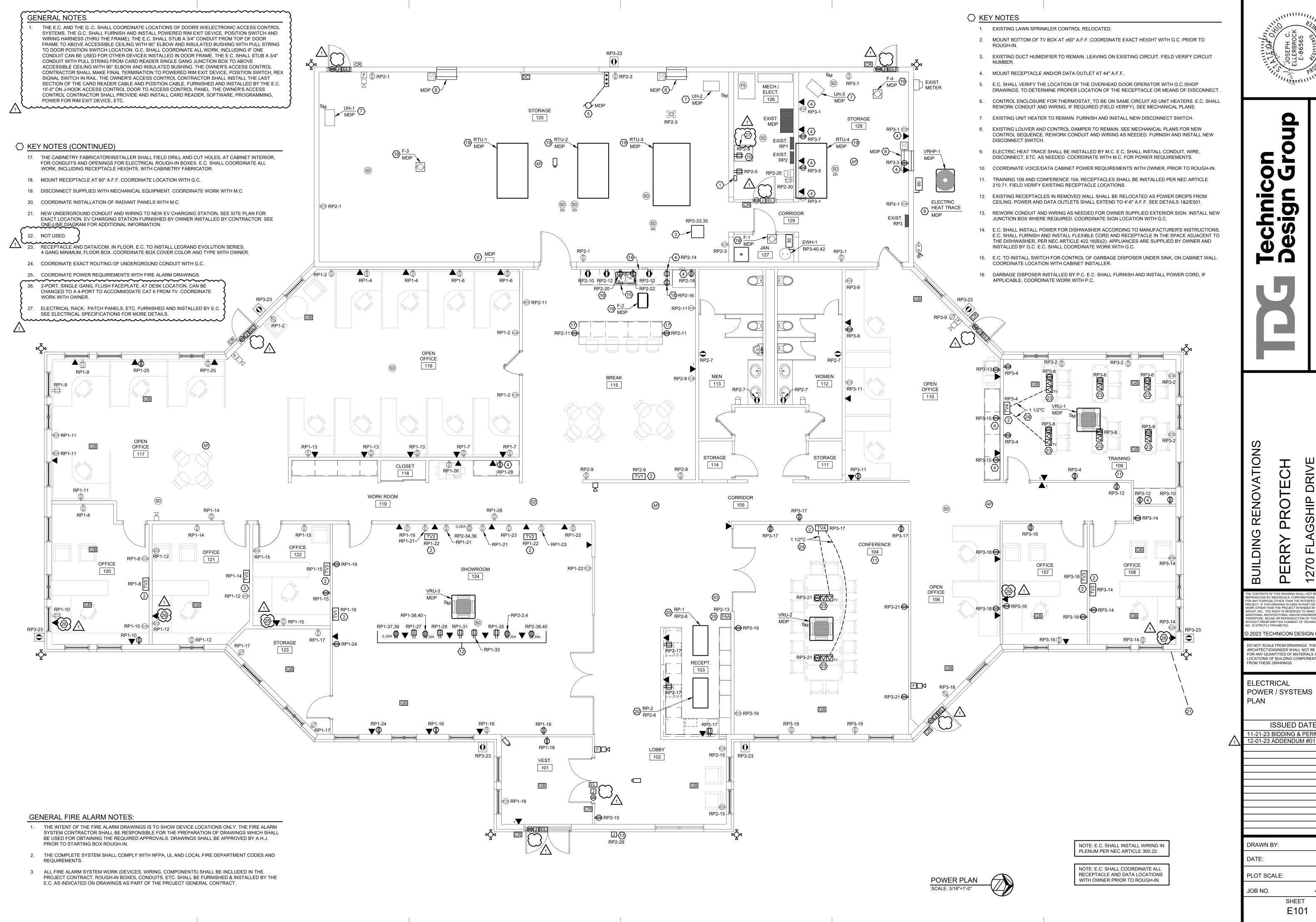
ISSUED DATE 1-21-23 BIDDING & PERMITS 2-01-23 ADDENDUM #01

DRAWN BY: JCE
DATE: 08-23

PLOT SCALE: 1

JOB NO. 45-2902-23 SHEET

DE101



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POWER / SYSTEMS

ISSUED DATE 11-21-23 BIDDING & PERMITS 12-01-23 ADDENDUM #01

08-23

45-2902-23

SHEET E101

			R & DATA LEGEND							
E	DESCRIPTION	MFR	MODEL	MOUNTING HEIGHT (A.F.F.)	COVER PLATE		PH	AMPS	NEMA	NOTES
۱ ۲	HEAVY DUTY SAFETY SWITCH	SQUARE D OR EQUAL							1/3R	1
	DUPLEX RECEPTACLE	HUBBELL OR EQUAL	BR20	16" U.N.O.	WHITE	120	1	20		2
	LOOR RECEPTACLE	HUBBELL OR EQUAL	BR20	FLOOR	WHITE	120	1	20		2
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-	OOUBLE DUPLEX RECEPTACLE	HUBBELL OR EQUAL	2-BR20	16" U.N.O.	WHITE	120	1	20		2
20A 2	208V 1 PHASE 20A RECEPTACLE	HUBBELL OR EQUAL	HBL5461 OR HBL5469C	SEE PLAN	-	208	1	20		2
) 0A 2	208V 1 PHASE 30A RECEPTACLE	HUBBELL OR EQUAL	HBL2620 OR HBL2623	SEE PLAN	-	208	1	30		2
-	GFCI RECEPTACLE	HUBBELL OR EQUAL	GF20	44" U.N.O.	WHITE	120	1	20		2
-	GFCI RECEPTACLE W/ IN-USE COVER	HUBBELL OR EQUAL	GFW20	24"	CLEAR OR GRA	Y 120	1	20		2,5
<u> </u>	RECESSED TV WALL BOX WITH FLUSH COVER 2 DATA, 1 RECEPT) RECESSED TV WALL BOX WITH FLUSH COVER	FSR OR EQUAL	PWB-100	SEE PLAN	-	120	1	20		4,11
ツェ	2 DATA, 1 RECEPT, 1-1/4" C BELOW)	FSR OR EQUAL	PWB-100	SEE PLAN	-	120	1	20		4,12
/'X II	RECESSED TV WALL BOX WITH FLUSH COVER 2 DATA, 1 RECEPT, DATA TO DESK)	FSR OR EQUAL	PWB-100	SEE PLAN	_	120	1	20		4,13
74 F	RECESSED TV WALL BOX WITH FLUSH COVER 3 DATA, 1 RECEPT, 1-1/2" C & 1" C)	FSR OR EQUAL	PWB-250-2KO-BX	SEE PLAN SEE PLAN & AS REQUIRED	- BLANK	120		20		4,14
$\overline{}$	MOTOR	-	-	-	-	120	1	_		-
+	MANUAL MOTOR SWITCH	SQUARE D OR EQUAL	-	-	-		1	-		7
7	FLOOR DATA/COM. OUTLET		CFP2WH	FLOOD	\ \ /\LI TE					2017
		PANDUIT	CJ688TGWH CFP2WH	FLOOR	WHITE	+	+			2,9,17
	FLOOR DATA/COM. TO TV WALL BOX	PANDUIT	CJ688TGWH CFP1WH	FLOOR	WHITE	+				2,16,17
,	DATA/COM. OUTLET - 1 PORT	PANDUIT	CJ688TGWH CFP2WH	44" U.N.O.	WHITE		+			2,6,8
	DATA/COM. OUTLET - 2 PORTS	PANDUIT	CJ688TGWH	16" U.N.O.	WHITE					2,6,9,17
<u> </u>	VIRELESS ACCESS POINT	-	-	CEILING	-					10,15
ES	LEGEND	<u>I</u>	<u>l</u>		<u> </u>					
١	E.C. TO VERIFY DEVICE COLOR AND/OR COVER P WIRING AND/OR CONDUIT FROM J-BOX TO PANEL ONE NEMA 5-20R DUPLEX RECEPT, E.C. SHALL PR	OR AS NOTED ON DRAWIN	G	& MOUNT PER NE		OARC)VF A	CCES	SIBI F CF	ILING SPACE
\ (\ \		OR AS NOTED ON DRAWING ROVIDE 3/4"C (POWER) AND E IN CAST ALUMINUM BOX V	G D 1-1/4"C (LOW VOLTAGE). F N/ EXTRA DUTY LISTED WE	ROUTE LOW VOLT	AGE CONDUIT THE	/ER			SIBLE CE	EILING SPACE
\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	WIRING AND/OR CONDUIT FROM J-BOX TO PANEL ONE NEMA 5-20R DUPLEX RECEPT. E.C. SHALL PE WITH 90° ELBOW AND INSULATED BUSHING NSTALL WEATHER-RESISTANT GFCI RECEPTACLE NSTALL 2 1/8" DEEP, 4 11/16" SQUARE BOX WITH HORSEPOWER RATED WITH OVERCURRENT PRO- COMMUNICATIONS OUTLET CONSISTING OF (1) 2-P CABLE (BLUE JACKET) ROUTED TO VOICE/DATA C.	OR AS NOTED ON DRAWING OVIDE 3/4"C (POWER) AND STATE IN CAST ALUMINUM BOX VIDENTIAL PROPERTY OF THE PROPERTY O	G D 1-1/4"C (LOW VOLTAGE). F W/ EXTRA DUTY LISTED WE TUB 1"C TO ACCESSIBLE CE D PILOT LIGHT. SEE PLAN F H FACEPLATE AND (1) PAN	ROUTE LOW VOLT EATHERPROOF WH EILING WITH 90° E FOR VOLTAGE RE IDUIT CAT 6 RJ45 N	TAGE CONDUIT THILE-IN-USE CON LBOW AND INSU QUIREMENT MINI-COM JACK (/ER JLATEI BLUE)	BUS WITH	SHING I (1) GE	ENSPEED	O CAT 6 4UTP
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\\	WIRING AND/OR CONDUIT FROM J-BOX TO PANEL ONE NEMA 5-20R DUPLEX RECEPT. E.C. SHALL PROVIDED BUSHING NSTALL WEATHER-RESISTANT GFCI RECEPTACLE NSTALL 2 1/8" DEEP, 4 11/16" SQUARE BOX WITH HORSEPOWER RATED WITH OVERCURRENT PROCEOMMUNICATIONS OUTLET CONSISTING OF (1) 2-PCABLE (BLUE JACKET) ROUTED TO VOICE/DATA COMMUNICATIONS OUTLET CONSISTING OF (1) 2-PCABLES (BLUE JACKET) ROUTED TO VOICE/DATA COMMUNICATIONS OUTLET CONSISTING OF (1) 2-PCABLES (BLUE JACKET) ROUTED TO VOICE/DATA COMMUNICATIONS OUTLET CONSISTING OF (1) 2-PCABLES (WHITE JACKET) ROUTED TO VOICE	OR AS NOTED ON DRAWING ON DRAWING OVIDE 3/4"C (POWER) AND THE IN CAST ALUMINUM BOX VIOLENTE PROPERTY OF THE PR	G D 1-1/4"C (LOW VOLTAGE). F N/ EXTRA DUTY LISTED WE UB 1"C TO ACCESSIBLE CE D PILOT LIGHT. SEE PLAN F H FACEPLATE AND (1) PAN H FACEPLATE AND (2) PAN H FACEPLATE AND (2) PAN 20'-0" OF COILED CABLE ON	ROUTE LOW VOLT ATHERPROOF WITH 90° E FOR VOLTAGE RE IDUIT CAT 6 RJ45 IN IDUIT CAT 6 RJ45 IN IDUIT CAT 6 RJ45 IN N J-HOOK ABOVE	TAGE CONDUIT TO THE IN-USE CONDUIT TO THE IN-USE CONDUIT TO THE IN-USE CONDUIT TO THE IN-USE CONDUIT TO THE IN-COM JACKS ACCESSIBLE CONDUITED	/ER JLATED BLUE) (BLUE) (WHIT	WITH WITH WITH	6HING I (1) GE TH (2) G	ENSPEED GENSPEE GENSPE	D CAT 6 4UTP ED CAT 6 4UTP ED CAT 6
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3	WIRING AND/OR CONDUIT FROM J-BOX TO PANEL DINE NEMA 5-20R DUPLEX RECEPT. E.C. SHALL PROBLEM NEMA 5-20R DUPLEX RECEPTACLE INSTALL 2 1/8" DEEP, 4 11/16" SQUARE BOX WITH HORSEPOWER RATED WITH OVERCURRENT PROBLEM NEMA 5-20R DUPLET CONSISTING OF (1) 2-P CABLE (BLUE JACKET) ROUTED TO VOICE/DATA COMMUNICATIONS OUTLET CONSISTING OF (1) 2-P CABLES (BLUE JACKET) ROUTED TO VOICE CONNECTION TO WIRELESS ACCESS POINT. WIRE COMMUNICATIONS OUTLET CONSISTING OF (1) 2-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 6-P COMMUNICATIONS OUTLET CONSISTING OF (1) 6-P COMM	OR AS NOTED ON DRAWING OVIDE 3/4"C (POWER) AND OVIDE 3	G D 1-1/4"C (LOW VOLTAGE). F W/ EXTRA DUTY LISTED WE UB 1"C TO ACCESSIBLE CE D PILOT LIGHT. SEE PLAN F H FACEPLATE AND (1) PAN H FACEPLATE AND (2) PAN 20'-0" OF COILED CABLE ON NISHED BY OWNER, INSTA H FACEPLATE AND (2) PAN VOICE/DATA CABINET H FACEPLATE AND (2) PAN VOICE/DATA CABINET. ALS 16" A.F.F. H FACEPLATE, (2) PANDUIT I) ROUTED FROM RECESSE PLATE AT DESK LOCATION H FACEPLATE AND (3) PAN VOICE/DATA CABINET. ALS (TO FLOOR BOXES. 1-1/2"C NISH, OWNER WILL INSTALI STALLED ABOVE CEILING O NG. PROVIDE GROMMET IN H FACEPLATE AND (3) PAN VOICE/DATA CABINET. ALS (TO FLOOR BOXES. 1-1/2"C NISH, OWNER WILL INSTALI STALLED ABOVE CEILING O NG. PROVIDE GROMMET IN H FACEPLATE AND (3) PAN VOICE/DATA CABINET. ALS (TO FLOOR BOXES. 1-1/2"C CTOR WITH FURNISH, OWN NG MORE PORTS PAD DESCRIPTION SHTING ENERGL RECEPTACLES PACE HEATING	ROUTE LOW VOLT ATHERPROOF WITH 90° E FOR VOLTAGE RE DUIT CAT 6 RJ45 M DUIT CAT 6 RJ	AGE CONDUIT TO THE INCOME AND INSUREMENT MINI-COM JACKS MINI-COM JACKS ACCESSIBLE CICTOR MINI-COM JACKS INSTALL 1-1/4"C COM JACKS (WHITO VOICE/DATA ED WITH DATA INSTALL 1"C TO OF (2) PANDUIT FROM TV WALL NT ON STRUCTUABLING MINI-COM JACKS INSTALL 1"C TO OF (2) PANDUIT FROM TV WALL NT ON STRUCTUABLING MINI-COM JACKS INSTALL 1"C TO ONLY OF (2) PACATA 6 CABLING MINI-COM JACKS INSTALL 1"C TO ONL	/ER JLATED BLUE) (BLUE) (WHIT FROM HITE), A CABIN DROP I (WHIT ABOV CAT 6 BOX T RE AS (WHIT ABOV NDUIT FROM T EMANI 1: DKVA + 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:	E) WITH E) WIT	SHING I (1) GE II (2) G III (3) G CESSIE MINI-CO CATED III (3) G CATED	GENSPEE GENSPEE GENSPE ENDS, F GENSPE OX TO SI DUIT CAT TALL (1) GENSPE BLE CEILI OM JACK OX FOR AB GENSPE BLE CEILI MINI-COM OX TO FL	ED CAT 6 OCAT 6 4UTP ED CAT 6 OR ED CAT 6 OR ED CAT 6 NGLE GANG GENSPEED ED CAT 6 ING SPACE (WHITE) WITH COVE CEILING ED CAT 6 ING SPACE // JACKS LOOR BOX DE MIN. (KVA) 11.25 21.35 3.12
3	WIRING AND/OR CONDUIT FROM J-BOX TO PANEL DINE NEMA 5-20R DUPLEX RECEPT. E.C. SHALL PROBLEM NEMA 5-20R DUPLEX RECEPTACLE INSTALL 2 1/8" DEEP, 4 11/16" SQUARE BOX WITH HORSEPOWER RATED WITH OVERCURRENT PROBLEM NEMA 5-20R DUPLET CONSISTING OF (1) 2-P CABLE (BLUE JACKET) ROUTED TO VOICE/DATA COMMUNICATIONS OUTLET CONSISTING OF (1) 2-P CABLES (BLUE JACKET) ROUTED TO VOICE CONNECTION TO WIRELESS ACCESS POINT. WIRE COMMUNICATIONS OUTLET CONSISTING OF (1) 2-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 6-P COMMUNICATIONS OUTLET CONSISTING OF (1) 6-P COMM	OR AS NOTED ON DRAWING OVIDE 3/4"C (POWER) AND OVIDE 3	G D 1-1/4"C (LOW VOLTAGE). F W/ EXTRA DUTY LISTED WE UB 1"C TO ACCESSIBLE CE D PILOT LIGHT. SEE PLAN F H FACEPLATE AND (1) PAN H FACEPLATE AND (2) PAN 20'-0" OF COILED CABLE ON NISHED BY OWNER, INSTA H FACEPLATE AND (2) PAN VOICE/DATA CABINET H FACEPLATE AND (2) PAN VOICE/DATA CABINET. ALS 16" A.F.F. H FACEPLATE AND (3) PAN VOICE/DATA CABINET. ALS (10 FLOOR BOXES. 1-1/2"C NISH, OWNER WILL INSTALE STALLED ABOVE CEILING O NG. PROVIDE GROMMET IN H FACEPLATE AND (3) PAN VOICE/DATA CABINET. ALS (10 FLOOR BOXES. 1-1/2"C CITCH WITH FURNISH, OWN NG MORE PORTS DAD DESCRIPTION SHTING ENERAL RECEPTACLES PACE HEATING VOICE/DATION CONTINUOUS	ROUTE LOW VOLT ATHERPROOF WITH 90° E FOR VOLTAGE RE IDUIT CAT 6 RJ45 M IDUIT CAT 6 RJ45	AGE CONDUIT TO THE INCOME AND INSUME AND INSUME ACCESSIBLE CONDUIT TO THE INSUME ACCESSIBLE CONTROLL TO THE INSUME ACCESSIBLE TO THE INSUME ACCESSI	/ER JLATED BLUE) (BLUE (WHIT FROM HITE), A CABIN DROP I (WHIT ABOV CAT 6 BOX T RE AS (WHIT ABOV T RE AS (WHIT ABOV T RE AS (WHIT ABOV T T T T T T T T T T T T T T T T T T T	E) WITH E) WIT	SHING I (1) GE I (1) GE ITH (2) GI ITH (2) H RJ45 ITH (2) ITH (2) ITH (3)	GENSPEE GENSPEE GENSPE GENSPE GENSPE GENSPE OX TO SI DUIT CAT TALL (1) GENSPE BLE CEILI OM JACK OX FOR AB GENSPE BLE CEILI MINI-COM OX TO FL	ED CAT 6 OR ED CAT 6 OR ED CAT 6 OR ED CAT 6 NGLE GANG G RJ45 MINI- GENSPEED ED CAT 6 ING SPACE (WHITE) WITH COVE CEILING ED CAT 6 ING SPACE // JACKS LOOR BOX DE MIN. (KVA) 11.25 21.35 3.12 65.11 83.63 4.31 188.77
3	WIRING AND/OR CONDUIT FROM J-BOX TO PANEL DINE NEMA 5-20R DUPLEX RECEPT. E.C. SHALL PROBLEM NEMA 5-20R DUPLEX RECEPTACLE INSTALL 2 1/8" DEEP, 4 11/16" SQUARE BOX WITH HORSEPOWER RATED WITH OVERCURRENT PROBLEM NEMA 5-20R DUPLET CONSISTING OF (1) 2-P CABLE (BLUE JACKET) ROUTED TO VOICE/DATA COMMUNICATIONS OUTLET CONSISTING OF (1) 2-P CABLES (BLUE JACKET) ROUTED TO VOICE CONNECTION TO WIRELESS ACCESS POINT. WIRE COMMUNICATIONS OUTLET CONSISTING OF (1) 2-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 4-P CABLES (WHITE JACKET) ROUTED FROM RESOMMUNICATIONS OUTLET CONSISTING OF (1) 6-P COMMUNICATIONS OUTLET CONSISTING OF (1) 6-P COMM	OR AS NOTED ON DRAWING OVIDE 3/4"C (POWER) AND OVIDE 3	G D 1-1/4"C (LOW VOLTAGE). F W/ EXTRA DUTY LISTED WE UB 1"C TO ACCESSIBLE CE D PILOT LIGHT. SEE PLAN F H FACEPLATE AND (1) PAN H FACEPLATE AND (2) PAN 20'-0" OF COILED CABLE ON NISHED BY OWNER, INSTA H FACEPLATE AND (2) PAN VOICE/DATA CABINET H FACEPLATE AND (2) PAN VOICE/DATA CABINET. ALS 16" A.F.F. H FACEPLATE AND (3) PAN VOICE/DATA CABINET. ALS (10 FLOOR BOXES. 1-1/2"C NISH, OWNER WILL INSTALE STALLED ABOVE CEILING O NG. PROVIDE GROMMET IN H FACEPLATE AND (3) PAN VOICE/DATA CABINET. ALS (10 FLOOR BOXES. 1-1/2"C CITCH WITH FURNISH, OWN NG MORE PORTS DAD DESCRIPTION SHTING ENERAL RECEPTACLES PACE HEATING VOICE/DATION CONTINUOUS	ROUTE LOW VOLT ATHERPROOF WITH 90° E FOR VOLTAGE RE IDUIT CAT 6 RJ45 M IDUIT CAT 6 RJ45	AGE CONDUIT TO THE INCOME AND INSUME AND INSUME ACCESSIBLE CONDUIT TO THE INSUME ACCESSIBLE CONTROLL TO THE INSUME ACCESSIBLE TO THE INSUME ACCESSI	/ER JLATED BLUE) (BLUE (WHIT FROM HITE), A CABIN DROP I (WHIT ABOV CAT 6 BOX T RE AS (WHIT ABOV T RE AS (WHIT ABOV T RE AS (WHIT ABOV T T T T T T T T T T T T T T T T T T T	E) WITH E) WIT	SHING I (1) GE ITH (2) GITH (2) ITH (2) ITH (3) ITH (3) CESSIE MINI-COOR BO CATED ITH (3) CESSIE VALL B CTOR REST	GENSPEE GENSPEE GENSPE GENSPE GENSPE GENSPE OX TO SI DUIT CAT TALL (1) GENSPE BLE CEILI OM JACK OX FOR AB GENSPE BLE CEILI MINI-COM OX TO FL	ED CAT 6 NGLE GANG ED CAT 6 NGLE GANG ED CAT 6 NGLE GANG GENSPEED ED CAT 6 ING SPACE (WHITE) WITH COVE CEILING ED CAT 6 ING SPACE (JACKS LOOR BOX DE MIN. (KVA) 11.25 21.35 3.12 65.11 83.63 4.31

EXISTING 20AF

20AT

EXISTING . EXISTING

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EXISTING 30AF

30AT/1

(SPARE)

EXISTING 20AF

20AT

100AF

丿 35AT

ノ 15AT

(12)

	120/208	VOLTS		AMPS	22	5		TYP	E S1	
	3	PHASE		MAIN	BREA	KER		MOUNTIN	G SURFACE	
	4	WIRE						NEMA CABINE	NEMA CABINET 1	
NO	BREAKER	DESCRIPTION	KVA	Α	В	С	KVA	DESCRIPTION	BREAKER	NO
1		NEW SURGE PROTECTIV	0.00	0.72			0.72	116 RECEPTACLES	20A1P	2
3	30A3P *	DEVICE	0.00		0.36		0.36	116 RECEPTACLES	20A1P	4
5		DEVICE	0.00			0.36	0.36	116 RECEPTACLES	20A1P	6
7	20A1P	116 RECEPTACLES	0.36	0.90			0.54	120 RECEPTACLES	20A1P	8
9	20A1P	117 RECEPTACLES	0.72		1.44		0.72	120 RECEPTACLES	20A1P	10
11	20A1P	117 RECEPTACLES	0.54			1.26	0.72	121 RECEPTACLES	20A1P	12
13	20A1P	116 RECEPTACLES	0.54	1.08			0.54	117,121 RECEPTACLES	20A1P	14
15	20A1P	122 RECEPTACLES	0.90		1.44		0.54	124 RECEPTACLES	20A1P	16
17	20A1P	123 RECEPTACLES	0.54			0.90	0.36	101 RECEPTACLES	20A1P	18
19	20A1P	124 RECEPTACLES	0.54	0.54			0.00	SPARE	20A1P	20
21	20A1P	124 RECEPTACLES	0.54		1.08		0.54	124 RECEPTACLES	20A1P	22
23	20A1P	124 RECEPTACLES	0.54			0.90	0.36	124 RECEPTACLES	20A1P	24
25	20A1P	117 RECEPTACLES	0.36	1.86			1.50	119 COPIER/PRINTER	20A1P	26
27	20A1P	124 RECEPTACLES	0.60		0.96		/Y Y Y Y	119 RECEPTACLES	20A1P~	28
29	20A1P	124 RECEPTACLES	0.60			0.60	0.00	SPARE	20A1P	30
31	20A1P	124 RECEPTACLES	0.60	0.60		1	0.00	SPARE	20A1P	32
33	20A1P	124 RECEPTACLES	0.60		0.60		0.00	SPARE	20A1P~	34
35	20A1P	124 RECEPTACLES	0.60			0.60	0.00	SPARE	20A1P	36
37	30A2P	124 RECEPTACLE	2.10	3.60			1.50	124 RECEPTACLE	20A2P	38
39			2.10		3.60		1.50			40
41	20A1P	SPARE	0.00			0.00	0.00	SPARE	20A1P	42
		S	UBTOTALS	9.30	9.48	4.62				
		TO	OTAL LOAD	23.40	KVA	65	AMPS			

NOTE *: NEW CIRCUIT BREAKER. GENERAL NOTE 1): RELOCATE CIRCUIT BREAKERS AS NEEDED

	SECURITY LEGEND					
TYPE	DESCRIPTION	NOTES				
	INTERIOR CAMERA	1,2				
₩	EXTERIOR CAMERA	1,3				
CR	ACCESS CONTROL	4				
\Rightarrow	DOOR CONTACT MOUNTED IN DOOR FRAME	5				
EL	ELECTRIC LOCKING DEVICE	5				
GB	GLASS BREAK SENSOR	6				
DC	DOOR CONTACT	7				

NOTES LEGEND 1 CAMERA FURNISHED AND INSTALLED BY OWNER'S SECURITY CONTRACTOR

INSTALL 2 1/8" DEEP, 4" SQUARE BOX WITH SINGLE GANG PLASTER RING. PROVIDE GROMMET IN OPENING FOR CABLING IF LOCATED ABOVE ACCESSIBLE CEILING. IF NOT LOCATED ABOVE ACCESSIBLE CEILING, INSTALL 1"C TO 2 ACCESSIBLE CEILING WITH 90° ELBOW AND INSULATED BUSHING. CAMERA OUTLET CONSISTING OF CAT 6 RJ45 MINI-COM JACK (WHITE) WITH PANGEN CAT 6 4UTP CABLE (WHITE JACKET) ROUTED TO VOICE/DATA CABINET, LOCATED IN MECH/ELECT 126 . COORDINATE WORK WITH OWNER'S SECURITY CONTRACTOR

INSTALL OWNER PROVIDED CAMERA CORNER MOUNT. INSTALL 3/4" LIQUIDTIGHT CONDUIT FROM CAMERA CORNER MOUNT TO TYPE-LB CONDUIT BODY. INSTALL 3/4" CONDUIT FROM TYPE-LB CONDUIT BODY BOX TO ACCESSIBLE CEILING WITH 90° ELBOW AND INSULATED BUSHING. CONDUIT THROUGH WALL SHALL BE SLANTED TOWARDS OUTSIDE WITH 3 WEATHERPROOF SEALANT AT WALL PENETRATIONS. CAMERA OUTLET TO BE LOCATED INSIDE BUILDING ABOVE ACCESSIBLE CEILING CONSISTING OF CAT 6 RJ45 MINI-COM JACK (WHITE) WITH GENSPEED CAT 6 4UTP CABLE (WHITE JACKET) ROUTED TO VOICE/DATA CABINET, LOCATED IN MECH/ELECT 126. COORDINATE WORK WITH OWNER'S SECURITY CONTRACTOR

FURNISH AND INSTALL SINGLE GANG JUNCTION BOX AND CONDUIT WITH PULL STRING. M.H. 44" A.F.F. FURNISH AND INSTALL ACCESS CONTROL CABLE (GENESIS 21965002, COLOR YELLOW) FROM ACCESS CONTROL LOCATION, 15'-0" ON J-HOOK ABOVE ACCESS CONTROL DOOR, TO ACCESS CONTROL PANEL, LOCATED IN MECH/ELECT 126. FINAL 4 TERMINATIONS BY OWNER. E.C., G.C. AND OWNER SHALL COORDINATE LOCATIONS AND RESPONSIBILITIES FOR WORK AT DOORS WITH ELECTRONIC ACCESS CONTROL SYSTEMS. THE OWNER SHALL INSTALL POWER TO THE ELECTRONIC STRIKE (THROUGH DOOR FRAME) AND SHALL FURNISH AND INSTALL ACCESS CONTROL DEVICE WIRING, HARDWARE, SOFTWARE, PROGRAMMING, ETC.

G.C. TO FURNISH AND INSTALL. E.C. SHALL STUB 3/4" CONDUIT FROM TOP OF DOOR FRAME TO ABOVE ACCESSIBLE 5 CEILING WITH 90° ELBOW AND INSULATED BUSHING WITH PULL STRING TO POSITION SWITCH. COORDINATE WITH G.C. IF ONE CONDUIT CAN BE USED FOR OTHER DEVICES INSTALLED IN DOOR FRAME

