



ADDENDUM #2
Boulder County Business Services
Boulder County Jail, Building C, Fortification Exterior Windows and Vestibule Door
BID # 7043-19

July 1, 2019

The attached addendum supersedes the original Information and Specifications regarding BID # 7043-19 where it adds to, deletes from, clarifies or otherwise modifies. All other conditions and any previous addendums shall remain unchanged.

1. Question: Reference A8.1 Gen Note 5 - Note says all frames to be installed per SPEC 1119 10. Please provide a copy of 1119 10

ANSWER: Specification 11 19 10 is attached.

2. Question: A8.1 Gen Note 5 - Note says frames to be grouted solid. Detail 1/A8.1 calls for frames to be filled with spray foam insulation. Please clarify.

ANSWER: The double angle iron anchor system divides the frames into two sections. If feasible BCBS would prefer to grout the front (exterior) and spray foam the back. If unachievable, provide alternates for fully grouted frames.

3. Question: Reference A8.1 REMARKS - The door we are to install has REMARK 4 listed. Remark 4 refers to sheet A0.2. Sheet A0.2 was NOT provided – please provide.

ANSWER: Sheet A0.2 is attached.

4. Question: Reference A8.1 A & B - note calls for FRAME DEPTH 7 5/8". Section 1/A8.1 shows a "Frame depth" of 10 3/8". Please clarify.

ANSWER: Frame depth should be 10 3/8".

5. Question: Is painting of the frames & door included in the scope? If yes please

provide spec.

ANSWER: Painting of the frames and door will be by BCBS.

6. Question: Is drywall repair part of this scope?

ANSWER: Drywall patching is by BCBS.

7. Question: Are Electrical/ security control wiring part of this scope?

ANSWER: All electrical and control wiring is by BCBS.

8. Question: Reference 1/A8.1 - Is caulking and backer rod part of this scope?
If yes, please provide Spec.

ANSWER: Provide pick resistant sealant Surebond SB 190 or equivalent at the interior and Silicone Joint Sealant: Single component, non-sag, neutral curing, Class 100/50 at the exterior. Provide backer rod compatible with substrates and are approved for applications indicated by sealant manufacturer.

9. Question: Reference A8.1 - Is there a specification for the "security hardware" to be provided for the door?

ANSWER: Specification 08 71 00 is attached.

10. Question: While we are working through the quote for the glazing, the following Section, 08 80 00, is missing. Please provide.

ANSWER: Section 08 80 00 is a project glazing specification and has been provided for reference.

11. Question: Reference A8.1 Door 109 Sallyport Opening - Sallyport frame C calls for SG-1 (non fire rated) glass in the sidelights, Door D calls for SG-1A Glass (fire rated wire glass). Is this correct to have 2 different types of glass in basically the same opening?

ANSWER: Provide SG-1A for both the door and the sidelights.

12. Question: Reference Door 109 - Can you tell me who supplied the (1) Frame (2) hardware and (3) glazing for door 113?

ANSWER: Information cannot be provided.

Submittal Instructions:

BIDs are due at the Administrative Services Information Desk or email box (preferred) listed below, for time and date recording on or before **2:00 p.m. Mountain Time on June 28, 2019**. A bid opening will be conducted at 3:00 p.m. Mountain Time at county offices.

Your response can be submitted in the following ways. Please note that email responses to this solicitation are preferred, but are limited to a maximum of 50MB capacity. NO ZIP FILES ALLOWED. Electronic Submittals must be received in the email box listed below. Submittals sent to any other box will NOT be forwarded or accepted. This email box is only accessed on the due date of your questions or proposals. Please use the Delivery Receipt option to verify receipt of your email. It is the sole responsibility of the proposer to ensure their documents are received before the deadline specified above. Boulder County does not accept responsibility under any circumstance for delayed or failed email or mailed submittals.

Email purchasing@bouldercounty.org; identified as **BID #7043-19** in the subject line.

-OR-

US Mail **One (1)** unbound copy of your submittal, printed double-sided, 11 point, on at least 50% post-consumer, recycled paper must be submitted in a sealed envelope, clearly marked as **BID # 7043-19**, to the **Administrative Services Information Desk located at 1325 Pearl Street, Boulder, CO 80302**.

All bids must be received and time and date recorded at the Administrative Services Information Desk by the above due date and time. Sole responsibility rests with the Offeror to see that their bid is received on time at the stated location(s). Any bid received after due date and time will be returned to the bidder. No exceptions will be made.

The Board of County Commissioners reserve the right to reject any and all bids, to waive any informalities or irregularities therein, and to accept the bid that, in the opinion of the Board, is in the best interest of the Board and of the County of Boulder, State of Colorado.



**RECEIPT OF LETTER
ACKNOWLEDGMENT**

July 1, 2019

Dear Vendor:

This is an acknowledgment of receipt of Addendum #2 for BID #7043-19, Boulder County Jail, Building C, Fortification Exterior Windows and Vestibule Door.