FURNISH AND INSTALL 22/4 STRANDED UNSHIELDED CABLE FROM EACH GLASS BREAK SENSOR LOCATION WITH 10'-0" 6 | SERVICE LOOP TO ACCESS CONTROL PANEL, LOCATED IN MECH/ELECT 126. DEVICE TO BE FURNISHED BY OWNER, INSTALLED BY CONTRACTOR. COORDINATE WORK WITH OWNER.

~~~\PURNISH'ANDHNSTALL'18/2'STRANDED'UNSHIELDED CABLE FROM'DOOR CONTACT TO ACCESS CONTROL PANEL; ~~~ 7 | LOCATED IN MECH/ELECT 126. INSTALL CABLE IN 1"C FROM DOOR CONTACT TO DATA CABINET. DEVICE TO BE FURNISHED BY OWNER, INSTALLED BY CONTRACTOR. COORDINATE WORK WITH OWNER.

EXISTING

100AF 70AT

**∖** 100AF

/ 45AT

 $-\sqrt{5}$ 

**100AF** 

45AT

(12)

**—**(5)

**EXISTING** 

100AF

50AT

 $-\sqrt{5}$ 

**EXISTING** 

6 SPD 7

EXISTING

120/208V

225 AMP

BREAKER

FEED THRU

LUGS

250AF

225AT

EXISTING

120/208V

3PH, 4W

225 AMP

M.L.O.

**EXISTING** 

**EXISTING** 120/208V

225 AMP

M.L.O.

250AF

225AT

|    |         | EXISTING               | G ELEC  | TRIC  | AL PA | NEL R | P2 S | CHEDULE                 |         |    |
|----|---------|------------------------|---------|-------|-------|-------|------|-------------------------|---------|----|
|    | 120/208 | VOLTS                  | AMPS    | 22    | 5     |       | TYPE | S1                      |         |    |
|    | 3       | PHASE                  |         | MAIN  | M.L   | .O.   |      | MOUNTING                | SURFACE |    |
|    | 4       | WIRE                   |         |       |       |       |      | NEMA CABINET            | 1       |    |
| NO | BREAKER | DESCRIPTION            | KVA     | Α     | В     | С     | KVA  | DESCRIPTION             | BREAKER | NO |
| 1  | 20A1P   | 125 RECEPTACLE         | 0.54    | 2.04  |       |       | 1.50 | 124 RECEPTACLE          | 20A2P   | 2  |
| 3  | 20A1P   | 125 RECEPTACLE         | 0.54    |       | 2.04  |       | 1.50 | 124 RECEPTAGLE          | ZUAZP   | 4  |
| 5  | 20A1P   | 126 RECEPTACLE         | 0.36    |       |       | 1.86  | 1.50 | 103 RADIANT PANELS      | 20A1P   | 6  |
| 7  | 20A1P   | 112,113 RECEPTACLES    | 0.72    | 1.72  |       |       | 1.00 | 126 DATA CABINET        | 20A1P   | 8  |
| 9  | 20A1P   | 115 RECEPTACLES        | 0.72    |       | 0.90  |       | 0.18 | 115 RECEPTACLES         | 20A1P   | 10 |
| 11 | 20A1P   | 115 RECEPTACLES        | 0.72    |       |       | 1.08  | 0.36 | 115 RECEPTACLES         | 20A1P   | 12 |
| 13 | 20A1P   | FIRE ALARM PANEL       | 0.60    | 1.60  |       |       | 1.00 | 115 RECEPT (MICROWAVE)  | 20A1P   | 14 |
| 15 | 20A1P   | 102 RECEPTACLES        | 0.54    |       | 1.54  |       | 1.00 | 115 RECEPT (MICROWAVE)  | 20A1P   | 16 |
| 17 | 20A1P   | 103 RECEPTACLES        | 1.08    |       |       | 1.68  | 0.60 | 115 RECEPT (REFRIG)     | 20A1P   | 18 |
| 19 | 20A1P   | 111-115,125,126 LIGHTS | 1.55    | 2.68  |       |       | 1.13 | 115 RECEPT (DISPOSER)   | 20A1P   | 20 |
| 21 | 20A1P   | 118-124 LIGHTS         | 1.51    |       | 2.71  |       | 1.20 | 115 RECEPT (DISHWASHER) | 20A1P   | 22 |
| 23 | 20A1P   | 101-103,105 LIGHTS     | 1.42    |       |       | 1.42  | 0.00 | SPARE                   | 20A1P   | 24 |
| 25 | 20A1P   | 116,117 LIGHTS         | 0.82    | 1.00  |       |       | 0.18 | FIRE DIALER             | 20A1P   | 26 |
| 27 | 20A1P   | EXTERIOR LIGHTS        | 0.41    |       | 0.41  |       |      | SPARE                   | 20A1P   | 28 |
| 29 | 20A1P   | EXTERIOR SIGN          | 1.00    |       |       | 1.36  |      | 126 RECEPTACLES         | 20A1P   | 30 |
| 31 | 20A1P   | TIMER                  | 0.18    | 0.18  |       |       | 0.00 | SPARE                   | 20A1P   | 32 |
| 33 | 20A2P   | EXISTING HUMIDIFIER    | 1.00    |       | 3.10  |       | 2.10 | 124 RECEPTACLE          | 30A2P   | 34 |
| 35 | ZOAZI   | EXCTING HOMIDII IEI    | 1.00    |       |       | 3.10  | 2.10 | 124 NEOLI TAOLE         | JOAZI   | 36 |
| 37 | 30A2P   | SPARE                  | 0.00    | 1.50  |       |       | 1.50 | 124 RECEPTACLE          | 20A2P   | 38 |
| 39 |         | 0171112                | 0.00    |       | 1.50  |       | 1.50 |                         |         | 40 |
| 41 | SPACE   |                        | 0.00    |       |       | 0.00  | 0.00 |                         | SPACE   | 42 |
|    |         |                        | STOTALS | 10.72 | 12.20 | 10.50 |      |                         |         |    |
|    |         | TOTA                   | AL LOAD | 33.42 | KVA   | 93    | AMPS |                         |         |    |

GENERAL NOTE 1): RELOCATE CIRCUIT BREAKERS AS NEEDED

NOTE \*: NEW CIRCUIT BREAKER.

EXISTING MDP (SIEMENS SB),

10-100

(LEFT SIDE)

80A 208V-1PH

800A, 120/208V 3 PHASE, 4 WIRE (1)(2)

100AF

100AT

(12)

NEW

**⁰** \ 100AF

。**ノ** 100AT

(12)

 $\overline{8}$ 

10 100

NEW EV CHARGER

(RIGHT SIDE)

80A 208V-1PH

|    | EXISTING ELECTRICAL PANEL RP3 SCHEDULE |                      |      |      |      |      |      |                     |             |    |
|----|----------------------------------------|----------------------|------|------|------|------|------|---------------------|-------------|----|
|    | 120/208                                | VOLTS                |      | AMPS | 22   | 5    |      | TYP                 | <b>E</b> S1 |    |
|    | 3                                      | PHASE                |      | MAIN | M.L  | .O.  |      | MOUNTIN             | G SURFACE   |    |
|    | 4                                      | WIRE                 |      |      |      |      |      | NEMA CABINE         | T 1         |    |
| NO | BREAKER                                | DESCRIPTION          | KVA  | Α    | В    | С    | KVA  | DESCRIPTION         | BREAKER     | NO |
| 1  | 20A1P                                  | 128 RECEPTACLES      | 1.08 | 1.80 |      |      | 0.72 | 109 RECEPTACLES     | 20A1P       | 2  |
| 3  | 20A1P                                  | 128 RECEPTACLES      | 0.18 |      | 0.90 |      | 0.72 | 109 RECEPTACLES     | 20A1P       | 4  |
| 5  | 20A1P                                  | 128 RECEPTACLES      | 0.18 |      |      | 0.72 | 0.54 | 109 RECEPTACLES     | 20A1P       | 6  |
| 7  | 20A1P                                  | 128 RECEPTACLES      | 0.18 | 0.72 |      |      | 0.54 | 109 RECEPTACLES     | 20A1P       | 8  |
| 9  | 20A1P                                  | 110 RECEPTACLES      | 0.54 |      | 0.72 |      | 0.18 | 109 RECEPT (REFRIG) | 20A1P       | 10 |
| 11 | 20A1P                                  | 110 RECEPTACLES      | 0.36 |      |      | 0.72 |      | 105,109 RECEPTACLES | 20A1P       | 12 |
| 13 | 20A1P                                  | 110 COPIER/PRINTER   | 1.50 | 2.58 |      |      | 1.08 | 108 RECEPTACLES     | 20A1P       | 14 |
| 15 | 20A1P                                  | 110 RECEPTACLES      | 0.36 |      | 1.26 |      | 0.90 | 107 RECEPTACLES     | 20A1P       | 16 |
| 17 | 20A1P                                  | 104,105 RECEPTACLES  | 0.72 |      |      | 1.26 | 0.54 | 106 RECEPTACLES     | 20A1P       | 18 |
| 19 | 20A1P                                  | 104 RECEPTACLES      | 0.72 | 1.44 |      |      | 0.72 | 110,127-129 LIGHTS  | 20A1P       | 20 |
| 21 | 20A1P                                  | 104 RECEPTACLES      | 0.72 |      | 2.11 |      | 1.39 | 104,106-109 LIGHTS  | 20A1P       | 22 |
| 23 | 20A1P                                  | EXTERIOR RECEPTACLES | 1.26 |      |      | 1.26 | 0.00 | SPARE               | 20A1P       | 24 |
| 25 | 20A1P                                  | SPARE                | 0.00 | 0.00 |      |      |      | SPARE               | 20A1P       | 26 |
| 27 | 20A1P                                  | SPARE                | 0.00 |      | 0.00 |      | 0.00 | SPARE               | 20A1P       | 28 |
| 29 | 20A1P                                  | SPARE                | 0.00 |      |      | 0.00 | 0.00 | SPARE               | 20A1P       | 30 |
| 31 | 20A1P                                  | SPARE                | 0.00 | 0.00 |      |      | 0.00 | SPARE               | 20A1P       | 32 |
| 33 | 20A1P                                  | SPARE                | 0.00 |      | 0.00 |      | 0.00 | SPARE               | 20A1P       | 34 |
| 35 | 20A1P                                  | SPARE                | 0.00 |      |      | 0.00 | 0.00 | SPARE               | 20A1P       | 36 |
| 37 | SPACE                                  |                      | 0.00 | 0.00 |      |      | 0.00 |                     | SPACE       | 38 |
| 39 | SPACE                                  |                      | 0.00 |      | 2.25 |      | 2.25 | FWH-1               | 30A2P *     | 40 |
| 41 | SPACE                                  |                      | 0.00 |      |      | 2.25 | 2.25 | EWH-1               | 30/12/      | 42 |
|    | <b>SUBTOTALS</b> 6.54 7.24 6.21        |                      |      |      |      |      |      |                     |             |    |
|    | TOTAL LOAD 19.99 KVA 55 AMPS           |                      |      |      |      |      |      |                     |             |    |

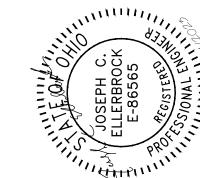
|      | FIRE ALARM LEGEND                                         |  |  |  |  |  |
|------|-----------------------------------------------------------|--|--|--|--|--|
| TYPE | Description                                               |  |  |  |  |  |
| FAA  | FIRE ALARM ANNUNCIATOR                                    |  |  |  |  |  |
| 占    | HORN AND STROBE COMBINATION - MOUNTED 80" A.F.F. U.N.O.   |  |  |  |  |  |
|      | STROBE ONLY - MOUNTED 80" A.F.F. U.N.O.                   |  |  |  |  |  |
| F    | MANUAL PULL STATION - MOUNTED 48" A.F.F. TO CENTER U.N.O. |  |  |  |  |  |
| (SD) | FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED                |  |  |  |  |  |
|      | FIRE ALARM DUCT DETECTOR                                  |  |  |  |  |  |
| FS   | FIRE ALARM FLOW SWITCH                                    |  |  |  |  |  |
|      |                                                           |  |  |  |  |  |

## ONE-LINE DIAGRAM NOTES

- 1. E.C. SHALL PROVIDE MARKING TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS PER NEC ARTICLE 110.16.
- 2. SERVICE EQUIPMENT SHALL BE FIELD MARKED WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE MARKING SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED PER NEC 110.24.
- EXISTING GROUNDING TO REMAIN.
- 4. EXISTING CONDUIT AND WIRING TO REMAIN.
- 5. REWORK CONDUIT AND WIRING AS REQUIRED, IF APPROPRIATE AND ALLOWED BY CODE. WIRE SIZE SHOULD BE ACCEPTABLE, FIELD VERIFY.
- 6. NEW SURGE PROTECTIVE DEVICE.
- 7. 4#10 CU & #10 GRD 3/4"C
- 8. 2#2 CU & #8 GRD 1"C OR 2#1 AL & #6 GRD 1-1/4"C
- 9. 2#2 CU & #8 GRD 1"C
- 10. FURNISH AND INSTALL NON-FUSED DISCONNECT PER NEC ARTICLE 625.43.
- 11. ONE CONDUIT MAY BE INSTALLED INSTEAD OF TWO WITH FOUR HOTS AND ONE GROUND. IF ONE CONDUIT INSTALLED, SIZE SHALL BE A MINIMUM OF 2" AND WIRE SIZES MUST BE ADJUSTED PER NEC TABLE 310.15(B)(3)(a).
- 12. REMOVE EXISTING CIRCUIT BREAKER AND INSTALL NEW CIRCUIT BREAKER OR INSTALL IN SPARE SECTION. FIELD VERIFY EXISTING EQUIPMENT AND MODIFY AS NEEDED.
- 13. CIRCUIT BREAKER SHALL BE 30 MILLIAMP GFPE RATED.
- 14. 2#12 CU & #12 GRD 3/4"C
- 15. 3#8 CU & #10 GRD 3/4"C

## ONE-LINE DIAGRAM GENERAL NOTES

- A. EXISTING PAD MOUNTED TRANSFORMER TO REMAIN.
- B. SEE LOAD SCHEDULE FOR CIRCUIT BREAKER SIZES AND QUANTITIES.
- C. E.C. SHALL PERFORM SHORT CIRCUIT STUDY ON PROPOSED DISTRIBUTION SYSTEM. THE AIC OR SCCR OF EQUIPMENT SHALL MEET OR EXCEED THE CALCULATED (ISC) VALUES OF THE SHORT CIRCUIT STUDY. FIELD VERIFY EXISTING AIC OR SCCR OF EQUIPMENT.



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FOR ANY QUANTITIES OF MATERIALS AND LOCATIONS OF BUILDING COMPONENTS SCALED ELECTRICAL

DO NOT SCALE FROM DRAWINGS. THE

LEGENDS PANEL SCHEDULES ONE-LINE DIAGRAM

ISSUED DATE 11-21-23 BIDDING & PERMITS 12-01-23 ADDENDUM #01

DRAWN BY: DATE: 08-23

PLOT SCALE: JOB NO. 45-2902-23

SHEET E601

ARTICLE 250.122.

(A) THE CONTRACTOR OR E.C. REFERRED TO IN THIS SECTION SHALL BE THE ELECTRICAL CONTRACTOR. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS AND OTHER EQUIPMENT NECESSARY TO INSTALL A COMPLETE ELECTRICAL SYSTEM IN THE BUILDING IN ACCORDANCE WITH THE DRAWINGS AND THESE SPECIFICATIONS. ALL ELECTRICAL WORK WILL COMPLY WITH THE REQUIREMENTS OF ARTICLE 27 OF OBC AND THE CURRENT ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) NFPA 70 AND IS SUBJECT TO APPROVAL OF THE GOVERNING AGENCIES AND THE ELECTRICAL INSPECTOR ASSIGNED.

(B) ALL CONTRACTORS BIDDING THE WORK SHALL VISIT THE SITE AND ACQUAINT THEMSELVES WITH EXISTING CONDITIONS BEFORE SUBMITTING THEIR BID. AS THEY WILL BE HELD RESPONSIBLE FOR THE INSTALLATION OF THE SYSTEM COMPLETE IN EVERY DETAIL. THE CONTRACTOR SHALL VERIFY AND SECURE ALL MEASUREMENTS OF THE SITE. ALL BIDDERS SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT/ENGINEER PRIOR TO SUBMITTING THEIR BID. NO ADDITIONAL COMPENSATION WILL BE GIVEN AFTER THE BIDS HAVE BEEN SELECTED.

(C) VERIFICATION: BEFORE RUNNING ANY CONDUITS, DUCTS, PIPING, ETC., WITHIN THE BUILDING, THE CONTRACTOR SHALL ASSURE HIMSELF THAT THEY CAN BE INSTALLED AS CONTEMPLATED WITHOUT TRAPPING OR INTERFERING WITH COLUMNS, BEAMS, PIPING, FIXTURES, ETC. ANY NECESSARY MAJOR DEVIATION SHALL BE REFERRED TO THE ARCHITECT/ENGINEER FOR ADJUSTMENT BEFORE LINES ARE RUN. AT NO INCREASE IN CONTRACT PRICE. OF NECESSITY, OPENINGS, SUPPORTING STEEL. FIELD-BUILT CURBS, ELECTRICAL DATA, SPACE REQUIREMENTS, ETC., WERE DESIGNED AROUND SPECIFIC PARAMETERS. WHEN THE CONTRACTOR DETERMINES THE MAKE OF EQUIPMENT TO BE PROVIDED FOR THE JOB. IT SHALL BE HIS RESPONSIBILITY TO VERIFY AND COORDINATE UNIT DIMENSIONS WITH THE CONSTRUCTION MANAGER AND ALL OTHER INTERESTED CONTRACTORS ON THE JOB. IT SHALL ALSO BECOME THE CONTRACTOR'S RESPONSIBILITY TO CHANGE AS NECESSARY, THROUGH THE ARCHITECT/ENGINEER, ALL REQUIRED DIMENSIONS SO THAT OPENINGS, SUPPORTING STEEL CURBS. ELECTRICAL DATA. ETC., WILL FIT THE EQUIPMENT SUPPLIED, ANY ADDITIONAL COST WILL BE THE SOLE RESPONSIBILITY OF THIS CONTRACTOR. IN ADDITION, ELECTRICAL POWER, INTERLOCK AND CONTROL DIAGRAMS AND PIPING ARRANGEMENTS WERE DESIGNED AROUND ONE SPECIFIC MANUFACTURER. IF ADDITIONAL WIRING, PIPING CONTROLS, ETC., ARE REQUIRED FOR OTHER EQUIPMENT, THIS CONTRACTOR SHALL INCLUDE THE COST OF THE SAME IN HIS PRICE. DIMENSIONS, ELEVATIONS AND RELATIVE LOCATIONS OF EXISTING EQUIPMENT, SEWERS, PIPES, DUCTS, CONDUITS, ETC., IN PLACE AS SHOWN ON THE DRAWINGS. ARE TAKEN FROM AS-BUILT AND RECORD DRAWINGS AND ARE DEEMED RELIABLE ONLY IN SO FAR GENERAL LAYOUT IS CONCERNED. SUCH DIMENSIONS SHALL NOT BE USED FOR LAYOUT DRAWINGS NOR DETAILING OF COMPONENTS. THE RESPONSIBILITY FOR CHECKING IN PLACE ITEMS WILL BE THE CONTRACTORS. ALL MEASUREMENTS, THE EXACT DETERMINATION OF RELATIVE ELEVATIONS OR LOCATIONS, THE ASCERTAINING OF ACCURACY OF ALL GIVEN ELEVATIONS AND THE OBTAINING OF ALL NECESSARY ADDITIONAL INFORMATION TO INSURE THE PROPER FIT AND COORDINATION OF ALL CONDUIT EQUIPMENT, DUCTS, AND PIPING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE GENERAL BUILDING PLANS AND ALL MECHANICAL PLANS AND CARRY ON HIS WORK SO AS NOT TO DELAY OR INTERFERE WITH THE WORK OF OTHER TRADES. HE SHALL OBTAIN IN WRITING FROM THE CONTRACTORS, SUCH DATA AS NECESSARY TO COORDINATE HIS WORK WITH OTHER BRANCHES.

(D) AS-BUILT DRAWINGS: THE CONTRACTOR SHALL NOTE CHANGES MADE FROM CONTRACT DRAWINGS AND SPECIFICATIONS. HE/SHE SHALL NEATLY AND CORRECTLY ENTER IN COLORED CRAYON ANY DEVIATIONS ON DRAWINGS AFFECTED AND SHALL KEEP DRAWINGS AVAILABLE FOR INSPECTION. EXTRA SET OF DRAWINGS WILL BE FURNISHED FOR THIS PURPOSE. GIVE TO OWNER AT COMPLETION AND BE MARKED "AS BUILT DRAWINGS-ELECTRICAL."

(E) CUTTING & PATCHING: PROVIDE CUTTING AND PATCHING OF ALL MATERIALS NECESSARY FOR THE INSTALLATION AS INDICATED OR SPECIFIED. NEATLY REMOVE AND LEGALLY DISPOSE OF ELECTRICAL COMPONENTS AND ITEMS NO LONGER IN USE. PROTECT THE STRUCTURE, FURNISHINGS, FINISHES AND MATERIALS ADJACENT TO THE AREA OF CUTTING AND PATCHING, PATCH EXISTING FINISHED SURFACES AND FOUIPMENT USING NEW MATERIALS AND METHODS. TO MATCH ADJACENT WORK, UTILIZING EXPERIENCED INSTALLERS. PATCHING OF FIRE RATED PARTITIONS, CEILINGS AND OTHER ASSEMBLIES SHALL MATCH THE RATING OF THE RATED BARRIER WITH MATERIALS LISTED AND IDENTIFIED FOR SUCH USE AND SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF THE GENERAL TRADES SPECIFICATIONS. AS THE WORK NEARS COMPLETION, ALL CUTTING AND PATCHING SHALL BE AUTHORIZED BY THE ARCHITECT/ENGINEER PRIOR TO STARTING WORK.

(F) SUBMITTALS: PRIOR TO ORDERING ANY MATERIALS, THE CONTRACTOR SHALL SUBMIT FOR G.C. AND ARCHITECT/ENGINEER'S REVIEW. DETAILED DRAWINGS, EQUIPMENT CUT SHEETS INDICATING PHYSICAL SIZE, RATINGS, CAPACITIES, ROUGH-IN SIZES, ETC. FOR ALL MATERIALS TO BE USED UNDER THIS CONTRACT.

(G) EQUALS: WHERE THE PHRASE "OR AN APPROVED EQUAL" APPEARS, IT SHALL REFER TO THE APPROVAL OF THE ARCHITECT/ENGINEER AND/OR OWNER ON THE MATERIAL OR EQUIPMENT INVOLVED. EQUIPMENT OF SIMILAR TYPES SHALL BE ON THE SAME MANUFACTURER, EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE. WHERE THE CONTRACTOR ELECTS TO SUBSTITUTE MATERIALS OR EQUIPMENT APPROVED BY THE ARCHITECT/ENGINEER AND/OR OWNER FOR THOSE SPECIFIED. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL STRUCTURAL, MECHANICAL AND ELECTRICAL CHANGES REQUIRED FOR THE INSTALLATION OF THE SUBSTITUTED MATERIALS, AT NO ADDITIONAL COST TO THE OWNER.

(H) PERMITS: THE CONTRACTOR SHALL PROCURE ALL NECESSARY PERMITS FROM THE GOVERNING AGENCY HAVING JURISDICTION. THE CONTRACTOR SHALL ARRANGE FOR ALL TESTS REQUIRED ON ANY AND ALL PARTS OF HIS WORK BY LOCAL AUTHORITIES AND PAYING ANY ADDITIONAL CHARGES INCLUDING REINSPECTION FEES. ALSO OBTAIN ALL CERTIFICATES OF INSPECTION AND APPROVAL FROM ALL REQUIRED AUTHORITIES AND THE UNDERWRITERS. UNDERWRITERS CERTIFICATES IN DUPLICATE SHALL BE FURNISHED TO THE OWNER AT THE COMPLETION OF THE PROJECT IF REQUESTED.

(I) CODES: NOTHING CONTAINED IN THESE SPECIFICATIONS OR SHOWN ON THE DRAWINGS SHALL BE SO CONSTRUED AS TO CONFLICT WITH ANY LOCAL, MUNICIPAL OR STATE LAWS OR REGULATIONS GOVERNING THE INSTALLATION OF ELECTRIC OR OTHER WORK SPECIFIED HEREIN, AND ALL SUCH ORDINANCES AND REGULATIONS, INCLUDING THE NATIONAL ELECTRIC CODE (NEC) ARE HEREBY INCORPORATED AND MADE A PART OF THESE SPECIFICATIONS. ALL SUCH REQUIREMENTS SHALL BE SATISFIED BY THE CONTRACTOR AND AT NO ADDITIONAL EXPENSE TO THE OWNER.

(J) EQUIPMENT WIRING: PROVIDE POWER WIRING CONNECTIONS AND TERMINATIONS TO EQUIPMENT PROVIDED BY OTHERS ALL NECESSARY STARTERS AND CONTROLS WILL BE FURNISHED WITH THE EQUIPMENT UNLESS NOTED OTHERWISE. WIRING AND CONNECTIONS SHALL BE AS REQUIRED BY THE EQUIPMENT MANUFACTURER AND SHALL NOT BE PERFORMED IN A MANNER WHICH MODIFIES THE FOLIPMENT, OR DEGRADES IT'S FLINCTION OR WARRANTY, WHERE NOT FLIRNISHED WITH EQUIPMENT, PROVIDE A LOCAL DISCONNECT WITHIN SIGHT OF EACH MOTOR AND APPLIANCE. ALL CONTROL WIRING, DEVICES SYSTEMS AND REQUIRED INTERLOCKS WILL BE PROVIDED BY OTHERS. FURNISH AND INSTALL POWER WIRING FOR TH AUTOMATIC POWERED DOOR OPERATORS FURNISHED COMPLETE WITH A PREWIRED CONTROL PACKAGE. POWERED DOOF REMOTE CONTROL DEVICES SHALL BE FURNISHED BY THE EQUIPMENT SUPPLIER, AND INSTALLED AND CONNECTED BY THE E.C. PER THE SUPPLIER'S WIRING DIAGRAMS, ALL OUTLET REQUIREMENTS AND LOCATIONS FOR THE LAUNDRY FOUIPMENT (IF ANY) SHALL BE VERIFIED WITH THE SUPPLIER PRIOR TO ROUGH-IN ELECTRICAL REQUIREMENTS OF THE ELECTRIC HEAT TRACING (FURNISHED AND INSTALLED BY OTHERS; IF ANY) SHALL BE FIELD VERIFIED AND SHALL BE PROVIDED WITH A 30 MILLIAMP GFCI TYPE BREAKER FOR THE BRANCH CIRCUIT SERVING THE HEAT TRACING.

(K) GROUNDING: GROUND AND BOND ALL METAL RACEWAYS, BOXES, FIXTURES, ENCLOSURES, ETC., PER NEC ARTICLE 250. SEPERATELY DERIVED SYSTEMS SHALL BE BONDED TO THE GROUNDING ELECTRODE SYSTEM. GROUNDING CONDUCTORS IN PVC RACEWAY SHALL BE EXTENDED TO THE BUILDING STRUCTURAL STEEL, INCOMING POINT OF THE INTERIOR METAL WATER LINE, AND SUPPLEMENTAL GROUND ROD(S). BONDING CONDUCTORS SHALL ALSO BE EXTENDED TO THE INTERIOR METAL GAS PIPING SYSTEM, INTERIOR WATER LINES, AND MAIN TELEPHONE BACKBOARD, WHERE INSTALLED. ALL FEEDERS AND BRANCH CIRCUITS SHALL INCLUDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, ROUTED WITH THE CIRCUIT, SIZED PER NEC

(L) CLOSE-OUT: CONTRACTOR SHALL PROVIDE FIELD TESTING, CHECK-OUT AND SYSTEM DEMONSTRATIONS TO G.C. AND OWNER TO ASSURE PROPER PERFORMANCE AND ADJUSTMENT OF ITEMS PROVIDED UNDER THE CONTRACT, REMOVE ALL DEBRIS CREATED BY THE ELECTRICAL WORK AND CLEAN ALL FIXTURES. PANELS, BOXES, ETC., INSIDE AND OUTSIDE, PROVIDE A BINDER WHICH INCLUDES: COPIES OF ALL SHOP DRAWINGS, MAINTENANCE PROCEDURES, OPERATION AND INSTRUCTION MANUALS, LITERATURE SUPPLIED WITH ELECTRICAL EQUIPMENT, AND A LIST OF ALL CONTRACTOR'S SUPPLIER'S NAMES, ADDRESSES AND PHONE NUMBERS, FOR ALL MATERIALS. PROVIDE INSTRUCTION TO PERSONNEL SELECTED BY THE OWNER, TO FAMILIARIZE THEM WITH THE LOCATION OF SIGNIFICANT EQUIPMENT, TRAIN THEM ON EQUIPMENT FUNCTIONS, REVIEW MAINTENANCE PROCEDURES AND COORDINATE INFORMATION AVAILABLE IN THE BINDER.

(M) CHASES & OPENINGS: THE CONSTRUCTION MANAGER WILL ARRANGE WITH OTHER SUBCONTRACTORS CHASES AND OPENINGS IN WALLS, FLOORS, CEILINGS AND PARTITIONS OF NEW CONSTRUCTION TO RECEIVE CONDUITS, DUCTS AND OTHER EQUIPMENT IN SO FAR AS IT IS POSSIBLE TO PREDETERMINE THE EXACT SIZE AND LOCATION OF SAME. THE ELECTRICAL CONTRACTOR SHALL ADVISE THE CONSTRUCTION MANAGER OF THE EXACT SIZE AND LOCATION OF ALL CHASES AND OPENINGS REQUIRED FOR THE INSTALLATION OF HIS WORK, AND SHALL CHECK THE SIZE AND LOCATION OF ALL SUCH CHASES AND OPENINGS PROVIDED BY THE CONSTRUCTION MANAGER SUBCONTRACTORS.

(N) SLEEVES: ELECTRICAL CONTRACTOR SHALL FURNISH AND PLACE ALL SLEEVES REQUIRED FOR CONDUITS AND DUCTS PASSING THROUGH FLOORS, BEAMS, WALLS AND CEILINGS BEFORE SUCH NEW GENERAL CONSTRUCTION WORK IS BUILT INTO PLACE. THE ELECTRICAL CONTRACTOR SHALL PLACE ALL INSERTS REQUIRED FOR HANGERS AND SUPPORTS. AS GENERAL CONSTRUCTION PROGRESSES, SO THAT UNNECESSARY CUTTING OF CONSTRUCTION WORK WILL BE ELIMINATED.

(O) MATERIALS: THE MATERIALS USED THROUGHOUT SHALL BE NEW, AND THE BEST OF THEIR RESPECTIVE KINDS AND SHALL BE LABELED OR LISTED BY UL WHERE SUCH STANDARDS HAVE BEEN ESTABLISHED. ALL WORK SHALL BE EXECUTED IN A NEAT AND WORKMANLIKE MANNER SKILLED IN THE PARTICULAR BRANCH OF WORK ASSIGNED TO THEM.

(P) DRAWINGS & SPECIFICATIONS: ALL ELECTRICAL WORK SHOWN ON THE DRAWINGS AND NOT SPECIFICALLY REFERRED TO IN THE SPECIFICATIONS OR VISA VERSA SHALL BE CONSIDERED A PART OF THE CONTRACT WORK. THESE SPECIFICATIONS ARE TO BE USED AS A GUIDE FOR THE QUALITY OF WORKMANSHIP AND MATERIALS, CAPACITIES, QUANTITIES, ETC., AND ARE INTENDED TO COVER ALL PARTS OF THE SYSTEM BUT THE OMISSION OF EXPRESS MENTION FITHER IN THE SPECIFICATIONS. OR ON THE DRAWINGS OF ITEMS WHICH ARE OBVIOUSLY NECESSARY FOR THE PROPER FUNCTIONING OF THE SYSTEM, SHALL NOT RELIEVE THE ELECTRICAL CONTRACTOR FROM RESPONSIBILITY FOR PROVIDING SAME AND THE NECESSARY LABOR AND

(Q) DISCREPANCIES: ELECTRICAL CONTRACTOR SHALL CHECK ALL DRAWINGS INCLUDED UNDER THIS CONTRACT, AND DRAWINGS INCLUDED UNDER OTHER CONTRACTS AND SHALL REPORT TO THE CONSTRUCTION MANAGER ANY

(R) DISPOSAL: UPON COMPLETION OF THE WORK, ALL WASTE MATERIALS AND RUBBISH RESULTING FOR THE CONTRACT WORK SHALL BE REMOVED FROM THE BUILDING AND PREMISES AND PROPERLY DISPOSED

(S) TESTS & INSPECTIONS: WHEN THE INSTALLATION IS REPORTED IN WRITING BY THE CONTRACTOR TO BE COMPLETE AND READY FOR ACCEPTANCE, TESTS AND INSPECTION SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF THE G.C. AND ARCHITECT/ENGINEER, TO ASCERTAIN WHETHER IT COMPLIES WITH THE SPECIFICATIONS AND CONTRACT, AND UPON ITS FAILURE TO DO SO. THE CONTRACTOR SHALL AT ONCE REMEDY ALL DEFECTS AND SHORTCOMINGS, AND ANY ADDITIONAL TESTS THAT MAY BE REQUIRED SHALL BE ENTIRELY AT THE CONTRACTOR'S EXPENSE. ALL OF THE TESTING WORK SHALL BE DONE WHEN AND AS DIRECTED BY THE ARCHITECT/ENGINEER BEFORE THE SYSTEM IS ACCEPTED.

(T) SCHEMATIC DRAWINGS: ELECTRICAL LAYOUTS ARE SCHEMATIC AND EXACT LOCATIONS SHALL BE DETERMINED BY STRUCTURAL AND OTHER CONDITIONS. THE CONTRACTOR SHALL MAKE MINOR CHANGES AS REQUIRED, AS LONG AS THE CHANGES ARE IN ACCORDANCE WITH NEC AND APPROVED BY THE ASSIGNED FLECTRICAL INSPECTOR, DUE TO THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL CONDUITS, CONDUCTORS, FITTINGS, BOXES, SWITCHES AND SIMILAR PARTS WHICH MAY BE REQUIRED. THE DRAWINGS ARE GENERALLY INDICATIVE OF THE WORK TO BE INSTALLED. THE CONTRACTOR SHALL INVESTIGATE THE STRUCTURAL AND FINISH CONDITIONS AFFECTING THE WORK, AND ARRANGE ALL WORK ACCORDINGLY FURNISHING SUCH PARTS AND EQUIPMENT AS MAY BE REQUIRED TO MEET BUILDING CONDITIONS

(U) LAYOUT OF WORK: THIS CONTRACTOR SHALL LAYOUT HIS WORK FROM DIMENSIONS OF ARCHITECTURAL AND STRUCTURAL DRAWINGS AND ACTUAL DIMENSIONS OF EQUIPMENT BEING INSTALLED LAYOUTS IN CONGESTED AREA SHOULD NOT BE SCALED FROM MECHANICAL AND ELECTRICAL DRAWINGS.

(V) TEMPORARY ELECTRICAL SERVICES: DURING CONSTRUCTION, ELECTRICAL CONTRACTOR SHALL ARRANGE AND PROVIDE TEMPORARY SERVICE FROM A TEMPORARY POWER SERVICE FOR LIGHTING AND POWER OUTLETS. THIS INCLUDES ALL INCIDENTALS SUCH AS LIGHT BULBS, FIXTURES, AND OTHER MISCELLANEOUS ITEMS. THE OWNER SHALL PAY ELECTRICAL DEMAND SERVICES FOR TEMPORARY SERVICE

(W) HIGH & LOW VOLTAGE: ALL HIGH VOLTAGE WIRING (120/208/240/480V), LOW AND HIGH VOLTAGE CONDUIT, BOXES, ETC. TO BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ALL SYSTEM CONTROL EQUIPMENT FOR THE HEATING AND/OR FIRE ALARM SYSTEMS SHALL BE AS NOTED OR REQUIRED IN HVAC AND/OR FIRE ALARM SPECIFICATIONS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL, MECHANICAL AND FIRE ALARM CONTRACTORS TO COORDINATE THE WORK BETWEEN THEMSELVES AND NO COMPENSATION WILL BE MADE EQUIPMENT OR LABOR NOT INCLUDED.

(X) WIRING: FURNISH AND INSTALL ALL WIRE, TERMINATIONS AND CONNECTION DEVICES AS SHOWN OR REQUIRED. UNLESS OTHERWISE NOTED, ALL LINE VOLTAGE CIRCUITS SHALL BE STRANDED, COPPER, 600 VOLT INSULATED: (75 DEGREES C THHN/THWN FOR CIRCUITS #14 AWG THRU #2 AWG; 90 DEGREES C THHN FOR CIRCUITS #1 AWG AND LARGER). BRANCH CIRCUIT WIRING SHALL BE #12 AWG MINIMUM. WHERE THE CIRCUIT LENGTH EXCEEDS 100 FEET, FROM THE PANEL TO THE FARTHEST DEVICE UTILIZE #10 AWG MINIMUM PHASE CONDUCTORS FOR 240 VOLT (AND LOWER) SYSTEMS SHALL BE RED. BLACK & BLUE ASSOCIATED NEUTRALS WHITE, CONNECTIONS AND TAPS FOR WIRE #4 AWG AND LARGER SHALL BE MADE WITH SOLDERLESS PRESSURE TYPE CONNECTORS AND LUGS. ALL LOW VOLTAGE CABLE SHALL BE MULTI-CONDUCTOR, COPPER, WITH WIRE SIZE, SHIELD, JACKET, COLOR-CODED INSULATION, TERMINATIONS, ETC. AS RECOMMENDED BY THE SYSTEM SUPPLIER. INSULATING AND JACKET MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION ENVIRONMENT (I.E. UNDERGROUND, PLENUM, HIGH AMBIENT TEMPERATURE, ETC.).

(Y) BRANCH CIRCUITS: BRANCH CIRCUIT WIRING SHALL CORRESPOND TO THE CIRCUIT NUMBERING SHOWN ON THE PLANS, BUT THE CONTRACTOR WILL BE PERMITTED MINOR CHANGES TO OPTIMIZE THE PIPING REQUIRED. THE QUANTITY OF CIRCUITS SHALL NOT BE REDUCED, NOR SHALL SEPARATE CIRCUITS BE COMBINED. ROUTING SHALL BE AT THE DISCRETION OF THE CONTRACTOR BUT THE INSTALLATION SHALL MEET ALL OTHER SPECIFIED CRITERIA. IN GENERAL, 1-POLE 120V. BRANCH CIRCUITS SHALL BE PROVIDED WITH A DEDICATED NEUTRAL WIRE FROM THE CIRCUIT SOURCE TO THE LOAD CONNECTION. THE AMPACITY OF BRANCH CIRCUITS ROUTED ACROSS ROOFS OR OTHERWISE EXPOSED TO SUNLIGHT, SHALL BE PROPERLY UPSIZED AS REQUIRED TO MEET THE DERATING FACTORS OF NEC ARTICLE 310.15(B)(2). WHERE "HOME RUNS" ARE SHOWN ON PLAN, THE QUANTITY OF THESE RUNS SHALL BE MAINTAINED AS A MINIMUM.

(Z) RENOVATIONS: REWORK THE EXISTING ELECTRICAL INSTALLATION AS REQUIRED TO ACCOMMODATE THE FINISHED AND OPERATING SYSTEMS AS INDICATED ON THE PLANS. NEW RACEWAYS SHALL BE CONCEALED IN FINISHED SPACES WHEREVER PRACTICALLY POSSIBLE. EXISTING BOXES AND ENCLOSURES SHALL NOT BE RENDERED INACCESSIBLE DUE TO THE NEW WORK OF ANY TRADE. PANEL DIRECTORIES IN RENOVATED AREAS SHALL BE NEATLY UPDATED INTERRUPTIONS TO EXISTING SYSTEMS SHALL BE PERFORMED AT OFF HOURS, UNLESS SCHEDULED OTHERWISE WITH THE OWNER.

(AA) ELECTRICAL SITE WORK: COORDINATE ALL EXTERIOR WORK WITH AFFECTED UTILITIES AND THE CONSTRUCTION MANAGER. PROVIDE THE EXCAVATION, BACKFILL, COMPACTION AND TESTING, NECESSARY TO INSTALL THE UNDERGROUND RACEWAYS, HANDHOLES, AND EQUIPMENT FOUNDATIONS SHOWN ON THE PLANS. ALL PAVING SHALL BE SAWCUT PRIOR TO REMOVAL. REPAIR ALL LAWNS, PLANTINGS, PAVEMENT, AND OTHER EXTERIOR FINISHES TO MATCH THE ADJACENT AREAS AT THE COMPLETION OF THE PROJECT.

(BB) SERVICE ENTRANCE: SELECTED PANELS OR SAFETY SWITCHES, AS INDICATED, SHALL BE UTILIZED AND BE UL RATED AS SERVICE ENTRANCE EQUIPMENT. THESE SHALL BE COMPLETE WITH AN INSULATED SOLID NEUTRAL ASSEMBLY, REMOVABLE BONDING LINK, AND GROUND LUGS FOR THE CONDUCTORS SHOWN OR REQUIRED. PROVIDE GROUNDING BUSHINGS AS REQUIRED, AND ADDITIONAL LABELING TO DENOTE SERVICE ENTRANCE USAGE.

(CC) SUPPORTS: FURNISH AND INSTALL ALL REQUIRED MISCELLANEOUS STEEL SUPPORTS FOR MOUNTING OF PANELS, RACEWAYS, FIXTURES, CABINETS, BOXES, ETC. ALL EQUIPMENT SHALL BE RIGIDLY SUPPORTED FROM THE BUILDING STRUCTURE, WITH COMPONENTS RATED FOR TWICE THE ACTUAL LOAD OR WEIGHT. ALL INTERIOR SUPPORTS SHALL BE PAINTED STEEL STRUT WITH MATCHING FITTINGS AND HARDWARE, PLATED THREADED ROD, AND AUXILIARY STRUCTURAL STEEL. EXTERIOR SUPPORTS SHALL BE GALVANIZED STRUT WITH MATCHING FITTINGS AND STAINLESS STEEL HARDWARE. FIELD CUT GALVANIZED SUPPORTS SHALL BE COATED WITH Z.R.C. COLD GALVANIZING SPRAY OR OTHER RUST-INHIBITING MATERIAL AFTER INSTALLATION. PROVIDE A 4 INCH HIGH CONCRETE HOUSEKEEPING PAD FOR ALL FLOOR MOUNTED EQUIPMENT.

DESCRIPTION OF WORK: THE WORK TO BE PERFORMED UNDER THIS SECTION AND ACCOMPANYING DRAWINGS CONSISTS OF THE FOLLOWING:

(A) A COMPLETE WIRING SYSTEM FOR LIGHT AND POWER INCLUDING CABLE FROM MAIN DISTRIBUTION OR METER PANELS, SUB-PANELS, SWITCHES, PANELS FEEDERS, DUCTS, CONDUIT, BRANCH CIRCUIT WIRING TO EACH AND EVERY NEW OUTLET AS INDICATED ON THE PLANS INCLUDING THE LIGHTING UNITS ON THE EXTERIOR OF THE BUILDING AND PARKING LOT POLES WITH LIGHT FIXTURES. THE SYSTEM SHALL INCLUDE ALL LIGHTING FIXTURES SHOWN ON THE DRAWINGS.

(B) CIRCUITS SHALL BE SO CONNECTED TO THE PANEL BOARDS THAT THE TOTAL LOAD IS DISTRIBUTED AS NEARLY AS POSSIBLE EQUALLY BETWEEN EACH LINE AND NEUTRAL

(C) LABELS: PROVIDE AN ENGRAVED PLASTIC LAMINATE NAMEPLATES, SECURELY FASTENED TO EQUIPMENT, FOR ALL NEW PANELS, LARGE FULL BOXES, AND MAJOR COMPONENTS. NAMEPLATES SHALL BE 1" X 3", MINIMUM BLACK LETTER ON WHITE

EXCAVATION AND BACKELL (A) THE ELECTRICAL CONTRACTOR SHALL DO ALL EXCAVATING REQUIRED FOR THE INSTALLATION OF ANY UNDERGROUND DUCTS AND/OR WIRE FOR ELECTRICAL EQUIPMENT AS SHOWN ON THE DRAWINGS.

(B) UNDERGROUND DUCTS SHALL BE INSTALLED BELOW FINISH GRADE NOT LESS THAN THE REQUIREMENTS OF NEC TABLE 300.5. DUCTS SHALL BE INSTALLED AT DEPTH REQUIRED TO PROPERLY ENTER BUILDING.

(C) AFTER THE UNDERGROUND DUCTS ARE INSTALLED AND TESTED, THE CONTRACTOR SHALL BACKFILL ALL EXCAVATION WITH SELECTED EARTH PLACED IN LAYERS NOT EXCEEDING 6 INCHES IN THICKNESS, WITH EACH LAYER THOROUGHLY COMPACTED. COMPACTION TO BE IN ACCORDANCE WITH COMPACTION REQUIREMENTS LISTED IN OTHER SECTIONS OF THE SPECIFICATIONS.

(D) ALL SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITIONS, INCLUDING PAVED OR UNPAVED STREETS, ROADWAY AND TURF, TO THE SATISFACTION OF THE G.C. AND OWNER.

ELECTRICAL SYSTEM GROUNDS: ELIDNISH AND INSTALL ALL ELECTRICAL SYSTEM CROLLINGS AS REQUIRED BY THE NATIONAL ELECTRIC CODE AND THE POWER COMPANY THE FOLLOWING SHALL BE SOLIDLY GROUNDED: SWITCH AND PANEL BOARD ENCLOSURES, CONDUIT SYSTEM, BOXES, ETC., MOTOR FRAMEWORK, NEUTRAL LEADS OF SECONDARY SERVICE.

LIGHTING AND POWER PANELS:

(A) PANELBOARDS: PANELS SHALL BE DEAD FRONT, AND EQUIPPED WITH BOLT-ON TYPE, THERMAL-MAGNETIC MOLDED CASE CIRCUIT BREAKERS AS INDICATED. UNLESS NOTED OTHERWISE, ENCLOSURES SHALL BE OF CODE GAUGE STEEL, WITH GALVANIZED TUB, NOMINAL 5.75" DEEP BY 20" WIDE (NF AND NQ SERIES), NEMA 1, WITH CONCEALED TRIM CLAMP DESIGN. SURFACE OR FLUSH TRIM AS INDICATED, HINGED AND LOCKING DOOR, AND COPPER OR ALUMINUM BUS, AMPERE RATING AS INDICATED, PANELS SHALL BEAR A UL RATING INDICATING THE MAXIMUM NUMBER OF BREAKER POLES PERMITTED, PANELS EXCEEDING 42 USEABLE POLES SHALL BE PERMITTED ONLY WHERE THE MANUFACTURER'S NAMEPLATE REFLECTS THIS LISTING. PROVIDE GROUPING OF MULTI-WIRE BRANCH CIRCUITS AS REQUIRED BY NEC ARTICLE 210.4(D). WHERE LIGHTING CIRCUITS ARE CONTROLLED ONLY FROM THE PANEL BREAKERS, PROVIDE "SWITCHING DUTY" RATED BREAKERS. PROVIDE HACR, GFP AND SHUNT TRIP RATED BREAKERS WHERE NOTED OR REQUIRED. LIGHTING/RECEPTACLE PANELS SHALL BE RATED FOR 277/480 OR 120/208 VOLTS, WITH BREAKERS RATED; SQUARE D NF, NQ, OR EQUAL BY SIEMENS, ABB, OR EATON.

(B) FURNISH A NEW TYPED DIRECTORY BEHIND PLASTIC ON THE INSIDE OF EACH PANEL DOOR SHOWING "AS INSTALLED" CIRCUIT NUMBERS, LOAD DESCRIPTIONS, A COMPLETE DESCRIPTION OF ALL OUTLETS AND FIXTURES ON EACH CIRCUIT.

CIRCUIT BREAKERS (A) ALL NEW CIRCUIT BREAKERS TO BE SAME MANUFACTURER AND TYPE AS THE PANELS. BREAKERS TO MATCH PANEL.

(A) SPD SHALL COMPLY WITH UL 1449, 4TH EDITION. INSTALLATION SHALL CONFORM TO NEC 285. THE MANUFACTURER SHALL WARRANTY THE SURGE PROTECTIVE DEVICE COVERING ALL PARTS FOR A MINIMUM OF FIVE (5) YEARS.

(B) SPD UNITS SHALL HAVE LED INDICATOR LIGHTS FOR POWER AND PROTECTION STATUS, AUDIBLE ALARM WITH SILENCING SWITCH AND ONE SET OF DRY CONTACTS RATED AT 5A, 250VAC.

(C) SPD UNITS SHALL BE MODULAR IN DESIGN AND REPLACEABLE WITHOUT INTERRUPTING POWER TO THE SWITCHBOARD OR PANELBOARD. PROVIDE WITH FUSED SWITCH OR CIRCUIT BREAKER DISCONNECT.

(D) THE PROTECTION LEVELS SHALL BE: 1. 200KA (L-N, L-G, L-L, N-G) SERVICE ENTRANCE OR MAIN DISTRIBUTION PANEL (MDP) 2. 100KA (L-N, L-G, L-L, N-G) DISTRIBUTION PANEL (DP)

(E) THE SPD SHALL BE AS MANUFACTURED BY CURRENT TECHNOLOGY, LIEBERT, GENERAL ELECTRIC, SQUARE D, EATON OR APPROVED EQUAL BY THE ENGINEER.

SAFETY SWITCHES & MOTOR STARTERS: (A) DISCONNECTS: SAFETY SWITCHES SHALL BE HEAVY DUTY, H.P. RATED, 250 OR 600 VOLTS AC RATED TO MATCH THE

3. 50KA (L-N, L-G, L-L, N-G) BRANCH PANEL

CIRCUIT SHOWN, WITH GROUND LUG, REJECTION STYLE FUSE CLIPS AND NEMA 1 ENCLOSURE INDOORS OR NEMA 3R ENCLOSURE OUTDOORS; AS MANUFACTURED BY SQUARE D, SIEMENS, ABB, OR EATON.

(B) FUSES: FUSES SHALL BE DUAL-ELEMENT, TIME-DELAY, REJECTION STYLE, CLASS RK5 FOR FUSES UP TO 600 AMPERES; EATON BUSSMANN TYPE "FRN" (250 BOLT) OR TYPE "FRS" (600 VOLT). LARGER FUSES SHALL BE CLASS L, BOLT-IN STYLE; EATON BUSSMANN "HI-CAP". EQUAL FUSES MANUFACTURED BY MERSEN OR LITTLEFUSE, WILL BE ACCEPTABLE. PROVIDE ONE SET OF THREE SPARE FUSES FOR EACH SIZE AND TYPE INSTALLED.

(A) DEVICES SHALL BE COMMERCIAL GRADE, COMPLETE WITH THERMOPLASTIC FACE OR HANDLE. OF THE TYPE. RATING. AND CONFIGURATION AS INDICATED ON THE DRAWINGS. DEVICES SHALL BE SUPPLIED FROM A SINGLE MANUFACTURER, WHEREVER POSSIBLE, TO STANDARDIZE ON COLOR AND REPLACEMENTS. DEVICE COLOR SHALL BE AS SELECTED BY THE ARCHITECT/ENGINEER/OWNER, TO MATCH THE BUILDING FINISHES. COVER PLATES SHALL BE SMOOTH HIGH IMPACT MATCHING PLASTIC IN OFFICE AREAS, GALVANIZED IN DAMP AREAS, AND GASKETED, FLAP-TYPE METAL "IN-USE" TYPE IN OUTDOOR AREAS. WIRING DEVICES AND COVER PLATES SHALL BE AS MANUFACTURED BY HUBBELL, LEGRAND, LEVITON, OR COOPER.

(A) BOXES: FLUSH DEVICE BOXES SHALL BE DEEP, GALVANIZED, STAMPED STEEL BOXES, WITH PLASTER RINGS WHERE REQUIRED. EXPOSED DEVICE BOXES SHALL BE CAST MALLEABLE IRON TYPE FD WITH THREADED HUBS. INTERIOR PULL AND JUNCTION BOXES SHALL BE NEMA 1 GALVANIZED OR PAINTED STAMPED STEEL WITH SCREW COVERS. IN FIRE RATED WALLS AND CEILINGS, BOXES SHALL BE TWO-GANG MAXIMUM, AND CAREFULLY LOCATED TO MAINTAIN FIRE RATINGS; I.E. NO MORE THAN 100 SQUARE INCHES OF BOXES IN 100 SQUARE FEET OF WALL/CEILING WITH BOXES ON OPPOSITE SIDES OF WALL

SEPARATED BY 24 HORIZONTAL INCHES MINIMUM. UNLESS WRAPPED WITH FIRE PROOFING PUTTY. SMALL EXTERIOR BOXES

SHALL BE CAST TYPE WITH GASKETED COVERS, OR NEMA 4X STAINLESS STEEL FOR LARGER BOXES. FLUSH-IN-GRADE

EXTERIOR BOXES SHALL BE NON-METALLIC, 12"X12"X12" MINIMUM, WITH MATCHING COVER, QUAZITE PC SERIES, SYNERTECH S SERIES, OR EQUAL (B) BOXES FOR TELEPHONE AND CABLE TV SYSTEM (IF ANY INDICATED) SHALL BE OF TYPE APPROVED BY THE RESPECTED

(C) BOXES AT EXTERIOR OF BUILDING OR POLES SHALL BE CAST ALUMINUM, WATERTIGHT, WITH GASKETS AND BOLTED ON COVERS. BOXES FOR ALL EXTERIOR FIXTURES. EXTERIOR RECEPTACLES. ETC.. MOUNTED IN EXTERIOR WALLS OF THE BUILDING OR OTHER EXTERIOR LOCATIONS SHALL BE OF WEATHER TIGHT CONSTRUCTION. INTERIOR BOXES IN FINISHED AREAS SUCH AS OFFICES, BREAK ROOMS, RESTROOMS, SALES AREAS AND SERVICE DESK SHALL BE FLUSH MOUNTED IN FINISHED AREAS UNLESS DIRECTED OTHERWISE BY THE ARCHITECT/ENGINEER, G.C. OR OWNER.

(D) ONLY SUCH HOLES IN BOXES AS ARE TO BE USED FOR THE ENTERING CONDUIT SHALL BE OPEN; ALL OTHER HOLES MUST BE CLOSED. ANY BOX INSTALLED WITH OPEN HOLES OTHER THAN FOR THE ENTERING CONDUIT, MUST BE REMOVED AND (E) WHERE THE SPACE LIMITATIONS OR OTHER CONDITIONS INFLUENCE THE ARRANGEMENT AND DETAILS OF THE OUTLET, SPECIAL FORMS AND DESIGN OF OUTLET BOXES SHALL BE USED TO SECURE A PROPER, COMPLETE AND WORKMANLIKE ARRANGEMENT AT THE OUTLET.

(F) BRACKET OUTLET BOXES SHALL BE FIRMLY ANCHORED IN PLACE AND SHALL BE PROVIDED WITH FIXTURE STUDS. (G) DIAMOND EXPANSION, CINCH OR RAWL PLUG ANCHORS SHALL BE USED IN ALL CASES FOR SECURING BOXES TO BLOCK

(H) ALL OUTLET BOXES WHICH REQUIRE COVERS SHALL BE PROVIDED WITH SAME AND THEY SHALL BE OF SUCH CONSTRUCTION AND DESIGN AS TO EXACTLY FIT AND MATCH THE BOX IN WHICH THEY ARE INSTALLED.

(I) PANEL BOXES TO HAVE SEPARATE COVERS DESIGNED FOR EASY ALIGNMENT.

(J) CEILING AND WALL OUTLET BOXES GENERALLY SHALL BE 4 INCHES SQUARE OR OCTAGON WITH PLASTER RINGS AND SHALL HAVE TWO SCREW HOLES FOR MOUNTING RECEPTACLES WHEN SAME ARE SPECIFIED. GANG BOXES AND ADJUSTABLE COVERS SHALL BE USED WHERE DISSIMILAR SERVICES ARE INSTALLED.

THERMAL SWITCHES FURNISHED BY OTHER CONTRACTOR'S TO THE ELECTRICAL CONTRACTOR FOR INSTALLATION, WILL HAVE SEPARATE WALL PLATES AND MAY BE MOUNTED SEPARATELY BUT ADJACENT TO WALL SWITCHES. BOXES FOR TELEPHONE AND CABLE TV SYSTEM SHALL BE OF TYPE APPROVED BY THE RESPECTED COMPANY.

(A) THE APPROXIMATE LOCATION OF CEILING, SWITCH AND OTHER OUTLETS IS GIVEN ON THE DRAWINGS. THE EXACT LOCATIONS SHALL BE DETERMINED AT THE BUILDING AS THE WORK PROGRESSES.

(B) ANY OUTLET INSTALLED BY THE CONTRACTOR IN SUCH A LOCATION AS TO BE OUT OF PROPER RELATION TO BEAMS, WALLS OR OTHER DETAILS OF THE BUILDING, SHALL BE CORRECTED BY AND AT THE EXPENSE OF THE CONTRACTOR.

(C) UNLESS OTHERWISE INDICATED, OUTLET BOXES IN WALLS SHALL BE LOCATED AS INDICATED ON DRAWINGS TO BOTTOM OF BOX, IF NO ELEVATIONS ARE NOTED. THE FOLLOWING ELEVATIONS ABOVE FINISHED FLOOR: WALL SWITCHES: 44" A.F.F. MIN., EXCEPT IF HEIGHT IS NOTED ON DRAWINGS OR DIRECTED DIFFERENTLY BY OWNER. POWER RECEPTACLES: SEE SCHEDULE OR PLAN FOR HEIGHT. E.C. SHALL VERIFY ALL RECEPTACLES, SWITCHES, CONTROLS, ETC. WITH ARCHITECT/ENGINEER AND/OR OWNER FOR LOCATION AND HEIGHT PRIOR TO INSTALLATION.

(D) THESE HEIGHTS MAY BE CHANGED TO MEET BUILDING CONDITION, IN WHICH CASE THE CONTRACTOR SHALL USE NEW DIMENSIONS GIVEN HIM/HER BY THE G.C., ARCHITECT/ENGINEER AND/OR OWNER.

CONDUCTORS AND FEEDERS (600V AND BELOW) (A) CONDUCTORS FOR LIGHTING, POWER, AND RECEPTACLE CIRCUITS, AND FOR PANEL AND EQUIPMENT FEEDERS, SHALL BE NO. 12 AWG MINIMUM. ALL CONDUCTORS SHALL BE STRANDED COPPER, ANNEALED AND UNCOATED, IN ACCORDANCE WITH THE PHYSICAL AND ELECTRICAL PROPERTIES INDICATING IN THE ICEA STANDARDS.

(B) CONDUCTORS NO. 2 AWG AND LARGER INSTALLED IN DRY LOCATIONS SHALL HAVE 600 VOLT, 75 DEGREE C., CROSS-LINKED POLYETHYLENE XLP OR XHHW INSULATION. CONDUCTORS NO. 2 AND LARGER INSTALLED IN WET LOCATIONS OR UNDERGROUND DUCTS. SHALL HAVE 600 VOLT. 75 DEGREE C. RHW/USE TYPE INSULATION.

(C) CONDUCTORS SMALLER THAN NO. 2 AWG SHALL HAVE 600 VOLT, 75 DEGREE C, TYPE THHN/THWN OR XHHW TYPE

(D) ALL WIRING INSTALLED IN LIGHTING FIXTURE CHANNELS USED FOR RACEWAYS SHALL BE WIRED WITH 90 DEGREE C INSULATION ON ALL CIRCUIT WIRING WITHIN THE RACEWAYS. INSULATION MAY BE TYPE RHH OR THHN. (E) WHERE CONDUCTORS ARE LOCATED IN AMBIENT TEMPERATURES REGULARLY EXCEEDING 60 DEGREES C, TYPE FEPB

(F) ALL BRANCH CIRCUIT WIRING, INCLUDING MOTOR LEADS SHALL BE NO. 12 MINIMUM. WHERE THE CIRCUIT LENGTH EXCEEDS 100 FEET (FOR 120 VOLTS), OR 200 FEET (FOR 277 VOLTS), FROM THE PANEL TO THE FARTHEST DEVICE, UTILIZE #10AWG MINIMUM OR LARGER WHERE SO INDICATED OR REQUIRED.

(G) ALL 120 VOLT CONTROL WIRING SHALL BE NO. 14 AWG MINIMUM; PROVIDE WIRING AS SPECIFIED.

(H) EACH BUNDLE OF CABLE SHALL BEAR THE MAKER'S NAME AND THE UL LABEL, TOGETHER WITH THE GRADE, SIZE, LENGTH AND MANUFACTURING DATE. SIMILAR INFORMATION SHALL BE INCLUDED ON THE INSULATION JACKET OF THE CONDUCTORS. CONDUCTORS SHALL COMPLY WITH NEC 310.

(I) ALL CONDUCTORS SHALL BE COLOR-CODED WITH A SEPARATE COLOR FOR EACH PHASE AND NEUTRAL USED CONSISTENTLY THROUGHOUT THE INSTALLATION. COLOR CODING SHALL BE IN ACCORDANCE WITH THE NEC.

(J) ALL CONDUCTOR SIZES SHOWN ON THE DRAWINGS AND HEREIN SPECIFIED ARE BASED ON COPPER. ALL CONDUCTORS SHALL BE INSTALLED TO CONFORM WITH THE NEC. ALUMINUM CONDUCTOR WILL BE PERMITTED FOR THE SERVICE CABLE FROM THE METER/C.B. TO THE ELECTRICAL PANEL ONLY.

(K) CONDUITS AND RACEWAYS: PROVIDE RACEWAYS OF MATERIAL & SIZE AS INDICATED ON DRAWINGS FOR NEW WIRING. RACEWAYS SHALL BE INSTALLED, CONCEALED WITHIN NEW AND EXISTING CONSTRUCTION, UNLESS NOTED OTHERWISE. RACEWAYS INSTALLED OUTDOORS, OR UNDERGROUND CAST IN CONCRETE, WITHIN EXTERIOR BLOCK WALLS OR EXPOSED IN UNFINISHED SPACES, SHALL BE RIGID METAL CONDUIT, SCHEDULE 40, HOT-DIPPED GALVANIZED, 3/4 INCH TRADE SIZE MINIMUM INSTALLED PER NEC 344, COMPLETE WITH THREADED FITTINGS, DOUBLE LOCK-NUTS AND BUSHINGS AT BOXES AND CABINETS. CONDUIT WITHIN INTERIOR WALLS, MOUNTED ON ROOF STRUCTURE AND NOT SUBJECT TO ABUSE, AND ABOVE SUSPENDED CEILINGS, IN TRADE SIZES 1/2 INCH THRU 2 INCH DIAMETER, SHALL BE ELECTRICAL METALLIC TUBING (EMT), INSTALLED PER NEC ARTICLE 358. COMPLETE WITH STEEL COMPRESSION OR SET-SCREW FITTINGS. IN DRY INTERIOR LOCATIONS. CONDUIT IN TRADE SIZES 2 INCH THRU 4 INCH DIAMETER, MAY BE INTERMEDIATE METAL CONDUIT, INSTALLED PER NEC ARTICLE 342, COMPLETE WITH THREADED FITTINGS, DOUBLE LOCK-NUTS AND BUSHINGS AT BOXES AND CABINETS. UNDERGROUND EXTERIOR RACEWAYS MAY BE SCHEDULE 40 PVC SIZES PER NEC ARTICLE 352, AS INDICATED ON DRAWINGS COMPLETE WITH INSULATED GROUND WIRE, AND RGS ELBOWS WHERE RISER IS EXPOSED. PROVIDE WARNING RIBBON OR TAPE PLACED 12 INCHES ABOVE SERVICE LATERALS & BRANCH FEEDERS AND BURIED AS INDICATED IN NEC TABLE 300.5. INTERIOR UNDER-SLAB CONDUIT MAY BE SCHEDULE 40 PVC, IN TRADE SIZES 3/4 INCH THRU 3" INCH DIAMETER, COMPLETE WITH INSULATED GROUND WIRE, AND RGS ELBOWS WHERE RISER IS EXPOSED, CONNECTIONS TO RECESSED FIXTURES, AND OTHER ITEMS SUBJECT TO VIBRATION OR OCCASIONAL MOTION, SHALL BE MADE WITH FLEXIBLE METAL, ZINC-COATED STEEL CONDUIT, COMPLETE WITH STEEL FITTINGS, IN LENGTHS NOT TO EXCEED 6 FEET, INSTALLED PER NEC ARTICLE 348. FOR PUMPS, KITCHEN EQUIPMENT, OR WHERE SUBJECT TO DAMPNESS OR OILY ENVIRONMENTS, FLEXIBLE CONDUIT SHALL BE NEOPRENE JACKETED, COMPLETE WITH APPROVED FITTINGS AND MAY BE EXPOSED TO VIEW. M.C. TYPE CABLE, INSTALLED PER NEC ARTICLE 330, MAY BE USED FOR BRANCH CIRCUITS CONCEALED IN WALL CONSTRUCTION. EXPOSED CONDUIT SHALL

(L) SURFACE METAL WIREWAY/RACEWAY SHALL BE FURNISHED AND INSTALL WHERE NOTED ON PLANS OR SPECIFICALLY PERMITTED BY THE ENGINEER FOR POWER AND/OR TELECOMMUNICATION WIRING. SURFACE METAL RACEWAYS SHALL BE INSTALLED PER NEC ARTICLE 386 RACEWAYS SHALL BE BY HUBBELL OR FOLIAL PROVIDE SINGLE OR MULTI-CELL SURFACE METAL RACEWAYS FOR BRANCH CIRCUIT EXTENSIONS AND TELECOMMUNICATION WIRING MOUNT ALL RACEWAY STRAIGHT TRUE AND LEVEL AND ROUTE AS INCONSPICUOUSLY AS POSSIBLE. WHERE RUNS ARE HORIZONTAL, MOUNT TO CLEAR COUNTERTOPS, BACKSPLASH, BASE MOLDINGS, ETC.

(A) ALL SPLICING SHALL BE DONE IN OUTLET BOXES, JUNCTION BOXES, ETC. AND NOT IN CONDUIT, THE SPLICES SHALL BE MADE ACCORDING TO THE REQUIREMENTS OF THE NEC. THE CONTRACTOR SPLICES MAY BE MADE WITH SOLDERLESS CONNECTORS AND THEN INSULATED AS REQUIRED OR COVERED BY COMPOSITION INSULATION COVERS. PRESSURE CONNECTORS SHALL BE USED AT MOTOR-OPERATED EQUIPMENT AN OTHER VIBRATING EQUIPMENT.

SWITCHES AND DIMMERS: (A) AT EACH LOCAL LIGHTING WALL SWITCH INDICATED ON THE DRAWINGS, FURNISH AND INSTALL WITH PROPER GANGED FACE PLATE, FLUSH, MECHANICALLY OPERATED, QUIET OPERATING, 20 AMPERE, 120/277 VOLT SWITCH OF THE FOLLOWING OF

EQUAL MAKE AS ACCEPTED BY THE ARCHITECT/ENGINEER. ACCEPTABLE EQUALS OF THE SAME GRADE OF THE SWITCHES SPECIFIED IN THE LEGEND MAY BE: HUBBELL, LEGRAND, LEVITON OR COOPER.

(B) WHERE WALL SWITCHES WITH PILOT LIGHTS ARE INDICATED OR REQUIRED, FURNISH AND INSTALL SWITCH AS SPECIFIED IN LEGEND OR EQUALED BY ABOVE WITH RED JEWEL INDICATOR.

(C) LIGHT WIRING SHALL BE POLARIZED SO THAT ONLY THE BLACK OR FUSED WIRE SHALL BE BROKEN BY A SINGLE-POLE

(D) ALL SWITCHES SHALL BE OF THE SAME MANUFACTURER UNLESS NOTED OTHERWISE.

(E) DIMMERS SHALL BE ROTARY OR SLIDE OPERATION AS NOTED ON LEGEND. E.C. TO VERIFY LIGHTING LOAD WITH DIMMER

WATTAGE TO INSURE PROPER SIZE DIMMER IS INSTALLED. GANG DIMMERS AS RECOMMENDED BY MANUFACTURER. PROVIDE SEPARATE WALL BOXES FOR DIMMER IF LOCATED NEAR A GANG OF SWITCHES. ACCEPTABLE EQUALS OF THE SAME GRADE OF DIMMERS SPECIFIED IN THE LEGEND MAY BE: HUBBELL, SYNERGY, LEGRAND, LEVITON OR COOPER.

(A) AT EACH DUPLEX RECEPTACLE NOTED 20 AMPERES, FURNISH AND INSTALL NEW RECEPTACLES W/ FACE PLATES. A 20 AMPERE FLUSH DUPLEX RECEPTACLE WITH GROUND BLADE AS PER LEGEND OR EQUAL GRADE OF THE FOLLOWING: HUBBELL,

(B) ALL RECEPTACLES SHALL BE FURNISHED BY THE SAME MANUFACTURER, EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE. RECEPTACLES AND LOCAL WALL SWITCHES SHALL BE OF THE SAME MANUFACTURER.

(A) FIXTURE NUMBERS IN THE SPECIFICATIONS HAVE BEEN TAKEN FROM THE CATALOGS OF FIXTURE MANUFACTURERS LISTED ON THE DRAWINGS. FIXTURE NUMBERS AND DESCRIPTIONS ARE INTENDED TO DENOTE A STANDARD OF QUALITY AND TYPE. FIXTURES OF OTHER MANUFACTURERS MAY BE USED. PROVIDED A COMPLETE COMPARABLE SCHEDULES IS SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW BEFORE PROCEEDING WITH THE ORDER.

(B) LIGHT FIXTURES: FURNISH AND INSTALL THE LIGHT FIXTURES AS INDICATED ON THE PLANS AND SCHEDULES. FIXTURES SHALL BE COMPLETE WITH LAMPS, SOCKETS, CANOPIES, SUSPENSION ACCESSORIES, REFLECTORS, BALLASTS. LENSES. LOUVERS, PLASTER FRAMES, ETC. PRISMATIC LENSES SHALL BE 100% ACRYLIC, ONE-EIGHTH INCH NOMINAL THICKNESS. ELECTRONIC LED DRIVERS AND POWER SUPPLIES SHALL BE RATED FOR LONG LIFE AND MATCHED TO THE LED ARRAY SUPPLIED. SELF-CONTAINED EMERGENCY LIGHTING UNITS SHALL INCLUDE BUILT-IN BATTERIES, CHARGER, TRANSFER RELAY; SUCH UNIT EQUIPMENT SHALL BE CONNECTED TO THE NORMAL OR NIGHT LIGHT CIRCUIT IN THE SPACE, BUT AHEAD OF ANY LOCAL SWITCHES, LIGHTING CONTACTORS OR RELAYS. FIXTURES SHALL NOT RELY ENTIRELY ON THE CEILING SUSPENSION SYSTEM FOR MOUNTING, BUT SHALL ALSO BE SUPPORTED FROM THE STRUCTURE. PROVIDE A SEPARATE POWER CONNECTION FOR EACH FIXTURE OR CONTINUOUS AND CONTIGUOUS FIXTURE ROW (THROUGH-WIRING NOT PERMITTED) EXTERIOR FIXTURES SHALL ALSO BE PROVIDED WITH THE ANCHOR BOLTS, GROUNDING, LOW TEMPERATURE BALLASTS, ETC., AS NOTED OR REQUIRED.

(A) OPENINGS AROUND CONDUITS OR IN SLEEVES FOR CONDUITS PENETRATING FIRE-RATED FLOOR SLABS, WALLS, PARTITIONS, CEILINGS, OR SMOKE PARTITIONS (IF ANY INDICATED), SHALL BE SEALED AT BOTH SIDES OF THE PENETRATION. INSULATION SHALL NOT EXTEND THROUGH SLEEVES. PACK OPENINGS WITH CALCIUM SILICATE BLOCK, DOW CORNING 3-6548 RTV SILICON FOAM. 3M CP25 CAULK, OR 303 PUTTY FIRE BARRIER SYSTEM OR MATERIAL HAVING THE SAME FIRE-RATING AS THE FLOOR OR WALL PENETRATED. FIBERGLASS IS NOT ACCEPTABLE.

(A) THE CONTRACTOR GUARANTEES BY HIS ACCEPTANCE OF THE CONTRACT THAT ALL WORK WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND/OR MATERIALS AND THAT ALL APPARATUS WILL DEVELOP CAPACITIES AND CHARACTERISTICS SPECIFIED FOR A PERIOD OF ONE YEAR AFTER DATE OF SUBSTANTIAL COMPLETION. SHOULD ANY DEFECTS IN WORKMANSHIP AND/OR MATERIALS REQUIRE REDESIGN OF ANY PART OF THE FLECTRICAL MECHANICAL PLUMBING OR ARCHITECTURAL LAYOUT. ALL SUCH REDESIGN AND ALL NEW DRAWINGS AND DETAILING REQUIRED THEREOF SHALL, WITH THE APPROVAL OF THE ARCHITECT/ENGINEER, BE PREPARED BY THE CONTRACTOR AT HIS OWN EXPENSE. WHERE SUCH APPROVED DEVIATION REQUIRED A DIFFERENT QUANTITY AND ARRANGEMENT OF DUCTWORK, PIPING, WIRING, CONDUIT AND/OR EQUIPMENT FROM THAT SPECIFIED OR DETAILED ON THE DRAWINGS, WITH THE APPROVAL OF THE ARCHITECT/ENGINEER, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SUCH MATERIALS AND/OR EQUIPMENT REQUIRED BY THE SYSTEM AT NO ADDITIONAL COST TO THE G.C. OR OWNER.

(A) UNLESS OTHERWISE NOTED, ALL WORK INDICATED THROUGHOUT THESE DRAWINGS SHALL BE CONSIDERED TO BE NEW

WORK AND SHALL BE INCLUDED AS AN INTEGRAL PART OF THIS CONTRACT. (B) CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH OTHER TRADES THE PLACEMENT OF NEW PLUMBING AND

(C) E.C. IS RESPONSIBLE FOR SAW CUTTING AND PATCHING TO MATCH EXISTING.

MECHANICAL EQUIPMENT, PIPING, DUCTWORK, METERS, AND FIXTURES TO AVOID POSSIBLE CONFLICTS.

(D) CONTRACTOR SHALL NOT INSTALL ANY WORK KNOWINGLY IN ERROR. ALL WORK SHALL BE IN ACCORDANCE WITH ALL LÓCAL AND STATE CODES AND REQUIREMENTS.

TELECOMMUNICATION CABLING FOR VOICE/DATA: (A) VOICE/DATA CABLING SYSTEM: E.C. SHALL FURNISH AND INSTALL A COMPLETE SYSTEM OF RACEWAYS, RECEPTACLES, CABLING AND TERMINATIONS AS INDICATED FOR THE OWNER'S VOICE/DATA SYSTEM, INCLUDING OUTLETS, JACKS, COVER PLATES, CONDUIT AND SLEEVES. VERIFY EXISTING CONDITIONS AND IF NEEDED, PROVIDE A GROUND BAR AT THE REMOTE DATA RACK. PROVIDE A #2 GROUNDING CONDUCTOR FROM GROUND BAR TO THE NEAREST GROUNDING ELECTRODE OR THE INTERSYSTEM BONDING LUG AT THE SERVICE DISCONNECT. ALL METAL RACEWAYS STUBBED AT BACKBOARDS OR RACKS SHALL BE TERMINATED WITH BUSHINGS AND BONDED TOGETHER TO THE BUILDING GROUNDING SYSTEM. PROVIDE A PULL STRING IN EACH EMPTY RACEWAY FOR FUTURE USE. AT VOICE/DATA CABINET, EACH VOICE/DATA CABLE RUN SHALL BE PROPERLY LABELED FOR LOCATION OF WHAT ROOM THE CABLING TERMINATES. ALL LABELS SHALL BE MACHINE PRINTED. ALL VOICE/DATA CABLING, RECEPTACLES AND ASSOCIATED TERMINATION EQUIPMENT SHALL BE FURNISHED, TERMINATED, TESTED AND CERTIFIED BY E.C. PROVIDE DUST CAPS OR COVERS IN ALL RECEPTACLE JACKS. EQUIPMENT RACK (PANDUIT R4P42: 4-POST RACK, 45RU, 41.5" DEEP, #12-24 THREADED E-RAILS, BLACK) FURNISHED AND INSTALLED BY E.C. VOICE/DATA RACK CATEGORY 6 PATCH PANELS (MINIMUM QUANTITY OF 4, PANDUIT CPP48FMWBLY: MINI-COM FLUSH PATCH PANEL, 48 PORT, 2 RU, BLACK) SHALL BE FURNISHED AND INSTALLED BY E.C. VOICE/DATA JACKS (FURNISHED AND INSTALLED BY E.C.) IN EQUIPMENT RACK PATCH PANELS SHALL BE PANDUIT CJ688TGBL: MINI-COM UTP RJ45 CAT 6 TG JACK MODULE, BLACK. CATEGORY 6 CABLES SHALL BE PRYSMIAN GROUP 6P4P24-WH-P-GCC-APCE: GENSPEED 6 CAT 6 PLENUM CABLE, WHITE, 1000FT., BOX, COLOR OF CABLE JACKET SHALL BE WHITE UNLESS SPECIFIED ELSEWHERE ON PLANS

(B) OPEN CABLING SYSTEMS: WHERE SPECIFIED HEREIN, LOW VOLTAGE CABLES SHALL BE NEATLY ROUTED "OPEN" THROUGH THE ACCESSIBLE CEILING PLENUM, OR EXPOSED ALONG STRUCTURAL ROOF STEEL MEMBERS, PARALLEL AND PERPENDICULAR TO THE BUILDING STRUCTURE. CONTRACTOR SHALL FIELD VERIFY WHERE AIR HANDLING PLENUMS ARE USED SO THAT APPROVED PLENUM RATED CABLES ARE INSTALLED, PROVIDE CABLE RUNGS, J-HOOKS, OR OTHER MEANS FOR SUPPORTING AND ORGANIZING BUNDLES OF CABLES. SEE NEC ARTICLES 725.24, 760.24, 800.24, 800.133, 820.24, AND 830.24 WHERE APPLICABLE. CABLES SHALL NOT BE SUPPORTED FROM OR BE DRAPED OVER CONDUITS, FIXTURES, PIPING, DUCT WORK, ETC. NYLON TIE WRAPS ARE NOT ACCEPTABLE FOR SUPPORTS. CABLE DROPS TO WALL MOUNTED DEVICES SHALL BE ENCLOSED IN CONDUIT SLEEVES WITH BUSHINGS AND APPROPRIATE OUTLET BOXES FOR CONCEALING CABLE CONNECTIONS.

CONTRACTOR'S QUALIFICATIONS FOR TELECOMMUNICATION CABLING:

TESTING AND CERTIFICATION FOR TELECOMMUNICATION CABLING:

(A) CONTRACTOR MUST SUBMIT A COPY OF A BICSI (BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL) CERTIFIED RCDD (REGISTERED COMMUNICATIONS DISTRIBUTIONS DESIGNER) CERTIFICATE OF THE INDIVIDUAL(S) WHO DESIGNS AND/OR SUPERVISES THE INSTALLATION OF THE PROPOSED WORK.

(B) THE HORIZONTAL CABLING SYSTEM IS BASED ON THE INSTALLATION OF 4-PAIR UNSHIELDED TWISTED PAIR (UTP) CATEGORY 6 DATA CABLES, CONFORMING TO APPLICABLE ANSI/EIA/TIA/BICSI STANDARDS. VENDOR MUST INSTALL CABLE TRAY TO SUPPORT NEW CABLING AND J-HOOKS AS REQUIRED IN ACCORDANCE WITH ANSI/EIA/TIA/BICSI STANDARDS.

(C) ALL CABLES SHALL BE PERMANENTLY LABELED AT BOTH THE PATCH PANEL AND THE COMMUNICATIONS OUTLET. THE LABELING SHALL CONSISTENTLY ADHERE TO THE FOLLOWING SCHEME: ALL LABELING AT THE JACK SHALL DESIGNATE CLOSET, PATCH PANEL, AND PORT #. EXAMPLE: MDF-A1 INDICATES MDF, FIRST PATCH PANEL, FIRST PORT. MDF-B24 INDICATES MDF, SECOND PATCH PANEL, 24TH PORT. ALL FACE PLATES SHALL BE PERMANENTLY LABELED REFERENCING THE CABLES LANDING IN THE FACE PLATE.

(A) TESTING FIBER OPTIC AND COPPER DISTRIBUTION SYSTEMS IS CRUCIAL IN ASSURING THE OVERALL INTEGRITY AND SATISFACTORY PERFORMANCE OF THE NETWORK. TEST RESULTS QUANTIFY SYSTEM QUALITY, IDENTIFY SYSTEM FAULTS, AND ESTABLISH THE BASELINE ACCOUNTABILITY PERFORMANCE OF THE SYSTEM. PROPER TESTING ALSO MAXIMIZES THE LONGEVITY OF THE SYSTEM, MINIMIZES DOWNTIME AND MAINTENANCE, AND FACILITATES SYSTEM UPGRADES OR RECONFIGURATIONS.

(B) THE CONTRACTOR SHALL TEST, FULLY DOCUMENT, AND PROVIDE PROOF OF COMMUNICATIONS WIRING SYSTEMS

(C) EACH COMMUNICATION OUTLET TESTED SHOULD INCLUDE THE PATCH PANEL, DEVICE JACK, AND ALL CABLE CONNECTING THEM.

(D) TESTING MUST INCLUDE COMPLETE, UNMODIFIED CAT6 TESTING PARAMETERS, INCLUDING BUT NOT LIMITED TO:

COPPER TESTING LENGTH

DELAY AND DELAY SKEW

IMPEDANCE (TDR) RESISTANCE

ATTENUATION NEAR END CROSS TALK (NEXT)

CAPACITANCE

LINE MAPPING RETURN LOSS PSNEXT (POWER SUM NEAR-END CROSS TALK LOSS)

PSELFEXT (POWER SUM EQUAL LEVEL FAR-END CROSS TALK LOSS)

(A) FAILURE OF VENDOR TO PROVIDE THESE FULL TEST RESULTS WILL RESULT IN DELAY OF PAYMENT UNTIL FULL TEST RESULTS ARE PROVIDED.

LOCAL AREA NETWORK (LAN) HORIZONTAL WIRING SPECIFICATIONS: (A) THIS SECTION COVERS THE CABLE FROM THE COMMUNICATIONS OUTLET TO THE PATCH PANEL IN THE IDF OR MDF. EACH CABLE SHALL BE PLACED IN A "POINT-TO-POINT" FASHION FROM THE COMMUNICATION OUTLET TO THE WIRING CLOSET FOR EACH COMMUNICATIONS OUTLET NEEDED. THERE SHALL BE NO INTERMEDIATE SPLICES OR CROSS CONNECTS IN THESE CABLES. THE VENDOR MAY USE ANY PULL CORDS PROVIDED BY THE ELECTRICAL CONTRACTOR IN ANY CONDUITS DESIGNATED FOR NETWORK AND VOICE CABLING, IN WHICH CASE THE VENDOR IS TO BRING NEW PULL CORDS THROUGH THE CONDUITS WITH THE CABLING FOR FUTURE USE.

THE CHARACTERISTICS OF THE HORIZONTAL CABLE ARE AS FOLLOWS:

(A) CATEGORY 6 AS SPECIFIED, CABLE CONSISTING OF FOUR PAIR OF 24 AWG BARE SOLID COPPER CONDUCTORS

INSULATED WITH A PLENUM-RATED MATERIAL SHALL BE USED FOR DATA CABLING. (B) UNLESS SPECIFIED OTHERWISE BELOW, CABLE MUST BE WHITE IN COLOR AND DATA JACKS AT FACE PLATE MUST BE

WHITE IN COLOR AND ALL DATA JACKS ON THE PATCH PANEL MUST BE BLACK IN COLOR. (C) ALL CABLING SHALL BE PLENUM GRADE.

(D) THE CABLING SHALL MEET OR EXCEED ALL APPLICABLE EIA/TIA/BICSI STANDARDS.

(E) ALL FACE PLATES SHOULD BE WHITE.

WIRELESS ACCESS POINT DATA LOCATIONS:

(F) EXISTING DATA CONDUIT OR J-HOOKS FROM HALLWAY INTO ROOMS MAY BE USED BY VENDOR IF AVAILABLE. WHERE NOT AVAILABLE, VENDOR IS RESPONSIBLE FOR J-HOOKS FROM HALLWAY INTO ROOM TO DATA DROP LOCATION.

(G) VENDOR PROVIDED CABLE TRAY SHALL BE USED TO SUPPORT ALL DATA CABLING IN HALLWAYS.

(A) TWO CATEGORY 6 CABLES SHALL BE USED FOR EACH WIRELESS ACCESS POINT LOCATION, TERMINATED IN A BISCUIT JACK OR SIMILAR ENCLOSURE ABOVE CEILING. CABLING SHALL BE WHITE IN COLOR. DATA JACKS IN PATCH PANEL SHALL BE BLACK IN COLOR.

(B) FOR CLARITY IN DETERMINING CABLE COUNTS, IN APPENDICES, WIRELESS ACCESS POINT DATA LOCATIONS ARE SPECIFIED AT TWO DATA DROPS PER INDIVIDUAL LOCATION.

(C) DATA OUTLET AT CEILING MUST BE LABELED AS PER NORMAL LABELING SCHEME. PATCH PANEL OUTLET MUST BE LABELED WITH WIRELESS ACCESS POINT NUMBER SPECIFIED FOR LOCATION, NUMBERS TO BE PROVIDED TO CONTRACTOR BY

PATCH PANELS & CABLING STANDARD: (A) PATCH PANELS SHALL BE CATEGORY 6 MATCHING THE DATA CABLING SPECIFICATION, AND SHALL USE MODULAR JACKS, SIZED IN 48-PORT LAYOUTS OR MULTIPLES THEREOF.

(B) THE TERMINATION HARDWARE WILL BE CO-LOCATED ON 19-INCH RACKS OR IN 19-INCH DATA CABINETS IN THE MDF WITH

THE OWNER-SUPPLIED LAN SWITCHES. CONSULT OWNER FOR CONFIGURATION OF THE PATCH PANELS SHOULD BE IN AN ARRANGEMENT THAT MINIMIZES PATCH CORD LENGTHS.

(C) VELCRO TIES AND NOT ZIP TIES ARE TO BE USED TO BUNDLE CABLES. (D) HORIZONTAL CABLES FROM THE MDF/IDF TO THE DATA OUTLETS IN THE BUILDING SHALL BE WIRED TO THE EIA 568B

WIRING STANDARD FOR CAT6 RESPECTIVELY.

SYSTEM DOCUMENTATION OF TELECOMMUNICATION CABLING: (A) SYSTEM VERIFICATION AND ACCEPTANCE DOCUMENTATION SIGNED AND DATED BY THE INSTALLER (CONTRACTOR) AND THE DESIGN PROFESSIONAL SHALL BE PROVIDED. THIS DOCUMENTATION SHALL INCLUDE TEST MEASUREMENTS AND SYSTEM CALIBRATIONS PERFORMED FOR THE ENTIRE SYSTEM. SAMPLE SYSTEM OPERATIONS SHALL ALSO BE PERFORMED WITH CONTRACTOR PROVIDED TEST EQUIPMENT AND DOCUMENTED TO VERIFY THAT THE SYSTEM IS OPERATIONAL AND READY FOR

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DO NOT SCALE FROM DRAWINGS. THE FOR ANY QUANTITIES OF MATERIALS AND LOCATIONS OF BUILDING COMPONENTS SCALED FROM THESE DRAWINGS.

ELECTRICAL SPECIFICATIONS

ISSUED DATE 11-21-23 BIDDING & PERMITS 12-01-23 ADDENDUM #01

DRAWN BY: 08-23

PLOT SCALE JOB NO. 45-2902-23

> SHEET E901



**Date:** December 07, 2023 **Project Number:** 45-2902-23

Project Name: Perry ProTech, Toledo - Building Renovations

Intent:

This Addendum provides modifications and clarifications To the Bid Documents dated **Tuesday**, **November 21**, **2023**, Bidder shall ascertain prior to submitting its Bid Form that it has received all Addenda issued and shall acknowledge receipt of each Addendum on the Bid Form.

In the event of a conflict between the terms and provisions of this Addendum and the terms and provisions of the Bidding Documents, the terms and provisions of this Addendum shall control. In all other respects, the Bidding Documents shall remain unchanged and in full force and effect.

| ltem               | Additional<br>Document | Cons. Doc.<br>Reference | Description                                                                                     |  |  |  |
|--------------------|------------------------|-------------------------|-------------------------------------------------------------------------------------------------|--|--|--|
| General:           |                        |                         |                                                                                                 |  |  |  |
| 1                  | Bid Form<br>Revised    |                         | Bid Form was revised to include Alternate #1 and remove statement about bonding (see attached). |  |  |  |
| End of Addendum 02 |                        |                         |                                                                                                 |  |  |  |

# Bid Form – Stipulated Sum (Single-Prime Contract) Revised

| PROJECT:                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                         | BIDDER:                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Building Renovations<br>Perry ProTech                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                         | Name:                                                                                                                                                                                                                                                                                |
| 1270 Flagship Drive<br>Perrysburg, Ohio 4355                                                                                                                                                                                                               | 1                                                                                                                                                                                                                                                                                       | Address:                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         | Phone:                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         | E-mail:                                                                                                                                                                                                                                                                              |
| BID DATE:                                                                                                                                                                                                                                                  | Tuesday, December 19, 2023                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                      |
| TIME:                                                                                                                                                                                                                                                      | 1:00 p.m. Local Time                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                      |
| SUBMIT TO:                                                                                                                                                                                                                                                 | Technicon Design Group, Inc.<br>Attn: Sandy Knueven<br>Email: sandy@technicondesig                                                                                                                                                                                                      | gngroup.com                                                                                                                                                                                                                                                                          |
| materials and perform Flagship Drive, Perry prepared by Architect, of this Bid Form, and v  By submission of the certifies as to his/her consultation, commun responsive if the base legibly for all requests  BIDDER hereby agree and to substantially co | a all work necessary for the Pysburg, Ohio 43551 project in Technicon Design Group, Inc. within the time set forth on Page BID, each Bidder certified, and own organization, that this BI ication, or agreement as to a bid and alternate (if any indicate within in any trade of work. | In the case of a joint Bid, each party thereto D has been arrived at independently, without my competitor. Bids will only be considered ted) bid requests are completed accurately and contract upon receipt of the Notice to Proceed of execution of the Contract for Construction. |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                      |
| BIDDER agrees to per prices:                                                                                                                                                                                                                               | form all the work described in the                                                                                                                                                                                                                                                      | ne CONTRACT DOCUMENTS for the following                                                                                                                                                                                                                                              |

Building Renovations Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551

BID FORM Page 1

# **BASE BID (TOTAL SINGLE PRIME CONTRACT): TOTAL BID - LABOR & MATERIALS** (Written Amount) (Numerals) ALTERNATE 1: FURNISH AND INSTALL ROLLER WINDOW SHADES **BID - LABOR & MATERIALS** (Written Amount) (Numerals) Please submit an electronic copy of this Bid Form completed in its ENTIRETY. The successful contractor will be required to enter into an agreement with the owner according to A.I.A. Document A101: Standard Form of Agreement Between Owner and Contractor, 2017 Edition. SUBMITTED BY: Signature Title Address

Date

Building Renovations Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551

BID FORM Page 2

## **TABLE OF CONTENTS**

## **BIDDING INSTRUCTIONS**

Bidding Information / Advertisement Instructions to Bidders (AIA - A701 2018)