In an effort to keep you informed, we would appreciate your acknowledgment of receipt of the preceding addendum. Please sign this acknowledgment and email it back to purchasing@bouldercounty.org as soon as possible. If you have any questions, or problems with transmittal, please call us at 303-441-3525.

Thank you for your cooperation in this matter. This information is time and date sensitive; an immediate response is requested.

Sincerely,

Boulder County Purchasing

Signed by: _____ **Date:** _____

Name of Company _____

End of Document

SECTION 11 19 10
DETENTION EQUIPMENT DOORS AND FRAMES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-01 Specification sections, apply to work of this section.

Conform to requirements of Section 11 19 00.

1.1 SUMMARY:

Section Includes:

All labor, equipment, material and services necessary to provide detention hollow metal security doors and frames, including, but not necessarily be limited to:

Hollow metal security doors, security steel frames for security doors, sidelights, borrowed lights and related openings.

Food passes and cuff ports incorporated into security hollow metal work.

Miscellaneous steel closure trim and steel plates.

Steel plate sprinkler baffles welded to hollow metal frames.

Steel shutters for vision panels in doors.

Related Sections:

Security Screws and Fasteners: Section 01 73 25.

Concrete work: Division 03 sections.

Grouting: Section 03 60 00.

Masonry work: Division 04 sections.

Steel sprinkler shrouds: Section 05 50 00.

Joint Sealants: Section 07 92 00.

Hollow Metal Systems (for commercial grade steel doors and frames): Section 08 11 13.

Door Hardware: Section 08 71 00.

Security Glazing (for impact glazing): Section 08 88 53.

Painting and Coating: Section 09 90 00.

General Requirements for Detention Equipment (and related work noted therein): Section 11 19 00.

Detention Equipment Hardware: Section 11 19 20.

Electrical: Division 26 sections.

Security Electronics: Division 28 sections.

1.2 APPLICABLE REFERENCE STANDARDS:

Comply with the following except where more stringent requirements are required.

ASTM A36 "Specification for Structural Steel".

ASTM A366, Steel, Carbon, Cold Rolled, Commercial Quality.

ASTM A500 "Hot-Formed Welded and Seamless Carbon Steel Structural Tubing," Grade B, 46,000 PSI Yield Point Required.

00	ASTM A525, Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, General	00
01	Requirements.	01
02		02
03	ASTM A526, Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, Commercial	03
04	Quality.	04
05		05
06	ASTM A568 "Steel, Carbon and High-Strength Low-Alloy Hot-Rolled Sheet, Hot-Rolled Strip,	06
07	and Cold-Rolled Sheet."	07
08		08
09	ASTM A569, Steel Carbon, (0.15 Maximum Percent) Hot-Rolled Sheet and Strip, Commercial	09
10	Quality.	10
11		11
12	AWS D1.1 "Structural Welding Code".	12
13		13
14	HMMA "Hollow Metal Manufacturers Association": Standard No. 863 unless otherwise	14
15	specified.	15
16		16
17	Welding Electrodes, AWS Code Series E70XX Covered Mild Steel Type.	17
18		18
19	1.3 <u>DEFINITIONS:</u>	19
20		20
21	Minimum-Thickness Steel: Indicated as the specified minimum thicknesses for base metal without	21
22	coatings, according to HMMA 803.	22
23		23
24	Nominal Surface of Floor Covering: Top surface of floor; for fluid applied flooring, nominal surface of	24
25	floor covering is defined as top of concrete slab.	25
26		26
27	1.4 <u>PERFORMANCE REQUIREMENTS:</u>	27
28		28
29	<u>General:</u>	29
30		30
31	Doors and frames shall meet the following minimum test standards. Compliance with test	31
32	requirement shall be certified by reports of independent testing agencies. Test reports shall indicate	32
33	the construction of the samples tested with sufficient particularity that construction can be verified.	33
34		34
35	Detention Doors and Frame Assemblies: Provide detention doors and frames that comply with the	35
36	following, based on testing manufacturer's standard units in assemblies similar to those indicated for	36
37	this Project:	37
38		38
39	Security Grade: Comply with Grade 3, according to ASTM F1450, unless otherwise indicated.	39
40		40
41	Tool-Attack Resistance: Comply with small-tool-attack-resistance rating when tested according	41
42	to UL 437 and UL 1034.	42
43		43
44	Detention Frames: Provide sidelight and borrowed-light detention frames that comply with	44
45	ASTM F1592 and removable stop test according to HMMA 863, based on testing manufacturer's	45
46	standard units in assemblies similar to those indicated for this Project.	46
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Static Load Test:

This test is intended to verify the integrity of the door construction system employed by the manufacturer. With a 36" by 84" door panel supported by both ends, and load applied equally one fourth of the distance from each end, the test panel shall deflect not more than 0.58" at the center and shall rebound to not more that 0.10" when load is removed.