## **BIDDING DOCUMENTS**

Bid Form – Stipulated Sum (Single-Prime Contract) General Conditions of the Contract for Construction (AIA - A201 2017) Supplementary General Conditions

## **SAMPLE DOCUMENT FORMS**

| Standard Form of Agreement Between Owner and Contractor | A101 2017 |
|---------------------------------------------------------|-----------|
| Performance Bond                                        | A312 2010 |
| Payment Bond                                            | A312 2010 |
| Change Order                                            | G701 2017 |
| Application and Certificate for Payment                 | G702 1992 |
| Continuation Sheet                                      | G703 1992 |
| Certificate of Substantial Completion                   | G704 2017 |

## **DIVISION 01 - GENERAL REQUIREMENTS**

| 011000    | Summary                        |
|-----------|--------------------------------|
| 012300    | Alternates                     |
| 012500    | Substitution Procedures        |
| 013300    | Submittal Procedures           |
| 014000    | Quality Requirements           |
| 014200    | References                     |
| 016000    | Product Requirements           |
| 016000.01 | Substitution Form              |
| 017300    | Execution                      |
| 017400    | Warranties                     |
| 017700    | Closeout Procedures            |
| 017823    | Operation and Maintenance Data |
| 017839    | Project Record Documents       |
| 017900    | Demonstration and Training     |

## **DIVISION 02 - EXISTING CONDITIONS**

024119 Selective Demolition

## **DIVISION 03 - CONCRETE**

033000 Cast-in-Place Concrete 033500 Polished Concrete

## **DIVISION 05 - METALS**

055000 Metal Fabrications

Building Renovations Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551

## **DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

061053 Miscellaneous Rough Carpentry

061600 Sheathing

064116 Plastic-Laminate Faced Architectural Cabinets

## **DIVISION 07 - THERMAL AND MOSTURE CONTROL**

072100 Thermal Insulation

074213.24 Aluminum-Metal-Plate-Wall-Panels

079200 Joint Sealants

#### **DIVISION 08 - OPENINGS**

081416 Flush Wood Doors 083613 Sectional Doors

084113 Aluminum-Framed Entrances and Storefronts

087100 Door Hardware

088000 Glazing

088733 Decorative Film

#### **DIVISION 09 - FINISHES**

| 092900 | Gypsum Board   |
|--------|----------------|
| 093013 | Ceramic Tiling |

095113 Acoustical Panel Ceiling

096513 Resilient Base and Accessories

096813 Tile Carpeting

099112 Painting

## **DIVISION 10 - SPECIALTIES**

| 101410 | Panel | Signage |
|--------|-------|---------|
|--------|-------|---------|

102113.13 Metal Toilet Compartments

102310 Glazed Interior Wall and Door Assemblies 102800 Toilet, Bath, and Laundry Accessories

104413 Fire Protection Cabinets 104416 Fire Extinguishers

## **DIVISION 12 - FURNISHING**

122413 Roller Window Shades

123623 Plastic-Laminate-Clad Countertops

123661 Simulated Stone Countertops and Window Sills

#### **END OF TABLE OF CONTENTS**

## **BIDDING INFORMATION / ADVERTISEMENT**

Sealed bids will be received at the office of **Technicon Design Group** for the following project:

Building Renovations Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551

Attn: Sandy Knueven (Email: Sandy@technicondesigngroup.com)

In accordance with the Contract Documents prepared by:

Technicon Design Group, Inc. 1800 N. Perry Street, Suite 102 Ottawa, Ohio 45875

Bidders may submit requests for consideration of a proposed Substitution for a specified product, equipment, or service to the Architect/Engineer ("A/E") no later than 10 days prior to the bid opening. Additional products, equipment, and services may be accepted as approved Substitutions only by written Addendum.

Sealed bids will be received for this contract until <u>1:00 pm</u> local time, <u>Tuesday, December 19</u> and will be reviewed thereafter.

All Bidders are strongly encouraged to attend the Pre-Bid Meeting on <u>Tuesday, December 5</u> at 1:00pm at the following location:

Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551

All work and bids shall be under one General Contract including General Construction, Mechanical, Electrical and Plumbing work for the Project. The General Contractor is responsible for scheduling the Project, coordinating work with other subcontractors, and providing other services identified in the Contract Documents.

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|----------------------------------------|
| Ilding Renovations                     |

## Instructions to Bidders

for the following Project: (Name, location, and detailed description)

Perry ProTech, Toledo - Building Renovations 1270 Flagship Drive Perrysburg, Ohio 43551

## THE OWNER:

(Name, legal status, address, and other information)

Perry ProTech, Toledo 1270 Flagship Drive Perrysburg, Ohio 43551

#### THE ARCHITECT:

(Name, legal status, address, and other information)

Technicon Design Group, Inc. 1800 North Perry Street, Suite 102 Ottawa, Ohio 45875

#### TABLE OF ARTICLES

- 1 DEFINITIONS
- 2 BIDDER'S REPRESENTATIONS
- 3 BIDDING DOCUMENTS
- 4 BIDDING PROCEDURES
- 5 CONSIDERATION OF BIDS
- 6 POST-BID INFORMATION
- 7 PERFORMANCE BOND AND PAYMENT BOND
- 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

#### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612<sup>™</sup>–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

#### ARTICLE 1 DEFINITIONS

- § 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.
- § 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.
- § 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.
- § 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.
- § 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.
- § 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.
- § 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.
- § 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.
- § 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

#### ARTICLE 2 BIDDER'S REPRESENTATIONS

- § 2.1 By submitting a Bid, the Bidder represents that:
  - .1 the Bidder has read and understands the Bidding Documents;
  - .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
  - .3 the Bid complies with the Bidding Documents;
  - .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
  - .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
  - 6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

#### ARTICLE 3 BIDDING DOCUMENTS

## § 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

Documents are available for download at www.technicondesigngroup.com/2902.

- § 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.
- § 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.
- § 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.
- § 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

#### § 3.2 Modification or Interpretation of Bidding Documents

- § 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.
- § 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids. (Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

Such requests shall be submitted in writing to Sandy Knueven via email sandy@technicondesigngroup.com.

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

#### § 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

#### § 3.3.2 Substitution Process

- § 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.
- § 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.
- § 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.
- § 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.
- § 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

#### § 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

When issued, addenda will be available for download at www.technicondesigngroup.com/2902 All plan holders registered with this site will receive an email notification when an addendum has been issued.

- § 3.4.2 Addenda will be available where Bidding Documents are on file.
- § 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.
- § 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

#### ARTICLE 4 BIDDING PROCEDURES

## § 4.1 Preparation of Bids

- § 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.
- § 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.
- § 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.
- § 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.
- § 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.
- § 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.
- § 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.
- § 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

## § 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security: (Insert the form and amount of bid security.)

None required.

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising

thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

- § 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.
- § 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginningsixty (60) days after the opening of Bids, withdraw its Bid and request the return of its bid security.

#### § 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

Please submit an electronic copy of the Bid Form completed in its entirety and email to Sandy Knueven (Sandy@technicondesigngroup.com)

- § 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.
- § 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.
- § 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.
- § 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

## § 4.4 Modification or Withdrawal of Bid

- § 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.
- § 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.
- § 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

#### ARTICLE 5 CONSIDERATION OF BIDS

## § 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be privately opened and reviewed thereafter.. A summary of the Bids may be made available to Bidders.

### § 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

## § 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

#### ARTICLE 6 POST-BID INFORMATION

## § 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305<sup>TM</sup>, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

## § 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

#### § 6.3 Submittals

- § 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:
  - .1 a designation of the Work to be performed with the Bidder's own forces;
  - .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
  - .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.
- § 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.
- § 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.
- § 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

## ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

#### § 7.1 Bond Requirements

- § 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.
- § 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.
- § 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.
- § 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.
- (If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

## § 7.2 Time of Delivery and Form of Bonds

- § 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.
- § 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.
- § 7.2.3 The bonds shall be dated on or after the date of the Contract.
- § 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

## ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

- § 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:
  - .1 AIA Document A101<sup>TM</sup>–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below. (Insert the complete AIA Document number, including year, and Document title.)

A sample is provided for reference.

.2 AIA Document A101<sup>TM</sup>\_2017, Exhibit A, Insurance and Bonds, unless otherwise stated below. (Insert the complete AIA Document number, including year, and Document title.)

Not used.

- .3 AIA Document A201<sup>TM</sup>\_2017, General Conditions of the Contract for Construction, unless otherwise stated below. (Insert the complete AIA Document number, including year, and Document title.)
- AIA Document E203<sup>TM</sup>–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below: (Insert the date of the E203-2013.)

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|    | Not used.                                                           |                          |                               |               |  |
|----|---------------------------------------------------------------------|--------------------------|-------------------------------|---------------|--|
| .5 | Drawings                                                            |                          |                               |               |  |
|    | Number<br>Refer to drawing Cover Sheet.                             | Title                    | Date                          |               |  |
| .6 | Specifications                                                      |                          |                               |               |  |
|    | Section Refer to Table of Contents.                                 | Title                    | Date                          | Pages         |  |
| .7 | Addenda:                                                            |                          |                               |               |  |
|    | Number<br>TBD                                                       | Date                     | Pages                         |               |  |
| .8 | Other Exhibits: (Check all boxes that apply and required.)          | l include appropriate in | nformation identifying the e  | exhibit where |  |
|    | [ ] AIA Document E204 <sup>TM</sup> _ (Insert the date of the I     |                          | jects Exhibit, dated as indic | ated below:   |  |
|    | [ ] The Sustainability Plan:                                        |                          |                               |               |  |
|    | Title                                                               | Date                     | Pages                         |               |  |
|    | [ ] Supplementary and other Conditions of the Contract:             |                          |                               |               |  |
|    | Document                                                            | Title                    | Date                          | Pages         |  |
| .9 | Other documents listed below: (List here any additional documents.) | nents that are intended  | to form part of the Propos    | ed Contract   |  |
|    | The project consists of the Proj                                    | ect Manual, Construct    | ion Drawing Set, and any A    | ddenda issued |  |

during Bidding. All are available for download at www.technicondesigngroup.com/2902.

# Bid Form – Stipulated Sum (Single-Prime Contract) Revised

| PROJECT:                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                         | BIDDER:                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Building Renovations<br>Perry ProTech                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                         | Name:                                                                                                                                                                                                                                                                                |
| 1270 Flagship Drive<br>Perrysburg, Ohio 43551                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                         | Address:                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         | Phone:                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         | E-mail:                                                                                                                                                                                                                                                                              |
| BID DATE:                                                                                                                                                                                                                                                  | Tuesday, December 19, 2023                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                      |
| TIME:                                                                                                                                                                                                                                                      | 1:00 p.m. Local Time                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                      |
| SUBMIT TO:                                                                                                                                                                                                                                                 | Technicon Design Group, Inc.<br>Attn: Sandy Knueven<br>Email: sandy@technicondesig                                                                                                                                                                                                      | gngroup.com                                                                                                                                                                                                                                                                          |
| materials and perform Flagship Drive, Perry prepared by Architect, of this Bid Form, and v  By submission of the certifies as to his/her consultation, commun responsive if the base legibly for all requests  BIDDER hereby agree and to substantially co | a all work necessary for the Pysburg, Ohio 43551 project in Technicon Design Group, Inc. within the time set forth on Page BID, each Bidder certified, and own organization, that this BI ication, or agreement as to a bid and alternate (if any indicate within in any trade of work. | In the case of a joint Bid, each party thereto D has been arrived at independently, without my competitor. Bids will only be considered ted) bid requests are completed accurately and contract upon receipt of the Notice to Proceed of execution of the Contract for Construction. |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                      |
| BIDDER agrees to per prices:                                                                                                                                                                                                                               | form all the work described in the                                                                                                                                                                                                                                                      | ne CONTRACT DOCUMENTS for the following                                                                                                                                                                                                                                              |

Building Renovations Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551

BID FORM Page 1

# **BASE BID (TOTAL SINGLE PRIME CONTRACT): TOTAL BID - LABOR & MATERIALS** (Written Amount) (Numerals) ALTERNATE 1: FURNISH AND INSTALL ROLLER WINDOW SHADES **BID - LABOR & MATERIALS** (Written Amount) (Numerals) Please submit an electronic copy of this Bid Form completed in its ENTIRETY. The successful contractor will be required to enter into an agreement with the owner according to A.I.A. Document A101: Standard Form of Agreement Between Owner and Contractor, 2017 Edition. SUBMITTED BY: Signature Title Address

Date

Building Renovations Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551

BID FORM Page 2



## General Conditions of the Contract for Construction

## for the following PROJECT:

(Name and location or address)

Perry ProTech, Toledo - Building Renovations 1270 Flagship Drive Perrysburg, Ohio 43551

#### THE OWNER:

(Name, legal status and address)

Perry ProTech, Toledo 1270 Flagship Drive Perrysburg, Ohio 43551

## THE ARCHITECT:

(Name, legal status and address)

Technicon Design Group, Inc. 1800 North Perry Street, Suite 102 Ottawa, Ohio 45875

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#### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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### ARTICLE 1 GENERAL PROVISIONS

#### § 1.1 Basic Definitions

#### § 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

#### § 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

## § 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

#### § 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

## § 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

#### § 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

## § 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

#### § 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

#### § 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent

consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

- § 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.
- § 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.
- § 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

## § 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

## § 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

## § 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

- § 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Subsubcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.
- § 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

## § 1.6 Notice

User Notes:

- § 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.
- § 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

## § 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203<sup>TM</sup>–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

## § 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203<sup>TM</sup>—2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202<sup>TM</sup>—2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

## ARTICLE 2 OWNER

#### § 2.1 General

- § 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.
- § 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

## § 2.2 Evidence of the Owner's Financial Arrangements

- § 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.
- § 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.
- § 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.
- § 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

## § 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements,

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assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

- § 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.
- § 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.
- § 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.
- § 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.
- § 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

## § 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

#### § 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

## ARTICLE 3 CONTRACTOR

## § 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

- § 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.
- § 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

## § 3.2 Review of Contract Documents and Field Conditions by Contractor

- § 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.
- § 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.
- § 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.
- § 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

## § 3.3 Supervision and Construction Procedures

- § 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.
- § 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.
- § 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

## § 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

- § 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.
- § 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

## § 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

## § 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

## § 3.7 Permits, Fees, Notices and Compliance with Laws

- § 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.
- § 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.
- § 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

## § 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

#### § 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

## § 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.
- § 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

## § 3.9 Superintendent

- § 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.
- § 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.
- § 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

#### § 3.10 Contractor's Construction and Submittal Schedules

- § 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.
- § 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the

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Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

## § 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

## § 3.12 Shop Drawings, Product Data and Samples

- § 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.
- § 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- § 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.
- § 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.
- § 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.
- § 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- § 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.
- § 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

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- § 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.
- § 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.
- § 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.
- § 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

#### § 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

## § 3.14 Cutting and Patching

- § 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.
- § 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

## § 3.15 Cleaning Up

- § 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.
- § 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

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## § 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

## § 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

## § 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## ARTICLE 4 ARCHITECT

#### § 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

## § 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the

Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

#### § 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

- § 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.
- § 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.
- § 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- § 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.
- § 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.
- § 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.
- § 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.
- § 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations

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and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## ARTICLE 5 SUBCONTRACTORS

## § 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

## § 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

#### § 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor,

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prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Subsubcontractors.

## § 5.4 Contingent Assignment of Subcontracts

- § 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that
  - .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
  - .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

- § 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.
- § 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

## ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

## § 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

- § 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.
- § 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.
- § 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.
- § 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

#### § 6.2 Mutual Responsibility

- § 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.
- § 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work,

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promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

- § 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.
- § 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.
- § 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

## § 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

#### ARTICLE 7 CHANGES IN THE WORK

## § 7.1 General

- § 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.
- § 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.
- § 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

## § 7.2 Change Orders

- § 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:
  - .1 The change in the Work;
  - .2 The amount of the adjustment, if any, in the Contract Sum; and
  - .3 The extent of the adjustment, if any, in the Contract Time.

## § 7.3 Construction Change Directives

- § 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.
- § 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.
- § 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:



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- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation:
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.
- § 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:
  - .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
  - .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed:
  - .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
  - .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
  - .5 Costs of supervision and field office personnel directly attributable to the change.
- § 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.
- § 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.
- § 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.
- § 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.
- § 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.
- § 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

## § 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will

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affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

#### ARTICLE 8 TIME

#### § 8.1 Definitions

- § 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.
- § 8.1.2 The date of commencement of the Work is the date established in the Agreement.
- § 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.
- § 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

## § 8.2 Progress and Completion

- § 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.
- § 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.
- § 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

## § 8.3 Delays and Extensions of Time

- § 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.
- § 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.
- § 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

## ARTICLE 9 PAYMENTS AND COMPLETION

## § 9.1 Contract Sum

- § 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.
- § 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

#### § 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and

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unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

## § 9.3 Applications for Payment

- § 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.
- § 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.
- § 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.
- § 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.
- § 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

#### § 9.4 Certificates for Payment

- § 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.
- § 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

## § 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- § 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.
- § 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.
- § 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

## § 9.6 Progress Payments

- § 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.
- § 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.
- § 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.
- § 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.
- § 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

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- § 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.
- § 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.
- § 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

## § 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

## § 9.8 Substantial Completion

- § 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.
- § 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- § 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.
- § 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.
- § 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

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## § 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

## § 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

- § 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from
  - .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
  - .2 failure of the Work to comply with the requirements of the Contract Documents;
  - .3 terms of special warranties required by the Contract Documents; or
  - .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.
- § 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

## ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

## § 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

## § 10.2 Safety of Persons and Property

- § 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to
  - .1 employees on the Work and other persons who may be affected thereby;
  - .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
  - .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- § 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.
- § 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.
- § 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.
- § 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.
- § 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.
- § 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

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§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

## § 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

## § 10.4 Emergencies

**User Notes:** 

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

#### ARTICLE 11 INSURANCE AND BONDS

## § 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

#### § 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

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§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, subsubcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

# ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to

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the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

#### § 12.2 Correction of Work

## § 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

## § 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

- § 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.
- § 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.
- § 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- § 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.
- § 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

#### § 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## ARTICLE 13 MISCELLANEOUS PROVISIONS

## § 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

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## § 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

## § 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

## § 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

## § 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

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#### ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

## § 14.1 Termination by the Contractor

- § 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:
  - .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be
  - .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
  - .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
  - .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.
- § 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.
- § 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.
- § 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

#### § 14.2 Termination by the Owner for Cause

- § 14.2.1 The Owner may terminate the Contract if the Contractor
  - repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
  - fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
  - repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
  - otherwise is guilty of substantial breach of a provision of the Contract Documents.
- § 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:
  - Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
  - .2 Accept assignment of subcontracts pursuant to Section 5.4; and
  - Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.
- § 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.
- § 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance,

the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

## § 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

## § 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

#### ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

## § 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

## § 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.



§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

## § 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

## § 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

## § 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

## § 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

#### § 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the

Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

## § 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

## § 15.4 Arbitration

- § 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.
- § 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.
- § 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.
- § 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

## § 15.4.4 Consolidation or Joinder

- § 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).
- § 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written
- § 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

## **Supplementary General Conditions**

The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201 - 2017. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

## Article 1 – General Provisions

## 1.1.5 The Drawings

ADD TO: 1.1.5 Drawings are diagrammatic and are a graphic representation of Contract requirements, produced according to best available standards to an optimum scale. Dimensions and elevations of work as indicated on Drawings are not guaranteed to be as built dimensions. No measurements shall be scaled from Drawings and used as definite dimensions for layout or fitting work in place.

#### Article 3 – Contractor

## 3.7 Permits, Fees, Notices and Compliance With Laws

DELETE: 3.7.1 Delete in its entirety and substitute with the following: Bidder shall contact appropriate authorities to familiarize themselves with procedures regarding required inspections required during their respected construction trade. The Architect shall secure the structural, mechanical, electrical, and plumbing permits from the Authority Having Jurisdiction and pay all associated fees. The Owner shall secure any local zoning permits required.

## Article 8 – Time

## 8.3 <u>Delays and Extensions of Time</u>

ADD TO: <u>8.3.1</u> If Change Orders are granted for time extensions, it is understood and agreed that they are done so upon the agreement of the Owner and Contractor that no claim will be asserted for any alleged increasing costs, either direct, indirect, or impact costs, including, but not limited to, extended overhead, or any wage, material, or other escalations associated with such time extensions, and such costs are hereby expressly waived.

## **Article 9 – Payments and Completion**

#### 9.3 Applications for Payment

ADD: <u>9.3.1.3</u> The form of Application for Payment shall be the latest edition of AIA Document G702, Application and Certification for Payment, supported by either the latest edition of AIA Document G703 Continuation Sheet or other support document form preferred by the Contractor. Applications must be submitted in triplicate and supported by such other documentation as the Owner may require.

ADD: <u>9.3.1.4</u> From the total of the amount determined to be payable on a partial payment, eight percent (8%) of such total amount will be deducted and retained by the Owner until the project has reached 50% completion per Ohio Revised Code 153.12(A) The balance the amount payable, less all previous payments, shall be paid to the Contractor.

## 9.8 Substantial Completion

ADD: <u>9.8.1</u> Add after last sentence: The Certificate of Substantial Completion will not be issued until those submissions listed under Section 017700, Closeout Procedures, in the General Requirements have been submitted.

## Article 10 – Protection of Persons and Property

## 10.2 Safety of Persons and Property

ADD: <u>10.2.7.1</u> The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated.

- 1. For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights, and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office).
- 2. The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stockpiles, and his parked construction equipment that may be hazardous to the operation of traffic, emergency fire/rescue, or maintenance vehicles at the project site.
- 3. The Contractor shall furnish and erect all barricades, warning signs, and marking for hazards prior to commencing work which requires such erection and shall maintain the barricades, warning signs, and markings for hazards until dismantled at the appropriate time.

#### Article 11 – Insurance and Bonds

Supplement with the following special provisions insurance requirements:

## 11.1.5 Comprehensive General Liability Insurance

- 1. The Contractor and / or Subcontractor shall provide insurance policies in a limit of not less than \$1,000,000 per occurrence for Bodily Injury Liability (including wrongful death) and Property Damage Liability. Limits shall be solely applicable to this Contract.
- 2. Coverage provided on standard forms for Bodily Injury and Property Damage Liability with a total limit of \$1,000,000 per occurrence will include but not be limited to the following extensions:
  - a. Personal Injury
  - b. X.C.U.
  - c. Broad Form Property Damage
  - d. Blanket Contractual coverage
  - e. Independent Contractors
  - f. Products / Completed Operations
  - g. Aggregate limits apply per project.
- 3. Policies or Certificates of Insurance shall be provided by the named insured to the Owner, successful General Contractor and Technicon Design Group, Inc. evidencing proper limits of coverage; the Owner, successful General Contractor and Technicon Design Group, Inc., shall be named as additional insureds under all policies. Evidence of continuation of Products / Completed Operations coverage shall be provided for a period of three (3) years after completion of the work.

4. If coverage as required is other than an occurrence basis at any time during the contract period, the basis at any time during the contract period, the substitution of claims made from the occurrence may occur providing appropriate additional extensions are made to the claims made from to protect the Contractor and the Owner and other named additional insureds for any remaining time in which liability from an occurrence may be in effect. Such alteration of coverage will be subject to the sole approval of the Owner.

## 11.1.6 Comprehensive Automotive Liability Coverage

- 1. The Contractor of Subcontractors shall be responsible for maintaining Automotive Coverage and furnishing the Owner with the proper Certificates of Insurance for a total of \$1,000,000 single limit for bodily Injury and Property Damage.
- 2. All policies, primary and / or excess, shall name the Owner, *successful General Contractor* and Technicon Design Group, Inc., as additional insured's, and policies or Certificates of Insurance shall be provided to the Owner evidencing such coverage. Coverage shall also include owned, non-owned, and hired automotive vehicles while on the premises.

## 11.1.7 Contractor's Liability Insurance

1. Required limits of insurance to be obtained by the Contractor which protect the Contractor and any additional insureds are set forth in Article 11 – Insurance and Bonds, Supplementary Conditions.

## 11.1.8 Performance Bond And Payment Bond

ADD 11.4.1: A Performance Bond is required. See sample copy of AIA Document A312-2010 Performance Bond included with document forms in the Project Manual.

## 11.1.9 Forms of Certificates and Policies

ADD 11.5: The Contractor shall furnish to the Owner Certificates of Insurance which shall specifically set forth evidence of all coverages required by Article 11 of the General Conditions and of this Article 11 of the Supplementary Conditions.

Each policy shall contain a clause to the effect that no modification of change in the policy will be made, nor will such policy be canceled, non-renewed, or expired without thirty (30) days written notice to the Owner, as evidenced by receipt of registered or certified mail.

When any certified insurance (due to the attainment of a normal expiration date or renewal date) shall expire, it is the responsibility of the Contractor to supply to the Owner updated replacement Certificates of Insurance that clearly evidence the continuation and scope of coverage as was supplied by the Certificates originally submitted.

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|                                        |



# **Standard Form of Agreement Between Owner and Contractor** where the basis of payment is a Stipulated Sum

| AGREEMENT made as of the day of in the year (In words, indicate day, month and year.) |                                                                                                                                                           |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| BETWEEN the Owner: (Name, legal status, address and other information)                | This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.               |
| and the Contractor: (Name, legal status, address and other information)               | The parties should complete A101*–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement.                                            |
|                                                                                       | AlA Document A201*–2017,<br>General Conditions of the<br>Contract for Construction, is<br>adopted in this document by<br>reference. Do not use with other |
| for the following Project: (Name, location and detailed description)                  | general conditions unless this document is modified.                                                                                                      |
|                                                                                       |                                                                                                                                                           |
| The Architect:                                                                        |                                                                                                                                                           |
| (Name, legal status, address and other information)                                   |                                                                                                                                                           |
|                                                                                       |                                                                                                                                                           |

The Owner and Contractor agree as follows.

#### TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

#### **EXHIBIT A INSURANCE AND BONDS**

## ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

#### ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

#### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be: (Check one of the following boxes.)

| The date of this Agreement.                                                                           |
|-------------------------------------------------------------------------------------------------------|
| A date set forth in a notice to proceed issued by the Owner.                                          |
| Established as follows: (Insert a date or a means to determine the date of commencement of the Work.) |

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

## § 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

| ☐ Not later than | ( ) calendar days from the date of commencement of the Work. |
|------------------|--------------------------------------------------------------|
|------------------|--------------------------------------------------------------|

| ☐ By the following                                                                                             | g date:                                                                                                                                  |                                                                                 |
|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| § 3.3.2 Subject to adjustments of the to be completed prior to Substantia of such portions by the following of | he Contract Time as provided in the Contract E<br>al Completion of the entire Work, the Contract<br>dates:                               | Documents, if portions of the Work are tor shall achieve Substantial Completion |
| Portion of Work                                                                                                | Substantial Completion Dat                                                                                                               | te                                                                              |
|                                                                                                                |                                                                                                                                          |                                                                                 |
| § 3.3.3 If the Contractor fails to ach any, shall be assessed as set forth it                                  | hieve Substantial Completion as provided in th<br>in Section 4.5.                                                                        | is Section 3.3, liquidated damages, if                                          |
| § 4.1 The Owner shall pay the Contract. The Contract Sum shall be Documents.                                   | tractor the Contract Sum in current funds for the be (\$ ), subject to additions and deduct                                              | he Contractor's performance of the tions as provided in the Contract            |
| § 4.2 Alternates<br>§ 4.2.1 Alternates, if any, included in                                                    | in the Contract Sum:                                                                                                                     |                                                                                 |
| Item                                                                                                           | Price                                                                                                                                    |                                                                                 |
| execution of this Agreement. Upon                                                                              | ted below, the following alternates may be accordance, the Owner shall issue a Modificative conditions that must be met for the Owner to | tion to this Agreement.                                                         |
| Item                                                                                                           | Price                                                                                                                                    | Conditions for Acceptance                                                       |
| § 4.3 Allowances, if any, included in (Identify each allowance.)                                               | n the Contract Sum:                                                                                                                      |                                                                                 |
| Item                                                                                                           | Price                                                                                                                                    |                                                                                 |
| § 4.4 Unit prices, if any: (Identify the item and state the unit)                                              | price and quantity limitations, if any, to which                                                                                         | the unit price will be applicable.)                                             |
| Item                                                                                                           | Units and Limitations                                                                                                                    | Price per Unit (\$0.00)                                                         |
| § 4.5 Liquidated damages, if any: (Insert terms and conditions for liquidated)                                 | uidated damages, if any.)                                                                                                                |                                                                                 |
| § 4.6 Other: (Insert provisions for bonus or other                                                             | r incentives, if any, that might result in a chang                                                                                       | ge to the Contract Sum.)                                                        |

### ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

- § 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.
- § 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:
- § 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

- § 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.
- § 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.
- § 5.1.6 In accordance with AIA Document A201<sup>TM</sup>—2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:
- § 5.1.6.1 The amount of each progress payment shall first include:
  - .1 That portion of the Contract Sum properly allocable to completed Work;
  - .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
  - .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.
- § 5.1.6.2 The amount of each progress payment shall then be reduced by:
  - .1 The aggregate of any amounts previously paid by the Owner;
  - .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
  - .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
  - A For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
  - .5 Retainage withheld pursuant to Section 5.1.7.

### § 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

- § 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.
- § 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

### § 5.2 Final Payment

- § 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when
  - .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
  - .2 a final Certificate for Payment has been issued by the Architect.
- § 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

### § 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located. (Insert rate of interest agreed upon, if any.)

| % |  |
|---|--|
|   |  |

### ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker. (If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

| § 6.2 Binding Dispute Resolution For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows: (Check the appropriate box.)                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2017                                                                                                                                                                                                                                                                                    |
| Litigation in a court of competent jurisdiction                                                                                                                                                                                                                                                                                                     |
| ☐ Other (Specify)                                                                                                                                                                                                                                                                                                                                   |
| If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.                                                                                 |
| ARTICLE 7 TERMINATION OR SUSPENSION § 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.                                                                                                                                                                                        |
| § 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows: (Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.) |
| § 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.                                                                                                                                                                                                                                                   |
| ARTICLE 8 MISCELLANEOUS PROVISIONS § 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.                                                                          |
| § 8.2 The Owner's representative: (Name, address, email address, and other information)                                                                                                                                                                                                                                                             |
| § 8.3 The Contractor's representative: (Name, address, email address, and other information)                                                                                                                                                                                                                                                        |

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

### § 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101<sup>TM</sup>\_2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101<sup>TM</sup>—2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203<sup>TM</sup>–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

### ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101<sup>TM</sup>-2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101<sup>TM</sup>–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201<sup>TM</sup>\_2017, General Conditions of the Contract for Construction
- 4 AIA Document E203<sup>™</sup>–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

| .5 | Drawings                                                                       |                                                                 |                                       |                        |
|----|--------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------|------------------------|
|    | Number                                                                         | Title                                                           | Date                                  |                        |
| .6 | Specifications                                                                 |                                                                 |                                       |                        |
| A  | Section                                                                        | Title                                                           | Date                                  | Pages                  |
|    |                                                                                |                                                                 |                                       |                        |
| .7 | Addenda, if any:                                                               |                                                                 |                                       |                        |
|    | Number                                                                         | Date                                                            | Pages                                 |                        |
|    |                                                                                |                                                                 |                                       |                        |
|    | Portions of Addenda relating to biddi<br>Documents unless the bidding or prop  | ng or proposal requirements<br>posal requirements are also e    | are not part of the numerated in this | Contract<br>Article 9. |
| .8 | Other Exhibits: (Check all boxes that apply and include                        | de appropriate information i                                    | dentifying the exhi                   | bit where required.)   |
|    | ☐ AIA Document E204 <sup>TM</sup> —2017, Sus<br>(Insert the date of the E204-2 | stainable Projects Exhibit, da<br>2017 incorporated into this A | ted as indicated be greement.)        | elow:                  |

|                | ☐ The Sustainability Plan:                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                   |                                                                                                                                                                     |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | Title                                                                                                                                                                                                                                                                                                                                    | Date                                                                                                                                                                                              | Pages                                                                                                                                                               |
|                | ☐ Supplementary and other Condition                                                                                                                                                                                                                                                                                                      | ns of the Contract:                                                                                                                                                                               |                                                                                                                                                                     |