Door Gage	12	14	16
Test Load	14,000#	14,000#	8,000#

Rack Load Test:

This test simulates a prying attack on a corner of the door. A 36" by 84" test panel is rigidly restrained at one end. A third corner is simply supported. Loads are applied and deflections measured at the fourth corner. Under the following loads, deflection shall not exceed the amounts shown.

Door Gauge	12	14	16
Test Load	7,500#	7,500#	4,000#
Deflection	3.2" max.	3.2" max.	2.6" max.

Door Impact Test:

This test simulates a battering attack on a door and frame assembly, using impacts of 200 foot pounds applied to the stop side of the door by a steel pendulum having a 4 square inch hitting surface. 12 and 14 gauge doors shall be secured with a Folger Adam 82 lock installed in a door pocket. 16 gauge doors shall be secured with a Folger Adam 2" narrow jamb lock mounted in the frame jamb. Door shall remain closed during testing and shall be fully operable following the test.

Door Gauge	12	14	16	
Hits (6" from bolt)	400	400	200	
Hits (6" each hinge)	150	150	50*	* center hinge only

Edge Crush Test:

This test simulates a crushing attack on the edge of the door, and also demonstrates the door's resistance to buckling across the surface. At the center of the edge of a 36" by 36" flush door panel, apply load using a 1-1/2" diameter steel cylinder. Load shall be applied in the plane of the door and the axis of the cylinder shall be perpendicular to the plane of the door. Ends of the test panel shall not be restrained.

Door Gauge	12	14	16
Minimum Load Supported at 0.25"			
Deflection	8,000#	8,000#	3,500#
Load Supported Without Collapse	15,000#	10,000#	6,000#

Removable Glass Stop Testing:

Prepare a 12 gauge test window frame of 28" by 33" glass opening, and glaze it with a 3/8" steel plate. Security screws used and screw spacing shall be the manufacturer's standards. Subject the test frame to 400 impacts of 200 foot pounds each on the steel glazing panel within 6" of a single corner. Stops must remain in place, and not more than one screw may be broken upon completion.

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1.5 SUBMITTALS:

General:

Make submittals in accordance with the requirements of Section 01 33 00 and Section 11 19 00. All submittal items required under this section are to be submitted in a composite package. See Section 11 19 00 for additional requirements.

Product Data:

Submit manufacturer's standard instructions for frame installation and for material handling and storage. Include construction details, material descriptions, core descriptions, label compliance, fire-resistance rating, and finishes for each type of detention doors and frames specified.

Submit data defining proposed primer paints; include descriptions of equivalence to types specified and written confirmation that selected primer paints are compatible with finish paints and base materials.

Submit metal body putty filler product data.

Shop Drawings:

Submit electronically generated shop drawings for review and approval which include at least the following:

- Door and frame elevations and sections.
- Schedule of openings including dimensions, gauges, anchors and label requirements.
- Direction of swing.
- Inmate and non-inmate sides.
- Details of doors, including vertical and horizontal edge details, and metal thicknesses.
- Details of frames, including dimensioned profiles, and metal thicknesses.
- Locations of reinforcement and preparations for hardware, including lock pockets, grout boxes, etc.
- Details of anchorages (including embedment anchoring details), joints, field splices, and connections.
- Details of food-pass openings, cuff port openings and shutters.
- Details of moldings, removable stops and glazing.
- Details of sprinkler baffles.
- Details of conduit, junction boxes, and preparations for electrified door hardware.
- Full coordination with hardware requirements including surface mounted and recessed hardware.

Include full coordination with the Security Electronics Contractor with wire and conduit requirements, and frames to receive intercoms.

Submit composite type shop drawings for each opening, showing complete details of construction including glazing, glazing stops, doors, frames, all hardware and electronic products whether included as detention equipment or otherwise, reinforcements, joints, connections and all other related types of construction. Shop drawings that are non-conforming to the above will be rejected.

Indicate on 3/16" or 1/8" scale floor plan drawings the sides of the glazed frames and doors where applied glazing stops are intended to be set.

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Samples:

Submit 12" long frame corner sections for door and window frames for review.

Detention Doors: Show vertical-edge, top and bottom construction; insulation; face stiffeners; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.

Detention Frames: Show profile, welded corner joint, welded hinge reinforcement, grout-cover boxes, floor and wall anchors, and silencers. Include separate section showing fixed steel panels and glazing if applicable.

Test Reports:

Submit an independent testing laboratory report certifying that the doors and frames comply with the performance requirements outlined in this specification section.

Certificates:

For information and record, submit copies of welder's certification.

1.6 QUALITY ASSURANCE:

Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment."

Manufacturer Qualifications:

Materials covered by this section shall be supplied only by manufacturers having at least ten years of experience supplying detention grade hollow metal, and who have furnished at least 50,000 openings for detention installations.