|                | Document                                                                                                                                                                                                                                                                                                                                 | Title                                                                                                                                                                                             | Date Pages                                                                                                                                                          |
| .9 This Agreem | Other documents, if any, listed below: (List here any additional documents the Document A201 <sup>TM</sup> —2017 provides that sample forms, the Contractor's bid or requirements, and other information to proposals, are not part of the Contract documents should be listed here only the tentered into as of the day and year forms. | that are intended to form part<br>at the advertisement or invitate<br>proposal, portions of Adde<br>furnished by the Owner in an<br>at Documents unless enumer<br>if intended to be part of the C | ntion to bid, Instructions to Bidders, and relating to bidding or proposal atticipation of receiving bids or atted in this Agreement. Any such Contract Documents.) |
| OWNER (Si      | ignature)                                                                                                                                                                                                                                                                                                                                | CONTRACTOR (Sig                                                                                                                                                                                   |                                                                                                                                                                     |
| (Printed na    | ame and title)                                                                                                                                                                                                                                                                                                                           | (Printed name and                                                                                                                                                                                 | title)                                                                                                                                                              |



### Performance Bond

| CONTRACTOR: (Name, legal status and address)                             | SURETY: (Name, legal status and principal place of business)                       |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| OWNER:<br>(Name, legal status and address)                               |                                                                                    |
| CONSTRUCTION CONTRACT Date:                                              |                                                                                    |
| Amount:                                                                  |                                                                                    |
| Description: (Name and location)                                         |                                                                                    |
| BOND Date: (Not earlier than Construction Contract Date) Amount:         | 2)                                                                                 |
| Modifications to this Bond: ☐ None                                       | ☐ See Section 16                                                                   |
| CONTRACTOR AS PRINCIPAL Company: (Corporate Seal)                        | SURETY Company: (Corporate Seal)                                                   |
| Signature: Name and Title: (Any additional signatures appear on the last | Signature:  Name and Title: page of this Performance Bond.)                        |
| (FOR INFORMATION ONLY — Name, addr<br>AGENT or BROKER:                   | ess and telephone)  OWNER'S REPRESENTATIVE:  (Architect, Engineer or other party:) |

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or

modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

- § 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
- § 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.
- § 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after
  - the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default:
  - .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
  - .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
- § 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
- § 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
- § 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
- § 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors:
- § 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
- § 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
  - .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
  - .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- § 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

- § 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for
  - .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
  - .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
  - .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- § 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.
- § 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.
- § 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- § 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
- § 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.
- § 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

### § 14 Definitions

- § 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
- § 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
- § 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
- § 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- § 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.
- § 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.



| CONTRACTOR AS PRINCIPAL |                  | d parties, other than those ap | ppearing on the cover page.) |
|-------------------------|------------------|--------------------------------|------------------------------|
| Company:                | (Corporate Seal) | Company:                       | (Corporate Seal)             |
| Signature:              |                  | Signature:                     |                              |
| Name and Title:         |                  | Name and Title:                |                              |



## **Payment Bond**

| CONTRACTOR: (Name, legal status and address)             | SURETY: (Name, legal status and principal place of business) |                                                                                                                                             |
|----------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| OWNER: (Name, legal status and address)                  |                                                              | This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification. |
|                                                          |                                                              | Any singular reference to<br>Contractor, Surety, Owner or<br>other party shall be considered<br>plural where applicable.                    |
| CONSTRUCTION CONTRACT Date:                              |                                                              | pidrai where applicable.                                                                                                                    |
|                                                          |                                                              |                                                                                                                                             |
| Amount:                                                  |                                                              |                                                                                                                                             |
| Description: (Name and location)                         |                                                              |                                                                                                                                             |
|                                                          |                                                              |                                                                                                                                             |
| BOND Date: (Not earlier than Construction Contract Date) |                                                              |                                                                                                                                             |
| Amount:                                                  |                                                              |                                                                                                                                             |
| Modifications to this Bond:    None                      | ☐ See Section 18                                             |                                                                                                                                             |
| CONTRACTOR AS PRINCIPAL                                  | SURETY                                                       |                                                                                                                                             |
| Company: (Corporate Seal)                                | Company: (Corporate Seal)                                    |                                                                                                                                             |
| Signature:                                               | Signature:                                                   | _                                                                                                                                           |
| Name and Title:                                          | Name and Title:                                              |                                                                                                                                             |
| and Title: (Any additional signatures appear on the last |                                                              |                                                                                                                                             |
| (FOR INFORMATION ONLY — Name, addre                      | ess and telephone)                                           |                                                                                                                                             |
| AGENT or BROKER:                                         | OWNER'S REPRESENTATIVE:                                      |                                                                                                                                             |
|                                                          | (Architect, Engineer or other party:)                        |                                                                                                                                             |

- § 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
- § 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
- § 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.
- § 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.
- § 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:
- § 5.1 Claimants, who do not have a direct contract with the Contractor,
  - have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
  - .2 have sent a Claim to the Surety (at the address described in Section 13).
- § 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).
- § 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.
- § 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
- § 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
- § 7.2 Pay or arrange for payment of any undisputed amounts.
- § 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
- § 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
- § 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

- § 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.
- § 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- § 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
- § 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
- § 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- § 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

### § 16 Definitions

- § 16.1 Claim. A written statement by the Claimant including at a minimum:
  - .1 the name of the Claimant;
  - .2 the name of the person for whom the labor was done, or materials or equipment furnished;
  - .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
  - .4 a brief description of the labor, materials or equipment furnished;
  - .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
  - .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
  - .7 the total amount of previous payments received by the Claimant; and
  - .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.
- § 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
- § 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.



# **Change Order**

| PROJECT: (name and address)                                     | CONTRACT INFORMATION: Contract For: Date:                                                                                          | CHANGE ORDER INFORMATION:<br>Change Order Number:<br>Date: |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| OWNER: (name and address)                                       | ARCHITECT: (name and address)                                                                                                      | CONTRACTOR: (name and address)                             |
|                                                                 |                                                                                                                                    | ference specific exhibits. Also include agreed             |
|                                                                 |                                                                                                                                    |                                                            |
| The original (Contract Sum) (Gua                                | ranteed Maximum Price) was                                                                                                         | \$                                                         |
| The net change by previously auth                               | norized Change Orders                                                                                                              | \$                                                         |
| The (Contract Sum) (Guaranteed I                                | Maximum Price) prior to this Change Ord                                                                                            | ler was \$                                                 |
| The (Contract Sum) (Guaranteed by this Change Order in the amou | Maximum Price) will be (increased) (decreased) (decreased)                                                                         | reased) (unchanged)                                        |
| The new (Contract Sum) (Guarant                                 | teed Maximum Price), including this Char                                                                                           | nge Order, will be \$                                      |
| The Contract Time will be (increa                               | sed) (decreased) (unchanged) by                                                                                                    | ( ) days.                                                  |
| The new date of Substantial Comp                                | pletion will be                                                                                                                    |                                                            |
| Contract Time, that have been auth                              | ot include adjustments to the Contract Sum<br>norized by Construction Change Directive<br>in which case a Change Order is executed | until the cost and time have been agreed upon              |
| NOT VALID UNTIL SIGNED BY THE                                   | ARCHITECT, CONTRACTOR AND OWNER                                                                                                    |                                                            |
| ARCHITECT (Firm name)                                           | CONTRACTOR (Firm name)                                                                                                             | OWNER (Firm name)                                          |
| GIGNATURE                                                       | SIGNATURE                                                                                                                          | SIGNATURE                                                  |
| PRINTED NAME AND TITLE                                          | PRINTED NAME AND TITLE                                                                                                             | PRINTED NAME AND TITLE                                     |
| ATE                                                             | DATE                                                                                                                               | DATE                                                       |



# Application and Certificate for Payment

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | CONTRACT FOR:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| FROM CONTRACTOR:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | VIA ARCHITECT:                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| CONTRACTOR'S APPLICATION FOR PAYMEN'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PAYMENT                               | The undersigned Contractor certifies that to the best of the Contractor's knowledge information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Application is made for payment as shown below in connection who the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | nnection whithe control               | and belief the Work covered by this Application for Payment has been completed in accordance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| AIA Document G703 <sup>TM</sup> Continuation Sheet is attached                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1000                                  | with the Contract Documents, that all amounts have been paid by the Contractor for Work for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| AND EXPERIENCE OF A COMMINGRICAL SILVER, 13 AUGCILOU.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | which previous Certificates for Payment were issued and payments received from the Owner and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1. ORIGINAL CONTRACT SUM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | · · · · · · · · · · · · · · · · · · · | that current payment shown herein is now due.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2. NET CHANGE BY CHANGE ORDERS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | \$                                    | CONTRACTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3 CONTRACT SUM TO DATE (Ting 1 + 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| 4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | on G703) \$                           | Nate of:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5. RETAINAGE:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                       | Suntra of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| a. 70 01 Completed Work                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | Sy ser, ed and sworn to before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| b. % of Stored Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| TO THE TO SEE THE PERSON OF TH |                                       | My com, ission expires:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Total Retainage (Lines $5a + 5b$ , or Lotal in Column Lof G/03)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | of G/03) \$                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6. TOTAL EARNED LESS RETAINAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | υ                                     | ARC, TECT & C. PTIFICATE FOR DAYMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| (Line 4 minus Line 5 Total)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7. LESS PREVIOUS CERTIFICATES FOR PAYMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 64                                    | this application the Architect certifies to the Owner that to the best of the Architect's knowledge,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (Line 6 from prior Certificate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | Information and relief the Work has progressed as indicated, the quality of the Work is in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | accordance with the Contract Documents, and the Contractor is entitled to payment of the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 8. CURRENT PAYMENT DUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5/9                                   | AMOCINI CENTILIED.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 9. BALANCE TO FINISH, INCLUDING RETAINAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                       | AMOUNT CERTIFIED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Wing 2 minus line K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ú                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| trute 5 minus tine 0)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | (Altach explanation if amount certified differs from the amount applied. Initial all figures on this<br>Application and on the Continuation Sheet that are changed to conform with the amount certified.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CHANGE ORDER SUMMARY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ADDITIONS DEDUCTIONS                  | ARCHITECT:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Total changes approved in previous months by Owner                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | \$                                    | Bv:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Total approved this month                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 8                                     | THE COLUMN THE PROPERTY OF THE |
| TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | the Owner or Contractor under this Contract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                       | THE CHIEF OF CONTRACT WITH THE CONTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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NET CHANGES by Change Order

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# Continuation Sheet

| And December (2012-1-04) Application and Certificate for Payment, or G732-200),  And December (2012-1-04) Application and Certificate for Payment, or G732-200),  And December (2012-1-04) Application and Certificate for Payment, Construction Manager as Adviser Edition, Continued for Section 1 on Continue for surface for time terms may apply.  A final december (2012-1-04) Application and apply apply apply and apply apply and apply |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------|-------------|--------------------------------------------|-----------------------------------------------------|-------------|---------------------------------|------|
| PERIOD TO:  ARCHITECT'S PROJECT NO:  ARCHITECT'S PROJECT NO:  H  G  MATERIALS  TOTAL  PRESENTLY  TOTAL  PRESENTLY  STORED  (Not in D or E)  (D+E+F)  (G-C)  (C-G)  (C-G)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | AIA Do<br>Applica<br>contain | ocument G702 <sup>rm</sup> –1992, Application an<br>tion and Certificate for Payment, Com-<br>ing Contractor's signed certification is | nd Certificate for Pay<br>struction Manager as<br>attached. | yment, or G732 <sup>TM</sup> –2(<br>s Adviser Edition, | ,600        |                                            | APPLICATION NO<br>APPLICATION DA                    | ii.<br>Iii. |                                 |      |
| DESCRIPTION OF WORK SCHEDULED ROUGHLETED MATERIALS SCHEDULED ROUGHLETED APPLY CONTRICTED MATERIALS SCHEDULED ROUGHLETED APPLY CHOOK STORED STO | In tabul<br>Use Co           | lations below, amounts are in US dolla lumn I on Contracts where variable ret                                                          | ars.<br>tainage for line items                              | s may apply.                                           |             |                                            | PERIOD TO:<br>ARCHITECT'S PRO                       | OJECT NO    |                                 |      |
| DESCRIPTION OF WORK  VALUE  VALUE  APPLICATION  VALUE  APPLICATION | V                            | В                                                                                                                                      | C                                                           | D                                                      | Ε           | <u></u>                                    | 9                                                   |             |                                 |      |
| DESCRIPTION OF WORK SCHEDULED ROATPREVIOUS APPENDING TO A PRESENTLY STORED TO A PRESENTLY STORED TO A PROPERTY OF STORED TO A  |                              |                                                                                                                                        |                                                             | WORK CO                                                | MPLETED     |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ITEM<br>NO.                  | DESCRIPTION OF WORK                                                                                                                    | SCHEDULED                                                   | FROM PREVIOUS  APP AC ATON  9 + E                      | THIS PERIOD | MATERIALS PRESENTLY STORED (Not in D or E) | TOTAL<br>COMPLETED AND<br>STORED TO DATE<br>(D+E+F) | %<br>(G+C)  | BALANCE TO<br>FINISH<br>(C – G) | RET. |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             | D                                                      |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        | 4           |                                            |                                                     |             |                                 | 1200 |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             | 3                                                      |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             | X                                          |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             | •                                          |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
| GRAND TOTAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |                                                                                                                                        |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                              | GRAND TOTAL                                                                                                                            |                                                             |                                                        |             |                                            |                                                     |             |                                 |      |

ariable rate) TAINAGE

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# Certificate of Substantial Completion

| PROJECT: (name and add                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NTRACT INFORMATION:<br>ntract For:<br>ee:                                                                   | CERTIFICATE INFORMATION: Certificate Number: Date:                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| OWNER: (name and addre                                                                                          | ss) ARG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CHITECT: (name and address)                                                                                 | CONTRACTOR: (name and address)                                                                                                                         |
| to be substantially comp<br>designated portion is sur<br>or utilize the Work for i<br>below is the date establi | plete. Substantial Corfficiently complete in<br>the intended use. The constant of the state of the | npletion is the stage in the progr<br>a accordance with the Contract I<br>date of Substantial Completion of | pest knowledge, information, and belief, less of the Work when the Work or Documents so that the Owner can occupy of the Project or portion designated |
| ARCHITECT (Firm Name)                                                                                           | SIGNATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PRINTED NAME AND TI                                                                                         | TLE DATE OF SUBSTANTIAL COMPLETION                                                                                                                     |
| (Identify warranties that commencement.)  WORK TO BE COMPLETI A list of items to be comidentified as follows:   | do not commence or  ED OR CORRECTED pleted or corrected is                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | s attached hereto, or transmitted                                                                           | elow:  tion, if any, and indicate their date of  as agreed upon by the parties, and                                                                    |
| The failure to include an                                                                                       | y items on such list o                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | loes not alter the responsibility of                                                                        | of the Contractor to complete all Work in                                                                                                              |
| warranties for items on t<br>final payment, whicheve                                                            | he attached list will be coccurs first. The Co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | be the date of issuance of the fina                                                                         | ng, the date of commencement of al Certificate of Payment or the date of the Work on the list of items attached                                        |
| Cost estimate of Work to                                                                                        | be completed or cor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | rected: \$                                                                                                  |                                                                                                                                                        |
| insurance, and other item                                                                                       | is identified below sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | nall be as follows:                                                                                         | eat, utilities, damage to the Work, insurance requirements and coverage.)                                                                              |
| The Owner and Contract Completion:                                                                              | or hereby accept the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | responsibilities assigned to then                                                                           | n in this Certificate of Substantial                                                                                                                   |
| ONTRACTOR (Firm Name)                                                                                           | SIGNATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PRINTED NAME AND TIT                                                                                        | LE DATE                                                                                                                                                |
| WNER (Firm Name)                                                                                                | SIGNATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PRINTED NAME AND TIT                                                                                        | DATE DATE                                                                                                                                              |

### SECTION 011000 - SUMMARY

### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section includes:
  - 1. Project information.
  - 2. Work covered by Contract Documents.
  - 3. Work under separate contracts.
  - 4. Access to site.
  - 5. Coordination with Owner.
  - 6. Work Restrictions.

### 1.2. PROJECT INFORMATION

- A. Project Identification: No. 45-2902-23 Perry ProTech Building Renovations.
  - 1. Project Location: 1270 Flagship Drive, Perrysburg, Ohio 43551.
- B. Project Owner: Perry Protech; 1270 Flagship Drive, Perrysburg, Ohio 43551.
  - 1. Owner's Representative: Jeff Waltman, COO Email: jwaltman@perryprotech.com
- C. Architect / Engineer: Technicon Design Group, Inc., 1800 N. Perry St.-Suite 102, Ottawa, Ohio 45875 Phone: 419-523-5323 Email: info@technicondesigngroup.com
  - 1. Architect of Record: Gillian Stechschulte, AIA Email: gillian@technicondesigngroup.com
  - 2. Architect's Representative: Kevin Niese Email: kevin@technicondesigngroup.com
  - 3. Mechanical Engineer: Scott Birkemeier, P.E. Email: scott@technicondesigngroup.com
  - 4. Electrical Engineer: Joe Ellerbrock, P.E. Email: joe@technicondesigngroup.com
- D. Civil Engineer: Bockrath & Associates Engineering and Sureying, LLC, 115 S. Fair Avenue, Ottawa, Ohio 45875. Phone: 419-523-5789. Civil Engineer's Representative: Greg Bockrath, P.E., P.S. Email: <a href="mailto:greg@bockrath-es.com">greg@bockrath-es.com</a>

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### 1.3. WORK COVERED BY CONTRACT DOCUMENTS

- A. General Contract: The Owner will award a stipulated sum (single Prime) contract for construction operations as follows:
  - 1. It is intended that one Single-Prime Contract be awarded for the work required to complete the entire project as follows:
    - a. Sitework, General Construction, Electrical, Plumbing, Mechanical and Fire Suppression work.
  - 2. The General Contract will consist of the following work as well as all incidental work required to accomplish the intent of these Contract Documents.
    - a. Furnish and install all general trade items required for the complete construction of the project, including but not limited to: site work including replacement of pavement for parking areas, drives, striping of parking areas, aprons, sidewalks, curbs, grading of lawn and landscaping areas. Building envelope work including new air slab at new entrance, misc. framing alterations for new entry, aluminum entrance canopy, and new exterior doors. Interior work includes removal of interior finishes and some interior parittions, installation of new floor finses, suspended ceilings, caswork, tile, painting and base.
- B. Work in the Plumbing Sub-Contract will consist of the following specific work items as well as all incidental work as required by the Contract Documents:
  - 1. Furnish and install the piping, vents, valves, insulation, plumbing fixtures indicated or required for a complete installation as shown on the plumbing drawings and specifications. Systems shall include domestic water, domestic waste and vent, and natural gas.
  - 2. Plumbing Sub-Contractor shall connect to existing sanitary main as indicated on site drawings and specifications.
  - 3. Plumbing Sub-Contractor shall connect to existing domestic hot and cold water as indicated on drawigns.
  - The Plumbing Sub-Contractor shall disconnec the natural gas serving the existing packaged rooftop units, and reconnect to new packaged rooftop units as indicated on drawings.
  - 5. Furnish and install all plumbing fixtures indicated or required for a complete installation as shown on the plumbing drawings and specifications. Plumbing Sub-Contractor to provide and coordinate rough-in plumbing with General Contractor during building shell phase. Coordinate the installation of piping, fixtures, faucets, etc. with the General Contractor.
- C. Work in the Mechanical Sub-Contract will consist of the following specific work items as well as all incidental work as required by the Contract Documents.
  - 1. Furnish and install HVAC systems, exhaust fans, hangers, piping, accessories and insulation as indicated on Mechanical Drawings and Specifications.

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- 2. Provide and install all temperature controls and necessary accessories for system to execute the sequence of operations called for on Mechanical Drawings and Specifications.
- 3. Provide all necessary labor and material to test balance and start-up mechanical systems and equipment.
- D. Work in the Electrical Sub-Contract includes, but is not limited to, the following:
  - Furnish and install all conduit, wiring, equipment, fixtures, exterior lighting, controls, distribution panelboards, conductors, connections, data/communiciation including cabling indicated or required for a complete installation as shown on the electrical drawings and specifications. Provide and coordinate rough-in electrical with General Contractor.
- E. The General Contractor shall be responsible for scheduling the work to allow the project to be completed by the dates or timeline indicated in the Bid Form including allowances for bad weather. Provide the Owner with bi-weekly updates on the progress of the project and any change in projected completion date. Project shall start following award of contracts as indicated in the Notice to Proceed.
- F. Work in the Fire Protection Sub-Contract includes, but is not limited to, the following:
  - 1. Fire Suppression System designed by a certified sprinkler designer and installed by a licensed contractor according to the requirements of the Ohio Building Code and NFPA 13.
  - 2. Domestic waterline is installed from utility main into building by G.C. Fire Protection Sub-Contractor shall connect on to flanged stub and provide transitions as necessary. Fire Protection Sub-Contractor shall provide 2 ½" flanged tee in riser for plumbing contractor to extend domestic water piping from.
  - 3. Quick response sprinklers to be used for all light hazard occupancies.
  - 4. The fire department connection type and the exact location to be verified with the fire department.
  - 5. The riser setup to include a means for full flow testing of the backflow preventer.
  - 6. The inspector's test setup to include a relief valve assembly.
  - 7. Minimum design densities are to be as indicated on drawing FP101.
  - 8. A new flow test shall be conducted and used for this design.
  - 9. Sprinkler heads to be installed within 1" of the center of the ceiling tiles.
  - 10. Any penetrations through all rated and smoke barrier walls to be sealed to maintain the integrity of the wall.
  - 11. Pay all associated permit fee and inspection fees to the Authority Having Jurisdiction as necessary to secure the permit for this trade.
  - 12. Submittal drawings and calculations shall be reviewed by the Architect and Engineer before any installation of the system shall begin.

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- 13. Furnish and install the sprinkler, riser assembly, back flow preventer, valves, piping, sprinkler heads, etc. as required for a complete Fire Suppression System. All material for this project to be domestic.
- 14. Testing of Fire Protection System as required prior to putting system in service in accordance with the Ohio Building Code and NFPA 13.
- G. Work Performed by Others Under a Separate Contract with the Owner:
  - 1. Security Systems shall be furnished and installed as shown on the electrical drawings and specifications.
- H. Future Contracts: The Owner reservies the right to award separate contracts for other work being considered including, but not limited to:
  - 1. Furnishings.

### 1.4. WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors or the Owner's maintenance and I.T. personnel so work on those contracts or self-performed work may be carried out smoothly, without interfereing with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts or alternates.

### 1.5. ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of the Project.

### 1.6. COORDINATION WITH OWNER

- A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
  - 1. If applicable, Architect will prepare a Certificate of Substantial Completion for each specific portion of the work to be occupied prior to Owner acceptance of the completed Work.
  - 2. Contractor shall obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
  - 3. Before limited Owner occupancy, mechanical, electrical and plumbing systems shall be fully operational and required tests and inspections shall be successfully

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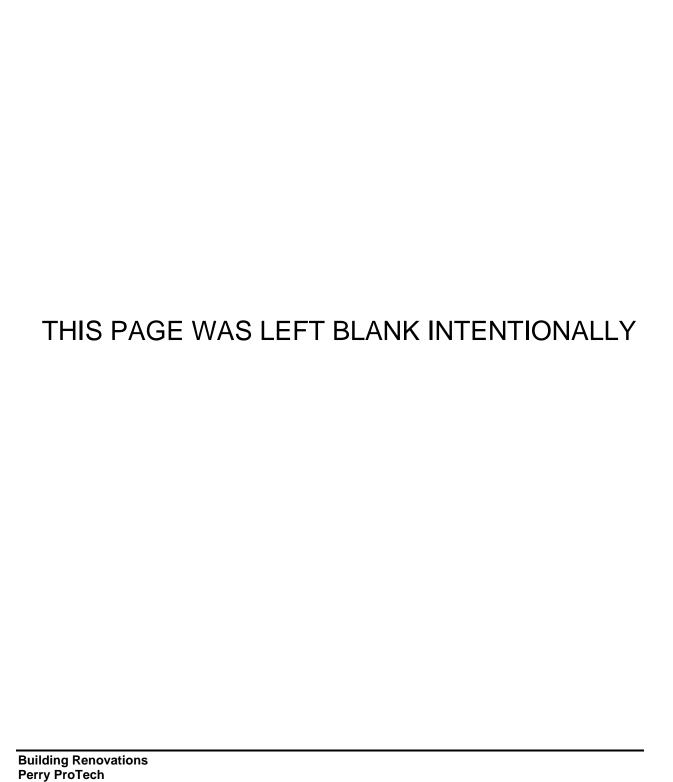
- completed. On occupancy, Owner will operate and maintain mechanical, electrical and plumbing systems serving occupied portions of work.
- 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of work.

### 1.7. WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.

END OF SECTION 011000

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SUMMARY 011000 - 6

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### SECTION 012300 - ALTERNATES

### PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

### 1.2 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

### 1.3 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

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ALTERNATES 012300 - 1

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

### 3.1 SCHEDULE OF ALTERNATES

A. <u>ALTERNATE 1:</u> Furnish and install roller window shades on windows as indicated on the contract documents.

END OF SECTION 012300

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ALTERNATES 012300 - 2

### SECTION 012500 - SUBSTITUTION PROCEDURES

### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
  - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

### 1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

### 1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit a pdf electronic copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form: Use form provided by Architect.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Certificates and qualification data, where applicable or requested.
    - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

- i. Research reports evidencing compliance with building code in effect for Project from 2017 Ohio Building Code.
- j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
- k. Cost information, including a proposal of change, if any, in the Contract Sum.
- I. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
- m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
  - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

### 1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

### PART 2 - PRODUCTS

### 2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
    - Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Requested substitution provides sustainable design characteristics that specified product provided.
    - c. Requested substitution will not adversely affect Contractor's construction schedule.

- d. Requested substitution has received necessary approvals of authorities having iurisdiction.
- e. Requested substitution is compatible with other portions of the Work.
- f. Requested substitution has been coordinated with other portions of the Work.
- g. Requested substitution provides specified warranty.
- h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

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### SECTION 013300 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. See Division 1 Section "Warranties" for submitting warranties.

### 1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

### 1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- C. Identification: Place a permanent label or title block on each submittal for identification.

- 1. Indicate name of firm or entity that prepared each submittal on label or title block.
- 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
- 3. Include the following information on label for processing and recording action taken:
  - a. Project name.
  - b. Date.
  - c. Name and address of Architect.
  - d. Name and address of Contractor.
  - e. Name and address of subcontractor.
  - f. Name and address of supplier.
  - g. Name of manufacturer.
  - h. Submittal number or other unique identifier, including revision identifier.
    - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
  - i. Number and title of appropriate Specification Section.
  - j. Drawing number and detail references, as appropriate.
  - k. Location(s) where product is to be installed, as appropriate.
  - I. Other necessary identification.
- D. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- E. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
  - 1. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- F. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
  - 1. Transmittal Form: Use Contractor's standard transmittal form.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked "Review as Acceptable by the Architect."
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Use only final submittals with mark indicating "Review" taken by Architect.

### 1.4 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

- A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
  - 1. Base floor plan CAD file only Contractor will be required to sign Architect's "Release of Electronic Files" form.

### PART 2 - PRODUCTS

### 2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Manufacturer's catalog cuts.
    - e. Wiring diagrams showing factory-installed wiring.
    - f. Printed performance curves.
    - g. Operational range diagrams.
    - h. Compliance with specified referenced standards.
  - 4. Document Format: Submit either one (1) reproducible paper copy of shop drawings or a .pdf electronic copy; files larger in size than 15 megabytes (mb) shall be transferred via secure file sharing website.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
  - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.

- c. Fabrication and installation drawings.
- d. Roughing-in and setting diagrams.
- e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
- f. Shopwork manufacturing instructions.
- g. Templates and patterns.
- h. Schedules.
- i. Notation of coordination requirements.
- j. Notation of dimensions established by field measurement.
- k. Relationship to adjoining construction clearly indicated.
- I. Seal and signature of professional engineer if specified.
- m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
- 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
- 3. Document Format: Submit either one (1) reproducible paper copy of shop drawing or a .pdf electronic copy; files larger in size than 15 megabytes (mb) shall be transferred via secure file sharing website.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
  - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  - 2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of appropriate Specification Section.
  - 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
  - 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.
  - 1. Document Format: Submit either one (1) reproducible paper copy of submittals or a .pdf electronic copy; files larger in size than 15 megabytes (mb) shall be transferred via secure file sharing website.

- F. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design.
  - 1. Submit the Subcontractor Form with bid and advise Architect of any changes in Subcontractors after Project Award.

### 2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required only where by other Specification Sections.
  - Document Format: Submit either one (1) reproducible paper copy of submittals or a pdf electronic copy; files larger in size than 15 megabytes (mb) shall be transferred via secure file sharing website.
  - Certificates and Certifications: Provide a notarized statement that includes signature
    of entity responsible for preparing certification. Certificates and certifications shall be
    signed by an officer or other individual authorized to sign documents on behalf of that
    entity.
- B. Coordination Drawings: Comply with requirements as established between the Contractor and Architect.
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

- I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- L. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- M. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- N. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
- R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
  - 1. Statement on condition of substrates and their acceptability for installation of product.
  - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

- 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
- S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- T. Material Safety Data Sheets (MSDSs): Submit information directly to the General Contractor; do not submit to Architect.
  - 1. Architect will not review submittals that include MSDSs and will return them for resubmittal.

#### 2.3 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit either one (1) reproducible paper copy or a .pdf electronic copy of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

## 3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.
- F. Panelized framing drawings submittals: It is the Contractor's responsibility to review these submittals for dimensions, rough openings and compliance with the specifications for materials used in framing. The Architect will review for compliance with specifications for materials only.

END OF SECTION 013300

#### SECTION 014000 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality assurance and control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.

# C. RELATED SECTIONS

1. Divisions 02 through 49 Sections: Specific test and inspection requirements.

## 1.3 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

- 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL), National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- G. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

#### 1.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

## 1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most

- stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

### 1.6 SCHEDULE OF QUALITY ASSURANCE TESTS AND INSPECTIONS:

#### A. General Notes:

- Carefully examine the individual Sections of these Specifications or additional or complete quality assurance testing and inspections requirements. Failure to include any test or inspection in this schedule does not relieve the Contractor of his responsibility for timely notification of the testing and inspections agency for quality assurance tests or inspections which may be listed in the individual Sections of the Specifications but not in this schedule.
- This schedule includes quality assurance tests and inspections only, which will be performed by the selected testing and inspections agency and paid for as indicated. Code compliance tests and inspections, Contractor's convenience tests and inspections, and additional or alternative tests and inspections requested by the Owner are not included.
- B. Soils Materials and Compaction:

Compaction and Testing of the stone base under the concrete slab shall be General Contractor.

- 1. Referenced Sections: Tests and inspections specified herein relate to, but are not necessarily limited to the following Sections:
  - a. Section 033000 Cast-In-Place Concrete.
- 2. Required Inspections and Tests of Soils for Building Construction: Table 1705.6 O.B.C.

|    | Туре                                                   | Continuous | Periodic Special |
|----|--------------------------------------------------------|------------|------------------|
|    |                                                        | Special    | Inspection       |
|    |                                                        | Inspection |                  |
| 1. | Verify materials below shallow foundation are adequate | -          | Х                |
|    | to achieve the design bearing capacity.                |            |                  |
| 2. | Verify excavations are extended to proper depth and    | -          | X                |
|    | have reached proper material.                          |            |                  |
| 3. | Perform classification and testing of compacted fill   | -          | X                |
|    | materials                                              |            |                  |
| 4. | Verify use of proper materials, densities and lift     |            |                  |
|    | thicknesses during placement and compaction of         | Х          | -                |
|    | compacted fill.                                        |            |                  |
| 5. | Prior to placement of compacted fill, inspect subgrade | -          | X                |
|    | and verify that site has been prepared properly.       |            |                  |

- C. Concrete Materials and Quality (Included in General Contract and paid for by G.C.):
  - Referenced Sections: Tests and Inspections specified herein related to, but are not necessarily limited to, the following Sections:
    a. Section 033000 – Cast-in-Place Concrete.

    - 2. Required Special Inspections and Tests of Concrete Construction: Table 1705.3 O.B.C

|    | Туре                                                                                                                                                                                                                                             | Continuous<br>Inspection | Periodic<br>Inspection | Referenced<br>Standard                            | OBC<br>Reference                        |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------|---------------------------------------------------|-----------------------------------------|
| 1. | Inspect reinforcement, including prestressing tendons, and verify placement.                                                                                                                                                                     | -                        | х                      | ACI 318 Ch.<br>20, 25.2, 25.3,<br>26.6.1-26.6.3.  | 1908.4                                  |
| 2. | <ul> <li>Reinforcing bar welding:</li> <li>a. Verify weldability of reinforcing bars other than ASTM A 706;</li> <li>b. Inspect single-pass fillet welds, maximum 5/16"; and</li> <li>c. Inspect all other welds.</li> </ul>                     | -<br>x                   | x<br>x                 | AWS D1.4<br>ACI 318:<br>26.6.4                    | -                                       |
| 3. | Inspect anchors cast in concrete                                                                                                                                                                                                                 | -                        | Х                      | ACI 318:<br>17.8.2                                | -                                       |
| 4. | Inspect anchors post-installed in hardened concrete members.  a. Adhesive anchors installed in horizontally or upwardly inclined orientation to resist sustained tension loads.  b. Mechanical anchors and adhesive anchors not defined in 4. a. | х                        | x                      | ACI 318:<br>17.8.2.4<br>ACI 318:<br>17.8.2        | -                                       |
| 5. | Verify use of required design mix                                                                                                                                                                                                                | -                        | х                      | ACI 318: Ch.<br>19, 26.4.3,<br>26.4.4             | 1904.1,<br>1904.2,<br>1908.2,<br>1908.3 |
| 6. | Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.                                                                                         | х                        | -                      | ASTM C172<br>ASTM C31<br>ACI 318:<br>26.4., 26.12 | 1908.10                                 |
| 7. | Inspect concrete and shotcrete placement for proper application techniques.                                                                                                                                                                      | х                        | -                      | ACI 318: 26.5                                     | 1908.6,<br>1908.7,<br>1908.8            |
| 8. | Verify maintenance of specified curing temperatures and techniques.                                                                                                                                                                              | -                        | х                      | ACI 318:<br>26.5.3-26.5.5                         | 1908.9                                  |
| 9. | Inspect prestressed concrete for:  a. Application of prestressing forces; and                                                                                                                                                                    | х                        | -                      | ACI 318:<br>26.10                                 | -                                       |
|    | <ul> <li>b. Grouting of bonded pre-<br/>stressing tendons.</li> </ul>                                                                                                                                                                            | Х                        | -                      |                                                   |                                         |

| 10. | Inspect erection of precast concrete members.                                                                                                                        | - | х | ACI 318: Ch.<br>26.8     | - |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|--------------------------|---|
| 11. | Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs. | - | х | ACI 318:<br>26.11.2      | - |
| 12. | Inspect formwork for shape, location and dimensions of the concrete member being formed.                                                                             | - | х | ACI 318:<br>26.11.1.2(b) | - |

For SI: 1 inch = 25.4 mm.

- a. Where applicable, see also Section 1705.12, Special Inspections for seismic resistance.
- b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be submitted to the building official prior to the commencement of the work.

#### 1.7 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
  - 1. Date of issue.
  - 2. Project title and number
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.
  - 13. Recommendations on retesting and reinspecting.

- C. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.
  - 1. Other required items indicated in individual Specification Sections.

#### 1.8 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - NRTL: A nationally recognized testing laboratory according to 29 CRF 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
    - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
  - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
  - 2. Build mockups in location and indicated or, if not indicated, as directed by Architect.
  - 3. Notify Architect seven days in advance of dates and times when mockups will be constructed.

- 4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
- 5. Demonstrate the proposed range of aesthetic effects and workmanship.
- 6. Obtain Architect's and approval of mockups before starting corresponding work, fabrication, or construction.
  - a. Allow seven days for initial review and each re-review of each mockup.
- 7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
- 8. Demolish and remove mockups when directed unless otherwise indicated.

### 1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
  - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 1. Where services are indicated as Contractor's responsibilities, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
  - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  - 6. Do not perform duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Associated Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspection equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

### 1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: (If any indicated) Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected work.
  - 7. If applicable, see Statement of Special Inspections submitted to Authority Having Jurisdiction.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of Work tested or inspected.
  - 3. Date test or inspection results were transmitted to the Architect.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.
  - 1. Submit log at Project closeout as part of the Project Document Documents.

## 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

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### SECTION 014200 - REFERENCES

#### 1.1 GENERAL

- A. Definitions: Basic contract definitions are included in the Conditions of the Contract.
- B. "Indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.
- C. "Directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
- D. "Approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer" is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
  - 1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
  - 2. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter."
- J. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project.

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REFERENCES 014200 - 1

The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

- K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.
- L. Specification Format: These Specifications are organized into Divisions and Sections based on the 33-division format and CSI/CSC's "MasterFormat" numbering system.
- M. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - Abbreviated Language: Language used in the Specifications is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
  - 2. Streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
    - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
- N. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- O. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.
- P. Copies of Standards: Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.
- Q. Abbreviations and Names: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-producing organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.
- R. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices,

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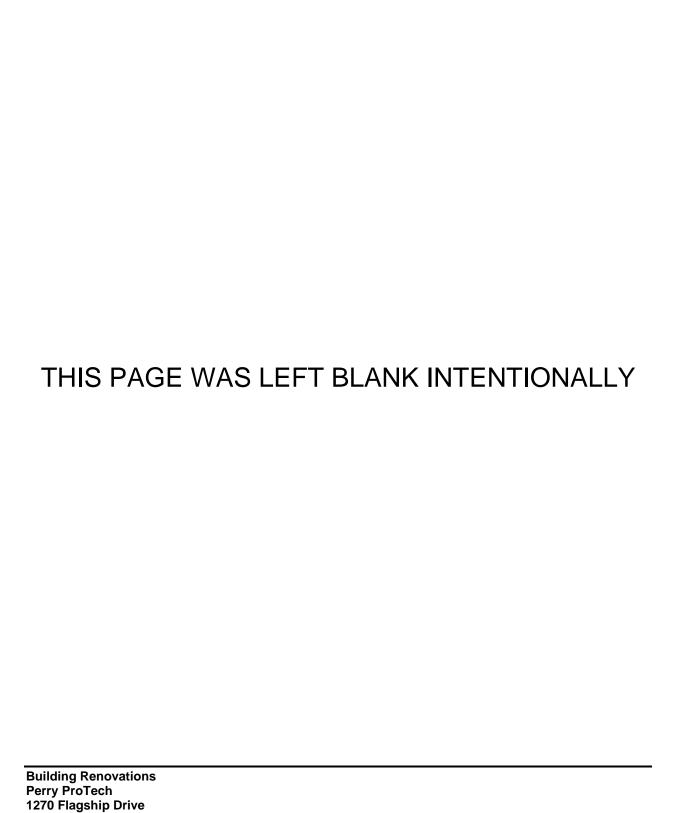
REFERENCES 014200 - 2

receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

END OF SECTION 014200

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REFERENCES 014200 - 3



REFERENCES 014200 - 4

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#### SECTION 016000 - PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. See Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
- C. See Divisions 2 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

### 1.2 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - Comparable Product: Product that is demonstrated and approved through submittal
    process, or where indicated as a product substitution, to have the indicated qualities
    related to type, function, dimension, in-service performance, physical properties,
    appearance, and other characteristics that equal or exceed those of specified
    product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, inservice performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

### 1.3 SUBMITTALS

- A. Substitution Requests: Submit a pdf electronic copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form: Use Substitution Form provided by Architect. A copy is provided at the end of this section.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified material or product cannot be provided.
    - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
    - i. Detailed comparison of General Contractor's Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
    - i. Cost information, including a proposal of change, if any, in the Contract Sum.
    - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
    - I. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
  - Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
    - a. Form of Acceptance: Change Order.
    - b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

- B. Comparable Product Requests: Submit a pdf electronic copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
    - Form of Approval: As specified in Division 1 Section "Submittal Procedures."
    - b. Use product specified if Architect cannot make a decision on use of a comparable product request within time allocated.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

#### 1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

## 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

### C. Storage:

- 1. Store products to allow for inspection and measurement of quantity or counting of units.
- 2. Store materials in a manner that will not endanger Project structure.

- 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- 4. Store cementitious products and materials on elevated platforms.
- 5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 7. Protect stored products from damage and liquids from freezing.

#### 1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  - 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
  - 3. Refer to Divisions 2 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

### PART 2 - PRODUCTS

#### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
  - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

- 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- 4. Where products are accompanied by the term "as selected," Architect will make selection.
- 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
- 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

### B. Product Selection Procedures:

- 1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
- 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
- 3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
- 4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
- 5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
- 6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
- 7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
- 8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
- 9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

- a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
- 10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
  - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
  - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

#### 2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
- B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
  - Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
  - 2. Requested substitution does not require extensive revisions to the Contract Documents.
  - 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - 4. Substitution request is fully documented and properly submitted.
  - 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
  - 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
  - 7. Requested substitution is compatible with other portions of the Work.
  - 8. Requested substitution has been coordinated with other portions of the Work.
  - 9. Requested substitution provides specified warranty.

## 2.3 COMPARABLE PRODUCTS

- A. Conditions: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
  - 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  - 3. Evidence that proposed product provides specified warranty.
  - 4. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and Owners, if requested.
  - 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

**END OF SECTION 016000** 

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# **Substitution Request Form**

Technicon Design Group 1800 N. Perry St. Ste. 102, Ottawa, Ohio 45875 info@technicondesigngroup.com

Px 419.523.5323 Fx 419.523.9441

| Drawing No.:                      | Drawing Name:                                                             |                                                                               |  |  |  |  |  |
|-----------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------|--|--|--|--|--|
| Spec. Section:                    |                                                                           |                                                                               |  |  |  |  |  |
| Article/Paragraph:                |                                                                           |                                                                               |  |  |  |  |  |
| Proposed Substitution:            |                                                                           |                                                                               |  |  |  |  |  |
| Manfacturer:                      | Manfacturer: Model:                                                       |                                                                               |  |  |  |  |  |
|                                   | ting data to prove equal quality a<br>manufacturer's literature to indica | nd performance to the basis of design or<br>te equality in performance.       |  |  |  |  |  |
| Does the Substitution affect dim  | ensions shown on Drawings? Y                                              | es No If yes, clearly indicate changes.                                       |  |  |  |  |  |
| •                                 |                                                                           | er installation of the proposed product nat indicates description of changes. |  |  |  |  |  |
| What affect does substitution ha  | eve on other Contracts or other tra                                       | ades?                                                                         |  |  |  |  |  |
| What affect does substitution ha  | ive on the delivery and constructi                                        | on schedule?                                                                  |  |  |  |  |  |
| Differences between proposed s    | substitution and specified item.                                          |                                                                               |  |  |  |  |  |
| Manufacturer's warranties of pro  | posed and specified items are:                                            |                                                                               |  |  |  |  |  |
| Same:                             | Different:                                                                | Explain on an Attachment (Provide Warranty Information)                       |  |  |  |  |  |
| Company Submitting Request:       |                                                                           |                                                                               |  |  |  |  |  |
| Address:                          |                                                                           |                                                                               |  |  |  |  |  |
| Phone: Email:                     |                                                                           |                                                                               |  |  |  |  |  |
| Signature/Title: Date:            |                                                                           |                                                                               |  |  |  |  |  |
| For use by Technicon Design Group |                                                                           |                                                                               |  |  |  |  |  |
| A                                 | ccepted                                                                   | Accepted as Noted                                                             |  |  |  |  |  |
| N                                 | ot Accepted                                                               | Received too Late                                                             |  |  |  |  |  |
| Signature/Title:                  |                                                                           | Date:                                                                         |  |  |  |  |  |

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Perrysburg, Ohio 43551

#### SECTION 017300 - EXECUTION

## PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Coordination of Owner's portion of the Work.
  - 6. Coordination of Owner-installed products.
  - 7. Progress cleaning.
  - 8. Starting and adjusting.
  - 9. Protection of installed construction.

## B. Related Requirements:

- 1. Section 011000 "Summary" for coordination of Owner's separate contracts.
- 2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

#### 1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

## 1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing landsurveying services of the kind indicated.

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- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
  - Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
  - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
  - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

### PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

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#### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
  - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
  - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
  - 1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
  - 2. List of detrimental conditions, including substrates.
  - 3. List of unacceptable installation tolerances.
  - 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

## 3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

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- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect.

#### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.
- B. Engage a land surveyor that is a professional engineer experienced in laying out the Work, using the following accepted surveying practices:
  - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 2. Establish limits on use of Project site.
  - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 4. Inform installers of lines and levels to which they must comply.
  - 5. Check the location, level and plumb, of every major element as the Work progresses.
  - 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
  - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

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## 3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
  - 1. Do not change or relocate existing benchmarks or control points without prior written approval of the project Civil Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the project Civil Engineer before proceeding.
  - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
  - Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
  - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
  - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey (Provide if Required by Owner): Engage a land surveyor/professional engineer to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor/professional engineer, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
  - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

## 3.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb, and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

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- 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- 4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces, unless otherwise indicated on Drawings.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.
  - 1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

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### 3.6 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering, and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.

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- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate, and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
  - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an evenplane surface of uniform appearance.
  - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

## 3.7 COORDINATION OF OWNER'S PORTION OF THE WORK

- A. Site Access: Provide access to Project site for and Owner's separate contractors.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's separate contractors.
  - Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

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# 3.8 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Use containers intended for holding waste materials of type to be stored.
  - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

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EXECUTION 017300 - 9

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

# 3.9 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

# 3.10 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

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EXECUTION 017300 - 10

#### 1.1 GENERAL

- A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.
  - Refer to the General Conditions for terms of the Contractor's period for correction of the Work.
  - Refer to the General Conditions for the period of Time the Contractor shall warranty the Work.
- C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- D. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
- E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- F. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- G. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
  - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

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WARRANTIES 017400 - 1

- 2. Where the Contract Documents require a special warranty, or similar commitment, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.
- H. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties upon request of the Architect.
- I. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.
  - 1. Refer to Divisions 2 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.
- J. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.
  - 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
  - 2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES." Project title or name, and name of the Contractor.
  - 3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.
- 1.2 PRODUCTS (Not Applicable)
- 1.3 EXECUTION (Not Applicable)

**END OF SECTION 017400** 

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WARRANTIES 017400 - 2

#### SECTION 017700 - CLOSEOUT PROCEDURES

## PART 1 - GENERAL

### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Inspection procedures.
  - 2. Warranties.
  - 3. Final cleaning.
- B. See AIA Document A201 "General Conditions of the Contractor for Construction" for requirements for Applications for Payment for Substantial and Final Completion.
- C. See Divisions 2 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

## 1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
  - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  - 2. Advise Owner of pending insurance changeover requirements.
  - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 5. Prepare and submit Project Record Documents (as-built drawings), operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
  - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
  - 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  - 8. Complete startup testing of systems.
  - 9. Submit test/adjust/balance records.

- 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
- 11. Advise Owner of changeover in heat and other utilities.
- 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- 13. Complete final cleaning requirements, including touchup painting.
- 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
  - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  - 2. Results of completed inspection will form the basis of requirements for Final Completion.

## 1.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
  - 1. Submit a final Application for Payment according to Payment Procedures outlined.
  - 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  - 4. Submit pest-control final inspection report and warranty.
  - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
  - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

# 1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  - 1. Organize list of spaces in sequential order, starting with exterior areas first.
  - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

## 1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

# PART 2 - PRODUCTS

### 2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

### 3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove snow and ice to provide safe access to building.
    - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - h. Sweep concrete floors broom clean in unoccupied spaces.
    - i. Clean polished concrete floors by sweeping and cleaning floors as required to leave a polished sheen.
    - j. Vacuum carpet and similar soft surfaces removing debris and excess nap; shampoo if visible soil or stains remain.
    - k. Clean luxury vinyl tile (LVT) floors as recommended by LVT manufacturer.
    - I. Clean ceramic tile floors and walls and seal grout as recommended by the manufacturer.
    - m. If applicable, waxing of vinyl composition resilient floors as recommended by resilient floor manufacturer.
    - n. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    - o. Remove labels that are not permanent.
    - p. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

- 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- q. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- r. Replace parts subject to unusual operating conditions.
- s. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- t. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- u. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent fixtures to comply with requirements for new fixtures.
- v. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

**END OF SECTION 017700** 

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#### SECTION 017823 - OPERATION AND MAINTENANCE DATA

## PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals.

## 1.2 SUBMISSION OF MANUALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit draft operation and maintenance manuals in the following format:
  - Submit for review by email to Architect. Enable reviewer comments on draft submittals.
  - 2. Architect will comment on whether content of operation and maintenance submittals is acceptable

## C. Final Manual Submittal:

- 1. Correct or revise each manual to comply with Architect's comments. Submit one hard copy and one digital copy to the Architect.
- D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

### 1.3 FORMAT

- A. Electronic Files: Submit one digital copy in the form of a multiple file composite electronic PDF file for each manual type required.
- B. Manuals, Paper Copy: Submit one manual in the form of hard-copy, bound and labeled volumes.
  - 1. Binders: Heavy-duty, three-ring, vinyl-covered binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic

sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

- 2. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
  - If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
  - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

#### 1.4 ORGANIZATION OF MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  - 1. Title page.
  - 2. Table of contents.
  - 3. Manual contents.
- B. Title Page: Include the following information:
  - 1. Identify each binder with OPERATION AND MAINTENANCE MANUAL.
  - 2. Identify the name of Project.

#### C. Table of Contents:

- 1. List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- 2. After the Table of Contents provide a list of names, addresses and telephone numbers of the Architect, Contractor, Subcontractors, and Suppliers for products and systems used in project.

## D. Manual Contents:

- 1. Organize into sets of manageable size. Arrange contents by Specification Sections.
- 2. Provide tabbed dividers for each separate product and system,
- 3. Text: Contractor's name, address and telephone number and supplier's name, address, and phone number of each product. If Subcontractor is used, specify their name, address, and phone number in lieu of the Contractor.

# 1.5 SYSTEMS AND EQUIPMENT OPERATION AND MAINTENANCE MANUALS

- A. Systems and Equipment Operation and Maintenance Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
- B. The manual shall be sufficiently comprehensive for routine maintenance, overhaul, and repairs to be carried out by personnel who are qualified to undertake maintenance work, but who are not necessarily familiar with the equipment. The manual shall contain the following:
  - 1. A comprehensive list of contents including:
    - a. Equipment/Material Name (and Tag Number).
    - b. Equipment/Material Type and Model Number.
    - c. Equipment/Material Capacity description.
    - d. Manufacturer's Name.
    - e. Equipment/Material Supplier's Name, Address and Telephone Number.
    - f. Service Representative's Name, Address and Telephone Number.
  - 2. Data sheets for each Equipment/Material item (including individual components) shall provide:
    - a. Title (i.e., "Data Sheet).
    - b. Equipment/Material Name (and Tag Number).
    - c. Equipment Type, Model Number, Serial Number.
    - d. Specific Design Characteristics.
    - e. Performance Characteristics (including any relevant curves).
    - f. Lubrication Type including: specification, brand and quality, etc.
    - g. List of individual items of equipment/material which are components of, or are associated with, the equipment described in this sub-clause of the Specification.
    - h. Reference Drawing List
    - i. All other information necessary to fully specify the item of equipment
    - j. Equipment/material supplier's name, address, and telephone number.
  - 3. Operating instructions and description of the equipment and its principles of operation including:
    - a. Theory of Operation.
    - b. Function of Equipment.
    - c. Pre-Start-Up Checks and Adjustments.
    - d. Start-Up Procedures.
    - e. Normal Operating Modes (i.e., Pump Selector Switch to AUTO).
    - f. Normal Shut-Down Procedures.
    - g. Emergency Start-Up and Shut-Down Procedures.
    - h. Visual checks and observations should be made routinely to ensure equipment to operating satisfactorily.
    - i. Diagnostic troubleshooting techniques, where applicable, to determine probably causes of operating difficulties or alarm situation.
    - 4. Maintenance Instructions:
      - a. Recommended preventative maintenance procedures, tests, and activities to ensure that equipment and components are adequately maintained.

- b. Recommended cleaning procedures for materials.
- c. Frequency that each preventative maintenance procedure or cleaning procedure should be carried out.
- d. Lubrication points and recommended lubricants.
- e. Details of any special tools, lubricants, or cleaning agents necessary to implement the preventative maintenance procedures.
- 5. Dismantling instructions shall include step-by-step procedures to extract, fully dismantle, re-assemble, and re-install the equipment. The instructions shall include checks, tests, tolerances on fitting and lining up components of the equipment and all procedures to re-install the equipment correctly. The instructions shall be supplemented to exploded view, drawings, or photographs.
- 6. Spare parts list with cross reference to sectional drawing shall include:
  - a. Part Name.
  - b. Part Number (identification for ordering of spares).
  - c. Number of parts required.
  - d. Material of Construction.
  - e. Availability.
  - f. Supplier.
- 7. Illustrations and drawings shall include:
  - a. General arrangements.
  - b. Sectional arrangements in sufficient detail to allow all components to be identified, all tolerances, clearances and fits necessary for the equipment, dismantling, and reassembly of equipment components understanding of installation, operating and maintenance of the particular item.
  - c. Any other drawings necessary for complete understanding of installation, operating and maintenance of the particular item.
  - d. Subdivision drawings.
- 8. Function, application, specification, and comprehensive technical data of all equipment including sub-assemblies, proprietary items, and system circuit and schematic diagrams.
- 9. Troubleshooting procedures.
- 10. Lists of spare parts recommended to be held in stock.
- 11. Procedure of ordering spare parts.
- C. The manual shall contain clear and comprehensive illustrations and/or drawings with all parts readily identifiable.
- D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.
- E. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

# 1.6 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Product Information: Include the following, as applicable:
  - 1. Product name and model number.
  - Manufacturer's name.
  - 3. Color, pattern, and texture.
  - 4. Material and chemical composition.
  - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
  - 1. Inspection procedures.
  - 2. Types of cleaning agents to be used and methods of cleaning.
  - 3. List of cleaning agents and methods of cleaning detrimental to product.
  - 4. Schedule for routine cleaning and maintenance.
  - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

END OF SECTION 017823

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#### SECTION 017839 - PROJECT RECORD DOCUMENTS

## PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.

## 1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set of marked-up record prints and PDF electronic files of scanned record prints.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

# PART 2 - PRODUCTS

## 2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.
  - Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Record data as soon as possible after obtaining it.
    - c. Record and check the markup before enclosing concealed installations.
  - 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.

- 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
- 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect and Owner. If authorized by the Owner for an additional fee, the Architect shall prepare a full set of corrected digital data files of the Contract Drawings, as follows:
  - 1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
  - 2. Format: DWG.
  - 3. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  - 4. Refer instances of uncertainty to Contractor for resolution.
  - 5. Architect will furnish the Owner and Contractor one set of digital data (PDF) files of the Contract Drawings for use in recording information.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
  - 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  - 2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
  - 3. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Architect.
    - e. Name of Contractor.

## 2.2 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file scanned PDF electronic file(s) of marked-up paper copy of Product Data.

# 2.3 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file or scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

## PART 3 - EXECUTION

## 3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

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#### SECTION 017900 - DEMONSTRATION AND TRAINING

## PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.

## 1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

#### 1.3 CLOSEOUT SUBMITTALS

1. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals and in PDF electronic file format on compact disc.

# 1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.
- C. Preinstruction Conference: Conduct conference at Project site. Review methods and procedures related to demonstration and training.

## 1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect / Engineer.

# PART 2 - PRODUCTS

#### 2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
  - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a. System, subsystem, and equipment descriptions.
    - b. Performance and design criteria if Contractor is delegated design responsibility.
    - c. Operating standards.
    - d. Regulatory requirements.
    - e. Equipment function.
    - f. Operating characteristics.
    - g. Limiting conditions.
    - h. Performance curves.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.
    - d. Project record documents.
    - e. Identification systems.
    - f. Warranties and bonds.
    - g. Maintenance service agreements and similar continuing commitments.
  - 3. Emergencies: Include the following, as applicable:
    - a. Instructions on meaning of warnings, trouble indications, and error messages.
    - b. Instructions on stopping.
    - c. Shutdown instructions for each type of emergency.
    - d. Operating instructions for conditions outside of normal operating limits.
    - e. Sequences for electric or electronic systems.
    - f. Special operating instructions and procedures.
  - 4. Operations: Include the following, as applicable:
    - a. Startup procedures.
    - b. Equipment or system break-in procedures.

- c. Routine and normal operating instructions.
- d. Regulation and control procedures.
- e. Control sequences.
- f. Safety procedures.
- g. Instructions on stopping.
- h. Normal shutdown instructions.
- i. Operating procedures for emergencies.
- j. Operating procedures for system, subsystem, or equipment failure.
- k. Seasonal and weekend operating instructions.
- I. Required sequences for electric or electronic systems.
- m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
  - a. Alignments.
  - b. Checking adjustments.
  - c. Noise and vibration adjustments.
  - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
  - a. Diagnostic instructions.
  - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
  - a. Inspection procedures.
  - b. Types of cleaning agents to be used and methods of cleaning.
  - c. List of cleaning agents and methods of cleaning detrimental to product.
  - d. Procedures for routine cleaning
  - e. Procedures for preventive maintenance.
  - f. Procedures for routine maintenance.
  - g. Instruction on use of special tools.
- 8. Repairs: Include the following:
  - a. Diagnosis instructions.
  - b. Repair instructions.
  - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d. Instructions for identifying parts and components.
  - e. Review of spare parts needed for operation and maintenance.

## PART 3 - EXECUTION

## 3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual as directed by the Architect / Engineer.

# 3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Owner through Architect, with at least 7 days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

**END OF SECTION 017900** 

# SECTION 024119 - SELECTIVE DEMOLITION

#### PART 1 - GENERAL

#### 1.1 SUMMARY

#### A. Section Includes:

- 1. Demolition and removal of selected portions of building or structure.
- 2. Salvage of existing items to be reused or recycled.

## 1.2 MATERIALS OWNERSHIP

A. Unless otherwise indicated to be salvaged or reused by the Owner, demolition waste becomes property of Contractor once it is removed.

# 1.3 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Take measures proposed for protecting individuals and property. Outline the proposed locations and construction of barriers with the Architect.
- B. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

### 1.4 CLOSEOUT SUBMITTALS

A. Inventory of items that have been removed and salvaged as indicated on drawings (if any is indicated).

## 1.5 FIELD CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities (if applicable) in service during selective demolition operations.
- F. Arrange selective demolition schedule so as not to interfere with other subcontractor's work

### 1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

#### PART 2 - PRODUCTS

# 2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

# 3.2 PREPARATION

A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

# 3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Contractor to arrange to shut off utilities with utility companies if required.
  - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
  - 3. Disconnect, demolish, and remove fire-suppression systems (if any indicated), plumbing, electrical and HVAC systems, equipment, and components indicated on Drawings to be removed.
    - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    - e. Equipment to Be Removed and Salvaged (If Any Indicated): Disconnect and cap services and remove equipment and deliver to Owner.
    - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material, if applicable.

## 3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- C. Remove temporary barricades and protections where hazards no longer exist.

## 3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering, and chopping. Temporarily cover openings to remain.
  - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  - 4. Maintain fire watch during and for at least four hours after flame-cutting operations.
  - 5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  - 6. Dispose of demolished items and materials promptly.
  - 7. Temporarily close in any openings caused by selective demolition to secure building and weatherproof the area as required until permanent enclosure(s) are in place.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers.
  - 3. Store items in a secure area until delivery to Owner.
  - 4. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items (If any indicated):
  - 1. Clean and repair items to functional condition adequate for intended reuse.
  - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  - 3. Protect items from damage during transport and storage.
  - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

## 3.6 CLEANING

- A. Remove demolition waste materials from Project site.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

**END OF SECTION 024119** 

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| Building Renovations Perry ProTech 1270 Flagship Drive Perrysburg, Ohio 43551 |            |

## SECTION 033000 - CAST-IN-PLACE CONCRETE

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections:
  - 1. Section 033500 "Polished Concrete."
- C. Proposed Substitutions: See Section 016000 "Product Requirements."

# 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product indicated.
- C. Design Mixtures: For each concrete mixture.
- D. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

# 1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Material certificates.
- C. Material test reports.
- D. Floor surface flatness and levelness measurements.

# 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code Reinforcing Steel."
- C. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  - 1. ACI 301, "Specifications for Structural Concrete."
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

#### PART 2 - PRODUCTS

# 2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Form Release Agent: Colorless mineral oil which will not stain concrete, absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.
  - 1. VOC Content: Maximum 340 gm/liter.
  - Manufacturers:
    - a. W. R. Meadows; Duogard
    - b. L & M Construction Chemicals, Inc.; Debond Form Coating
    - c. BASF Corporation: MasterFinish RL 100
- D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as require, of sufficient strength and character to maintain formwork in place while placing concrete.

## 2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from asdrawn steel wire into flat sheets.

- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

#### 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I, gray. Supplement with the following:
    - a. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
    - b. Fly Ash: ASTM C618, Class C.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
  - 1. Maximum Coarse-Aggregate Size: 1 inch (25 mm).
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement. Provide natural sand that meets ASTM C33. No manufactured sand permitted.
- C. Water: ASTM C 94/C 94M and potable.

## 2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Mid-Range Water Reducing Admixture: ASTM C494/C494M, Type A/F.
  - Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 4. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 5. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 7. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

# 2.5 WATERSTOPS (if any indicated)

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).
- B. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch (10 by 19 mm).

## 2.6 VAPOR RETARDERS

- A. 10 Mil Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.
  - 1. Basis-of-Design: STEGO® Wrap 10-mil Class A vapor barrier as manufactured by Stego Industries, LLC or comparable equal.

Note: Verify type of curing materials that are recommended for polished concrete.

# 2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
  - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
  - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

# 2.8 RELATED MATERIALS

- A. Expansion and Isolation-Joint-Filler Strips: ½-inch thick: ASTM D 4819; closed cell polyethylene or ASTM D 3575 closed cell foam.
- B. Bond Breaker No. 15 asphalt saturated felt.
- C. Non-Shrink Grout for Structural Steel Base Plates and Bearing Plates: Corps of Engineers Specification CRC-C 621 Type D; ASTM C-827 and ASTM C 1104; non catalyzed, multipurpose construction type containing mineral aggregate; Portland Cement-based; flowable, stiff, or plastic consistency.
- D. Bonding Agent for Concrete Topping: Re-wettable ethylene vinyl copolymer emulsion bonding agent for concrete complying with ASTM C 1059, Type 1.
  - 1. Tammsweld Latex Bonding Agent for concrete.

### 2.9 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. See concrete mix design matrix on drawings.
- B. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

# 2.10 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.11 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M and furnish batch ticket information.
  - 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

# PART 3 - EXECUTION

#### 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Do not chamfer exterior corners and edges of permanently exposed concrete. Treat these corners as indicated on drawings.

## 3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

## 3.3 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
  - 1. Lap joints 6 inches (150 mm) and seal with manufacturers recommended tape.

## 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete

### 3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction

- joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
- 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- E. Waterstops (if any indicated on drawings): Install in construction joints and at other joints indicated according to manufacturer's written instructions.

## 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.

# 3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish (Exposed Concrete Walls): Apply the following to smooth-formed finished ascast concrete where indicated:

- 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

## 3.8 FINISHING FLOORS AND SLABS

- A. General: Refer to Section 033500 Polished Concrete for finishing of polished concrete floors. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
  - 1. Apply float finish to surfaces to receive trowel finish.
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
  - 1. Apply a trowel finish to surfaces exposed to view or to be covered with epoxy resin flooring, resilient flooring, carpet, ceramic, or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
  - 2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch (4.8 mm) 1/8 inch (3.2 mm).
- D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
  - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

## 3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - Moisture Curing: Keep surfaces continuously moist for not less than seven days.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
    - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
  - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

## 3.10 APPLICATION OF BONDING AGENT

- A. Surface Preparation: Apply latex bonding agent to a clean, dry and structurally sound surface. The substrate must be free of all curing compounds and other contaminants. Preferred method of surface preparation is mechanical abrasion. Concrete substrate must be dry before applying bonding agent.
- B. Application of Bonding Agent: Apply the bonding agent according to the manufacturer's recommendations. Allow the bonding agent to dry completely before placement of concrete topping.
- C. Clean-Up: Clean tools and equipment with detergent and water immediately following use. Clean drips and over-spray with water while still wet. Dried bonding agent may require mechanical abrasion for removal.

# 3.11 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

# 3.12 FIELD QUALITY CONTROL

- A. Testing and Inspecting: General Contractor shall engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
  - 1. See Section 014000 "Quality Requirements.

END OF SECTION 033000

# SECTION 033500 - POLISHED CONCRETE

#### PART 1- GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2. SUMMARY

- A. Section Includes: This Section specifies polished concrete.
- B. Related Sections:
  - Section 033000 "Cast-in-Place Concrete."
  - 2. Section 079200 "Joint Sealants."
- C. Proposed Substitutions: See Section 016000 "Product Requirements."

#### 1.2 REFERENCES

- A. American Concrete Institute (ACI):
  - 1. ACI 302.1R Guide for Concrete Floor and Slab Construction.
- B. ASTM International:
  - 1. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  - 2. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete.
  - 3. ASTM C779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
  - 4. ASTM D523 Standard Test Method for Specular Gloss

#### 1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide polished flooring that has been selected, manufactured and installed to achieve the following:
  - 1. ASTM C779 Method A- standard test method for abrasion resistance of horizontal concrete surfaces.

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- 2. Reflectivity: ASTM D523, Specular gloss in accordance with architect's required gloss unit (GU) reading of approximately 20-30%
- ANSI B101.1- Test method for measuring wet SCOF of common hard surface floor materials.

# B. Design Requirements:

- 1. Hardened Concrete Properties:
  - a. Minimum Concrete Compressive Strength: 4000 psi (24 MPa).
  - b. Normal Weight Concrete: No lightweight aggregate or deleterious materials. Ensure all aggregates used are polishable.
  - c. Non-air entrained.

## 2. Placement Properties:

- a. Natural concrete slump of 4 1/2 inches 5 inches (114 127 mm). Admixtures may be used.
- b. Any admixtures, plasticizers, slag, fly ash or anything taking the place of Portlandbased cement shall not exceed 20%. \* a straight cement mix is recommended
- c. Flatness Requirements: Overall FF 50, Local FF 35.
- d. Levelness Requirements: Overall FL 30, Local FL 20.
- e. Hard-Steel Troweled (3 passes) Concrete: No burn marks. Finish to ACI 302.1R, Class 5 floor.
- f. When placing edges use a 3' metal or wooden 2x 4 screed and run parallel with form or edge after initial screed and before floating.
- g. Hand floating shall be parallel to edge and done in 2' increments to avoid lifting or depressing edges. Do not reach out beyond 2' of edge with hand tools or float in a fan direction pulling excessive mud to the forms.

# 3. Curing Options:

- a. Membrane forming curing compounds (polyethylene film not recommended.)
- b. Damp Curing: Seven day cure.
- 4. Slab Protection Immediately Following Placement (see also section 3.6):
  - a. Silicone chalks should NOT be used if at all possible. The RED and yellow chalks are PERMANENT DYES. RED Chalk, black markers, wax pencils should NOT be used for framing. White or Blue chalks are OK. Do not over mark for the framing. Do NOT use silicone sprays to "Hold" the lines. The sprays repel the stain and leave harsh, permanent scars on the floor.
  - b. Do not use, Tape, Glue, Solvents, Pine-Sol, Varnish, Non Breathing Plastics, Liquid Nail, Silicone, Plastics, Nails, Plumbers Glue, Foam Insulation, Bond Release Agents, Flux, Oils, Grease, Polyurethane, Paint, Markers (framers often write dimensions of doorways in marker on the slab. Ask them to make that note on the wood framing the doorway), Grease Sticks, Spray Paints, Crayons, Muriatic Acid, and other chemicals both before and after staining.
  - c. It is important that wood, sheet goods, insulation boards, plywood, press board, drywall, sections of framing and the like not lay on the slab for extended periods of time. They can transfer resins and tannins into the slab. This will alter the moisture content in the slab which leaves a pattern in the finished floor. Cardboard should be placed between the slab and the stacked material to minimize any unwanted transfers. Also, Food, Beverages, Oil, Glass, Metal, Paint, Caulk, or Primers.

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# 1.4. ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: Submit product data, including manufacturer's spec data product sheet, for specified products.
  - 1. Material Safety Data Sheets (MSDS).
  - 2. Preparation and concrete grinding procedures.

## 1.5 INFORMATION SUBMITTALS

## A. Quality Assurance:

- 1. Certificates:
  - a. Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- 2. Manufacturer's Instructions: Manufacturer's installation instructions.

## 1.6 CLOSEOUT SUBMITTALS

- A. Warranty: Submit warranty documents specified.
- B. Operation and Maintenance Data: Submit operation and maintenance data for installed products in accordance with Section 01 78 23 Operation and Maintenance Data
  - 1. Include:
    - a. Manufacturer's instructions on maintenance renewal of applied treatments.
    - b. Protocols and product specifications for joint filing, crack repair and/or surface repair.

#### 1.7 QUALITY ASSURANCE

#### A. Qualifications:

- 1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
- 2. Installer trained and holding current certification in system to be applied (if available).

# B. Mock-Ups:

- 1. Construct mock-ups in accordance with Section 01 40 00 Quality Requirements.
- 2. Mock-Up Size: 100 sf at jobsite at location as directed under conditions similar to those which will exist during actual placement.
- 3. Mock-up will be used to judge workmanship, concrete substrate preparation, operation of equipment, material application, color selection and shine. Perform ASTM D523 Standard Test Method as cited in Section 2.02 Finishes and provide printed results to architect prior to commencement of work.

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- 4. Allow 24 hours for inspection of mock-up before proceeding with work.
- 5. When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mockup may remain as part of finished work.
- C. Preinstallation Meetings: Conduct a preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Review the following:
  - 1. Environmental requirements.
  - 2. Scheduling and phasing of work.
  - 3. Coordinating with other work and personnel.
  - 4. Protection of adjacent surfaces.
  - 5. Surface preparation.
  - 6. Repair of defects and defective work prior to installation.
  - 7. Cleaning.
  - 8. Installation of polished floor finishes.
  - 9. Application of liquid hardener, densifier.
  - 10. Protection of finished surfaces after installation.

# 1.8 DELIVERY, STORAGE & HANDLING

- A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- B. Delivery: Deliver materials in manufacturer's original packaging with identification labels and seals intact.
- C. Storage and Protection:
  - 1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
  - 2. Protect concrete slab.
  - 3. Protect from petroleum stains during construction.
  - 4. Diaper hydraulic power equipment.
  - 5. Restrict vehicular parking.
  - 6. Restrict use of pipe cutting machinery.
  - 7. Restrict placement of reinforcing steel on slab.
  - 8. Restrict use of acids or acidic detergents on slab.
- D. Waste Management and Disposal:

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- 1. Separate waste materials for Reuse and Recycling.
- 2. Remove from site and dispose of packaging materials at appropriate recycling facilities.

#### 1.9. PROJECT AMBIENT CONDITIONS

A. Installation Location: Comply with manufacturer's written recommendations.

## 1.10 WARRANTY

- A. Project Warranty: Refer to Contract Conditions for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and does not limit, other rights Owner may have under Contract Documents.
- C. Warranty: Commencing on date of acceptance by Architect, minimum 5 years.

## 1.11 MAINTENANCE

A. Comply with manufacturer's written instructions to maintain installed product.

# **PART 2- PRODUCTS**

## 2.1 MANUFACTURERS

A. Ensure that manufacturer has a minimum of 5 years' experience in manufacturing components similar to or exceeding the requirements of this project.

# 2.2 POLISHED CONCRETE FINISHING PRODUCTS

# A. Products/Systems:

- Hardener, Sealer, Densifier: Water based, odorless liquid, VOC compliant, environmentally safe chemical hardening solution leaving no surface film. Silicate or amorphous silica designed specifically to be used in conjunction with concrete polishing. No siliconate hardener will be accepted.
- 2. Polyurea Joint and Crack Filler: Semi-rigid, 2-component, self-leveling, 100% solids, rapid curing, control joint and crack filler with Shore A 80 or higher hardness.
- 3. Spall Repair: Polymer modified cementitious material compatible with concrete polishing process designed to repair surface defects in concrete.
- 4. Oil Repellent Sealer: Penetrating concrete sealer designed specifically to be used in conjunction with polished concrete.

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- 5. Cleaning Solution: Mild, highly concentrated liquid concrete cleaner and conditioner; biodegradable, and environmentally safe. Cleaner must be ph neutral.
- B. Finish: Matte Finish, 15 GU @ 60°
- C. Color: none
- D. Aggregate Exposure: Paste finish: No aggregate exposed (less than 1/16")

## PART 3- EXECUTION

## 3.1 EXAMINATION

- A. Site Verification of Conditions:
  - 1. Verify that concrete substrate conditions, which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of concrete finishing materials.
  - 2. Verify Concrete Slab Performance Requirements:
    - a. Verify concrete is cured to 28 day 4000 psi (24 MPa) strength.
    - b. Verify concrete surfaces received a hard steel-trowel finish (3 passes) during placement.

# 3.2 PREPARATION

- A. Ensure surfaces are clean and free of dirt and other foreign matter harmful to performance of concrete finishing materials.
- B. Examine surface to determine soundness for concrete for polishing.
- C. Fill surface defects with acceptable cement based material compatible with polishing process.
- D. Fill large cracks (greater than 1/16") with polyurea joint and crack filler flush with concrete surface.
- E. General Contractor to remove surface contamination.

## 3.3 INSTALLATION

- A. Sequence of Polishing:
  - 1. Perform grinding and polishing before partition studs are erected
- B. Floor Surface Polishing and Treatment:

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- 1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.
- 2. Apply floor finish prior to installation of fixtures and accessories.
- 3. Apply patching compound and crack filler flush with concrete surface where necessary.
- 4. Diamond polish concrete floor surfaces with planetary grinding machine with a minimum head pressure of 600 lbs. (3-4 headed machine). Sequence with coarse to fine grit.
  - a. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level. Level of sheen shall meet specified gloss unit measurements.
  - b. Expose aggregate in concrete surface as determined by approved mock-up.
  - c. All concrete surfaces shall be as uniform in appearance as possible with no visible scratches anywhere in surface.
- 5. Grind and polish edges to a maximum of 1/8" of walls to match field area of floor.
- 6. Edge into corners with a maximum size of 5" diameter grinding & polishing discs.
- 7. Apply silicate densifier/hardener per manufacturer's specifications
- 8. Remove defects and re-polish defective areas.
- 9. Finish edges of floor finish adjoining other materials in a clean and sharp manner

## C. Concrete Sealer:

- 1. No topical sealer allowed.
- 2. The appearance of any streaking or swirling from the use of topical sealing products will not be accepted. Identification of such issues will require the surface be ground off and re-polished.

#### D. Joint Fill:

- 1. Apply polyurea joint filler to saw cut contraction joints only. Product not to be used on tooled, expansion, keyed, or isolation joints. Refer to section [07 92 00 Joint Sealants] for these joints.
- 2. Slightly overfill joints to create a crown and allow the material to cure for 15-20 minutes or until dry to the touch.
- 3. Shave excess joint fill off flush with the top of the slab with a razor blade to create a seamless finish.

## 3.4 ADJUSTMENTS

- A. Polish to higher gloss those areas not meeting specified gloss levels per mock-up.
- B. Fill joints flush to surface.

#### 3.5 PROTECTION

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- A. It is important that wood, sheet goods, insulation boards, plywood, press board, drywall, sections of framing and the like not lay on the slab for extended periods of time. They can transfer resins and tannins into the slab. This will alter the moisture content in the slab which leaves a pattern in the finished floor. Cardboard should be placed between the slab and the stacked material to minimize any unwanted transfers. Also, Food, Beverages, Oil, Glass, Metal, Paint, Caulk, or Primers.
- B. It is extremely important that you do not tape directly to the floor! Duct Tape, Masking Tape, Packaging Tape, Strap Tape, Blue Tape, Green Tape, and Electrical Tape there are NO exceptions. The tape alters the natural curing process and transfers chemicals to and from the slab. Tape, Plastics, and other Adhesives can contribute to Plasticizer Migration. This WILL SHOW in the finished product.

## 3.6 SCHEDULE

A. Matte Finish, Color (none) at all spaces to receive polished concrete finish according to Interior Finish Schedule on drawings.

END OF SECTION 033500

#### SECTION 055000 - METAL FABRICATIONS

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Miscellaneous steel framing and supports.
  - 2. Metal bollards.
  - 3. Loose bearing and leveling plates.
- B. Products furnished, but not installed, under this Section include the following:
  - Loose steel lintels.
  - 2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
  - 3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.
- C. Proposed Substitutions: See Section 016000 "Product Requirements."
- D. Related Sections:
  - 1. Section 051200 "Structural Steel"
  - 2. Section 052100 "Steel Joist Framing"
  - 3. Section 053100 "Steel Decking"

# 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For the following:
  - 1. Steel Lintels.
  - 2. Paint products.
  - 3. Grout.

- C. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
- D. Samples for Verification: For each type and finish of extruded nosing.

## PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  - 1. Temperature Change: 180 deg F (100 deg C), material surfaces.

## 2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- D. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

# 2.3 FASTENERS

- A. General: Unless otherwise indicated, provide stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM Type 304 B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum.
- B. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
- C. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
  - Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.

# 2.4 MISCELLANEOUS MATERIALS

- A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- D. Concrete: Comply with requirements in Section 033000 "Cast-in-Place Concrete."

# 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- C. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended.
- D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.
- E. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors not less than 8 inches (200 mm) from ends and corners of units and 24 inches (600 mm) o.c.

## 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Fabricate steel girders for wood frame construction from continuous steel shapes of sizes indicated.
  - 1. Where wood nailers are attached to girders with bolts or lag screws, drill or punch holes at 24 inches (600 mm) o.c.

## 2.7 METAL BOLLARDS

- A. Fabricate metal bollards from Schedule 40 steel pipe.
- B. Bollard Covers: Provide 1/8 inch (3mm) thick polyethylene (HDPE and MDPE) and 3M #680 white reflective tape. Include Gripper Tabs® to secure bollard cover. Covers shall be UV stable guaranteed not to fade and crack for (5) years.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide "Bollard Gard" as manufactured by Quick-Switch (Phone: 866-784-2511), or comparable product by one of the following:
    - a. Bollard Cover USA; 800-352-6609
    - b. Post Guard; 866-737-8900
    - c. Idea Shield; 866-825-8659

## 2.8 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

## 2.9 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Prime loose steel lintels located in exterior walls with zinc-rich primer.

## 2.10 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

# 2.11 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

## 2.12 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
- B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
  - Shop prime with zinc-rich primer.
- C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
  - 1. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

## PART 3 - EXECUTION

# 3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

# 3.2 INSTALLING METAL BOLLARDS

- A. Anchor bollards in existing concrete in core-drilled holes and fill annular space around bollard solidly with nonshrink grout.
- B. Anchor bollards in existing place with concrete footings. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete until concrete has cured.
- C. Fill bollards solidly with concrete, mounding top surface to shed water.
- D. Install bollard covers according to manufacturer's recommendations.

## 3.3 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

# 3.4 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055000

# SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Framing with dimension lumber.
  - 2. Wood blocking and nailers.
  - 3. Wood furring.
  - 4. Sill Sealer.
  - 5. Plywood backing panels.
  - 6. Plywood wall panels.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Sections:
  - 1. Section 054000 "Cold Metal Framing"
  - 2. Section 061600 "Sheathing"

## 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

# 1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
  - 1. Preservative-treated wood.
  - 2. Power-driven fasteners.

# PART 2 - PRODUCTS

## 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
  - 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: On job site shall be 19 percent.

#### 2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
  - 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  - 4. Wood floor plates that are installed over concrete slabs-on-grade.

# 2.3 DIMENSION LUMBER FRAMING

A. Size and spacing of lumber members shall be as shown on the drawings.

- B. Non-Load-Bearing Interior Partitions: No. 2 grade.
  - 1. Application: All interior partitions not load bearing. Unless noted otherwise on drawings, load bearing.
  - 2. Species:
    - a. Mixed southern pine; SPIB.
    - b. Northern species; NLGA.
    - c. Eastern softwoods; NeLMA.
    - d. Western woods: WCLIB or WWPA.
    - e. Spruce-Pine-Fir; NLGA.
- C. Unless noted otherwise on the drawings, all exterior and all load bearing lumber shall be No. 2 Spruce-Pine-Fir (SPF). Other grades &/ species may be substituted if their reference design values as presented in Table 4a of the Supplement to ANSI/AF&PA NDS-05 are greater than or equal to No. 2 SPF and the specific gravity of the species is greater than or equal to 0.42.

# 2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  - 1. Blocking.
  - Nailers.
  - 3. Cants.
  - 4. Furring.
  - Grounds.
- B. For items of dimension lumber size, provide grade lumber of any species.
- C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
  - 1. Mixed southern pine, No. 2 grade; SPIB.
  - 2. Eastern softwoods, No. 2 Common grade; NELMA.
  - 3. Northern species, No. 2 Common grade; NLGA.
  - 4. Western woods, No. 2 Common grade; WCLIB or WWPA.

# 2.5 PLYWOOD PANELS

- A. Equipment Backing Panels: DOC PS 1, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.
- B. Plywood wall panels (Wall Backer Board): 3/4-inch (19 mm) nominal thickness CDX plywood; Class C.D. or better where indicated on drawings.

## 2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Power-Driven Fasteners: NES NER-272.
- C. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

## 2.7 MISCELLANEOUS MATERIALS

- A. Sealer Gaskets: Closed-cell neoprene foam, ¼ inch (6.4 mm) thick minimum, selected from manufacturer's standard widths to match width of baseplate members. Self adhesive backing is optional.
  - 1. Manufacturers:
    - a. Protecto Wrap Co., Premium Sill Sealer.
    - b. Foam Molders, Inc., Sill Sealer.
    - c. Dow Chemical, Styrofoam Sill Sealer.
    - d. Diversifoam Products, R-Tite.

# PART 3 - EXECUTION

# 3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit.
- B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- C. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.
- E. Do not splice structural members between supports unless otherwise indicated.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

- G. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. Table 2304.10.1, "Fastening Schedule," in Ohio Building Code.
- H. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.