Submit evidence that the firm has a minimum of ten years experience in successfully completing projects of equal scope and magnitude with products as specified herein. Such evidence shall consist of a list of not less than five projects which have been in actual and satisfactory use for not less than five years. Provide a list of contacts at each facility, addresses and current phone numbers.

Provide a list of all projects in the past five years in which the proposed firm has been involved in litigation with a city, county, state or federal government agency and the status thereof.

Requests shall be considered only from competent and reputable firms who specialize in this particular branch of work and who can demonstrate to the satisfaction of the Architect and Owner that they are fully capable of completing detention equipment work in accordance with the requirements. The Architect reserves the right to consider each request on merits of material furnished or otherwise at his disposal, and to reject any or all requests which are not in the Owner's best interest. See Section 01 25 00 for additional requirements.

Source Limitations for Detention Enclosures:

Obtain each type of detention enclosure from single source from single manufacturer.

Testing Agency Qualifications:

Qualified according to ASTM E329 for testing tool-resisting steel.

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Qualifications for Welding Work:

Qualify procedures and personnel according to the following:

- AWS D1.1, "Structural Welding Code - Steel."
- AWS D1.6, "Structural Welding Code - Stainless Steel."

Provide certification that welders to be employed in work have passed AWS qualification tests within previous twelve months. If recertification of welders is required, retesting will be Detention Equipment Subcontractor's responsibility.

Shop Assembly:

Preassemble products in shop to greatest extent possible to minimize field splicing and assembly. Disassemble products only as necessary for shipping and handling limitations. Clearly mark products for reassembly and coordinated installation.

Fire-Rated Assemblies:

When a fire resistance classification is shown or scheduled for steel doors or frames, provide fire rated doors with recognized testing laboratory labels affixed. During the submittal process, identify openings which may not receive labels due to hardware, dimensional or other limitations. For such openings, provide certification that the door and frame components have been constructed in accordance with the requirements of the testing laboratory.

Doors and Frames: Construct and install assemblies to comply with NFPA Standard No. 80, and as herein specified, based on testing at positive pressure according to NFPA 252 or UL 10C.

Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

For all assemblies in smoke partitions and other locations indicated for smoke control, provide "S" label complying with NFPA 105.

Fire-Rated Detention Sidelight and Borrow-Light Frames: 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 NFPA 257.

Preinstallation Conference:

Conduct conference at Project site in accordance with the requirements of Section 01 31 19.

Include the following attendees in the meeting:

- Contractor.
- Detention Equipment Contractor.
- Architect.
- Owner's Representative.
- Security glazing Installer.
- Masonry Installer.
- Sealant Installer.

Discuss actual project details, including sequence, installation, hardware and security electronics coordination, finishing and glazing of units.

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00	1.7	<u>DELIVERY, STORAGE AND HANDLING:</u>	00
01			01
02		Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment."	02
03			03
04		Deliver detention doors and frames palleted, wrapped or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.	04
05			05
06			06
07		Provide frame spreaders for shipment. Do not remove spreaders until after frame installation.	07
08			08
09		Frame erector shall receive material at jobsite; unload it; note any damage and file any required freight claims; and store the material, all in accordance with manufacturer's instructions. Any scratches or paint damage which has occurred during shipment shall be cleaned and touched up with primer.	09
10			10
11			11
12			12
13			13
14		Store detention doors and frames under cover at building site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4" high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber.	14
15			15
16			16
17			17
18		Provide minimum 0.25" space between each stacked unit to permit air circulation.	18
19			19
20	1.8	<u>PROJECT/SITE CONDITIONS:</u>	20
21			21
22		Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment."	22
23			23
24		<u>Field Measurements:</u>	24
25			25
26		When possible, take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting of the work. Otherwise, indicate field measurements on reviewed shop drawings.	26
27			27
28			28
29	1.9	<u>WARRANTY:</u>	29
30			30
31		Materials furnished under this section shall be warranted to be free from defects in material and workmanship for a period of two years from the date of substantial completion. The Detention Equipment Contractor shall make good any defect at his expense.	31
32			32
33			33
34			34
35		The Detention Equipment Contractor shall "warrant" products and installation by himself, his installers, manufacturers and product suppliers.	35
36			36
37			37
38	1.10	<u>COORDINATION:</u>	38
39			39
40		Where possible, field verify dimensions of hollow metal frames prior to fabrication. Furnish inserts and anchoring devices which must be built into masonry to the appropriate subcontractor in a timely manner to avoid delay. Coordinate frame fabrication with the General Contractor and Masonry Installer for frames which are built into masonry walls, to avoid delaying erection of the masonry.	40
41			41
42			42
43			43
44			44
45	1.11	<u>OPERATING INSTRUCTIONS AND MANUALS:</u>	45
46			46
47		Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment."	47
48			48
49		<u>PART 2 - PRODUCTS</u>	49
50			50
51	2.1	<u>MANUFACTURERS:</u>	51
52			52
53		Subject to specified requirements, provide detention hollow metal manufactured by one of the following:	53
54			54
55			55

00	American Steel Products, Swainsboro, GA	00
01	Slate Security, Hartselle, AL	01
02	Sweeper Metal Fabricators Corp., Drumright, OK	02
03	Southwestern Hollow Metal	03
04	Trussbilt, Inc., St. Paul, MN	04

2.2 MATERIALS REQUIRED:

Mild Steel Plates, Shapes, and Bars: ASTM A36.