- I. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

#### 3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. For to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

## 3.3 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061053

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#### SECTION 061600 - SHEATHING

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Divison 1 Specification Section, apply to this section.

#### 1.2 SUMMARY

- A. Section Includes:
  - Wall sheathing.
- B. Proposed Substitutions: See Section 016000 "Product Requirements".
- C. Related Sections:
  - Section 061053 "Miscellaneous Rough Carpentry."

## 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures".
- B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.
  - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

## PART 2 - PRODUCTS

# 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory." or GA-600, "Fire Resistance Design Manual." as indicated on the drawings.

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- B. Glass-Mat Gypsum Sheating (Base Bid): ASTM C1177/C1177M.
  - 1. Gypsum Panel made of treated water resistant core, surfaced with fiberglass matts and primer coating.
    - Basis-of-Design: Georgia-Pacific DensGlass Sheathing or comparable equal. Thickness: 5/8 inch.

#### 2.2 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153/M.

## 2.3 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

## PART 3 - EXECUTION

# 3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. As indicated on the drawings.
  - 3. See Fastening Schedule Table 2304.10.1 indicated in the Ohio Building Code if fastening is not indicated on the drawings.
- D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

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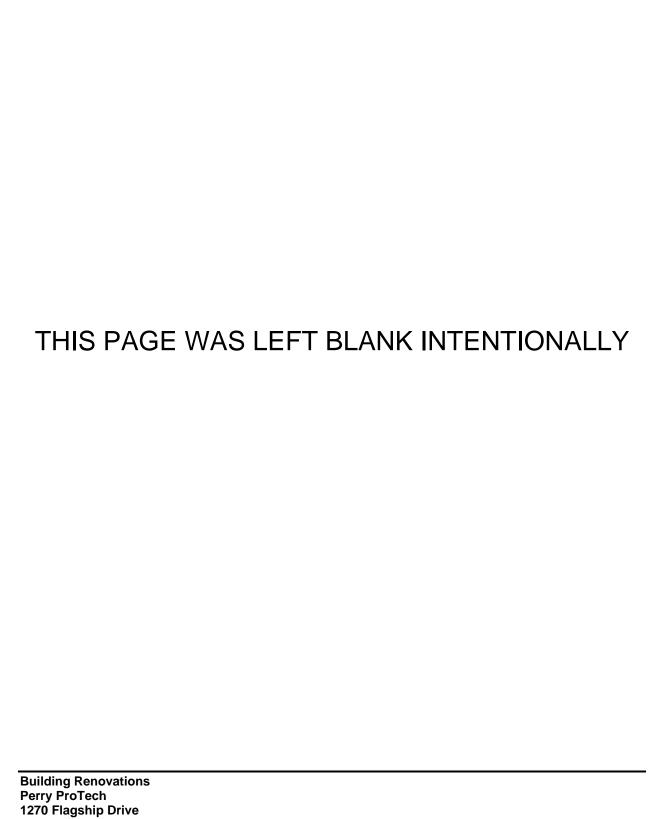
# 3.2 GYPSUM SHEATHING INSTALLATION

- A. Comply with GA-253 and with manufacturer's written instructions.
  - 1. Fasten gypsum sheathing to wood framing with screws.
  - 2. Fasten gypsum sheathing to cold-formed metal framing with screws.
  - 3. Install panels with a 3/8-inch (9.5 mm) gap where non-load-bearing construction abuts structural elements.
  - 4. Install panels with a 1/4-inch (6.4 mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.
- B. Seal sheathing joints according to sheathing manufacturer's written instructions.
  - 1. Apply elastomeric sealant to joints and fasteners and trowel flat. Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.
  - 2. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel so fasteners are completely covered. Seal other penetrations and openings.

END OF SECTION 061600

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#### SECTION 064116 - PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

#### 1.2 SUMMARY

## A. Section Includes:

- 1. Plastic-laminate-faced architectural cabinets.
- 2. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets unless concealed within other construction before cabinet installation.

# B. Related Requirements:

- 1. Section 061053 "Miscellaneous Rough Carpentry."
- 2. Section 123623 "Plastic-Laminate-Clad Countertops."
- 3. Section 123661 "Simulated Stone Countertops and Window Sills."
- C. Proposed Substitutions: See Section 016000 "Product Requirements."

# 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product, including panel products, high-pressure decorative laminate, adhesive for bonding plastic laminate and cabinet hardware and accessories.
- C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

# D. Samples:

- 1. Plastic laminates, for each color, pattern, and surface finish.
- 2. Thermoset decorative panels, for each color, pattern, and surface finish.

# 1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Fabricator shall have a minimum of five (5) years of experience in fabricating cabinets of this nature.
- B. Installer Qualifications: Installer shall be familiar with the installation procedure for this type of cabinetry. Coordinate installation with cabinet fabricator.

## 1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

## PART 2 - PRODUCTS

#### 2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.
- B. Grade: Custom.
- C. Type of Construction: Frameless.
- D. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.
- E. Reveal Dimension: As indicated.
- F. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Abet Laminati, Inc.
    - b. Formica Corporation.
    - c. Lamin-Art, Inc.

- d. Panolam Surface Systems
- e. Wilsonart International; Div. of Premark International, Inc.
- G. Laminate Cladding for Exposed Surfaces:
  - 1. Horizontal Surfaces: Grade HGL.
  - Postformed Surfaces: Grade HGP.
  - 3. Vertical Surfaces: Grade VGS.
  - 4. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.
- H. Materials for Semiexposed Surfaces:
  - 1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3. Grade VGS.
  - 2. Drawer Sides and Backs: Solid-hardwood lumber or Thermoset decorative panels with PVC or polyester edge banding.
  - 3. Drawer Bottoms: Hardwood plywood or Thermoset decorative panels.
- I. Dust Panels: 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers unless located directly under tops.
- J. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
  - 1. As selected by Architect from laminate manufacturer's full range in the following categories:
    - a. Solid colors, finish as indicated on drawings.
    - b. Wood grains, finish as indicated on drawing.
    - c. Patterns, finish as indicated on drawings.

# 2.2 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
  - 1. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
  - 1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
  - 2. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde.
  - 3. Softwood Plywood: DOC PS 1, medium-density overlay.
  - 4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.

5. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

#### 2.3 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
- B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening, self-closing.
- C. Cabinet Pulls: Back mounted, solid metal type and style as indicated on drawings.
- D. Catches: Magnetic catches, BHMA A156.9, B03141, Push-in magnetic catches, BHMA A156.9, B03131, Roller catches, BHMA A156.9, B03071 or Ball friction catches, BHMA A156.9, B03013 if any indicated on the drawings.
- E. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.
- F. Shelf Rests: BHMA A156.9, B04013; metal.
- G. Drawer Slides: BHMA A156.9.
  - 1. Grade 1 and Grade 2: Side mounted and extending under bottom edge of drawer; full-extension zinc-plated steel or epoxy-coated steel with polymer rollers.
  - 2. Grade 1HD-100 and Grade 1HD-200: Side mounted; full- extension type; zinc-plated-steel ball-bearing slides.
  - 3. For drawers not more than 3 inches (75 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1.
  - 4. For drawers more than 3 inches (75 mm) high but not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1HD-100.
  - 5. For drawers more than 6 inches (150 mm) high or more than 24 inches (600 mm) wide, provide Grade 1HD-100.
  - 6. For computer keyboard shelves, provide Grade 1HD-100.
  - 7. For trash bins not more than 20 inches (500 mm) high and 16 inches (400 mm) wide, provide Grade 1HD-200.
- H. Door Locks: BHMA A156.11, E07121.
- I. Drawer Locks: BHMA A156.11, E07041.
- J. Door and Drawer Silencers: BHMA A156.16, L03011.
- K. Exposed Hardware Finishes: For exposed hardware, provide finish that is indicated.

Satin Stainless Steel.

#### 2.4 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- C. Adhesives: Do not use adhesives that contain urea formaldehyde.
- D. Adhesive for Bonding Plastic Laminate: Contact cement.
  - 1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

#### 2.5 FABRICATION

- A. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- B. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- C. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

#### PART 3 - EXECUTION

## 3.1 PREPARATION

A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

#### 3.2 INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

- B. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- C. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk, and filled flush with woodwork.
- E. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
  - 1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
  - 2. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips.

END OF SECTION 064116

# SECTION 072100 - THERMAL INSULATION

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Foam-plastic board insulation.
  - 2. Glass-fiber blanket insulation.
  - 3. Spray Foam Insulation
  - 4. Vapor retarders.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

# 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product indicated.

# 1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Research/evaluation reports.

# PART 2 - PRODUCTS

# 2.1 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation for under slab perimeter foundations; ASTM C 578, Type IV, standard specific for rigid cellular polystyrene thermal insulation. Thermal resistance per inch. ATSM C518, 5².h.F/BTU, R-Value, min C75°F means temp is 5.0.

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide "Styrofoam Square Edge" or comparable by use of the following:
  - a. DiversiFoam Products.
  - b. Owens Corning.
  - c. Pactiv Building Products.
- 2. Type IV, 25 psi.

## 2.2 POLYISOCYANURATE FOAM-PLASTIC BOARD

- A. Polyisocyanurate Board, Foil Faced: ASTM C 1289, reflective or white aluminum facer surface, Type I, Class 1 or 2.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide "Thermax" product as manufactured by the Dow Chemical Company.
  - 2. Type I, 25 psi.
  - 3. Insulation thickness as indicated on drawings.
  - 4. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
  - 5. Seal joints with sealant as recommended by the manufacturer. to match the aluminum facer of the foam sheathing board. Install aluminum foil tape to cover seams between these foil-faced insulation boards to prevent air and water vapor infiltration.

#### 2.3 POLYURETHANE FOAM INSULATION

- A. Closed-Cell Polyurethane Foam Insulation: ASTM C 1029, Type II, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E 84.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide "InsulBloc" spray foam system as manufactured by NCFI Polyurethanes; Division of Barnhardt Manufacturing Co., or comparable product by one of the following:
    - a. Certa-Spray by Certain Teed Corporation.
    - b. Homeseal N.A.I.S.
    - c. ProSeal MD-C-200v3 by Icynene, Inc.
  - 2. Closed cell content, two component system with a minimum density of 2.0 lb/cu. ft. (32 kg/cu. m) nominal; Class II @1.3 perm with antibacterial properties.
  - 3. R-value aged ASTM C518 is R-6.8 at one inch.
  - 4. Locations of spray foam applications as indicated on drawings.

# 2.4 GLASS-FIBER BLANKET INSULATION

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. CertainTeed Corporation.
  - 2. Guardian Building Products, Inc.
  - Johns Manville.
  - 4. Knauf Insulation.
  - 5. Owens Corning.
- B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
- C. Kraft-Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type II (non-reflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier).
- D. Reinforced-Foil-Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
- E. Foil-Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type III (reflective faced), Class B (faced surface with a flame-propagation resistance of 0.12 W/sq. cm); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
- F. Unfaced Acoustic Batts: ASTM C 665, Type I with flame-spread index of 10 or less, 3 ½-inches or 6-inches thick as wall thickness dictates. 3 ½-inches at ceiling plenum applications (if any indicated on drawings).
  - 1. Manufacturer:
    - a. Owens Corning; Quitezone.
    - b. Johns-Manville: Unfaced Acoustical.
    - c. Knauf Fiber Glass; EcoBatt Quiet Therm.

# 2.5 VAPOR RETARDERS

- A. Polyethylene Vapor Retarders (if any indicated): ASTM D 4397, 6 mils (0.15 mm), with maximum permeance rating of 0.13 perm (7.5 ng/Pa x s x sq. m).
- B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

# PART 3 - EXECUTION

# 3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

# 3.2 INSTALLATION OF BELOW-GRADE INSULATION

- A. On vertical surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
  - 1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) below exterior grade line.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
  - 1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) in from exterior walls at door openings.

#### 3.3 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Glass-Fiber Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
  - Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
  - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

- 3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
- 4. Install eave ventilation troughs (if any indicated) between roof framing members in insulated attic spaces at vented eaves.
- 5. For wood-framed construction, install blankets according to ASTM C 1320 and as follows:
  - a. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
- 6. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
  - a. Exterior Walls: Set units with facing placed toward interior of construction.
  - b. Interior Walls: Set units with facing placed toward areas of high humidity.
- C. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked.
- D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
  - Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

# 3.4 INSTALLATION OF VAPOR RETARDERS

- A. Place vapor retarders on side of construction indicated on Drawings. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives or other anchorage system as indicated. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
- B. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs.
  - 1. Fasten vapor retarders to wood framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches (406 mm) o.c.
  - 2. Before installing vapor retarders, apply urethane sealant to flanges of metal framing including runner tracks, metal studs, and framing around door and window openings. Seal overlapping joints in vapor retarders with vapor-retarder tape according to vapor-retarder manufacturer's written instructions. Seal butt joints with vapor-retarder tape. Locate all joints over framing members or other solid substrates.
  - 3. Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer.

- C. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.
- D. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

END OF SECTION 072100

#### SECTION 074213.24 – ALUMINUM METAL PLATE WALL PANELS

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

# 1.2 SUMMARY

- A. Section includes aluminum metal plate wall panels.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Sections:
  - 1. Section 055000 "Metal Fabrications."
  - 2. Section 061600 "Sheathing."

# 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Division 01 Section 013300 "Submittal Procedures."
- B. Product Data: Submit for each type of product indicated, include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal plate wall panel and accessory.
- C. Shop Drawings: Submit fabrication and installation layouts of metal plate wall panels; including details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
  - Provide distinction between factory-assembled, shop-assembled, and fieldassembled work.
  - 2. Provide details of following items at full scale.
    - a. Manufacturer's standard sheet metal trims.
    - b. Components of wall panel construction, anchorage methods, and hardware.
- D. Coordination Drawings: Submit exterior elevations, drawn to scale, that have the following items shown and coordinated with each other, using input from installers of these items as follows:
  - 1. Metal plate wall panels and attachments.
  - 2. Girts.
  - 3. Wall-mounted items including doors, windows, louvers, and lighting fixtures.

- 4. Penetrations of wall by pipes and utilities.
- E. Samples: Submit for each type of exposed finish required, and prepared on samples of size as follows:
  - 1. Aluminum Metal Plate Wall Panels: At least 2 inch by 3 inch.
- F. Test and Inspection Reports: Submit test and inspection reports on each type of wall panel system provided for project based on evaluation of comprehensive tests performed by qualified testing agency.
- G. Maintenance Data: Submit maintenance data for metal plate wall panels.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Warranties: Samples of special warranties.

#### 1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

# 1.6 REFERENCE STANDARDS

- A. AAMA American Architectural Manufacturers Association (www.aamanet.org):
  - AAMA CW-RS-1 The Rain Screen Principle and Pressure Equalized Wall Design; 2004.
  - 2. AAMA 501.1 Standard Test Method for Water Penetration of Windows, Curtain Walls, and Doors Using Dynamic Pressure; 2005.
  - 3. AAMA 501.2 Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2009.
  - 4. AAMA 508 Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems; 2007.
  - 5. AAMA 611 Voluntary Standards for Anodized Architectural Aluminum; 1998.
  - 6. AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; 2011 (Testing based on 2005 Edition).
- B. ASTM International (American Society for Testing and Materials; www.astm.org):
  - 1. ASTM B 117 Standard Practice for Operating Salt Spray (Fog) Apparatus; 2011.

- 2. ASTM C 754 <u>Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products</u>; 2009.
- 3. ASTM D 523 Standard Test Method for Specular Gloss; 2008.
- 4. ASTM D 2244 Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates; 2011.
- 5. ASTM D 2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity; 2011.
- 6. ASTM D 4214 Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films; 2007.
- 7. ASTM E 8/E 8M Standard Test Methods for Tension Testing of Metallic Materials; 2009.
- 8. ASTM E 283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.
- 9. ASTM E 330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2010.
- 10. ASTM E 331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2009.
- ASTM E 1233 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential; 2006.
- C. TAS Testing Application Standards; Florida Building Code, 2007
  - 1. TAS 202 Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure Loading; 1994.
  - 2. TAS 203 Criteria for Testing Products Subject to Cyclic Wind Pressure Loading; 1994.
- D. LEED Leadership in Energy and Environmental Design
- E. NAAMM National Association of Architectural Metal Manufacturers
- F. SMACNA Sheet Metal and Air Conditioning Contractor's National Association
- G. PS Voluntary Product Standard; National Institute of Standards and Technology (NIST).
  - 1. PS-1 Structural Plywood; 2007

#### 1.7 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate panel assemblies with rain drainage, flashing, trim, stud back-up, soffits, and other adjoining work.
- B. Preinstallation Meeting:

# 1. Attendees:

- a. Owner.
- b. Architect.
- c. Installer.
- d. Panel manufacturer's representative.
- e. Structural support installer's.
- f. Installer's whose work interfaces with or affects wall panels including installers of doors, windows, and louvers.
- 2. Review and finalize construction schedule.
- 3. Verify availability of materials, installer's personnel, equipment, and facilities needed to maintain schedule.
- 4. Review means and methods related to installation, including manufacturer's written instructions.
- 5. Examine support conditions for compliance with requirements, including alignment and attachment to structural members.
- 6. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affects this Work.
- 7. Review temporary protection requirements for during and after installation of this Work.

#### 1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least five years of documented experience.
- B. Installer: Company specializing in performing work of this section and approved by manufacturer.
  - 1. Install system in strict compliance with manufacturer's installation instructions.
- C. Source Limitations: Obtain each type of metal plate wall panel from single source and from single manufacturer.

# 1.9 MOCKUPS

- A. Mockups: Provide mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and to establish quality standards for fabrication and installation.
  - 1. Build mockup of typical wall panel assembly, including corner, soffits, supports, attachments, and accessories.
    - a. Include at least four panels to represent a four-way panel joint and showing full thickness.
  - 2. Water Spray Test: Conduct water-spray test of mockup metal panel assembly, test water penetration in accordance with AAMA 501.2.

- 3. Approval of mockups does not constitute approval of deviation from Contract Documents within mockups unless these deviations are approved by Architect in writing.
- 4. Subject to compliance with requirements, approved mockups may become part of completed Work if undisturbed upon date of Substantial Completion.

# 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling: Store materials in clean, dry, interior area in accordance with manufacturer's instructions.
- C. Deliver panels, components, and other manufactured items without damage or deformation.
- D. Protect panels during transportation, handling, and installation from weather, excessive temperatures, and construction operations.
- E. Handle panels in strict compliance with manufacturer's instructions and recommendations, and in a manner to prevent bending, warping, twisting, and surface damage.
  - 1. Store panels vertically with top of panel down, storage of panels horizontally is not permitted.
- F. Store panels covered with suitable weather tight and ventilated covering.
- G. Provide storage of panels to ensure dryness, with positive slope for drainage of moisture.
- H. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.
- I. Remove strippable protective covering from aluminum panel prior to installation.

# 1.11 SITE CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of this Work to be performed according to manufacturer's installation instructions and warranty requirements.
- B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before panel fabrication and indicate measurements on Shop Drawings.
  - 1. Coordinate with construction schedule.

# 1.12 WARRANTY

- A. Wall System Warranty: Provide wall panel manufacturer warranty, agreeing to correct defects in manufacturing of materials within a one year period after date of Substantial Completion.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures, including rupturing, cracking, or puncturing.
    - b. Deterioration: Beyond normal weathering of wall system metals and other materials.
- B. Panel Finish Warranty: Provide panel finish manufacturer warranty, agreeing to repair finish of metal plate wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Finish Warranty Period: 5 years from date of Substantial Completion.
  - 2. Warranty Coverage: In accordance with AAMA 611 Class 1 anodized aluminum finish requirements.
    - Loss of Adhesion: Resists cracking, crazing, flaking, and blistering when forming and welding completed prior to finishing; post forming or welding voids warranty.
    - b. Fading, Loss of Color Retention: Loss of 5 Delta E units (Hunter) or less in accordance with ASTM D 2244.
    - c. Chalking, Chalky White Powder on Panel Surface: Chalking at No. 8 or less in accordance with ASTM D 4214.
    - d. Salt Spray, Accelerated: At least 3,000 hours in accordance with ASTM B 117.

# PART 2 - PRODUCTS

# 2.1 MANUFACTURER

- A. Dri-Design Aluminum Wall Panel System.
  - 1. Address: 12480 Superior Ct., Holland, Michigan 49424.
  - 2. P.O. Box 1286 Holland, Michigan 49422-1286.
- B. Phone: (616) 355-2970; Fax: (616) 355-2972; Website: <u>www.dri-design.com.</u>

# 2.2 PERFORMANCE REQUIREMENTS

- A. Metal Plate Wall Panel Assemblies: Comply with performance requirements without failure due to defective manufacturing, fabrication, installation, or other construction defects.
- B. Design, fabricate, and erect a dry joint, pressure equalized rainscreen aluminum wall panel system without use of sealants, gaskets, or butyl tape, tested as installed in compliance with AAMA 508, and as follows.

- 1. Pressure Equalization Cycling: Pass cycled pressure loading from 5 psf to 25 psf for 100 three-second cycles at 0.08 seconds or less; ASTM E 1233.
- 2. Air Infiltration: 0.12 cfm per sf of wall area, tested at 1.57 psf (25 mph) in accordance with ASTM E 283.
  - a. Maintain air/water barrier leakage rate at 0.11 to 0.13 cfm per sf at 1.57 psf when tested in accordance with ASTM E 283 in compliance with AAMA 508 criteria.

# 3. Water Penetration:

- a. Static: Pass water penetration test under static pressure when tested in accordance with ASTM E 331 at a differential of 10 percent of inward acting design load, with 15 psf pressure differences for at least 15 minutes with 5 gal per sf per hour of water applied.
- b. Dynamic: Pass water penetration test under dynamic pressure of 6.24 psf in accordance with AAMA 501.1.
- 4. Structural: Provide systems tested in accordance with ASTM E 330 and certified to be without permanent deformation or failure of structural members.

# 2.3 MATERIALS

- A. Aluminum Plate: Alloy and temper as recommended by manufacturer for application and in compliance with manufacturers design requirements.
  - 1. Aluminum Material: Tension-leveled, anodized finish, 5005-AQ manganese alloy.
  - 2. Thickness: 0.080 inch.
  - 3. Weight: Less than 2 lbs. per sf.
  - 4. Finish: Clear Anodized Finish.
- B. Panel Depth: 1 1/4 inch, nominal.
- C. Panel Size: As indicated on Drawings.
- D. Panel Joints: As indicated on Drawings or as recommended by the manufacturer.

#### 2.4 FABRICATION

- A. Fabricate and finish wall panels within manufacturer's facilities and fulfill indicated performance requirements demonstrated by laboratory testing.
  - 1. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide aluminum wall panels with welded inside corners at backside, typically at corner locations where metal plate is bent to form reveals.
- C. Provide post-finishing of panels, paint aluminum wall panels only after completion of panel fabrication.

# 2.5 FINISHES

- A. Comply with NAAMM's Metal Finishes Manual for Architectural and Metal Products, for recommendations of designating finishes.
- B. Clear Anodized Finish: AAMA 611, Class I, clear anodic coating not less than 0.7 mils thick.
- C. Field Touch-Up Materials: As recommended by coating manufacturer for field application.

# 2.6 METAL SOFFIT PANELS

- A. General: Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- B. Flush-Profile Metal Soffit Panels: Solid and Perforated panels formed with vertical panel edges and intermediate stiffening ribs symmetrically spaced or a flat pan between panel edges; with flush joint between panels.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by the following:
    - a. MBCI (Cornerstone Building Brands)
  - 2. Material: Same material, finish, and color as metal wall panels.
  - 3. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
    - a. Nominal Thickness: 24 gauge.
    - b. Surface: Smooth finish.
    - c. Exterior Finish: Two-coat fluoropolymer.
    - d. Color: As selected by Architect from manufacturer's full range.
  - 4. Aluminum Sheet: Coil-coated sheet, ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer, with temper as required to suite forming operations and structural performance required.
    - a. Thickness: 0.032 inch (0.81 mm).
    - b. Surface: Smooth finish; Perforated vent holes.
    - c. Exterior Finish: Two-coat fluoropolymer.
    - d. Color: As indicated on drawings or as selected by Architect from manufacturer's full range.

# 2.7 ACCESSORIES

- A. Metal Plate Wall Panel Accessories: Provide components required for a complete metal plate wall panel assembly including trim, copings, fascia, mullions, sills, corner units, flashings, and similar items. Match material and finish of panels unless otherwise indicated.
- B. Provide integral drainage system and manufactures standard extrusions at termination of dissimilar materials.
- C. Flashing and Trim: Match material, finish, and color of adjacent wall panels.
  - 1. Thickness: At least 0.040 inch.
  - Refer to Section 076200.
- D. Panel Fasteners: Designed to withstand design loads, with at least 7/16 inch diameter head and neoprene washer.
  - 1. Aluminum Wall Panel Material: Stainless steel fasteners.
- E. Sub-Girts (if any required): Galvanized, provide size and gage in accordance with project requirements.
  - 1. Furring Channel: Provide Hat, C, U or Z type as recommended by manufacturer.
  - 2. Flat Strap: At least 14 gage thick.
- F. Substrate Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I, at least 5/8 inch thick.
- G. Weather Barriers: Provide climate specific weather barrier with performance characteristics for air penetration, water vapor transmission, and water penetration resistance.
- H. Sealants: As recommended by metal panel manufacturer for openings within wall panels and perimeter conditions.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine substrates, and Work areas and conditions with Installer present for compliance with requirements for installation tolerances, wall panel supports, and other conditions affecting performance of this Work.
- B. Examine wall framing to verify that girts, angles, channels, studs, and other structural wall panel support members and anchorage have been installed within alignment tolerances required by wall panel manufacturer.
- C. Verify that weather barrier has been installed over sheathing or substrate to prevent air infiltration or water penetration.

- D. Examine rough-in for components and systems penetrating wall panels to coordinate actual penetration locations relative to wall panel joint locations prior to installation.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

A. Miscellaneous Framing: Install sub girt, base angles, sills, furring, and other wall panel support members and provide anchorage in accordance with ASTM C 754 for gypsum panel type substrates and panel manufacturer's installation instructions.

#### 3.3 INSTALLATION

- A. Install wall panels in accordance with manufacturer's installation instructions, including pressure equalized rainscreen installation method and installation guidelines.
  - Wall panels consist of single sheets of metal formed with interlocking gutter and drainage system integral to the panel with single horizontal attachment for dry-joint rainscreen assembly.
  - 2. Use of secondary drainage channels, brackets, support pins, joint sealants, or gaskets to manage the drainage of wall panel system is not permitted.
  - 3. Attach wall panels using progressive interlocking method, engaging bottom of panel in top of previous panel working bottom up, and left to right.
  - 4. Install wall panels with single top attachment in pre-punched holes to allow individual panels to move due to thermal expansion.
  - 5. Do not compromise internal gutter.
- B. Install wall panels for orientation, sizes, and locations as indicated on Drawings.
- C. Install wall panels with proper anchorage and other components for this Work securely in place.
- D. Install wall panels with provisions for thermal and structural movement.
- E. Install shims to plumb substrates as necessary for installation of wall panels.
- F. Install weather tight seals at perimeter of wall panel openings.
  - 1. Test for proper adhesion on small unexposed area of solid surfacing prior to use.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA Architectural Sheet Metal Manual.
  - Provide concealed fasteners where possible, and set units true to line and level as indicated.
  - 2. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
  - 3. Install flashing and trim as wall panel Work proceeds.

- H. Install weather tight escutcheons for pipe and conduit penetrating exterior walls.
- I. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by wall panel manufacturer.
- J. Install attachment system to support wall panels and with provisions to provide a complete weather tight wall system, including sub girts, extrusions, flashings and trim.
  - 1. Include attachment to supports and trims at locations using dissimilar materials.
  - Do not apply sealants to joints, unless noted otherwise on Drawings or Shop Drawings.
  - 3. Install starter extrusion at base course and at cut panel locations.
- K. Install accessories with positive anchorage to building and weather tight mounting and provisions for thermal expansion, and coordinate installation with flashings and other components.
  - 1. Install components required for a complete wall panel assembly including trim, copings, flashings, and other accessory items.
- L. Weather Barrier: Install weather barrier behind wall panels and over substrate in accordance with requirements of Section 072500.

#### 3.4 TOLERANCES

A. Shim and align wall panel units with installed tolerances of 1/4 inch in 20 feet, non-cumulative, on level, plumb, and location lines as indicated.

# 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: The Owner may engage a qualified independent testing agency to perform field tests and inspections.
- B. Water-Spray Test: After installation and in coordination with Mockup requirements, test area of assembly as directed by a factory-authorized service representative for water penetration in accordance with AAMA 501.2.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.
- D. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.
- E. Perform additional tests and inspections, at Contractor's expense, to verify compliance of replaced wall panels or necessary additional work with specified requirements.
- F. Prepare test and inspection reports.

# 3.6 CLEANING

- A. Upon completion of wall panel installation, clean finished surfaces as recommended by panel manufacturer.
- B. Upon completion of wall panel installation, clear weep holes and drainage channels of obstructions and dirt.

# 3.7 PROTECTION

- A. Protect installed products from damage during subsequent construction.
- B. Replace wall panels damaged or deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION 074213.24** 

# SECTION 079200 - JOINT SEALANTS

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

A. Drawing and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

# 1.2 SUMMARY

- A. Proposed Substitutions: See Section 016000 "Product Requirements."
- B. Section Includes:
  - 1. Silicone joint sealants.
  - 2. Urethane joint sealants.
  - 3. Latex joint sealants.
  - 4. Acoustical joint sealants.

# C. Related Sections:

- 1. Section 033000 "Cast-in-Place Concrete."
- Section 084113 "Aluminum-Framed Entrances and Storefronts."
- 3. Section 099122 "Painting."
- 4. Section 123623 "Plastic-Laminate-Clad Countertops."
- Section 123661 "Simulated Stone Countertops and Window Sills."

# 1.3 SUBMITTALS

- A. Submittal Procedures: See 013300 "Submittal Procedures."
- B. Product Data: For each joint-sealant product indicated.
- C. Samples: For each kind and color of joint sealant required.
- D. Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - Joint-sealant formulation.
  - 4. Joint-sealant color.

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- E. Product test reports.
- F. Preconstruction compatibility and adhesion test reports.
- G. Preconstruction field-adhesion test reports.
- H. Field-adhesion test reports.
- Warranties.

# 1.4 QUALITY ASSURANCE

- A. Installer Qualification: A firm experienced in installing joint sealants similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements.
  - 1. Manufacturer's authorized installer who is approved or licensed for installation of elastomeric sealants required for this project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
  - 1. Use ASTM C 1087 or manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
  - 2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals and miscellaneous materials.
  - 3. Schedule sufficient time for testing and analyzing results to prevent delaying the work.
  - 4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
  - 5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesive to, and compatibility with, joint substrates and other materials matching those submitted.
- D. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period preceding the commencement of the work.
  - Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documents according to ASTM E 548.

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- 2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.
- E. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
  - 1. Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:

# 1.5 PROJECT CONDITONS

- A. Do not proceed with installation of joint sealants under the following conditions:
  - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
  - 2. When joint substrates are wet.
  - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  - 4. Contaminates capable of interfering with adhesion have not yet been removed from joint substrates.

#### 1.6 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified within specified warranty period.
  - 1. Warranty Period: 2 years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: 5 years from date of Substantial Completion.
- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
  - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
  - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
  - 3. Mechanical damage caused by individuals, tools, or other outside agents.
  - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminates.

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# PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in the Joint Sealant Schedule at end of Part 3.

# 2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range, unless otherwise indicated.

# 2.3 JOINT SEALANT

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
  - Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
  - 2. Suitably for Contact with food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21CFR 177.2600.
- B. Latex Sealant: Comply with ASTM C 834, Type OP, Grade NF.
- C. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant comply with ASTM C 834 and the following:
  - 1. Product effectively reduces airborne sound transmissions through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- D. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, non-skinning, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

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# 2.4 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experienced and laboratory testing.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
- C. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

# 2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

# PART 3 - EXECUTION

# 3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
  - 1. Remove laitance and form-release agents from concrete.
  - 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
  - 3. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

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C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

#### 3.2 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
  - 4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
- F. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.
- G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

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# 3.3 FIELD QUALITY CONTROL

- A. Field Adhesion Testing: Field test joint sealant adhesion to joint substrates as follows:
  - 1. Field-Adhesion Testing: Field test joint-sealant adhesion to join substrates as follows:
    - a. Perform 10 tests for the first 10000 feet of joint length for each type of elastomeric sealant and joint substrate.
    - b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.
  - 2. Test Method: Test joint sealants according to the first method below in Appendix X1 in ASTM C 1193 or another of the listed methods as appropriate for type of joint-sealant application indicated:
    - a. Method A, Field Applied Sealant Joint Hand Pull Tab.
    - b. Method B, Exposed Surface Finish Hand Pull Tab.
    - c. Method C, Field Applied Sealant Joint Hand Pull Flap.
    - d. Method D, Water Immersion.
  - 3. For joints with dissimilar substrates, verify adhesion to each substrate separately, do this by extending cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
  - 4. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
  - 5. Inspect tested joints and report on the following:
    - a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
    - b. Whether sealants filled joint cavities and are free of voids.
    - c. Whether sealant dimensions and configurations comply with specified requirements.
  - 6. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration and sealant dimensions.
  - 7. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

#### 3.4 CLEANING

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A. Clean off excess sealant or sealant smears adjacent to joins as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

# 3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes to sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

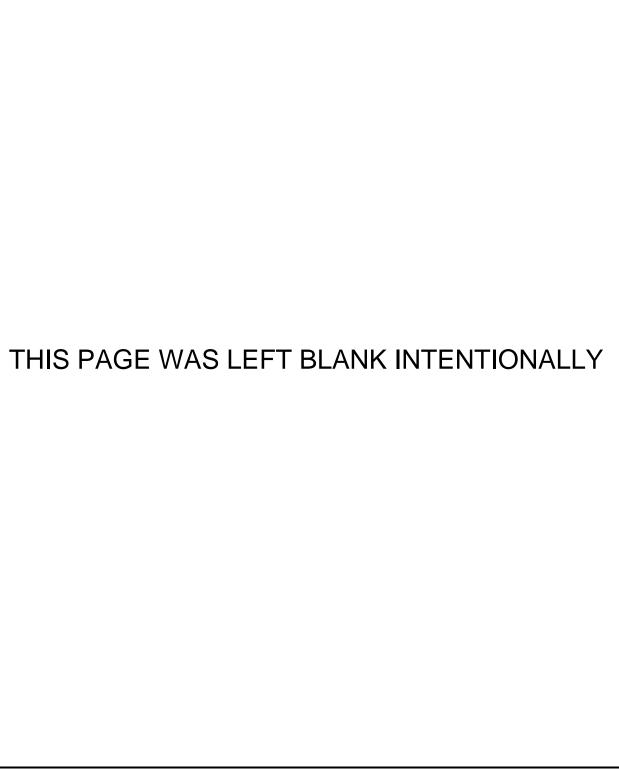
# 3.6 JOINT-SEALANT SCHEDULE

- A. Single-Compound Neutral-Curing or Basic-Curing Silicone Sealant:
  - Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow Corning Corporation; 790.
    - b. GE Silicones; SilPruf LM SC2700.
    - c. Tremco; Spectrem 1 (Basic).
  - 2. Type and Grade: S (single component) and NS 9 (nonsag).
  - 3. Class: 100/50.
  - 4. Use Related to Exposure: NT (nontraffic).
  - 5. Use Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated. O.
  - 6. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.
  - 7. Applications: Exterior non-traffic building joints in building walls, soffits, glazing assemblies, insulated metal ceiling panel flashing and trim and horizontal surfaces above grade.
- B. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Pecora Corporation; 898.
    - b. Tremco, Tremsil 600 White.
  - 2. Type and Grade: S (single component) and NS (nonsag).
  - 3. Class: 25
  - 4. Use Related to Exposure: NT (nontraffic).
  - 5. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

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- 6. Applications: Perimeter joints of plumbing fixtures, counters, and backsplashes; perimeter joints in ceramic tile; and in rooms indicated.
- C. Multicomponent Pourable Urethane Sealant:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Bostik Findley: Chem-Calk 550.
    - b. Meadows, W. R., Inc.; POURTHANE
    - c. Pecora Corporation; Urexpan NR 200.
    - d. Tremco; THC-900.
  - 2. Type and Grade: M (multicomponent) and P (pourable)
  - 3. Class: 25.
  - 4. Use Related to Exposure: T (traffic).
  - 5. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.
  - 6. Applications: Joints in paving.
- D. Single-Component Pourable Urethane Sealant:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Sika Corporation, Inc.; Silkaflex 1CSL.
    - b. Sonneborn, Division of ChemRex Inc.; SL 1.
- E. Latex Sealant: Comply with ASTM C 834, Type OP, Grade NF.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Pecora Corporation; AC-20+
    - b. Tremco; Tremflex 834.
  - 2. Applications: Interior non-movement and non-traffic joints not indicated for another type of sealant.
- F. Acoustical Sealant for Exposed and Concealed Joints:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
    - b. Untied States Gypsum Co.; SHEETROCK Acoustical Sealant.
- G. Acoustical Sealant for Concealed joints:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Pecora Corporation; BA-98.
    - b. Tremco; Tremco Acoustical Sealant.

END OF SECTION 079200



#### SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

# 1.2 SUMMARY

#### A. Section Includes:

- 1. Standard and custom hollow metal doors and frames.
- 2. Steel sidelight, borrowed lite and transom frames.
- 3. Louvers installed in hollow metal doors.
- 4. Light frames and glazing installed in hollow metal doors.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

# C. Related Sections:

- 1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
- 2. Division 08 Section "Flush Wood Doors".
- 3. Division 08 Section "Glazing" for glass view panels in hollow metal doors.
- 4. Division 08 Section "Door Hardware".
- 5. Division 08 Section "Access Control Hardware".
- 6. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
  - 1. ANSI/SDI A250.8 Recommended Specifications for Standard Steel Doors and Frames.
  - 2. ANSI/SDI A250.4 Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
  - 3. ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.

- 4. ANSI/SDI A250.10 Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- ANSI/SDI A250.11 Recommended Erection Instructions for Steel Frames.
- 6. ASTM A1008 Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- 7. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- 8. ASTM A924 Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- 9. ASTM C 1363 Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
- 10. ANSI/BHMA A156.115 Hardware Preparation in Steel Doors and Frames.
- 11. ANSI/SDI 122 Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
- 12. ANSI/NFPA 80 Standard for Fire Doors and Fire Windows; National Fire Protection Association.
- 13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
- NFPA 252 Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
- 15. UL 10C Positive Pressure Fire Tests of Door Assemblies.
- 16. UL 1784 Standard for Air Leakage Tests of Door Assemblies.

#### 1.3 SUBMITTALS

- A. Submittal Procedures: See Section 13300 "Submittal Procedures."
- B. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- C. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- D. Shop Drawings: Include the following:
  - 1. Elevations of each door design.
  - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
  - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  - 4. Locations of reinforcement and preparations for hardware.

- 5. Details of anchorages, joints, field splices, and connections.
- Details of accessories.
- 7. Details of moldings, removable stops, and glazing.
- 8. Details of conduit and preparations for power, signal, and control systems.

# E. Samples for Verification:

1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

# 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40" above sill) or UL 10C.
  - Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
  - 2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
  - 3. Smoke Control Door Assemblies: Comply with NFPA 105.
    - a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.
- D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.
- E. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

# 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
  - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

# 1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

# 1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

# PART 2 - PRODUCTS

# 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:
  - 1. CECO Door Products (C).
  - 2. Curries Company (CU).

# 2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

# 2.3 HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.
- B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, and ANSI/SDI A250.4 for physical performance level.
  - 1. Design: Flush panel.
  - 2. Core Construction: Foamed in place polyurethane and steel reinforced core with no stiffener face welds.
    - a. Provide 18 gauge steel vertical reinforcements 6 inches apart and welded in place. Foamed in place polyurethane core is chemically bonded to all interior surfaces. No face welding is permitted.
    - b. Thermal properties to rate at a fully operable minimum U-Factor 0.37 and R-Value 2.6, including insulated door, Mercury thermal-break frame and threshold.
    - c. Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.38 and R-Value 2.6, including insulated door, kerf type frame, and threshold.
  - 3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053-inch 1.3-mm) thick steel, Model 2.
  - 4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
  - 5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
  - 6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
  - 7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
  - 1. Design: Flush panel.

- a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
- 2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch 1.0-mm) thick steel, Model 2.
- 3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
- 4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
- 5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- D. Manufacturers Basis of Design:
  - 1. CECO Door Products (C) Honeycomb Core Regent Series.
  - 2. CECO Door Products (C) Energy Efficient Mercury Series.

# 2.4 HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Thermal Break Frames: Subject to the same compliance standards and requirements as standard hollow metal frames. Tested for thermal performance in accordance with NFRC 102, and resistance to air infiltration in accordance with NFRC 400. Where indicated provide thermally broken frame profiles available for use in both masonry and drywall construction. Fabricate with 1/16" positive thermal break and integral vinyl weatherstripping.
- C. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.
  - 1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
  - 2. Frames: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.
  - 3. Manufacturers Basis of Design:
    - a. CECO Door Products (C) Thermal Break TQB Series.
- D. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
  - 1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
  - 2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
  - 3. Manufacturers Basis of Design:
    - a. CECO Door Products (C) BU Series.

- b. CECO Door Products (C) SU Series.
- E. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- F. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

# 2.5 FRAME ANCHORS

#### A. Jamb Anchors:

- Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
- 2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.
- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

# 2.6 LIGHT OPENINGS AND GLAZING

- A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.
- B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.
- C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.
- D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

# 2.7 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

#### 2.8 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

# C. Hollow Metal Doors:

- 1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
- 2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
- Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08
  Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for
  fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of
  door on which astragal is mounted.
- 4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

# D. Hollow Metal Frames:

- 1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
- 2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
  - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
- 3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.

- 4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
- 5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
- 6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
- 7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
- 8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
- 9. Jamb Anchors: Provide number and spacing of anchors as follows:
  - a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
    - 1) Two anchors per jamb up to 60 inches high.
    - 2) Three anchors per jamb from 60 to 90 inches high.
    - 3) Four anchors per jamb from 90 to 120 inches high.
    - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
  - b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
    - 1) Three anchors per jamb up to 60 inches high.
    - 2) Four anchors per jamb from 60 to 90 inches high.
    - 3) Five anchors per jamb from 90 to 96 inches high.
    - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
    - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
- Door Silencers: Except on weather-stripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
- 11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.
- E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
  - 1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.

- 2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
- 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
- 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

# 2.9 STEEL FINISHES

- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.
- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

## 3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
  - 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
  - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
  - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
  - 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
  - 1. Non-Fire-Rated Standard Steel Doors:
    - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
    - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
  - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

## 3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air

|                                  | paint.                              |
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| END OF                           | SECTION 081113                      |
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drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish

Perrysburg, Ohio 43551

#### SECTION 081416 - FLUSH WOOD DOORS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Solid-core doors with wood-veneer faces.
  - 2. Factory finishing flush wood doors.
  - 3. Factory fitting flush wood doors to frames and factory machining for hardware.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Requirements:
  - 1. Section 080671 "Door Hardware Schedule"
  - 2. Section 081113 "Hollow Metal Doors and Frames"
  - 3. Section 087100 "Door Hardware"
  - 4. Section 088000 "Glazing"

## 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of door. Include factory-finishing specifications.
- C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
  - 1. Dimensions and locations of blocking.
  - 2. Dimensions and locations of mortises and holes for hardware.
  - 3. Dimensions and locations of cutouts.
  - 4. Undercuts.
  - 5. Requirements for veneer matching.
  - 6. Doors to be factory finished and finish requirements.
  - 7. Fire-protection ratings for fire-rated doors.

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- D. Samples: For factory-finished doors.
- E. Samples for Verification:
  - 1. Provide construction samples of doors, approximately 5" x 5" (125 mm x 125mm) with door faces and vertical edges representing actual construction to be used.

## 1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For Special Warranty.

## 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body when FSC Certified wood is specified.
  - 2. A qualified manufacturer that is a member in good standing of the Window and Door Manufacturers Association.
- B. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body when FSC Certified wood is specified
- C. Product Performance: Provide documents showing compliance to the following WDMA attributes, validating the specified WDMA Performance Duty Level:
  - 1. Adhesive Bonding Durability: WDMA TM-6
  - 2. Cycle Slam: WDMA TM-7
  - 3. Hinge Loading: WDMA TM-8
  - 4. Screw Holding: WDMA TM-10
    - a. Door Face
    - b. Vertical Door Edge
    - c. Horizontal Door Edge (applies when hardware is attached)

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package factory-finished doors individually in manufacturer's standard plastic bags, stretch wrap, or cardboard cartons.
- C. Mark each door on top rail with opening number used on Shop Drawings. Include manufacturer's order number and date of manufacture.

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## 1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weather tight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during remainder of construction period.

#### 1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Warping (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.
    - b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 76.2-mm) span.
  - 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
  - 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. Eggers Industries.
  - 2. Graham Wood Doors; an Assa Abloy Group company.
  - 3. Mohawk Doors; a Masonite company.
  - 4. VT Industries, Inc.

## 2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."
- B. WDMA I.S.1-A Performance Grade:
  - 1. Heavy Duty unless otherwise indicated.
- C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252.

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1. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.

## D. Particleboard-Core Doors:

- 1. Particleboard: Provide wood based particle board cores with a minimum density per ANSI A2081, grade LD-2 as required to meet WDMA performance duty level specified without adding blocking.
- 2. Provide doors with structural-composite-lumber cores instead of particleboard cores for doors indicated to receive exit devices.

## E. Structural-Composite-Lumber-Core Doors:

- 1. Structural Composite Lumber: WDMA I.S.10.
  - a. Screw Withdrawal, Face: 700 lbf (3100 N).
  - b. Screw Withdrawal, Edge: 400 lbf (1780 N).

## 2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

## A. Interior Solid-Core Doors:

- 1. Grade: Premium, with Grade A faces.
- 2. Species: White Oak.
- Cut: Plain sliced.
- 4. Match between Veneer Leaves: Random match.
- 5. Assembly of Veneer Leaves on Door Faces: Random.
- 6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
- 7. Core: Particleboard.
- 8. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering.

## 2.4 LIGHT FRAMES AND LOUVERS

A. Wood-Veneered Beads for Light Openings in Fire-Rated Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire-protection rating indicated. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated.

## B. Metal Louvers:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Air Louvers, Inc.
  - b. Anemostat; a Mestek company.
  - c. L & L Louvers, Inc.

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- d. Louvers & Dampers, Inc.; a division of Mestek, Inc.
- e. McGill Architectural Products.
- 2. Metal and Finish: Hot-dip galvanized steel, 0.040 inch (1.0 mm) thick, with baked-enamel- or powder-coated finish.

## 2.5 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  - 1. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
- C. Openings: Factory cut and trim openings through doors.
  - 1. Light Openings: Trim openings with moldings of material and profile indicated.
  - 2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."
  - 3. Louvers: Factory install louvers in prepared openings.

## 2.6 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  - 1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors that are indicated to receive transparent finish.
- C. Transparent Finish:
  - 1. Grade: Premium.
  - 2. Finish: WDMA TR-4 conversion varnish or WDMA TR-6 catalyzed polyurethane.
  - 3. Staining: As selected by Architect from manufacturer's full range.
  - 4. Effect: Open-grain finish.
  - 5. Sheen: Satin.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

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- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
  - Install fire-rated doors according to NFPA 80.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  - 1. Clearances: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch (6.4 mm) from bottom of door to top of threshold unless otherwise indicated.
    - a. Comply with NFPA 80 for fire-rated doors.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

## 3.2 FLUSH WOOD DOOR HARDWARE SETS

A. See hardware sets indicated on in Section 087100 "Door Hardware."

**END OF SECTION 081416** 

#### SECTION 083613 - SECTIONAL DOORS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section includes manual and electrically operated sectional doors.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Sections:
  - 1. Section 088000 "Glazing."

#### 1.3 REFERENCES

- A. ANSI/DASMA 102 American National Standard Specifications for Sectional Overhead Type Doors.
- B. ASTM A 123 Zinc hot-dipped galvanized coatings on iron and steel products.
- C. ASTM A 216 Specifications for sectional overhead type doors.
- D. ASTM A 229 Steel wire, oil-tempered for mechanical springs.
- E. ASTM A 653 Steel sheet, zinc-coated galvanized by the hot-dipped process, commercial quality.
- F. ASTM D 1929 Ignition temperature test to determine flash and ignition temperature of foamed plastics.
- G. ASTM E 84 Tunnel test for flame spread and smoke developed index.
- H. ASTM E 330 Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.
- I. ASTM E 413 Classification for Rating Sound Insulation.
- J. ASTM E 1332 Standard Classification for Rating Outdoor-Indoor Sound Attenuation.

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K. ASTM E 283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

## 1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.
  - 1. Design pressure: As indicated on drawings.
- B. Wiring Connections: Requirements for electrical characteristics.
  - 1. 120 volts, single phase, 60 Hz.
  - 2. 230 volts, single phase, 60 Hz.
  - 3. 208 volts, three phase, 60 Hz.
- C. Single-Source Responsibility: Provide doors, tracks, motors and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

#### 1.5 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations and installation details.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. Operation and Maintenance Data.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Sample warranty.
- B. Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.

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- 2. Storage and handling requirements and recommendations.
- 3. Installation methods.
- 4. Operation and maintenance data.
- 5. Nameplate data and ratings for motors.

## 1.7 CLOSEOUT SUBMITTALS

A. Maintenance data.

## 1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of doors specified in this section, with not less than ten years of documented experience.
- B. Install Qualifications: Company specializing in installing the types of products specified in this section, with minimum of five years of documented experience and approved by the door manufacturer.

## 1.9 DELIVERY, STORAGE AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Protect materials from exposure to moisture until ready for installation.
- C. Store materials in a dry, ventilated weathertight location.

## 1.10 PROJECT CONDITIONS

A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

#### 1.11 WARRANTY

- 1. Warranty: Manufacturer's limited door and operators System warranty for 10 years against cracking, splitting or deterioration of steel skin due to rust.
- 2. Warranty: Manufacturer's limited door and operators System warranty for 8 years against cracking, splitting or deterioration due to rust-through.

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## PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

A. General Performance: Sectional doors shall comply with performance requirements specified without failure due to defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.

## 2.2 GLAZED ALUMINUM SECTIONAL OVERHEAD DOORS

- A. Acceptable Manufacturer: Haas Door Co., which is located at: 320 Sycamore St.; Wauseon, OH 43567; ASD Tel: 419-337-9900; Fax: 800-874-4227; Email: <a href="mailto:specs@haasdoor.com">specs@haasdoor.com</a>; Web: <a href="mailto:https://www.haasdoor.com">https://www.haasdoor.com</a>
- B. Acceptable Comparable Products by one of the following:
  - 1. Wayne Dalton 451 Series
  - 2. Overhead Door Corporation; Model 521
- C. Glazed Sectional Overhead Doors: HAAS Door; Model CA-110 Narrow Line Frame (Basis-of-Design) Aluminum Doors. Units shall have the following characteristics:
  - 1. Door Assembly: Stile and rail assembly of aluminum alloy 6063-T6, 1-3/4 inch thick stiles and rails, joined with self-tapping screws.
    - a. Rails: Top and bottom rails with 3-1/2 inches wide, lower intermediate rail 1-3/4 inches, upper rail 1-5/8 inches, minimum wall thickness 0.062 inch.
    - b. Stiles: Top, bottom and end stiles are 3-1/2 inches wide, center stile 3 inches wide, minimum wall thickness 0.062 inch.