Cold-Rolled Steel Sheet: ASTM A1008, CS (Commercial Steel), Type B, suitable for exposed applications.

Hot-Rolled Steel Sheet: ASTM A1011, CS (Commercial Steel), Type B; free of scale, pitting, or surface defects; pickled and oiled.

Metallic-Coated Steel Sheet: ASTM A653, CS (Commercial Steel), Type B; with G60 zinc (galvanized) or A60 zinc-iron-alloy (galvannealed) coating designation.

Steel Tubing: ASTM A501 or ASTM A513, Type B unless otherwise indicated.

Security Fasteners: As specified in Section 01 73 25.

Concealed Bolts: ASTM A307, Grade A unless otherwise indicated.

Masonry Anchors: Fabricated from same steel sheet as door face.

Embedded Anchors: Fabricated from mild steel shapes and plates, hot-dip galvanized according to ASTM A 153/A 153M.

Embedded Plate Anchors: Fabricated from mild steel shapes and plates, minimum 3/16 inch thick; with minimum 1/2-inch-diameter, headed studs welded to back of plate.

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Metal Primer Paint, Weldable Metal Primer, Tnemec 27 Series, 3.0 mils dry minimum. Verify compatibility with the required finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified elsewhere.

Metal Body Putty, Bondo or other accepted epoxy filler.

Weld Studs, TRW Nelson Division "headed" studs, weld to steel plates.

For Expansion Bolts Concealed From View: Wedge type with current ICC approval and published ICC Research Report. Complete with required nuts, washers, and manufacturer's installation instructions. Provide each anchor complete with bolt, expansion sleeve, hex nut, washer; 5/8" dia. size required with length as required for 2-3/4" minimum embedment depth.

For use in conditioned environments free from potential moisture, provide carbon steel anchors conforming to ASTM A307 with zinc plating in accordance with FS 22-Z-235.

Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Architect, provide one of the following:

"Kwik-Bolt 3" by Hilti Fastening Systems.

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01		01
02		02
03		03
04		04
05		05
06	2.2 <u>MATERIALS REQUIRED:</u>	06
07		07
08	Mild Steel Plates, Shapes, and Bars: ASTM A36.	08
09		09
10	Cold-Rolled Steel Sheet: ASTM A1008, CS (Commercial Steel), Type B, suitable for exposed applications.	10
11		11
12		12
13	Hot-Rolled Steel Sheet: ASTM A1011, CS (Commercial Steel), Type B; free of scale, pitting, or surface defects; pickled and oiled.	13
14		14
15		15
16	Metallic-Coated Steel Sheet: ASTM A653, CS (Commercial Steel), Type B; with G60 zinc (galvanized) or A60 zinc-iron-alloy (galvannealed) coating designation.	16
17		17
18		18
19	Steel Tubing: ASTM A501 or ASTM A513, Type B unless otherwise indicated.	19
20		20
21	Security Fasteners: As specified in Section 01 73 25.	21
22		22
23	Concealed Bolts: ASTM A307, Grade A unless otherwise indicated.	23
24		24
25	Masonry Anchors: Fabricated from same steel sheet as door face.	25
26		26
27	Embedded Anchors: Fabricated from mild steel shapes and plates, hot-dip galvanized according to ASTM A 153/A 153M.	27
28		28
29		29
30	Embedded Plate Anchors: Fabricated from mild steel shapes and plates, minimum 3/16 inch thick; with minimum 1/2-inch-diameter, headed studs welded to back of plate.	30
31		31
32		32
33	Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.	33
34		34
35	Metal Primer Paint, Weldable Metal Primer, Tnemec 27 Series, 3.0 mils dry minimum. Verify compatibility with the required finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified elsewhere.	35
36		36
37		37
38		38
39	Metal Body Putty, Bondo or other accepted epoxy filler.	39
40		40
41	Weld Studs, TRW Nelson Division "headed" studs, weld to steel plates.	41
42		42
43	For Expansion Bolts Concealed From View: Wedge type with current ICC approval and published ICC Research Report. Complete with required nuts, washers, and manufacturer's installation instructions. Provide each anchor complete with bolt, expansion sleeve, hex nut, washer; 5/8" dia. size required with length as required for 2-3/4" minimum embedment depth.	43
44		44
45		45
46		46
47		47
48	For use in conditioned environments free from potential moisture, provide carbon steel anchors conforming to ASTM A307 with zinc plating in accordance with FS 22-Z-235.	48
49		49
50		50
51	Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Architect, provide one of the following:	51
52		52
53		53
54	"Kwik-Bolt 3" by Hilti Fastening Systems.	54
55		55

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"Parabolt", by Molly Fastener Group.

"Red Head Wedge Anchor", by ITW Ramset/Red Head.

Detention Equipment Hardware: See Section 11 19 20.

Electrical Conduit:

Raceways: Rigid metal conduit and intermediate metal conduit (IMC) shall be steel, galvanized inside and outside and shall be as manufactured by Republic Steel, Triangle, National or approved equal. Minimum 3/4" trade size conduit shall be used.

Raceway Fittings: Fittings for steel conduit shall be galvanized or cadmium plated. Fittings for rigid conduit and IMC shall be threaded. Couplings shall be galvanized steel. Locknuts and bushings shall be steel or malleable iron.

Quantities: Provide separate conduit for each function listed below unless otherwise indicated:

Power over 24 volts.

Power under 24 volts.

Audio communications.

Neoprene: 90 durometer hardness.

Screw Thread Adhesive: Loctite #271.

Exposed Fasteners: ASTM A307, Grade A.

Joint Sealants: Comply with requirements of Section 07 92 00.

Grout: Comply with ASTM C476, with a slump of not more than 4" as measured according to ASTM C143.

Insulation: Slag-wool-fiber/rock-wool-fiber or glass-fiber blanket insulation. ASTM C665, Type I (unfaced); with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics. Minimum 1.5-lb/cu. ft. m) density.

Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 FABRICATION, GENERAL:

Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

Coordinate dimensions and attachment methods of detention enclosures with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.

Shear and punch metals cleanly and accurately. Remove burrs.

Form and grind edges and corners to be free of sharp edges or rough areas.

Form metal in maximum lengths to minimize joints. Form sheet-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

Weld corners and seams continuously to comply with referenced AWS standard and the following:

Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

Obtain fusion without undercut or overlap.

Remove welding flux immediately.

Finish exposed welds and surfaces smooth and blended at exposed connections so that no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure detention enclosures rigidly in place and to support indicated loads. Build in straps, plates, and brackets as needed to support and anchor fabricated items to adjoining construction. Reinforce formed-metal units as needed to attach and support other construction.

Cut, reinforce, drill, and tap detention enclosures as indicated to receive hardware, security fasteners, and similar items.

Form exposed work true to line and level with accurate angles, surfaces, and straight sharp edges.

Form exposed connections with hairline joints flush and smooth using concealed fasteners where possible. Use exposed security fasteners of type indicated or, if not indicated, flat-head (countersunk) security screws. Locate joints where least conspicuous.

Exterior Detention Enclosures: Allow for thermal movements from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

Temperature Change (Range): 120° F, ambient; 180° F, material surfaces.

Rubber Door Silencers: Drill stops in strike jambs to receive three silencers on single-detention-door frames and drill head jamb stop to receive two silencers on double-detention-door frames. Keep holes clear during construction.

Grout Guards: Provide factory-installed grout guards of same material as detention frame, welded to detention frame at back of hardware cutouts, silencers, and glazing-stop screw preparations to close off interior of openings and prevent mortar or other materials from obstructing hardware operation or installation.

2.4 MOLDINGS FOR GLAZING:

Construct glazing stops of 10 gage angle with square corners. Fasten glazing stops using 12-24 pin torx security screws at not more than 6" on center. In no area will there be less than three screws per stop. Where 6" spacing does not fit, one screw will be placed 1" from each end of the stop and one screw will be placed in the center of the stop.

The glass rabbet size in the window unit shall be determined by the glass supplier, minimum 1" engagement on the glazing.

Weld back up plates for glazing stop screws to the inside of the jamb, head and sill members of the window unit to provide adequate thread bearing. These back up plates shall be continuous flat bar not less than 1/4" X 1". Drill and tap to receive specified size pin torx security screws. Protect inside of frame to assure complete screw penetration when frame is grouted full, with plastic cups, mortar boxes or "styrofoam" blocks.

2.5 DOOR CONSTRUCTION:

General:

Manufacturer's door reinforcements and fabrication techniques shall be consistent with, or more substantial than, the construction employed in doors tested to demonstrate compliance with the performance requirements herein.

Specific Requirements:

Provide door face sheets of 12 gauge cold-rolled steel sheet material, except galvanized for exterior or wet applications, internally reinforced with one of the following systems:

Continuous steel truss design core material, 28 gauge minimum, having truncated triangular sections extending continuously from one door face to the other, spot welded to each face 2-3/4" o.c. horizontally and 3" o.c. vertically. Core material to extend full height and width of door.

Rolled or formed 1/8" steel channels extending from top to bottom of door and continuous from one door face to the other, spaced not more than 4" o.c. and spot welded to door faces not more than 3" o.c. vertically.