    - c. Springs:
      - 1) High cycle spring: 25,000 cycles.
    - d. Glazing:
      - 1) 1/2 inch (13mm) insulated tempered glazing.
  - 2. Finish and Color:
    - a. Anodized Finish: Clear anodized.
  - 3. Windload Design: Provide to meet the Design/Performance requirements specified.
  - 4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
  - 5. Lock:
    - a. Interior mounted slide lock.
  - 6. Weatherstripping:
    - a. Flexible bulb-type strip at bottom section.
    - b. Flexible Jamb seals.
    - c. Flexible Header seals.
  - 7. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.

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- a. Size:
  - 1) 2 inch (51mm).
- b. Type:
  - 1) Vertical lift and high lift as specified on drawings.
- c. Horizontal track shall be reinforced with continuous angle of adequate length and gauge to minimize deflection.
- d. Vertical track shall be graduated to provide wedge type weathertight closing with continuous angle mounting for steel or wood jambs, and shall be fully adjustable to seal door at jambs.
- 8. Manual Operation: Pull rope.
- 9. Electric Motor Operation: Provide UL listed electric operator, equal to Genie Commercial Operators, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per section.
  - a. Medium Duty Type:
    - 1) Model J jackshaft
  - b. Entrapment Protection: Required for momentary contact, includes radio control operation.
    - 1) Photoelectric sensors monitored to meet UL 325/2010.
  - c. Operator Controls:
    - 1) Push-button operated control stations with open, close and stop buttons.
    - 2) Key operated control stations with open, close and stop buttons.
    - 3) Push-button and key operated control stations with open, close, and stop

buttons.

- 4) Flush mounting.
- 5) Interior location.

## 2.3 INSULATED SECTIONAL OVERHEAD DOORS

- A. Basis-of-Design Product: Wayne Dalton: Thermospan 200
- B. Acceptable Comparable Products by one of the following:
  - 1. Haas Door: CHT-2000
  - 2. Clopay Corporation: Model 3722
- C. Insulated Steel Sectional Overhead Doors: Wayne Dalton; Thermospan 200 insulated sectional overhead steel doors. Units be of steel/polyurethane/steel sandwich type construction with thermal break.
  - 1. Door Sections: Shall be of steel/polyurethane/steel sandwich type construction with thermal break.
    - a. Panel Thickness: 2 inches (51mm).
    - b. Exterior Surface: Flush non-repeating random stucco texture and 1/4 inch wide pinstriping.
    - c. Exterior Steel: .015 inch (0.38mm), hot-dipped galvanized.
    - d. Sections roll formed with two 1-3/4 inch integral struts sealed with polypropylene rib caps per section.
    - e. Thermal Values: R-value of 17.66; U-value of 0.057.
    - f. Air Infiltration: 0.07 cfm at 15 mph.

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- g. Sound transmission class 22 when tested in accordance with ASTM E 413.
- h. Outdoor-indoor transmission class 19 when tested in accordance with ASTM E 1332
- i. Insulation: CFC-free and HCFC-free polyurethane, fully encapsulated.
  - 1) Insulated sections tested in accordance with ASTM E 84 and achieve a Flame spread index of 10 or less, and a Smoke Developed Index of 210 or less
  - 2) Insulation material tested in accordance with ASTM D 1929 and achieve a minimum Flash Ignition temperature of 734 degrees F, and a minimum Self Ignition temperature of 950 degrees F.
  - 3) Insulated sections shall meet all requirements of the UBC 17-5 corner burn.
- j. Ends: Hot-dipped galvanized steel, full height with end caps.
  - 1) 16 gauge.
- k. Spring Counterbalance: Sized to weight of the doors, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of die cast aluminum with high strength galvanized aircraft cable. Sized with a minimum 5 to 1 safety factor.
  - 1) High Cycle spring: 25,000 cycles.
- I. 25 x 12 inches (635 x 305mm) Vision Lites:
  - 1) 3/4 inch (19mm) Tempered Double Insulating glass.
- 2. Door Finish:
  - 1) Custom Painted Color: Provide custom paint process per Wayne Dalton TruChoice™ Color System. See color to be matched as indicated on drawings.
  - 2) Finish of Interior Facing Material: Factory standard on interior of door.
  - 3) Color System Warranty: Provide TruChoice™ Color System Limited Warranty to protect against excessive color fade for a period of five (5) years from date of installation.
    - a) Contractor shall furnish completed limited warranty document at the time of project closeout.
- 3. Windload Design: Provide to meet the Design/Performance requirements specified.
- 4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
- 5. Lock:
  - a. Interior mounted slide lock.
- 6. Weatherstripping:
  - a. Flexible bulb-type strip at bottom section.
  - b. Flexible Jamb seals.
  - c. Flexible Header seal.
- 7. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
  - a. Size:
    - 1) 2 inch (51mm).
  - b. Type:
    - 1) Vertical lift.
  - c. Horizontal track shall be reinforced with continuous angle of adequate length and gauge to minimize deflection.

- d. Vertical track shall be graduated to provide wedge type weathertight closing with continuous angle mounting for steel or wood jambs, and shall be fully adjustable to seal door at jambs.
- 8. Manual Operation: Push-up.
- 9. Manual Operation: Chain hoist.
- 10. Electric Motor Operation: Provide UL listed electric operator, equal to Genie Commercial Operators, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.
  - a. Medium Duty Type:
    - 1) Model J jackshaft
  - b. Entrapment Protection: Required for momentary contact, includes radio control operation.
    - 1) Photoelectric sensors monitored to meet UL 325/2010.
  - c. Operator Controls:
    - 1) Push-button operated control stations with open, close and stop buttons.
    - 2) Surface mounting.
    - Interior location.
  - d. Special Operation:
    - 1) Radio control operation.
    - 2) Card reader control.

## 2.4 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances indicated on Drawings, Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides for required door type, size, weight, and loading.
  - 1. Track Reinforcement and Supports: Galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches (51 mm) apart for door-drop safety device.
- B. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.

## 2.5 HARDWARE

- A. General: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Heavy-duty, galvanized-steel hinges at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails.
- C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Provide 3-inch- (76-mm-) diameter roller tires

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- for 3-inch- (76-mm-) wide track and 2-inch- (51-mm-) diameter roller tires for 2-inch- (51-mm-) wide track.
- D. Push/Pull Handles: Equip each push-up operated or emergency-operated door with galvanized-steel lifting handles on each side of door, finished to match door.

## 2.6 LOCKING DEVICES

A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on single-jamb side, operable from inside only.

## 2.7 COUNTERBALANCE MECHANISM

- A. Torsion Spring: Counterbalance mechanism consisting of adjustable-tension torsion springs fabricated from steel-spring wire complying with ASTM A 229/A 229M, mounted on torsion shaft made of steel tube or solid steel. Provide springs designed for number of operation cycles indicated.
- B. Cable Drums and Shaft for Doors: Cast-aluminum or gray-iron casting cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.
- C. Cables: Galvanized-steel, multistrand, lifting cables.
- D. Cable Safety Device: Include a spring-loaded steel or spring-loaded bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if either lifting cable breaks.
- E. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.
- F. Bumper: Provide spring bumper at each horizontal track to cushion door at end of opening operation.

#### 2.8 MANUAL DOOR OPERATORS

- A. General: Equip door with manual door operator by door manufacturer.
- B. Push-up Operation: Lift handles and pull rope for raising and lowering doors, with counterbalance mechanism designed so that required lift or pull for door operation does not exceed 25 lbf (111 N).

## 2.9 ACCESSORIES

A. Portable, Radio-Control System as recommended by door operator manufacturer; consisting of one of the following:

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- 1. Three-channel universal coaxial receiver to open, close and stop door.
- 2. Portable control device to open and stop door may be momentary-contact type; control to close door shall be sustained or constant-pressure type.
- 3. Provide a direct wall remote antenna with cable of required length to receiver. Linear EXA-2000 or equal.
- 4. Provide two (2) three-button button remote controls for each door operator receiver; Basis-of-Design is LiftMaster Remote Control Model #893MAX or comparable product by Codedodger or Multi-cord.
- B. Emergency Manual Operation: Equip electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf (111 N).
- C. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- D. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- E. Portable, Radio-Control System: Consisting of two of the following:
  - 1. Three-channel universal coaxial receiver to open, close, and stop door.
  - 2. Portable control device to open and stop door may be momentary-contact type; control to close door shall be sustained- or constant-pressure type.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Do not begin installation until openings have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.
- D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

## 3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

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B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

## 3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.
- B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.
- C. Anchor assembly to wall construction and building framing without distortion or stress.
- D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- E. Fit and align door assembly including hardware.
- F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.
- G. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

## 3.4 ADJUSTING

- A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.
- B. Adjust hardware and operating assemblies for smooth and noiseless operation.

#### 3.5 CLEANING

- A. Clean doors, frames and glass using non-abrasive materials and methods recommended by manufacturer.
- B. Remove labels and visible markings.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

## 3.6 PROTECTION

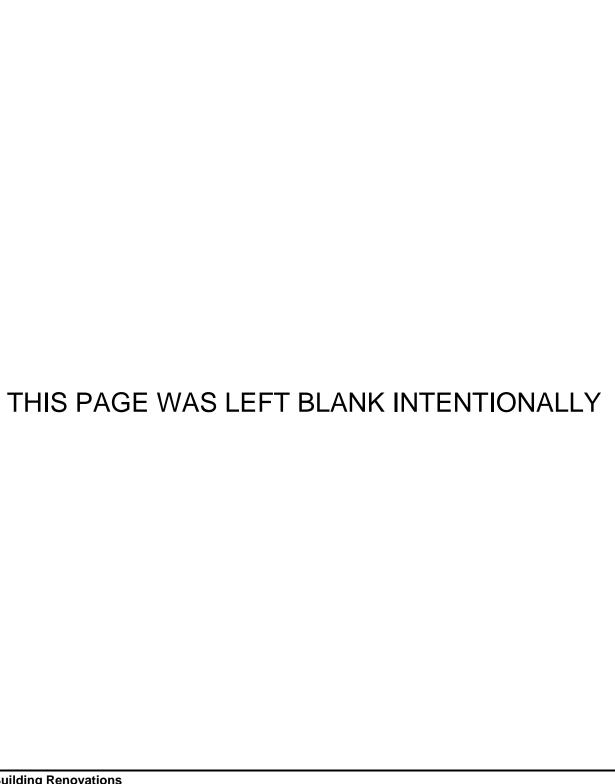
- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.
- B. Protect installed products until completion of project.

# 3.7 DEMONSTRATION

A. Engage a factory-authorized service department to train Owner's maintenance personnel to adjust, operate and maintain sectional doors.

END OF SECTION 083613

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#### SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Exterior storefront framing.
  - 2. Storefront framing for window walls.
  - 3. Exterior manual-swing entrance doors and door-frame units.
  - 4. Storefront framing for curtain walls.
- B. Related Requirements: See Section 088000 "Glazing."
- C. Proposed Substitutions: See Section 016000 "Product Requirements."

#### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.
- C. Shop Drawings: Include plans, elevations, sections, full-size details, and attachments to other work.
  - 1. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
- D. Samples: For each exposed finish required.
- E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication, and assembly of entrance door hardware, as well as procedures and diagrams.

## 1.4 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: NFRC-certified energy performance values from manufacturer.

- B. Product test reports.
- C. Field quality-control reports.
- D. Sample warranties.

## 1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025.
- C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
  - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

# 1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Two (2) years from date of Substantial Completion.

## PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
  - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening,

long-term creep, and deflection from uniformly distributed and concentrated live loads.

- 2. Failure also includes the following:
  - Thermal stresses transferring to building structure.
  - b. Glass breakage.
  - c. Noise or vibration created by wind and thermal and structural movements.
  - d. Loosening or weakening of fasteners, attachments, and other components.
  - e. Failure of operating units.

## B. Structural Loads:

- 1. Wind Loads: As indicated on Drawings.
- 2. Other Design Loads: As indicated on Drawings.
- C. Deflection of Framing Members: At design wind pressure, as follows:
  - 1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19.1 mm), whichever is less.
  - 2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch (3.2 mm), whichever is smaller.
- D. Structural: Test according to ASTM E 330 as follows:
  - 1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
  - 2. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- E. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
  - 1. Fixed Framing and Glass Area:
    - a. Maximum air leakage of 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa)] [6.24 lbf/sq. ft. (300 Pa).
  - 2. Entrance Doors:
    - a. Pair of Doors: Maximum air leakage of 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
    - b. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. (2.54 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
- F. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:
  - 1. No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).
- G. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

## 2.2 MANUFACTURERS

- A. Basis-of-Design: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. EFCO Corporation.
  - Kawneer.
  - 3. YKK AP America Inc.
  - 4. Capitol Aluminum & Glass Corp.

## 2.3 FRAMING

- A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
  - 1. Construction: Thermally broken.
  - 2. Glazing System: Retained mechanically with gaskets on four sides.
  - 3. Glazing Plane: Front.
  - 4. Finish: Clear anodic finish or baked enamel or powder-coat finish or high-performance organic finish as indicated on drawings.
  - 5. Fabrication Method: Field-fabricated stick system.
- B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

## D. Materials:

- 1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
  - a. Sheet and Plate: ASTM B 209 (ASTM B 209M).
  - b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
  - c. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
  - d. Structural Profiles: ASTM B 308/B 308M.
- Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.
  - a. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
  - b. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
  - c. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

## 2.4 ENTRANCE DOOR SYSTEMS

- A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.
  - 1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.1875-inch- (5-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated, and fillet welded or that incorporate concealed tie rods.
    - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
  - 2. Door Design: As indicated medium stile; 3 1/2-inch (88-mm) vertical and top, 10 inch (254-mm) bottom.
  - 3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.
    - a. Provide nonremovable glazing stops on outside of door.

## 2.5 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware" or as indicated on drawings.
- B. General: Provide entrance door hardware for each entrance door to comply with requirements indicated on drawings.
  - 1. Entrance Door Hardware Sets: Provide quantity, item, size, finish, or color indicated, and named manufacturers' products or products equivalent in function and comparable in quality to named products.
  - 2. Sequence of Operation: Provide electrified door hardware function (if any indicated), sequence of operation, and interface with other building control systems indicated.
  - 3. Opening-Force Requirements:
    - a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
    - b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.
- C. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:
  - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
  - 2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

- D. Hinges: Manufacturer's standard with stainless-steel bearings between knuckles, 3 hinges per frame with non-removable pins.
- E. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.
- F. Manual Flush Bolts: BHMA A156.16, Grade 1.
- G. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.
- H. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- Cylinders: As specified in Section 087100 "Door Hardware."
- J. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
- K. Operating Trim: BHMA A156.6.
- L. Removable Mullions: BHMA A156.3, extruded aluminum.
  - 1. When used with panic exit devices, provide removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305. Use only mullions that have been tested with exit devices to be used.
- M. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.
- N. Surface-Mounted Holders: BHMA A156.16, Grade 1.
- O. Door Stops: BHMA A156.16, Grade 1, floor, or wall mounted, as appropriate for door location indicated, with integral rubber bumper.
- P. Weather Stripping: Manufacturer's standard replaceable components.
- Q. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
- R. Silencers: BHMA A156.16, Grade 1.
- S. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (12.7 mm).
- T. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

## 2.6 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: As recommended by manufacturer.

#### 2.7 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Fabricate components that, when assembled, have the following characteristics:
  - 1. Profiles that are sharp, straight, and free of defects or deformations.
  - 2. Accurately fitted joints with ends coped or mitered.
  - 3. Physical and thermal isolation of glazing from framing members.
  - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
  - 5. Provisions for field replacement of glazing from interior.
  - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
- G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

## 2.8 ALUMINUM FINISHES

A. Finish: Clear Anodic Finish: AAM10C21A41/AA-M45 C22 44; Architectural Class I, 7 mils or thicker where indicated on drawings.

## PART 3 - EXECUTION

#### 3.1 INSTALLATION

## A. General:

- 1. Comply with manufacturer's written instructions.
- 2. Do not install damaged components.
- 3. Fit joints to produce hairline joints free of burrs and distortion.
- 4. Rigidly secure nonmovement joints.
- 5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
- 6. Seal perimeter and other joints watertight unless otherwise indicated.

#### B. Metal Protection:

- Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
- 2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Set continuous sill members and flashing in full sealant bed as specified in Section 079200 "Joint Sealants" to produce weathertight installation.
- D. Install components plumb and true in alignment with established lines and grades.
- E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.
- F. Install glazing as specified in Section 088000 "Glazing."
- G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
  - 1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
  - 2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

# 3.2 ENTRANCE DOOR HARDWARE SETS

A. See hardware sets as indicated in Section 080671 "Door Hardware Schedule."

END OF SECTION 084113

## SECTION 087100 - DOOR HARDWARE

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
  - 1. Swinging doors.
  - 2. Sliding doors.
  - 3. Other doors to the extent indicated.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Door hardware includes, but is not necessarily limited to, the following:
  - 1. Mechanical door hardware.
  - 2. Electromechanical door hardware.
  - 3. Cylinders specified for doors in other sections.

## D. Related Sections:

- 1. Division 08 Section "Hollow Metal Doors and Frames".
- 2. Division 08 Section "Flush Wood Doors".
- 3. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
- E. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
  - 1. ANSI A117.1 Accessible and Usable Buildings and Facilities.
  - 2. ICC/IBC International Building Code.
  - 3. NFPA 70 National Electrical Code.
  - 4. NFPA 80 Fire Doors and Windows.
  - 5. NFPA 101 Life Safety Code.
  - NFPA 105 Installation of Smoke Door Assemblies.
  - 7. State Building Codes, Local Amendments.

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- F. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
  - ANSI/BHMA Certified Product Standards A156 Series.
  - 2. UL10C Positive Pressure Fire Tests of Door Assemblies.
  - 3. CAN/ULC-S104 Standard Method for Fire Tests of Door Assemblies.
  - 4. ANSI/UL 294 Access Control System Units.
  - 5. ULC-S319 Electronic Access Control Systems.
  - 6. ULC-60839-11-1, Alarm and Electronic Security Systems Part 11-1: Electronic Access Control Systems System and Components Requirements.
  - 7. CAN-ULC-S132 -- Standard Method of Tests for Emergency Exit and Emergency Fire Exit Hardware.
  - 8. CAN-ULC-S533 Egress Door Securing and Releasing Devices.
  - 9. UL 305 Panic Hardware.
  - 10. ULC-S132, Emergency Exit and Emergency Fire Exit Hardware.
  - 11. ULC-S533 Egress Door Securing and Releasing Devices.
  - 12. ANSI/UL 437- Key Locks.
  - 13. ULC-S328, Burglary Resistant Key Locks.

## 1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
  - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
  - 3. Content: Include the following information:
    - a. Type, style, function, size, label, hand, and finish of each door hardware item.
    - b. Manufacturer of each item.
    - c. Fastenings and other pertinent information.

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- d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
- e. Explanation of abbreviations, symbols, and codes contained in schedule.
- f. Mounting locations for door hardware.
- g. Door and frame sizes and materials.
- h. Warranty information for each product.
- 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
  - Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    - b. Complete (risers, point-to-point) access control system block wiring diagrams.
    - c. Wiring instructions for each electronic component scheduled herein.
  - 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
  - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

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# 1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
  - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
  - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
  - 1. Function of building, purpose of each area and degree of security required.
  - 2. Plans for existing and future key system expansion.
  - 3. Requirements for key control storage and software.
  - 4. Installation of permanent keys, cylinder cores and software.
  - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives

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of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

- 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
- 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
- 3. Review sequence of operation narratives for each unique access controlled opening.
- 4. Review and finalize construction schedule and verify availability of materials.
- 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

## 1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

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## 1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
  - 1. Structural failures including excessive deflection, cracking, or breakage.
  - 2. Faulty operation of the hardware.
  - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
  - 1. Ten years for mortise locks and latches.
  - 2. Seven years for heavy duty cylindrical (bored) locks and latches.
  - 3. Five years for standard duty cylindrical (bored) locks and latches.
  - 4. Five years for exit hardware.
  - 5. Twenty five years for manual overhead door closer bodies.
  - 6. Five years for motorized electric latch retraction exit devices.
  - 7. Two years for electromechanical door hardware.

## 1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

## PART 2 - PRODUCTS

## 2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

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- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
  - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

## 2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
  - 1. Quantity: Provide the following hinge quantity:
    - a. Two Hinges: For doors with heights up to 60 inches.
    - b. Three Hinges: For doors with heights 61 to 90 inches.
    - c. Four Hinges: For doors with heights 91 to 120 inches.
    - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
  - 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
    - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
    - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
  - 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
    - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
  - 4. Hinge Options: Comply with the following:
    - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
  - 5. Manufacturers:
    - a. Hager Companies (HA).
    - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to

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template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

- 1. Manufacturers:
  - a. Bommer Industries (BO).
  - b. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

## 2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
  - 1. Manufacturers:
    - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) QC (# wires) Option.
- B. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
  - 1. Manufacturers:
    - a. Securitron (SU) EL-CEPT Series.
- C. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
  - 1. Provide one each of the following tools as part of the base bid contract:
    - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) Electrical Connecting Kit: QC-R001.
    - McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) -Connector Hand Tool: QC-R003.
  - 2. Manufacturers:
    - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) QC-C Series.

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## 2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
  - 1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
  - 2. Furnish dust proof strikes for bottom bolts.
  - 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
  - 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
  - 5. Manufacturers:
    - a. Door Controls International (DC).
    - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    - c. Trimco (TC).
- B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
  - 1. Manufacturers:
    - a. Door Controls International (DC).
    - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    - c. Trimco (TC).
- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
  - 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
  - 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
  - 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
  - 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
  - Manufacturers:
    - a. Hiawatha, Inc. (HI).
    - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
    - c. Trimco (TC).

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## 2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinders: Original manufacturer cylinders complying with the following:
  - 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
  - 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
  - 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
  - 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
- D. Patented Cylinders: ANSI/BHMA A156.5, Grade 1, certified patented cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer's United States patents. Cylinders are to be factory keyed with owner having the ability for on-site original key cutting.
  - 1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
  - 2. Manufacturers:
    - a. Corbin Russwin (RU) Access 3 AP.
    - b. Sargent (SA) Degree DG1.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
  - 1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
  - 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
  - 3. New System: Key locks to a new key system as directed by the Owner.
- F. Key Quantity: Provide the following minimum number of keys:
  - 1. Change Keys per Cylinder: Two (2)
  - 2. Master Keys (per Master Key Level/Group): Five (5).
- G. Key Registration List (Bitting List):
  - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.

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2. Provide transcript list in writing or electronic file as directed by the Owner.

## 2.6 KEY CONTROL

- A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
  - Manufacturers:
    - a. Lund Equipment (LU).
    - b. MMF Industries (MM).
    - c. Telkee (TK).

#### 2.7 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
  - 1. Where specified, provide status indicators with highly reflective color and wording for "locked/unlocked" or "vacant/occupied" with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1" x 0.6" with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.
  - 2. Manufacturers:
    - a. Corbin Russwin Hardware (RU) ML2000 Series.
    - b. Sargent Manufacturing (SA) 8200 Series.
- B. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed.
  - 1. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.
  - 2. Locks are to be non-handed and fully field reversible.
  - Manufacturers:
    - a. Corbin Russwin Hardware (RU) CL3300 Series.
    - b. Sargent Manufacturing (SA) 10 Line.
- C. Cylindrical Locksets, Grade 2 (Standard Duty): ANSI/BHMA A156.2, Series 4000, Grade 2 Certified Products Directory (CPD) listed.
  - 1. Locks are to be non-handed and fully field reversible.
  - 2. Manufacturers:

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- a. Corbin Russwin Hardware (RU) CL3800 Series.
- b. Sargent Manufacturing (SA) 7 Line.

#### 2.8 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
  - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
  - 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
  - 4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
  - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
  - 2. Strikes for Bored Locks and Latches: BHMA A156.2.
  - 3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
  - 4. Dustproof Strikes: BHMA A156.16.

# 2.9 ELECTRIC STRIKES

- A. Standard Electric Strikes: Electric strikes tested to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.
  - 1. Manufacturers:
    - a. HES (HS) 1500/1600 Series.
- B. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

## 2.10 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

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- At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
- 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
- 3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
- 4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
- 5. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
- 6. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
- 7. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
- 8. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.
- 9. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
  - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
  - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
- 10. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
- 11. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
- 12. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
- 13. Rail Sizing: Provide exit device rails factory sized for proper door width application.

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- 14. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
  - Manufacturers:
    - a. Corbin Russwin Hardware (RU) ED4000 / ED5000 Series.
    - b. Sargent Manufacturing (SA) 80 Series.
- C. Extruded Aluminum Removable Mullions: ANSI/BHMA A156.3 anodized, removable mullions with malleable-iron top and bottom retainers. Mullions to be provided standard with stabilizers and imbedded weatherstrip.
  - 1. Manufacturers:
    - a. Same as exit device manufacturer.

#### 2.11 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
  - General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
  - 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
  - Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
  - 4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
  - 5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
  - Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate

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non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

- 1. Manufacturers:
  - a. Corbin Russwin Hardware (RU) DC6000 Series.
  - b. Norton Door Controls (NO) 7500 Series.
  - c. Sargent Manufacturing (SA) 351 Series.

## 2.12 ARCHITECTURAL TRIM

#### A. Door Protective Trim

- General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
- 2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
- 3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
- 4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
  - a. Stainless Steel: 300 grade, 050-inch thick.
- 5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
- 6. Manufacturers:
  - a. Hiawatha, Inc. (HI).
  - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
  - c. Trimco (TC).

## 2.13 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
  - Manufacturers:

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- a. Hiawatha, Inc. (HI).
- b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- c. Trimco (TC).

## 2.14 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
  - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
  - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
  - 1. National Guard Products (NG).
  - 2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
  - 3. Reese Enterprises, Inc. (RE).

## 2.15 ELECTRONIC ACCESSORIES

- A. Request-to-Exit Motion Sensor: Request-to-Exit Sensors motion detectors specifically designed for detecting exiting through a door from the secure area to a non-secure area. Include built-in timers (up to 60 second adjustable timing), door monitor with sounder alert, internal vertical pointability coverage, 12VDC or 24VDC power and selectable relay trigger with fail safe/fail secure modes.
  - Manufacturers:
    - a. Securitron (SU) XMS Series.

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- B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
  - Manufacturers:
    - a. Securitron (SU) DPS Series.
- C. Intelligent Switching Power Supplies: Provide power supplies with single, dual or multi-voltage configurations at 12 and/or 24VDC. Power Supply shall have battery backup function with an integrated battery charging circuit. The power supply shall have a standard, integrated Fire Alarm Interface (FAI). The power supply shall provide capability for secondary voltage, power distribution, direct lock control and network monitoring through add on modules. The power supply shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs. Network modules shall provide remote monitoring functions such as status reporting, fault reporting and information logging.
  - 1. Manufacturers:
    - a. Securitron (SU) AQL Series.

#### 2.16 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

## 2.17 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

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#### PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

## 3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

## 3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
  - Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
  - Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  - Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
  - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
  - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in

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- Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

#### 3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures" and "Cash Allowances". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
  - 1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.
  - 2. Submit documentation of incomplete items in the following formats:
    - a. PDF electronic file.
    - b. Electronic formatted file integrated with the Openings Studio<sup>™</sup> door opening management software platform.

## 3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

## 3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

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## 3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

#### 3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
  - 1. Quantities listed are for each pair of doors, or for each single door.
  - 2. The supplier is responsible for handing and sizing all products.
  - 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
  - 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Refer to Section 080671, Door Hardware Sets, for hardware sets.

**END OF SECTION 087100** 

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## SECTION 088000 - GLAZING

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

#### 1.2 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
  - Windows.
  - 2. Doors.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Requirements:
  - 1. See Section 081113 "Hollow Metal Doors and Frames."
  - 2. See Section 081416 "Flush Wood Doors."
  - 3. See Section 084113 "Aluminum Framed Entrances and Storefronts."

# 1.3 PERFORMANCE REQUIREMENTS

- A. Use the following design criteria:
  - 1. Design Wind Pressures: Shall be based on the design criteria indicated on Drawings.
  - 2. Design Snow Loads: Shall be based on the design criteria indicated on Drawings.
  - Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.

# 1.4 SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each glass product and glazing material indicated.
- C. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.

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D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

## 1.5 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  - 1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
  - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or the manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

## 1.6 WARRANTY

- A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
  - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

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## PART 2 - PRODUCTS

## 2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
- B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
  - 1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
  - 2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
  - 3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

## 2.2 GLASS PRODUCTS

- A. Annealed Float Glass: ASTM C 1036, Type I, (transparent flat glass), class indicted.
- B. Heat-Treated Float Glass: ASTM C 1048; Type I; (transparent flat glass); Quality-Q-3; class, kind and condition indicated.
  - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated.
  - 2. Provide Kind HS (heat-strengthened) float glass in place of annealed float glass where needed to resist thermal stresses, induced by differential shading of individual glass lites and to comply with glass requirements specified in Part 1 "Performance Requirements" Article.
  - 3. For uncoated glass, comply with requirements for Condition A.
  - 4. For coated vision glass, comply with requirements for Condition C. (other uncoated glass).
  - 5. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass in indicated.
- C. Wired Glass: ASTM C 1036, Type II (patterned and wired flat glass), Class 1 (clear), Form 1 (wired glass, polished both sides), Quality-Q6, 6.0 mm thick; Mesh 2 (M2) (Square).
- D. Laminated Glass, General: ASTM C 112, and complying with other requirements specified and with the following:

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- 1. Interlayer: polyvinyl butyral of thickness indicated with a proven record of no tendency to bubble or lose physical and mechanical properties after laminating glass lites and installation.
  - a. For polyvinyl butyral interlayers, laminate lites in autoclave with head plus pressure.
- 2. Laminating Process: Fabricate laminated glass to produce glass free of foreign substances and air or glass pockets.

## E. Laminated-Glass Units:

- 1. Kind LT, consisting of two lists of fully tempered float glass.
- 2. Outer Lite: Class 1 (clear) float glass; 3.0 mm thick; Kind FT (fully tempered):
- 3. Plastic interlayer:
  - a. Thickness: 0.090 inch.
  - b. Interlayer Color: Clear
- 4. Inner Lite: Class 1 (clear) float glass; 3.0 mm thick; Kind FT (fully tempered).
- 5. Provide one-way view mirror glass where indicated.

## 2.3 INSULATING GLASS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Guardian Glass
  - 2. Pilkington North America
  - Cardinal glass Industries
  - 4. PPG Industries, Inc.
- B. Insulating-Glass Units: General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified.
  - 1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where need to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
  - 2. Provide Kind FT (fully tempered) glass lites where safety glass is indicated.
  - 3. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are normal and the overall thicknesses of units are measured perpendicularly for outer surfaces of glass lites at unit's edge.
  - 4. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
  - 5. Spacer Specifications: Manufacturer's standard spacer material and construction complying with the following requirements:
    - a. Spacer Material: Aluminum with clear anodic finish.

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- b. Desiccant: Molecular sieve or silica gel or blend of both.
- c. Corner Construction: Manufacturer's standard corner construction.

# C. Solar-Control Low-E Insulating-Glass Units:

- 1. Basis-of Design Product: Vitro Architectural Glass.: Solarban 60 Solar Control Low-E.
- Overall Unit Thickness and Thickness of Each Lite: 25 and 6.0 mm, unless otherwise indicated.
- 3. Interspace Content: Air.
- 4. Outdoor Lite: Class 1 (gray-tinted) float glass; Annealed unless otherwise indicated.
  - a. Where security glazing is indicated, provide outdoor lite complying with requirements specified for laminated-glass units.
- 5. Indoor Lite: Class 1 (clear) float glass; Annealed unless otherwise indicated.
  - a. Where security glazing is indicated, provide indoor lite complying with requirements specified for laminated-glass units.
- 6. Low-Emissivity Coating: Sputtered on second surface.
- 7. Visible Light Transmittance: 70 percent
- 8. Winter Nighttime U-Value: 0.29.
- 9. Summer Daytime U-Value: 0.27.
- 10. Solar Heat Gain Coefficient: 0.39.
- 11. Shading Coefficient: 0.44.
- 12. Outdoor Visible Reflectance: Exterior 11 percent, Interior 12 percent.
- 13. Light to Solar Gain Ratio: 1.79
- D. Pyrolytic-Coated Float Glass (If any indicated): ASTM C 1376, float glass with metallic-oxide coating applied by pyrolytic deposition process during initial manufacture and complying with other requirements specified.
- E. Sputter-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide or -nitride coating deposited by vacuum deposition process after manufacture and heat treatment and complying with other requirements specified.

## 2.4 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
  - 1. Neoprene complying with ASTM C 864.
  - 2. EPDM complying with ASTM C 864.
  - 3. Silicone complying with ASTM C 1115.
  - 4. Thermoplastic polyolefin rubber complying with ASTM C 1115.

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- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned neoprene, EPDM silicone or thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
  - 1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

#### 2.5 GLAZING SEALANTS

## A. General:

- Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulatingglass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
- 3. Sealants used inside the weatherproofing system, shall have a VOC content of not more than 250 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- 4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
- C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
- D. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.
- E. Glazing Sealants for Fire-Rated Glazing Products: Products that are approved by testing agencies that listed and labeled fire-resistant glazing products with which they are used for applications and fire-protection ratings indicated.

# 2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
  - 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

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- 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
  - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
  - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

## 2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

# 2.1 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface condition and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

## PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examination framing glazing, with installer present, for compliance with the following:
  - 1. Manufacturing and installation tolerances, including those for size, squareness and offsets at corners.

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- 2. Presence and functioning of week system.
- 3. Minimum required face or edge clearances.
- 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

# 3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

# 3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

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- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Apply heel bead of elastomeric sealant.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

# 3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

# 3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

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- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

## 3.7 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

## 3.8 GLAZING APPLICATION SCHEDULE

- A. General: Provide the types of glass specified in the Article for the applications indicated, and complying with Part 2 Articles for glazing types.
- B. Safety Glass: Provide fully tempered units where indicated on Drawings, where specified or where required to fulfill performance criteria, unless another type of safety glazing is indicated.
- C. Interior Glazed Openings: ¼ inch (6 mm) clear glass; tempered where indicated or where required.
- D. Fire Rated Doors (if any indicated): ¼ inch (6 mm) thick fire-lite glass.
- E. Interior Non-Rated Doors: ¼ inch (6 mm).

END OF SECTION 088000

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## SECTION 088733 - DECORATIVE FILM

#### PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplemental Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section Includes:
  - Decorative Films.
  - B. Proposed Substitutions: See Section 016000 "Product Requirements."
  - C. Related Requirements:
    - 1. Section 088000 "Glazing."

## 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: Submit for each product specified indicating:
  - 1. Performance properties.
  - 2. Preparation and installation instructions and recommendations.
  - 3. Storage and handling recommendations.
- C. Samples: For each type of decorative film specified, two (2) samples, 12 inches square.
- D. Qualification Data: Submit documentation indicating qualifications of decorative film supplier.
- E. Operation and Maintenance Data: Submit for decorative film to include in maintenance manuals.
- F. Warranty: Submit sample special warranty specified in this section

# 1.4 QUALITY ASSURANCE

A. Supplier Qualifications: A qualified supplier that has a minimum of 10 years of documented experience supplying decorative films similar to the film used for this project.

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- B. Installer Qualifications: A firm that is authorized by decorative film supplier to install film in accordance with guidelines set forth by the supplier.
- C. Source Limitations: Obtain each type of decorative film from same supplier.
- D. Mock-ups: Build mock-ups to verify selections made under sample submittals and to evaluate surface preparation techniques and application workmanship.
  - 1. Construct mock-ups in the location and of the size indicated or, if not indicated, as directed by Architect.
  - 2. Approved mock-ups may become part of the completed work if undisturbed at time of Substantial Completion.
- E. Pre-installation Conference: Conduct conference at project site to discuss methods and procedures relating to installation of the decorative films.

# 1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials in supplier's protective packaging.
- B. Store and protect materials according to supplier's written recommendations to prevent damage from condensation, temperature changes, direct exposure to sun, or other causes.

#### 1.6 SITE CONDITIONS

A. Ambient Conditions: Maintain temperature, humidity, and ventilation within limits recommended by supplier.

## PART 2 - PRODUCTS

# 2.1 SUPPLIER

- A. Basis-of-Design Product: The design for decorative films is based on LLumar® Decorative Films, *Matte Frost Line*, or approved equal by the following Manufacturers:
  - 1. 3M
  - Nexfil USA

# 2.2 DECORATIVE FILM ACCESSORIES

- A. General: Provide accessories either manufactured by or acceptable to Decorative film supplier for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Pressure Sensitive Adhesive: This adhesive is characterized by its tacky nature and its ease of installation.

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## PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates for compliance with requirements and for conditions affecting performance of Decorative film including glass that is broken, chipped, cracked, abraded, or damaged in any way.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.4 PREPARATION

- A. Comply with supplier's written instructions for surface preparation.
- B. Clean substrates thoroughly prior to installation.
- C. Prepare substrates using methods recommended by film supplier to achieve the best results for the substrate under project conditions.
- D. Protect window frames and surrounding surfaces to prevent damage during installation.

## 3.3 INSTALLATION

- A. Install in accordance with supplier's written instructions.
- B. Install with no gaps or overlaps.
- C. If seamed, make seams non-overlapping.
- D. Do not remove release liner from film until just before each piece of film is cut and ready for installation.
- E. Custom cut to the glass with neat, square corners and edges to within 1/8-inch of the window frame.
- F. Remove air bubbles, blisters, and other defects. Be careful to remove "fingers" to eliminate any contamination or excess water pockets. It is crucial to remove as much water as possible during installation.

# 3.4 FIELD QUALITY CONTROL

A. After installation, view film from a distance of 10 feet against a bright uniform sky or background. Film shall appear uniform in appearance with no visible streaks, wrinkles, banding, thin spots, or pinholes.

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B. If installed film does not meet these criteria, remove, and replace with new film.

## 3.5 CLEANING AND PROTECTION

- A. Remove excess mounting solution at finished seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended by film supplier.
- C. Replace films that cannot be cleaned.
- D. Protect installed products until completion of project.
- E. Touch-up, repair or replace damaged products before substantial completion.

END OF SECTION 088733

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#### SECTION 092900 - GYPSUM BOARD

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Interior gypsum board.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Sections:
  - 1. Section 072100 "Thermal Insulation."
  - 2. Section 079200 "Joint Sealants."
  - 3. Section 099112 "Painting."

#### 1.3 SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.

## PART 2 - PRODUCTS

# 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

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# 2.2 FIRE-RESISTANCE RATED GYPSUM BOARD WITH ENHANCED MOLD AND MILDEW RESISTANCE

- A. Basis-of-Design: Gold Bond® Brand X® Fire-Shield® Gypsum Board or comparable product by one of the following:
  - 1. Certainteed.
  - 2. Georgia-Pacific Company, LLC.
- B. Type X, Panel Physical Characteristics
  - 1. Core: Mold and moisture resistant, fire-resistance rated gypsum core.
  - 2. Surface paper: 100 percent recycled content moisture/mold/mildew resistant paper on front, back and long edges.
  - 3. Long Edges. Tapered
  - 4. Overall thickness: 5/8 inch.
  - 5. Panel complies with Type X requirements of ASTM C 1396
  - 6. Mold/Mildew Resistance: 10 when tested in accordance with ASTM D 3273.
- C. Basis-of-Design: Gold Bond® Brand XP® Fire-Shield® C Gypsum Board or comparable product by one of the following:
  - 1. Certainteed.
  - 2. Georgia-Pacific Company, LLC
- D. Type C, Panel Physical Characteristics
  - Core: Mold and moisture resistant gypsum core with enhanced fire-resistance (Type C)
  - 2. Surface paper: 100 percent recycled content moisture/mold/mildew paper on front, back and long edges.
  - 3. Long edges: Tapered.
  - 4. Overall thickness: 5/8 inch.
  - 5. Panel complies with requirements Type X of ASTM C 1396.
  - 6. Mold/Mildew Resistance: 10 when tested in accordance with ASTM D 3273.

## 2.3 ABUSE RESISTANT GYPSUM BOARD

- A. Basis-of-Design: Gold Bond Brand Hi-Abuse XP® Gypsum Board (if any indicated on drawings) or comparable product by one of the following:
  - 1. Certainteed.
  - 2. Georgia-Pacific Company, LLC
- B. Performance Criteria Wall Assembly STC minimum 47

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- 1. Panel Physical Characteristics
  - a. Core: Fire-resistance gypsum core, with additives to enhance surface indentation resistance and impact resistance.
  - b. Surface paper: Abrasion resistant, 100 percent recycled content moisture/mold/mildew resistant paper on front, back and long edges.
  - c. Long Edges: Tapered
  - d. Overall Thickness: 5/8 inch.
  - e. Panel complies with Type X requirements of ASTM C 1396.
  - f. Surface Abrasion Resistance: Classification Level 3 in accordance with ASTM C 1629.
  - g. Indentation Resistance: Classification Level 1 in accordance with ASTM C 1629.
  - h. Soft Body Impact Resistance: Classification Level 2 in accordance with ASTM C 1629.
  - i. Hard Body Impact Resistance: Classification Level 1 in accordance with ASTM 1629.
  - Mold/Mildew Resistance: score of 10 when tested in accordance with ASTM D 3273.

## 2.4 HIGH IMPACT GYPSUM BOARD

- A. Basis of Design: Gold Bond Brand Hi-Impact XP® Gypsum Board (if any indicated on drawings) or comparable product by one of the following:
  - 1. Certainteed
  - 2. Georgia-Pacific Company, LLC
- B. Performance Criteria: Wall Assembly STC minimum 47
  - 1. Panel Physical Characteristics
    - a. Core: Fire-resistance rated gypsum core, with additives to enhance mold/mildew resistance, surface indentation resistance, impact resistance and moisture and mold resistant.
    - b. Surface paper: Abrasion resistant, 100 percent recycled content moisture/mold/mildew resistant paper on front, back and long edges.
    - c. Embedded fiberglass mesh.
    - d. Long Edges: Tapered.
    - e. Overall thickness: 5/8 inch.
    - f. Panel complies with Type X requirements of ASTM C 1396.
    - g. Surface Abrasion Resistance: Classification Level 3 in accordance with ASTM C 1629.
    - h. Indentation Resistance: Classification Level 1 in accordance with ASTM C 1629.
    - Soft Body Impact Resistance: Classification Level 3 in accordance with ASTM C 1629.
    - j. Hard Body Impact Resistance: Classification Level 3 in accordance with ASTM C 1629.
    - Mold/Mildew Resistance: 10 when tested in accordance with ASTM D 3273.

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## 2.5 FLEXIBLE GYPSUM BOARD

- A. Basis-of-Design: Gold Bond® Brand High Flex Gypsum Board (where required) or comparable product by one of the following:
  - 1. Certainteed
  - 2. Georgia-Pacific Company, LLC
- B. Panel Physical Characteristics
  - 1. Core: Regular gypsum core.
  - 2. Surface paper: 100 percent recycled content moisture resistant paper on front, back and long edges.
  - 3. Long Edges: Eased
  - 4. Overall thickness: 1/4 inch.
  - 5. Panel complies with requirements of ASTM C 1396.

## 2.6 MOLD AND MILDEW RESISTANT TILE BACKER

- A. Basis-of-Design: Gold Bond® Brand eXP® Tile Backer (where required) or comparable product by one of the following:
  - 1. Certainteed
  - 2. Georgia-Pacific Company, LLC
- B. Panel Physical Characteristics
  - 1. Core: Mold and moisture resistant, fire-resistance rated, gypsum core.
  - 2. Thickness: 5/8 inch high, Type X.
  - 3. Facer: Fiberglass Mat; moisture resistant, acrylic coated water barrier on front.
  - 4. Long Edges: Square.
  - Water Absorption: less than 5 percent when tested in accordance with ASTM C 473.
  - 6. Combustibility: Noncombustible when tested in accordance with ASTM E 136.
  - 7. Flame spreads/Smoke Developed: 0/0 when tested in accordance with ASTM E 84.
  - 8. Mold/Mildew Resistance: 10 when tested in accordance with ASTM D 3273
  - 9. Panel complies with requirements of ASTM C 1178.

## 2.7 CEMENT BOARD

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- A. Cement Backerboard Basis-of-Design: PermaBase® Brand Cement Board (where required) or comparable product by one of the following:
  - Certainteed
  - 2. Georgia-Pacific Company, LLC
- B. Panel Physical Characteristics
  - 1. Core: Cementitious, water-durable.
  - 2. Surface: Fiberglass mesh on front and back
  - 3. Long Edges: Tapered
  - 4. Overall Thickness: 5/8 inch thick.
  - 5. Panel complies with requirements of ASTM C 1325 and ANSI A 118.9.
  - 6. Density: 72 lbs. per cu. ft.
  - 7. Water absorption: Not greater than 8 percent when tested for 24 hours in accordance with ASTM C 473.
- C. Cement Board Underlayment Basis-of-Design: PermaBase® Brand Cement Board
  - Panel Physical Characteristics.
    - a. Core: Cementitious, water-durable.
    - b. Surface: Fiberglass mesh on front and back
    - c. Long Edges: Tapered.
    - d. Overall Thickness: 1/4 inch.
    - e. Panel complies with requirements of ASTM C 1325 and ANSI A118.9.
    - f. Density: 72 lbs. per cu. ft.
    - g. Water Absorption: Not greater than 8 percent when tested for 24 hours in accordance with ASTM C 473.

# 2.8 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
  - 1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc, plastic or paper-faced galvanized steel sheet.
  - 2. Shapes:
    - a. Cornerbead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - c. Expansion control joints.

# 2.9 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
  - 1. Interior Gypsum Board: Paper.

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- 2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
- 3. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

## 2.10 AUXILIARY MATERIALS

- A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
  - 1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
  - 1. Use Screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing).
- D. Acoustical Joint Sealant: ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings as demonstrated by testing according to ASTM E 90.
  - 1. Joint Sealants: As specified in Section 079200 "Joint Sealants."
- E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."
- F. Vapor Retarder: As specified in Section 072100 "Thermal Insulation."

# PART 3 - EXECUTION

#### 3.1 APPLYING AND FINISHING PANELS

- A. Comply with ASTM C 840.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
  - 1. Control Joints: Install control joints at locations indicated on Drawings or as indicated in field by Architect.

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- E. Form control and expansion joins with space between edges of adjoining gypsum panels.
- F. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- G. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- H. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.) except in chases braced internally.
  - 1. Unless concealed applications is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
  - 2. Fit gypsum panels around ducts, pipes and conduits.
  - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and desks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.
  - 4. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
  - 5. STC-RTC Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- I. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- J. Remove and replace panels that are wet, moisture damaged, and mold damaged.

# 3.2 APPLYING INTERIOR GYSUM BOARD

- A. Install interior gypsum board in the following locations:
  - 1. Vertical and horizontal surfaces, unless otherwise indicated.
  - 2. Moisture- and Mold-Resistant Type X: Typical of all interior walls unless indicated otherwise on drawings.
- B. Single-Layer Application:
  - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
  - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
    - a. Stagger abutting end joints not than one framing member in alternate courses of panels.

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3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

# C. Multilayer Application:

- On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member. 16 inches minimum from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
- 2. On partition/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
- 3. Fastening Methods: Fasten base layers and face layers separately to supports with screws, if required, by fire- resistance-rated assemblies; or fasten base layers with screws and fasten face layers with adhesive and supplementary fasteners.
- D. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations, and temporarily brace or fasten gypsum panels until fastening adhesive has set.

## 3.3 APPLYING TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Panel: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with ¼-inch gap where panels abut other construction or penetrations.
- B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

#### 3.4 APPLYING CEMENT BOARD PANELS

A. Install and finish according to manufacturer's written instruction.

#### 3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C 840 and ins specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
  - Cornerbead: use at outside corners, unless otherwise indicated.

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- 2. LC-Bead: Use at exposed panel edges.
- 3. U-Bead: Do not use.

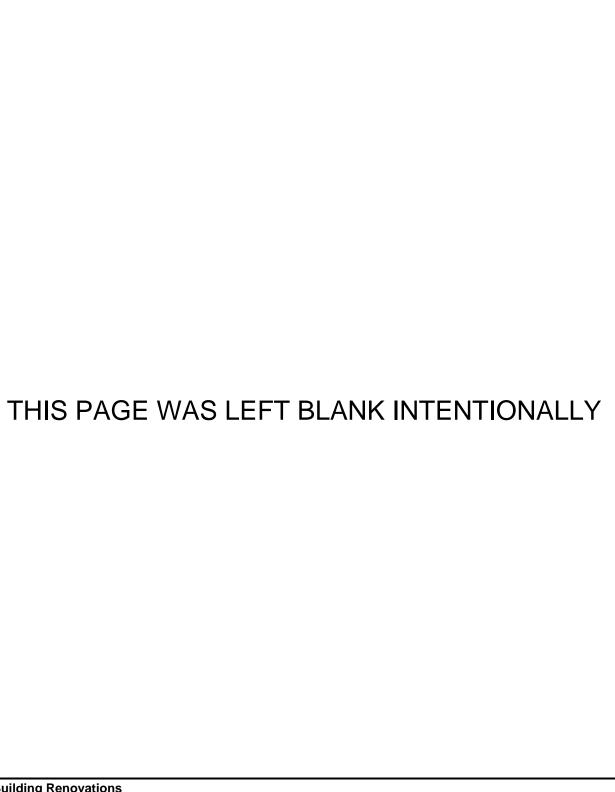
## 3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joins and damages surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840.
  - 1. Level 1: Ceiling plenum areas, concealed areas and where indicated.
  - 2. Level 2: Panels that are substrate for tile.
  - 3. Level 3: At panel surfaces located in enclosed closets and storage rooms.
  - 4. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
  - 5. Level 5: At panel surfaces that will be exposed to view where glass, semi-glass or enamel paints are specified.

#### 3.7 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
  - 1. Indications that panels are wet, or moisture damaged include, but are limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900



### SECTION 093013 - CERAMIC TILING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. Section Includes:
  - 1. Porcelain tile.
  - 2. Glazed wall tile.
  - 3. Crack isolation membrane.
  - 4. Metal edge strips.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

## 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.
- C. Samples:
  - 1. Each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide samples of each color blend.
  - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.
  - 3. Stone thresholds.

# 1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

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## 1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

## 1.6 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

### 1.7 TILE PRODUCTS

- A. Tile Type: Color Body porcelain tile.
  - 1. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide products as indicated on drawing; I-101 Materials Legend;
  - 2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  - 3. Face Size: as indicated on drawings
  - 4. Face Size Variation: Rectified.
  - 5. Thickness: varies between types specified.
  - 6. Face: Plain with square edges.
  - 7. Dynamic Coefficient of Friction: Passed.
  - 8. Tile Color, Glaze, and Pattern: As indicated on drawings.
  - 9. Grout Color: as indicated on drawing I-101.

### 1.8 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch (4-mm) nominal thickness.
  - 1. Products: Subject to compliance with requirements, provide the following:

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- a. Schluter Systems L.P.; DITRA.
- C. Latex-Portland Cement Mortar (Thinset): ANSI A118.4.
  - Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Bonsal American; an Oldcastle company.
    - b. Bostik, Inc.
    - c. Laticrete International, Inc.
    - d. Summitville Tiles, Inc.
    - e. TEC; H. B. Fuller Construction Products Inc.
  - 2. Provide prepackaged, dry-mortar mix to which only water must be added at Project site
  - 3. Provide prepackaged, dry-mortar mix combined with liquid-latex additive at Project site.
  - 4. For wall applications, provide nonsagging mortar.

#### 1.9 GROUT MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Standard Cement Grout: ANSI A118.6.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Bonsal American; an Oldcastle company.
    - b. Bostik, Inc.
    - c. <u>Laticrete International, Inc.</u>
    - d. Summitville Tiles, Inc.
    - e. TEC; H. B. Fuller Construction Products Inc.

### 1.10 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; nickel silver or stainless-steel, ASTM A 666, 300 Series exposed-edge material.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. <u>Schluter Systems L.P.</u>

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- C. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
  - 1. <u>Products</u>: Subject to compliance with requirements, provide one of the following:
    - a. <u>Bonsal American, an Oldcastle company</u>; Grout Sealer.
    - b. <u>TEC, H. B. Fuller Construction Products Inc.</u>; Grout Guard Plus Penetrating Grout Sealer.
  - 2. Grout sealers shall comply with requirements of FloorScore certification.

### PART 2 - EXECUTION

## 2.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
  - 2. Verify that concrete substrates for tile floors installed with adhesives or thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 2.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

### 2.3 CERAMIC TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in

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TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

- 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards
  - a. Tile floors consisting of tiles as indicated on drawings.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
  - 1. Glazed Wall Tile: 1/16 inch (1.6 mm).
  - 2. Porcelain Tile: 1/4 inch (6.4 mm).
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
  - Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.
- K. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to groutsealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

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L. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

## 2.4 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- A. Interior Wall Installations, Wood or Metal Studs or Furring:
  - 1. Ceramic Tile Installation: TCNA W243; thinset mortar on gypsum board.
    - a. Ceramic Tile Type: As indicated on drawings.
    - b. Thinset Mortar: Latex- portland cement mortar.
    - c. Grout: Sand-portland cement grout.

END OF SECTION 093013

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### SECTION 095113 - ACOUSTICAL PANEL CEILINGS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provision of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for ceilings.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

## 1.3 SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.
- C. Samples: For each exposed product and for each color and texture specified.

### 1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Evaluation reports.
- C. Field quality-control reports.

## 1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

### 1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to NVLAP.

## 1.6 EXTRA MATERIALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.
  - 1. Ceiling Tile Panels: Furnish quantity of full sized panels equal to 3 percent of the amount installed for each type, composition, color, pattern, and size indicated.

#### PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
  - 2. Smoke-Developed Index: 450 or less.

## 2.2 ACOUSTICAL PANEL CEILINGS, GENERAL

- A. Basis-of-Design: See reflected ceiling plan and key notes on Sheet A111 of drawings.
- B. Comparable Products: Subject to compliance with requirements, provide the basis-of-design product or comparable product by USG Interiors, Inc.
- C. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings and light reflections, unless otherwise indicated.
  - 1. Mounting Method for measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E795.
- D. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
  - 1. Where appearance characteristics of acoustical panels are indicated by referencing patterns designations in ASTM E 1264 and not manufacturer's full range that comply with requirements indicated or type, pattern, color, light reflectance, acoustical performance, edge detail and size.

# 2.3 METAL SUSPENSION SYSTEM, GENERAL

A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

- B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.
  - Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
    - a. Type: Postinstalled expansion anchors or postinstalled adhesive anchors.
    - Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition; unless otherwise indicated.
    - Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B 164 for UNS No. N04400 alloy; for ceilings located in locker rooms.
- D. Wire hangers, Braces and Ties: Provide wires complying with the following requirements:
  - 1. Zinc-Coated Carbon-Steel Wire: ASTM B 164/A 641M, Class 1 zinc coating, soft temper; unless otherwise indicated.
  - 2. Nickel-Copper-Alloy Wire: ASTM B 164, nickel-copper-alloy UNS No. N04400; for ceilings located in locker rooms.
  - 3. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than .0135-inch-diameter wire.
- E. Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- F. Angle Hangers: Angles with legs not less than 7/8-inch-wide; formed with 0.04-inch-thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.
- G. Seismic Structs: Manufacturer's standard compression struts designed to accommodate seismic forces.
- H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in-place.

## 2.4 METAL EDGE MOLDINGS AND TRIM

- A. Basis-of-Design: See reflected ceiling plan and key notes on Sheet A111 of drawings.
- B. Roll-Formed Sheet-Metal Edge Moldings and Trims: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical

panel edge details and suspension systems indicated; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners

- 1. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
- 2. For square edge lay-in panel suspension systems, provide suspension system and manufacturer's standard edge moldings that match width and configuration of exposed runners.
- C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with the following requirements:
  - 1. Aluminum Alloy: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and not less than the strength and durability properties of aluminum extrusions complying with ASTM B 221 for alloy and temper 6063-T5.
  - 2. Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.
  - 3. Baked-Enamel Finish: AA-C12C42R1 x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish; acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating and painting.
    - a. Organic Coating: Thermosetting, primer/topcoat system with a minimum dry film thickness of 0.8 to 1.2 mils.
- D. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceiling attach abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Proceed with installation only after unsatisfactory conditions have corrected.

#### 3.2 PREPARATON

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders and comply with layout shown on reflected ceiling plans.

## 3.3 INSTALLATION

- A. General: Install acoustical panels ceilings to comply with ASTM C 636 and seismic requirements indicated, per manufacturer's written instructions and CISCA's Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
  - Install hangers plub and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
  - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying or other equally effective means.
  - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
  - 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion or elevated temperatures.
  - 5. Secure flat, angle, channel and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion or elevated temperatures.
  - 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
  - 7. Do not attach hangers to steel deck tabs.
  - 8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
  - 9. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck or steel deck tabs. Fasten bracing wires in to concrete with cast-in-plate or postinstalled anchors.

- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
  - 1. Apply acoustical sealant in a continuous ribbon concealed on bac of vertical legs of moldings before they are installed.
  - 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch to 12 feet. Miter corners accurately and connect securely.
  - 3. Do not use exposed fasteners, including pop rivets, on molding and trim.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
  - 1. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
  - 2. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

#### 3.4. CLEANING

 Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

#### SECTION 096513 - RESILIENT BASE AND ACCESSORIES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

#### 1.2 SUMMARY

- A. Section Includes:
  - Resilient base.
  - 2. Resilient molding accessories.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.
- C. Samples: For each exposed product and for each color and texture specified, not less than 12 inches (300 mm) long.

## 1.3 EXTRA MATERIALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.
  - 1. Resilient Base and accessories: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

# PART 2 - PRODUCTS

### 2.1 THERMOPLASTIC-RUBBER BASE

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
  - 1. Roppe Corporation, U.S.A.

- 2. Armstrong World Industries, Inc.
- 3. Burke Mercer Flooring Products, Division of Burke Industries Inc.
- 4. Johnsonite; A Tarkett Company.
- 5. VPI, LLC, Floor Products Division.
- B. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic).
  - 1. Group: I (solid, homogeneous).
  - 2. Style and Location:
    - a. Style A, Straight: Provide in areas with carpet.
    - b. Style B, Cove: Provide in areas with resilient flooring.
- C. Thickness: 0.125 inch (3.2 mm).
- D. Height: 4 inches (102 mm) or as indicated on Drawings.
- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Job formed or preformed.
- G. Inside Corners: Job formed or preformed.
- H. Colors: As selected by Architect from full range of industry colors; see Interior Finish/Color Schedule on drawings.

#### 2.2 RUBBER MOLDING ACCESSORY

- A. <u>Manufacturers</u>: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Roppe Corporation, USA.
  - 2. VPI, LLC, Floor Products Division.
- B. Description: Rubber carpet edge for glue-down applications, reducer strip for resilient flooring, joiner for tile and carpet required to make the transition from materials and transition strips.
- C. Profile and Dimensions: As selected by Architect from manufacturer's standard profiles.
- D. Locations: Provide rubber molding accessories where necessary.
- E. Colors: As selected by Architect from full range of industry colors; see Interior Finish / Color Schedule on drawings.

### 2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

#### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until they are the same temperature as the space where they are to be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

### 3.2 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.
- H. Job-Formed Corners:

- 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 4 inches (102 mm) in length.
  - a. Form without producing discoloration (whitening) at bends.
- 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 4 inches (102 mm) in length.
  - a. Miter or cope corners to minimize open joints.

### 3.3 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

### 3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

# SECTION 096813 - TILE CARPETING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. This Section includes modular, multi-level pattern cut / loop carpet tile.
- B. Proposed Equals and Substitutions: See Section 016000 "Product Requirements."

## 1.3 SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each product indicated.
- C. Shop Drawings: Show the following:
  - 1. Carpet tile type, color, and dye lot.
  - 2. Pattern of installation.
  - 3. Insets and borders.
  - 4. Edge, transition, and other accessory strips.
  - 5. Transition details to other flooring materials.
- D. Samples: For each color and texture required.
  - 1. Carpet Tile: Full-size Sample.
  - 2. Exposed Edge, Transition, and other Accessory Stripping: 12inch (300 mm) long Samples.
- E. Product Schedule: For carpet tile. Use same designations indicated on Drawings.
- F. Maintenance data.

## 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- B. Mockups: Before installing carpet tile, build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Approved mockups may become part of the completed Work if undamaged at time of Substantial Completion.

### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104, Section 5, "Storage and Handling."

#### 1.6 PROJECT CONDITIONS

- A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."
- B. Environmental Limitations: Do not install carpet tiles until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

### 1.7 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, loss of tuft bind strength, dimensional stability, excess static discharge, and delamination.
  - 1. Warranty Period: Lifetime Commercial Limited.

# 1.8 EXTRA MATERIALS

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

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## PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include those indicated or approved equal.
- B. Basis-of-Design Product: Shaw Contract Group, Dalton, GA. Subject to compliance with the requirements, provide the named product or a comparable product by one of the following:
  - 1. J&J/Invision, Dalton, GA.
  - 2. Tandus Flooring, Dalton, GA.
  - 3. Mannington Commercial, Salem, New Jersey.
  - 4. Interface, Inc.

#### 2.2 CARPET TILE

- A. Products: Shaw Commercial Group.
  - 1. Color: 31557 Sterling.
  - 2. Style: 5T031 Welcome II Tile.
  - 3. Construction: Needlebond Hobnail.
  - 4. Fiber: Pet Polyester.
  - 5. Dye Method: 100% Solution Dyed.
  - 6. Tufted Weight: 49 oz/yd².
  - 7. Finished Pile Thickness: 0.157 inches.
  - 8. Average Density: 6,477 /yd3.
  - 9. Product Size: 24x24 in.
  - 10. Secondary Backing: Ecoworx® Tile.
- B. Products: Shaw Commercial Group.
  - 1. Color: 94535 Mirror Grey.
  - 2. Style: 5T294 Arrange Tile.
  - 3. Construction: Multi-Level Pattern Loop.
  - 4. Fiber: Ecosolution Q® Nylon.
  - 5. Dye Method: 100% Solution Dyed.
  - 6. Tufted Weight: 16 oz/yd².
  - 7. Finished Pile Thickness: 0.121 inches.
  - 8. Average Density: 4,760 /yd3.

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- 9. Product Size: 24x24 in.
- 10. Secondary Backing: Strataworx® Tile.
- C. Products: Shaw Commercial Group.
  - 1. Colors: 71485 Reservoir & 71580 Remote.
  - 2. Style: 5T374 Plains Tile.
  - 3. Construction: Multi-Level Pattern Loop.
  - 4. Fiber: Ecosolution Q100® Nylon.
  - 5. Dye Method: 100% Solution Dyed.
  - 6. Tufted Weight: 22 oz/yd².
  - 7. Finished Pile Thickness: 0.112 inches.
  - 8. Average Density: 7,071 /yd3.
  - 9. Product Size: 18x36 in.
  - 10. Secondary Backing: Ecoworx® Tile.
- D. Products: Shaw Commercial Group.
  - 1. Colors: 71485 Remote Reservoir.
  - 2. Style: 5T375 Landing Edge Tile.
  - 3. Construction: Multi-Level Pattern Loop.
  - 4. Fiber: Ecosolution Q100® Nylon.
  - 5. Dye Method: 100% Solution Dyed.
  - 6. Tufted Weight: 22 oz/yd2.
  - 7. Finished Pile Thickness: 0.106 inches.
  - 8. Average Density: 7,472 /yd3.
  - 9. Product Size: 18x36 in.
  - 10. Secondary Backing: Ecoworx® Tile.

#### 2.3 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
  - 1. VOC Limits: Provide adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA method 24).

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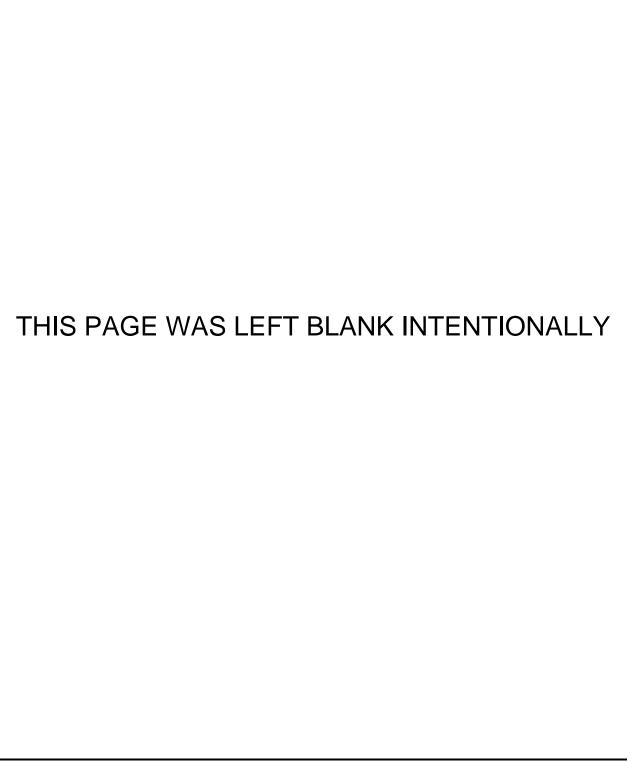
## PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710.
- C. Preparation: Comply with CRI 104, Section 7.3, "Site Conditions; Floor Preparation," and with carpet manufacturer's written installation instructions for preparing substrates.
- D. Installation Method: As recommended in writing by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Install pattern parallel to walls and borders.
- G. Protect installed carpet to comply with CRI 104, Section 16, "Protecting Indoor Installations."

END OF SECTION 096813

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#### SECTION 099112 - PAINTING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each product indicated, including:
  - 1. Product characteristics.
  - 2. Surface preparation instructions and recommendations.
  - 3. Primer requirements and finish specification.
  - 4. Storage and handling requirements and recommendations.
  - 5. Application methods.
  - 6. Cautions for storage, handling, and installation.
- C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors, and sheens available.

## 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.

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- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish surfaces for verification of products, colors and sheens.
  - 2. Finish area designated by Architect.
  - 3. Provide samples that designate primer and finish coats.
  - 4. Do not proceed with remaining work until the Architect approves the mock-up.

### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
  - 1. Product name, and type (description).
  - 2. Application and use instructions.
  - 3. Surface preparation.
  - 4. VOC content.
  - 5. Environmental handling.
  - 6. Batch date.
  - Color number.
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

## 1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

### 1.7 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.

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1. Quantity: 3 percent, but not less than 1 gal. (3.8 L) or 1 case, as appropriate, of each material and color applied.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis of Design Product: Subject to compliance with requirements, provide Sherwin-Williams, 101 Prospect Ave.; Cleveland, OH 44115; Toll Free Tel: 800-524-5979; Tel: 216-566-2000; Fax: 440-826-1989, or a comparable product by one of the following:
  - 1. Benjamin Moore & Co. (Benjamin Moore)
  - 2. PPG Industries, Inc. (Pittsburgh Paints)
  - 3. Pratt & Lambert

### 2.2 PAINT MATERIALS, GENERAL

- A. Paints and Coatings.
  - Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
  - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufactures product instructions for optimal color conformance.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
- D. Color: Refer to Finish Schedule for paint colors, and as selected.
- E. Chemical Components of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions:
  - 1. Flat Paints and Coatings: VOC not more than 50 g/L.
  - 2. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
  - 3. Anticorrosive Coatings: VOC not more than 250 g/L.
  - 4. Varnishes and Sanding Sealers: VOC not more than 350 g/L.
  - 5. Stains: VOC not more than 250 g/L.

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- 6. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
- 7. Restricted Components: Paints and coatings shall not contain acrolein; acrylonitrile; antimony; benzene; butyl benzyl phthalate; cadmium; di (2-ethylhexyl) phthalate; din-butyl phthalate; di-n-octyl phthalate; 1,2-dichlorobenzene; diethyl phthalate; dimethyl phthalate; ethylbenzene; formaldehyde; hexavalent chromium; isophorone; lead; mercury; methyl ethyl ketone; methyl isobutyl ketone; methylene chloride; naphthalene; toluene (methylbenzene); 1,1,1-trichloroethane; or vinyl chloride.

#### 2.3 PREPARATORY COATS

- A. Concrete Unit Masonry Block Filler: High-performance latex block filler of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
- B. Exterior Primer: Exterior alkyd or latex-based primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
  - 1. Ferrous-Metal and Aluminum Substrates: Rust-inhibitive metal primer.
  - 2. Zinc-Coated Metal Substrates: Galvanized metal primer.
  - 3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.
- C. Interior Primer: Interior latex-based or alkyd primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
  - 1. Ferrous-Metal Substrates: Quick drying, rust-inhibitive metal primer.
  - 2. Zinc-Coated Metal Substrates: Galvanized metal primer.
  - 3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

### PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

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C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

## 3.2 APPLICATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
- C. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
  - 1. Provide barrier coats over incompatible primers or remove and reprime.
  - 2. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
  - 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
    - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
    - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
    - c. If transparent finish is required, backprime with spar varnish.
    - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
    - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
  - 4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
    - a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

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- b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
- 5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

## E. Material Preparation:

- 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
- 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
- F. Exposed Surfaces: Include areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
  - 1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 2. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
  - 3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
  - 4. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
  - 5. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
- G. Sand lightly between each succeeding enamel or varnish coat.
- H. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.
- I. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
  - 1. Omit primer over metal surfaces that have been shop primed and touchup painted.
  - 2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
  - 3. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.

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- J. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
  - 1. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- K. Minimum Coating Thickness: Apply paint materials no thinner than manufacturers recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
- L. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.
- M. Block Fillers (if any indicated): Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- N. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- O. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- P. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
- Q. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

## 3.3 CLEANING AND PROTECTING

- A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
- B. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- C. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

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1. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

## 3.4 PAINT SCHEDULE

- A. Paint Schedule is based on Sherwin-Williams Co. (S-W) paint systems for the various substrates indicated:
- B. New surfaces to be painted:
  - 1. Interior ferrous metals:
    - a. 1 coat S-W Pro Industrial Pro-Cryl Universal Primer B66-1310 Series (5.0 mils wet, 2.0 mils dry).
    - b. 2 coats S-W Pro Industrial DTM Acrylic Semi-Gloss, B66 Series (6.0 mils wet, 2.5 mils dry per coat).
  - 2. Interior metal joists, any exposed secondary framing, piping, insulated piping, conduit, etc. exposed to view.
    - a. Clean and prepare existing surfaces.
    - b. 1 coat Pro Industrial Pro-Cryl Universal Primer, B66-1310 (5.0 mils wet, 2.0 dry).
    - c. 2 coats Pro Industrial Waterborne Acrylic Dryfall, Eg-Shel, B42-80 Series.
  - 3. Exterior ferrous metals:
    - a. 1 coat S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils wet, 2.0 mils dry).
    - b. 2 coats S-W Metalatex Acrylic Semi-Gloss, B42 Series (4 mils wet, 1.5 mils dry per coat).
  - 4. Gypsum walls and partitions High Performance:
    - a. 1 coat S-W ProMar 200 Zero VOC Latex Primer B28W2600 (4 mils wet, 1.5 mills dry).
    - b. 2 coats S-W Pro Industrial DTM Acrylic Eg-Shel, B66 Series (6.0 mils wet, 2.5 mils dry).
  - 5. Gypsum drywall horizontal soffit surfaces (flat finish):
    - a. 1 coat S-W ProMar 200 Zero VOC Interior Latex Primer B28W2600 (4 mils wet, 1.5 mils dry).
    - b. 2 coats S-W ProMar 200 Zero VOC Latex Flat, B30-2600 Series (4.0 mils wet, 1.6 mils dry per coat).

END OF SECTION 099112

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#### SECTION 101410 - PANEL SIGNAGE

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Room Identification Panel Signs
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each product indicated.
- C. Sign Schedule: Use same designations specified or indicated on drawings.
- D. Shop Drawings: Include plans, elevations, sections, details and attachments to other Work.
  - 1. Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
  - 2. Provide message list for each sign, including large-scale details of wording, lettering and braille layout.
  - 3. Verify names of all spaces with tenant.
- E. Samples: For each sign material indicated that involves color selection.

## 1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

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### PART 2 - PRODUCTS

#### 2.1 PANEL SIGNS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
- B. Manufacturers: Basis-of-Design Product: Subject to compliance with requirements, provide RowMark "The Ultra-Mattes" Series size and font style as indicated on drawings or comparable product by one of the following.
  - 1. National Signage Affiliates.
  - 2. Mohawk Sign Systems.
  - 3. Hackley Architectural Signage.
  - 4. Kroy Sign Systems, LLC.
- C. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- D. Cast-Acrylic Sheet: Manufacturer's standard and as follows:
  - 1. Color: As selected by Architect from manufacturer's full range, matte finish.
- E. Frames: Fabricate frames to profile indicated; comply with the following requirements for materials and corner conditions:
  - 1. Material: Acrylic plastic.
  - 2. Corner Condition: Rounded to radius indicated.
- F. Graphic Content and Style: Provide sign copy that complies with requirements indicated in the Sign Schedule on Drawings for size, style, spacing, content, mounting height and location, material, finishes, and colors of signage.
- G. Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by Grade 2 braille. Produce precisely formed characters with square cut edges free from burrs and cut marks.
  - 1. Raised-Copy Thickness: Not less than 1/32 inch.
- H. Engraved Copy: Machine engrave letters, numbers, symbols, and other graphic devices into panel sign on face indicated to produce precisely formed copy, incised to uniform depth.
- I. Subsurface Engraved Acrylic Sheet: Reverse-engrave back face of clear acrylic sheet. Fill resulting copy with enamel. Apply opaque background color coating over enamel-filled copy.

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PANEL SIGNAGE 101410 - 2

J. Colored Coatings for Acrylic Sheet: For copy and background and frame colors, provide Pantone Matching System (PMS) colored coatings, including inks and paints that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are nonfading for application intended.

### PART 3 - EXECUTION

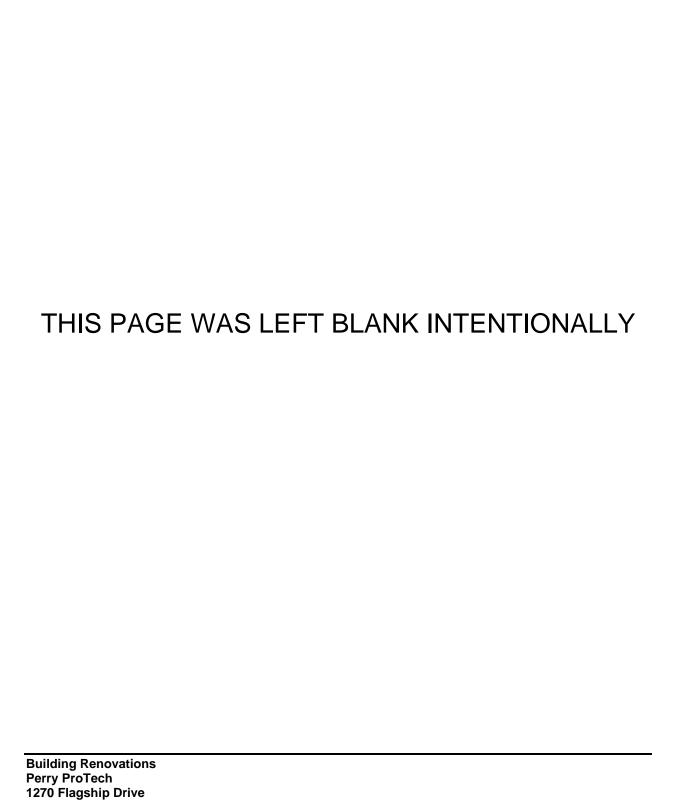
## 3.1 INSTALLATION

- A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
  - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
  - 2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.
- B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using methods indicated below:
  - 1. Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
  - 2. Screw Mounting: Option to vinyl-tape mounting, screw type and size per manufacturer's recommendations.

**END OF SECTION 101410** 

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PANEL SIGNAGE 101410 - 3



PANEL SIGNAGE 101410 - 4

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#### SECTION 102113.13 - METAL TOILET COMPARTMENTS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

#### 1.2 SUMMARY

- A. Section includes painted steel toilet compartments configured as toilet enclosures and urinal screens.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."

### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 0133000 "Submittal Procedures."
- B. Product Data: For each type of product.
- C. Shop Drawings: For toilet compartments. Include plans, elevations, sections, and attachment details.
- D. Samples for each type of toilet compartment material indicated.

### 1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

#### 1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

# PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for toilet compartments designated as accessible.

### 2.2 PAINTED STEEL TOILET COMPARTMENTS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. Accurate Partitions Corporation.
  - 2. All American Metal Corp.
  - 3. American Sanitary Partition Corporation.
  - 4. Ampco, Inc.
  - 5. Bradley Corporation; Mills Partitions.
  - 6. Flush Metal Partition Corp.
  - 7. Global Steel Products Corp.
- B. Toilet-Enclosure Style: Overhead braced.
- C. Urinal-Screen Style: Wall hung, flat panel.
- D. Door, Panel, and Pilaster Construction: Seamless, metal facing sheets pressure laminated to core material; with continuous, interlocking molding strip or lapped-and-formed edge closures; corners secured by welding or clips and exposed welds ground smooth. Exposed surfaces shall be free of pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections.
  - 1. Core Material: Manufacturer's standard sound-deadening honeycomb of resinimpregnated kraft paper in thickness required to provide finished thickness of 1 inch (25 mm) for doors and panels and 1-1/4 inches (32 mm) for pilasters.
  - 2. Grab-Bar Reinforcement: Provide concealed internal reinforcement for grab bars mounted on units of size and material adequate for panel to withstand applied downward load on grab bar of at least 250 lbf (1112 N), when tested according to ASTM F 446, without deformation of panel.
  - 3. Tapping Reinforcement: Provide concealed reinforcement for tapping (threading) at locations where machine screws are used for attaching items to units.

### E. Urinal-Screen Construction:

- 1. Flat-Panel Urinal Screen: Matching panel construction.
- 2. Integral-Flange, Wall-Hung Urinal Screen: Similar to panel construction, with integral full-height flanges for wall attachment, and maximum 1-1/4 inches (32 mm) thick.
- 3. Wedge-Shaped, Wall-Hung Urinal Screen: Similar to panels, V-shaped, fabricated for concealed wall attachment, and maximum 6 inches (152 mm) wide at wall and minimum 1 inch (25 mm) wide at protruding end.
- F. Facing Sheets and Closures: Electrolytically coated steel or hot-dip galvanized-steel sheet with nominal base-metal (uncoated) thicknesses as follows:
  - 1. Pilasters, Braced at Both Ends: Manufacturer's standard thickness, but not less than 0.036 inch (0.91 mm).

- 2. Pilasters, Unbraced at One End: Manufacturer's standard thickness, but not less than 0.048 inch (1.21 mm).
- 3. Panels: Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm).
- 4. Doors: Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm).
- 5. Flat-Panel Urinal Screens: Thickness matching the panels.
- G. Pilaster Shoes and Sleeves (Caps): Stainless-steel sheet, not less than 0.031-inch (0.79-mm) nominal thickness and 3 inches (76 mm) high, finished to match hardware.
- H. Brackets (Fittings):
  - 1. Stirrup Type: Ear or U-brackets; chrome-plated zamac.
  - 2. Full-Height (Continuous) Type: Manufacturer's standard design; (at urinal screen only) aluminum.
- I. Steel Sheet Finish: Manufacturer's standard baked-on finish.
  - Color: As indicated on drawings or as selected by Architect from manufacturer's full range.
    - a. Allow for application of one color in each room.

### 2.3 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard operating hardware and accessories.
  - 1. Material: Chrome-plated zamac.
  - 2. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
- B. Hardware and Accessories: Manufacturer's heavy-duty stainless-steel operating hardware and accessories.
  - 1. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
- C. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- D. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sextype bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

### 2.4 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories, and solid blocking within panel where required for attachment of toilet accessories.
- B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, inswinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, outswinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

### PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position indicated with manufacturer's recommended anchoring devices.
  - 1. Maximum Clearances:
    - a. Pilasters and Panels: 1/2 inch (13 mm).
    - b. Panels and Walls: 1 inch (25 mm).
  - 2. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than two brackets attached near top and bottom of panel.
    - a. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
    - b. Align brackets at pilasters with brackets at walls.
  - 3. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.
    - a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile ioints
    - b. Align brackets at pilasters with brackets at walls.

### 3.2 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors to return doors to fully closed position.

**END OF SECTION 102113.13** 

#### SECTION 102310 - GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplmentary Conditions and Division 1 Specification Sections, apply to this section.

# 1.2 SUMMARY

- A. Frameless glazed interior wall and door assemblies.
- B. Proposed Substitutions: See Section 016000 "Product Requirement."

### 1.3 RELATED REQUIREMENTS

A. Section 087100 - Door Hardware.

### 1.4 REFERENCE STANDARDS

- A. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum; 2012.
- B. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2013.
- C. ASTM B221M Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.
- D. ASTM C920 Standard Specification for Elastomeric Joint Sealants; 2014.
- E. ASTM C1036 Standard Specification for Flat Glass; 2011e1.
- F. ASTM C1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

### 1.5 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Meeting: Convene at project site seven calendar days prior to scheduled beginning of construction activities of this section to review section requirements.
  - 1. Require attendance by representatives of installer, other entities directly affecting, or affected by, construction activities of this section.

2. Notify Architect four calendar days in advance of scheduled meeting date.

#### 1.6 SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: Manufacturer's descriptive literature for each component in partition assembly.
- C. Shop Drawings: Drawings showing layout, dimensions, identification of components, and interface with adjacent construction.
  - 1. Include field measurements of openings.
  - 2. Include Elevations Showing:
    - a. Locations and identification of manufacturer-supplied door hardware and fittings.
    - b. Locations and sizes of cut-outs and drilled holes for other door hardware.
  - 3. Include Details Showing:
    - a. Requirements for support and bracing of overhead track.
    - b. Installation details.
    - c. Appearance of manufacturer-supplied door hardware and fittings.
- E. Verification Samples: one set, minimum size 2 by 3 inches (50 by 75 mm), representing actual material and finish of exposed metal.
- F. Design Data: Design calculations, bearing seal and signature of structural engineer licensed to practice in the State in which the Project is located, showing loads at points of attachment to the building structure.
- G. Certificates: Contractor to certify that installer of partition assemblies meets specified qualifications.
- H. Operation and Maintenance Data: For manufacturer-supplied operating hardware.
- I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- J. Specimen Warranty.
- K. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

#### 1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum three years of experience designing, assembling, and installing partition assemblies similar to those specified in this section.

# 1.8 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until installation.

# 1.9 WARRANTY

- A. See Section 017800 Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a one year period after date of Substantial Completion.
- C. Provide five year manufacturer warranty against excessive degradation of metal finishes. Include provision for replacement of units with excessive fading, chalking, or flaking.

### PART 2 - PRODUCTS

# 2.1 MANUFACTURERS

- A. Frameless Glazed Interior Wall and Door Assemblies:
  - 1. C.R. Laurence Co., Inc; CRL Clear View Series Frameless Glass Wall Office System: www.crl-arch.com.
  - 2. Substitutions: See Section 016000 Product Requirements.

### 2.2 FRAMELESS GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

- A. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels fastened with low profile sidelite aluminum rail fittings on top and bottom edge of glass wall.
  - 1. Configuration: As indicated on drawings.
  - 2. Full Length Top and Bottom Sidelite Rails: 2-5/16 inch (59 mm) high by 1-1/2 inch (38 mm) deep with end caps.
  - 3. Sidelite Fittings, Clad Finish: Satin anodized.
  - 4. Glass Thickness: 1/2 inch (12.7 mm), tempered.
  - 5. Designed to withstand normal operation without damage, racking, sagging, or deflection.
  - 6. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
  - 7. Finished metal surfaces protected with strippable film.
  - 8. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

- B. Pivoting Glass Doors: Full length dry glazed rail fittings.
  - 1. Door Configuration: As indicated on drawings.
  - 2. Full Length Top and Bottom Rails: 2-5/16 inch (59 mm) high by 1-1/2 inch (38 mm) deep with end caps.
  - 3. Glass Thickness: 1/2 inch (12.7 mm), tempered.
  - 4. Sidelite Rails: Match door rail sightlines and finish.
  - 5. Aluminum Finish: Satin anodized.
  - 6. Door Hardware: Locking ladder pulls, brushed stainless steel.
  - 7. Provide accessories as required for complete installation.
  - 8. Basis of Design: C.R. Laurence Co., Inc; CRL Wedge-Lock Low Profile Door Rail System: www.crl-arch.com.
- C. Other Manufacturers: see Substitution Procedures Section 012500.

### 2.3 FITTINGS AND HARDWARE

A. Operable Panel Hardware: Coordinate with additional requirements as specified in Section 087100.

# 2.4 MATERIALS

- A. Glass: Flat glass meeting requirements of ASTM C1036, Type I Transparent Flat Glass, Class 2 Tinted, Quality Q3, fully tempered in accordance with ASTM C1048, Kind FT, and as follows:
  - 1. Thickness: As indicated.
  - 2. Color: clear.
  - 3. Prepare glazing panels for indicated fittings and hardware before tempering.
  - 4. Polish edges that will be exposed in finished work to bright flat polish.
  - 5. Temper glass materials horizontally; visible tong marks or tong mark distortions are not permitted.
- B. Aluminum Components: Conforming to ASTM B221 (ASTM B221M), Alloy 6063, T5 Temper.
- C. Sealant: One-part silicone sealant, conforming to ASTM C920, clear.

#### 2.5 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

# PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that track supports are properly braced, level within 1/4 inch (6 mm) of required position and parallel to the floor surface.
- C. Verify floor flatness of 1/8 inch in 10 feet (3 mm in 3 m), non-cumulative.
- D. Do not begin installation until supports and adjacent substrates have been properly prepared.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean substrates thoroughly prior to installation.
- B. Prepare substrates using the methods recommended by the manufacturer for achieving acceptable result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with glazed interior wall and door assembly manufacturer's instructions.
- B. Fit and align glazed interior wall and door assembly level and plumb.

# 3.4 ADJUSTING

- A. Adjust glazed interior wall and door assembly to operate smoothly from sliding or pivoting positions.
- B. Adjust swing door hardware for smooth operation.

# 3.5 CLEANING

A. Clean installed work to like-new condition.

# 3.6 CLOSEOUT ACTIVITIES

- A. See Section 017000 Closeout Submittals, for closeout submittals.
- B. Demonstrate operation of glazed interior wall and door assembly and identify potential operational problems.

# 3.7 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before date of Substantial Completion.

**END OF SECTION 102310** 

### SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

# PART 1 - GENERAL

# 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. Section Includes:
  - 1. Washroom and shower accessories.
  - 2. Custodial accessories by plumbing sub-contractor.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Owner-Furnished Material: Toilet paper holders, Soap dispensers and waste receptacles.

# 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product indicated.
- C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
  - 1. Identify locations using room designations indicated and product designated on drawings for that space.

### 1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

### 1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

# 1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

#### 1.7 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 15 years from date of Substantial Completion.

### PART 2 - PRODUCTS

### 2.1 WASHROOM/SHOWER ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product as manufactured by Bobrick, Inc. or comparable product by one of the following:
  - 1. A & J Washroom Accessories, Inc.
  - 2. American Specialties, Inc.
  - 3. Bradley Corporation.
  - 4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
  - 5. Tubular Specialties Manufacturing, Inc.
- B. Toilet Tissue (Roll) Dispenser: Furnished by owner and installed by contractor.
- C. Liquid Soap Dispenser: Furnished by owner and installed by contractor.
- D. Grab Bar:
  - 1. Basis-of-Design Product: As indicated on Drawings.
  - 2. Mounting: Flanges with concealed fasteners.
  - 3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
    - a. Finish: Smooth, No. 4 finish (satin).
  - 4. Outside Diameter: 1-1/4 inches (32 mm)
  - 5. Configuration and Length: As indicated on Drawings.
- E. Mirror Unit: Re-use existing. G.C. to clean and install

# 2.2 CUSTODIAL ACCESSORIES

- A. Basis-of-Design Product: (Provided by Plumbing Contractor) Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. A & J Washroom Accessories, Inc.
  - 2. American Specialties, Inc.
  - 3. Bradley Corporation.
  - 4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
  - 5. Tubular Specialties Manufacturing, Inc.

# B. Mop and Broom Holder:

- 1. Basis-of-Design Product: As indicated on Drawings.
- 2. Description: Unit with holders.
- 3. Length: 24 inches (610mm).
- 4. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
- 5. Material and Finish: Stainless steel, No. 4 finish (satin).

### 2.3 FABRICATION

A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six (6) keys to Owner's representative.

#### PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

END OF SECTION 102800

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#### SECTION 104413 - FIRE PROTECTION CABINETS

# PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. Section includes fire-protection cabinets for portable fire extinguishers.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Sections:
  - 1. Section 104416 "Fire Extinguishers."

### 1.3 SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.
- C. Shop Drawings: For fire-protection cabinets.
- D. Maintenance data.

### 1.4 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

# 2.2 FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide Academy series Model 1027F10 as manufactured by JL Industries, Inc.; a division of the Activar Constructions Products Group, or comparable product by one of the following:
  - 1. Larsens Manufacturing Company.
  - 2. Potter Roemer, LLC.
  - 3. Strike First Corporation of America.
- C. Cabinet Construction: Nonrated.
- D. Cabinet Material: Steel sheet.
- E. Recessed Cabinet: Cabinet box recess in walls of sufficient depth to suit style of trim indicated.
  - 1. Trimless with Concealed Flange: Surface of surrounding wall finishes flush with exterior finished surface of cabinet frame and door, without overlapping trim attached to cabinet. Provide recessed flange, of same material as box, attached to box to act as drywall bead.
- F. Cabinet Door Material: Steel Sheet.
- G. Door Style: Vertical duo panel w/frame.
- H. Door Glazing: Clear transparent acrylic sheet.
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
- J. Accessories:
  - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  - 2. Provide projecting door pull and friction latch.
  - 3. Provide manufacturer's standard hinge permitting door to open 180 degrees.
  - 4. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.
    - Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
      - 1) Location: Applied to cabinet door.
      - 2) Application Process: Silk-screened or pressure-sensitive vinyl letters.
      - 3) Lettering Color: Black.
      - 4) Orientation: Vertical.

### K. Materials:

- 1. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- 2. Transparent Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), with Finish 1 (smooth or polished).
- L. Manufacturer's standard baked-enamel paint for the following:
  - Exterior of cabinet, door and trim except for those surfaces indicated to receive another finish.
    - Interior of cabinet and door.
  - 2. Steel: Baked enamel or powder coat.

### 2.3 FABRICATION

- A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door and hardware to suite cabinet type, trim style and door style indicated.
  - 1. Weld joints and grind smooth.
  - 2. Provide factory-drilled mounting holes.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
  - 1. Miter and weld perimeter door frames.

# 2.4 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components area acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

# 2.5 STEEL FINISHES

A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSP-SO 5/NACE No. 1, "White Metal Blast Cleaning." After cleaning, apply a conversion coating suited to the organic coating to be applied over it.

- B. Baked-Enamel or Powder Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05 mm).
  - 1. Color and Glass: As selected by Architect from manufacturer's full range.

#### PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Prepare recesses for recessed fire protection cabinets as required by type and size of cabinet and trim style.

### 3.3 INSTALLATION

- A. General: Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
- B. Fire Protection Cabinets: Fasten cabinet to structure, square and plumb.

### 3.4 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes or replace fire protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire protection cabinet and mounting bracket manufacturers.

| E.                                 | Paplace fire protection cabinets that have been demaged or have deteriorated beyond                                                                         |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>C.</b>                          | Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures. |
| END OF                             | SECTION 104413                                                                                                                                              |
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#### SECTION 104416 - FIRE EXTINGUISHERS

# PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.
- B. Proposed Substitutions: See Section 016000 "Product Requirements."
- C. Related Sections:
  - 1. Section 104413 Fire Protection Cabinets.

#### 1.3 SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.
- C. Operation and maintenance data.

### 1.4 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

# PART 2 - PRODUCTS

# 2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

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FIRE EXTINGUISHERS 104416 - 1

# 2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
  - Basis-of-Design Product: Subject to compliance with requirements, provide Cosmic 10E 10 lb dry chemical fire extinguisher as manufactured by J. L. Industries, Inc; a division of Activar Construction Products Group or comparable product by one of the following:
    - a. Badger Fire Protection.
    - b. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
    - c. Larsens Manufacturing Company.
    - d. Potter Roemer LLC.
    - e. Strike First Corporation of America.
  - 2. Valves: Manufacturer's standard.
  - 3. Handles and Levers: Manufacturer's standard
  - 4. Instruction Labels: Include pictorial marking system complying with NFPA 1, Appendix B.
- B. Fire Extinguisher for Typical Locations: (FE) for extinguishers in cabinets. See keynote on drawings.
  - 1. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A:60-B.C., 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
  - 2. Basis-of-Design Product: J. L. Industries, Inc.; Cosmic 10E
- C. Fire Extinguisher for Mechanical Room 138.
  - 1. Carbon Dioxide Type: UL-rated 10-B.C., 15-lb nominal capacity, with carbon dioxide in enameled-steel container.

# 2.3 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.
  - Basis-of-Design Product: Subject to compliance with requirements, provide bracket by JL Industries, Inc.; a division of the Activar Construction Products Group or comparable product by one of the following:
    - a. Badger Fire Protection.
    - b. Larsens Manufacturing Company.
    - c. Potter Roemer LLC.
    - d. Strike First Corporation of America.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

- 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
  - a. Orientation: Vertical.

# PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. Examine fire extinguishers for proper charging and tagging.
  - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
  - 1. Mounting Brackets: As indicated on Drawings.
- C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

**END OF SECTION 104416** 

FIRE EXTINGUISHERS 104416 - 3

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FIRE EXTINGUISHERS 104416 - 4

#### SECTION 122413 - ROLLER WINDOW SHADES

# PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplemental Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. Section Includes:
  - 1. Roller shades with single rollers.
- B. Proposed Substitutions: See Division 01 Section 016000 "Product Requirements."
- C. Related Requirements:
  - Section 061000 "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
- D. Alternates: See section 012300 "Alternates."

### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Division 01 Section 013300 "Submittal Procedures."
- B. Product Data: For each type of product.
  - Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
- C. Shop Drawings: Show fabrication and installation details for roller shades, including fabric panel materials, their orientation to rollers, and their seam and batten locations.
- D. Samples: For each exposed product and for each color and texture specified.

# 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of fabric panel material, signed by product manufacturer.

C. Product Test Reports: For each type of fabric panel material, for tests performed by manufacturer and witnessed by a qualified testing agency.

# 1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

### 1.6 Maintenance Material Submittals

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and fabric panel material indicated, but no less than one unit per size.

### 1.7 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

### 1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

### 1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Basis-of-Design: As indicated on finish material legend on Sheet I-101 in drawings or comparable equal from the following:
  - 1. Aperture Contract a Charles Samelson Company
  - 2. Hunter Douglas
  - 3. Mecho Shade
- B. Source Limitations: Obtain roller shades from single source from single manufacturer.

### 2.2 SHADES WITH SINGLE ROLLERS

- A. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of fabric panels indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of fabric panels for service.
  - 1. Fabric Panel-to-Roller Attachment: Manufacturer's standard method.
    - a. Provide fabric panels not less than 12 inches (300 mm) longer than desired shade height to assure solid attachment to roller tube and ability to adjust panels in field without removing mounting brackets.
- B. Mounting Style: Fascia.
- C. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.
- D. Fabric Panels:
  - 1. Fabric Panel Material: Light-filtering fabric.
  - 2. Fabric Panel Bottom (Hem) Bar: Enclosed in hem pocket of fabric panel material, thermally sealed, not sewn.
    - a. Bottom (Sill) Channel: With light seals and designed to eliminate light gaps at bottoms of shades when shades are closed.
    - b. Color and Finish: As selected by Architect from manufacturer's full range.

### 2.3 FABRIC PANEL MATERIALS

A. Fabric Panel Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

- B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.
  - 1. Source: Roller shade manufacturer.
  - 2. Type: PVC-coated polyester.
  - 3. Weave: Basketweave.
  - 4. Openness Factor: 3 percent.
  - 5. Color: As selected by Architect from manuf. full range.

# 2.4 ROLLER SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):
  - 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).

#### PART 3 - EXECUTION

### 3.1 ROLLER SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
- B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- C. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.
- D. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

**END OF SECTION 122413** 

#### SECTION 123623 - PLASTIC-LAMINATE-CLAD COUNTERTOPS

# PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

- A. Section includes plastic-laminate countertops.
- B. Related Requirements:
  - Division 0615053 Section "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
  - 2. Division 064116 "Plastic-Laminate-Faced Architectural Cabinets" for casework.
  - 3. Section 123661 "Solid Surface Countertops."
- C. Proposed Substitutions: See Section 016000 "Product Requirements".

### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures".
- B. Product Data: For each type of product, including panel products and high-pressure decorative laminate.
- C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
- D. Samples:
  - 1. Plastic laminates, for each color, pattern, and surface finish.

# 1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Fabricator shall have a minimum of five (5) years of experience in fabricating cabinets of this nature.
- B. Installer Qualifications: Installer shall be familiar with the installation procedure for this type of cabinetry. Coordinate installation with cabinet fabricator.

# 1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install countertops until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

### PART 2 - PRODUCTS

# 2.1 PLASTIC-LAMINATE COUNTERTOPS

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades indicated for construction, installation, and other requirements.
- B. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGL; post-formed surfaces: grade HGP.
  - Manufacturers: Subject to compliance with requirements, available manufacturers
    offering products that may be incorporated into the Work include, but are not limited
    to, the following:
    - a. Abet Laminati, Inc.
    - b. Formica Corporation.
    - c. Lamin-Art, Inc.
    - d. Panolam Industries International, Inc.
    - e. Wilsonart International; Div. of Premark International, Inc.
- C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
  - 1. As selected by Architect from manufacturer's full range in the following categories:
    - a. Solid colors, finish as indicated on drawings.
    - b. Wood grains, finish as indicated on drawings.
    - c. Patterns, finish as indicated on drawings.
- D. Edge Treatment: Eased.
- E. Core Material at Sinks: Medium-density fiberboard made with exterior glue or exterior-grade plywood.
- F. Core Thickness: 1-1/8 inch (29 mm).
  - 1. Build up countertop thickness to 1-1/2 inches (38 mm) at front, back, and ends with additional layers of core material laminated to top.
- G. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.

H. Paper Backing: Provide paper backing on underside of countertop substrate.

#### 2.2 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.
  - Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
  - Medium-Density Fiberboard: ANSI A208.2, Grade 130 made with binder containing no urea formaldehyde.

# 2.3 ACCESSORIES

- A. Grommets for Cable Passage through Countertops: 1-1/4-inch (32-mm) or 2-inch (51-mm) OD, brown or black, molded-plastic grommets and matching plastic caps with slot for wire passage. Size and color as indicated on drawings.
  - 1. Product: Subject to compliance with requirements, provide "SG series" by Doug Mockett & Company, Inc.

# 2.4 MISCELLANEOUS MATERIALS

- A. Adhesives: Do not use adhesives that contain urea formaldehyde.
- B. VOC Limits for Installation Adhesives and Sealants: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - 1. Wood Glues: 30 g/L.
  - 2. Multipurpose Construction Adhesives: 70 g/L.
  - 3. Structural Wood Member Adhesive: 140 g/L.
  - 4. Architectural Sealants: 250 g/L.

# 2.5 FABRICATION

- A. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch (25 mm) over base cabinets. Ease edges to radius indicated for the following:
  - 1. Solid-Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.

- B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- C. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
  - 1. Seal edges of openings in countertops with a coat of varnish.

### PART 3 - EXECUTION

### 3.1 PREPARATION

A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.

### 3.2 INSTALLATION

- A. Grade: Install countertops to comply with same grade as item to be installed.
- B. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.
  - 1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items.
  - 2. Seal edges of cutouts by saturating with varnish.
- C. Field Jointing: Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required.
  - 1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- D. Install countertops level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).
- E. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- F. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
  - 1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

- 2. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) o.c. and to walls with adhesive.
- 3. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.
- G. Countertop Work Station Support Brackets: product as indicated on drawings.

END OF SECTION 123623

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# SECTION 123661 - SIMULATED STONE COUNTERTOPS AND WINDOW SILLS

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General, Supplementary Conditions and Division 1 Specification Sections, apply to this section.

### 1.2 SUMMARY

# A. Section Includes:

- 1. Solid-surface-material countertops and backsplashes.
- 2. Solid-surface-material window sills.

### B. Related Requirements:

- 1. Division 0615053 Section "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
- 2. Division 064116 "Plastic-Laminate-Faced Architectural Cabinets" for casework.
- 3. Section 123623 "Plastic-Laminate-Clad Countertops."
- C. Proposed Substitutions: See Section 016000 "Product Requirements".

### 1.3 ACTION SUBMITTALS

- A. Submittal Procedures: See Section 013300 "Submittal Procedures".
- B. Product Data: For countertop materials and sinks.
- C. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
- D. Samples: For each type of material exposed to view.

# PART 2 - PRODUCTS

### 2.1 SOLID-SURFACE-MATERIAL COUNTERTOPS AND WINDOW SILLS

- A. Configuration: Provide countertops with the following front and backsplash style:
  - 1. Front: Eased

- 2. Backsplash (if indicated on drawings): Eased
- 3. Endsplash (if indicated on drawings): Matching backsplash.
- B. Countertops: 1/2-inch- (12.7-mm-) thick, solid surface material with front edge built up with same material.
- C. Backsplashes: 1/2-inch- (12.7-mm-) thick, solid surface material. Backsplash locations, height and cove as indicated on the drawings.
- D. Window sills: 1 inch (25.4-mm) thick solid surface materials with jamb edge extensions. See sill detail on drawings.

#### 2.2 COUNTERTOP AND WINDOW SILL MATERIALS

- A. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue, made with binder containing no urea formaldehyde.
- B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.
- C. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide solid surface "Corian" product as manufactured by E. I. du Pont de Nemours and Company or comparable product by one of the following:
    - a. Formica Corporation.
    - b. LG Chemical, Ltd.
    - c. SDI Chemical USA, Inc.
    - d. Wilsonart International.
  - 2. Type: Provide Standard Type unless Special Purpose Type is indicated.
  - 3. Colors and Patterns: as indicated on drawings

# 2.3 ACCESSORIES

- A. Grommets for Cable Passage through Countertops: 1-1/4-inch (32-mm) or 2-inch (51-mm) OD, molded-plastic grommets and matching plastic caps with slot for wire passage. Size and color as indicated on drawings.
  - 1. Product: Subject to compliance with requirements, provide "SG series" by Doug Mockett & Company, Inc.

### PART 3 - EXECUTION

# 3.1 INSTALLATION

A. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Align adjacent surfaces and, using adhesive in color to match countertop, form

seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

- B. Adhere window sills to substrate with adhesive as recommended by solid surface manufacturer.
  - 1. Provide sealant at joints between window sills and interior wall surface and windows.
  - 2. See Section 079200 "Joint Sealants".
- C. Countertop Work Station Support Brackets: product and style as indicated on drawings.

**END OF SECTION 123661** 

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