Continuous vertical hat sections, one such hat section welded to each face of the door, 16 gauge minimum, with vertical webs no more than 4" apart, spot welded to faces no more than 3" o.c. vertically. Weld hat sections to each other at least every 6" o.c. both sides in order to prevent door separation. Install an additional full height edge stiffener in the form of a 1/8" channel welded to both faces not more than 4" o.c.

Provide door edges with additional reinforcing to prevent prying or compression attacks on the door edge. The thickness of the door edge, including this reinforcing, shall be not less than 5/32". Weld reinforcing directly to the door edge. Provide proper bevel at lock and hinge side. At vision panels, food pass and buff port openings, provide factory made openings, reinforced with not less than 1/8" thick material bending around complete opening perimeter and welded to face sheets at 2" o.c.; grind welds smooth and fill between welds with body putty.

Close top and bottom of the door with a 14 gauge formed channel. Weld top and bottom closing channels to the edge reinforcing. Top and bottom of doors shall be finished flush with inverted channels of not less than 14 gauge.

Provide minimum 3/16" thick hinge reinforcements of the size and shape utilized in testing. Projection weld to the door edge, and after installation additionally electrically spot weld to the door edge. In addition, weld a backup channel stiffener of not less than 14 gauge material to each hinge reinforcing and to each door face, to prevent rocking failure of the hinge reinforcing.

Provide weep-hole openings in bottom of detention doors to permit entrapped moisture to escape. Seal joints in top edges of detention doors against water penetration.

00	Bevel swing door edges 1/8" in 2".	00
01		01
02	Doors shall have no more than 1/8" clearance at sides and tops.	02
03		03
04	Door Undercuts:	04
05		05
06	Swing Doors Without Thresholds: 5/8".	06
07	Holding Cell Doors and Sleeping Room Doors: 3/4".	07
08	Swing Doors With Thresholds: As required for installation.	08
09		09
10	Insulation: Insulate doors to reduce metallic ring. Completely fill all internal door voids between face sheets with 6 lb. density, mineral composition, incombustible, moisture resistant, chemically inert sound deadener.	10
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14	Permanently stamp doors with the Architect's mark number on the center hinge reinforcement for swing doors.	14
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17	Field Examination: If directed by the Architect, the erector shall destroy a randomly selected security hollow metal door by sawing it in half. When examination discloses door construction at variance with the details shown in performance test reports (see Part 1), the door manufacturer shall replace all non-conforming doors shipped to the project with doors constructed in conformance with construction of doors tested. Under conditions of non-conformity, the door manufacturer shall pay for the destroyed door and related labor. When examination proves that the door construction is consistent with tested doors, the owner will pay to replace the destroyed door and related labor.	17
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25	<u>Hardware Preparation:</u>	25
26		26
27	Reinforce, drill, tap and prepare doors for templated mortised hardware only, in accordance with a final approved hardware schedule and templates provided by the hardware supplier. Where surface hardware is to be applied, doors shall be reinforced.	27
28		28
29		29
30		30
31	Unless otherwise required, locate door hardware according to HMMA 831.	31
32		32
33	Reinforcing Dimensions:	33
34		34
35	Surface Mounted Hinges: Minimum 3/8" reinforcing.	35
36	Mortised Hinges and Pivots: 3/16".	36
37	Internal Reinforcing for Other Hardware: 12 gage.	37
38	Door Closer: 12 gage channel, 3-1/2" deep x 14" long.	38
39	Handle Type Pulls: 3/8" x 2" x 12" steel plate.	39
40	Surface Mounted Closers: 12 gauge material.	40
41	Strike Mounting Clips: 3/16".	41
42	Surface Mounted Items: 3/16".	42
43		43
44	<u>Food Pass and Cuff Port Openings:</u>	44
45		45
46	Food Pass Installed on Leading Edge of Door (Non-rated Doors): Provide Willo Products Company, Inc., Model No. D011 or approved equal, (90° opening).	46
47		47
48		48
49	Install food pass at the leading door edge with a clear opening of 5" high X 16 3/8" wide. The door flap shall be 12 gauge hollow metal with a 7 gauge back plate. Provide an integral flush door pull recessed into a 16 gauge pull enclosure. Provide factory installed silencers on the bottom of the food pass door. Provide a continuous piano hinge on the bottom of the door, plug welded to the food pass door back plate and hollow metal door channel. The food pass snaplatch shall be recessed into the hollow metal door with a steel cover plate. Cover plate shall be flush with face of door.	49
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Shutters for Vision Panels:

Provide semi-recessed panels for covering vision panels where scheduled fabricated using 12 gage face sheets and 1/8" interior channels securely welded to the inside of both face sheets. Reinforce for hinges with 10 gauge channel. Custom fabricate units as required for the scheduled vision panel openings. Continuously arc weld the four corner seams.

Provide a continuous piano hinge on the hinge side of the door it is mounted in, plug welded to the shutter frame and hollow metal door channel. Include a surface mounted finger pull.

Provide Pan Type Vision Light Shutter as manufactured by Habersham Metal Products Company or approved equal.

Chemically treat for maximum paint adhesion and primed in accordance with the requirements of this Section. Factory install shutters.

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Hardware Requirements:

Pockets for Detention Locks: Provide in each door where required. Detention side of pockets shall have not less than 3/16" thick steel plate to protect lock. Provide rabbeted frame around mounting plate for flush finish with door face. Secure cover plates with a minimum of eight security screws. Also, anchor each lock to applicable door in accordance with lock manufacturers instructions and recommendations for particular conditions of installation in each case.

Lock Bolt Keepers: Minimum 14 gauge galvanized steel with 1/8" steel back up at lock bolt.

2.6 FRAME CONSTRUCTION:General:

Fully weld all frames and construct of 12 gage hot-rolled steel sheets as shown on the drawings, except galvanized at all exterior or wet locations. Form all frames of hot or cold rolled steel produced in accordance with ASTM A569 or ASTM A366. Form galvanized frames from galvanized sheet produced in accordance with ASTM A526 (A60). Fabricate frames straight, neat in appearance, and free of warpage and buckling. Weld all frame joints except where overall size of frame precludes shipment, in which case provide appropriate splices for field erection by others. Following fabrication, re-spray welded areas of galvanized frames with a cold galvanizing product complying with mil spec. P.46105.

Frame Details:

Provide jamb, head and sill profiles as scheduled or shown in architectural drawings. Stop height for frames shall be 1.25" for glass openings and 5/8" for door openings. Coordinate stop depth with glazing specified.

Close all contact edges of corner joints tight with faces mitered and stops butted or mitered. Continuously weld corner joints. The use of gussets or splice plates is unacceptable.

Fabricate frames for multiple openings with mullion members which are closed tubular shapes conforming to profiles shown on drawings and which have no visible seams or joints.

At mullion (either vertical or horizontal) intersections, reinforce joints with concealed "clip" angles (or

other acceptable shape) of the same metal thickness as frames and welded to frame members. Also,

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at mullion (either vertical or horizontal) intersections, accurately form joints and continuously weld and grind to smooth uniform finish.

Mortise, reinforce, drill and tap frames for all templated mortised hardware in accordance with the final approved hardware schedule and templates provided by the hardware manufacturer. Where surface mounted hardware is to be applied, reinforce frames only - with all drilling and tapping done by the erector.

Mortised hinge and pivot reinforcement shall be a minimum of 3/16" thick, 1-1/2" wide and 10" long. Projection weld reinforcements to the frame and MIG weld to the frame at top and bottom of each reinforcing. Additionally reinforce the top hinge with a 3/16" thick formed angle welded to both the hinge reinforcing and frame face.

Drilling and tapping of frames for surface mounted hinges shall be by field erector, after door is fitted plumb and true into frame.

Unless otherwise required, locate door hardware according to HMMA 831.

Provide 12 gage floor clips welded in place at the bottom of each jamb. Provide two holes each for anchoring to floor with expansion bolts. If so scheduled, provide adjustable floor clips.

Provide grout stiffeners as required to prevent frames from buckling during grouting in the field. Caulk or foam frames in order to limit leakage of grout into frame openings.

Lock Bolt Keepers: Minimum 14 gauge galvanized steel with 7/8" steel backup at lock bolt.

Lock Pockets: Provide in each frame where jamb mounted detention locks are used, with minimum 3/16" thick rounded edge steel plate cover to protect locking device. Secure cover with a minimum of twelve security screws. Anchor locks to frame in accordance with lock manufacturer's instructions and recommendations for particular conditions of installation in each case.

Pockets for Closers: Prepared to receive closers, in accordance with manufacturer's requirements. Construct mortar guards for closers of not less than 18 gage steel welded in place.

Provide all electrical conduit within frames. Conduits are to project above the top of the frame a minimum of 4". Provide separate conduits for each of the following systems: power over 24 volts, power under 24 volts, audio communications, and lighting power requirements. For electrical devices that are not detention equipment hardware but are required in frame, provide properly sized cut-outs for the devices, mortar boxes (18 ga. minimum) and conduit, and tapped holes for device and/or device cover plate attachment, with internal protection so fasteners seat properly when frame is grouted full. No electrical access boxes are to be provided except hardware pockets or communication boxes.

Provide rigid metal conduit and intermediate metal conduit (IMC) fabricated from steel, galvanized inside and outside, as manufactured by Republic Steel, Triangle, National, or approved equal. Use 0.75" minimum trade size conduit.

Provide cadmium plated galvanized fittings for steel conduit. Provide threaded fittings for rigid conduit and IMC. Provide couplings fabricated from galvanized steel. Provide locknuts and bushings fabricated from steel or malleable iron.

Anchors:

Anchor Spacing: The number of anchors provided on each jamb shall be as follows:

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Borrowed Lite Frames: Two anchors plus one for each 18" or fraction thereof over 36", spaced at 18" maximum between anchors.

Door Frames: Two anchors plus one for each 18" or fraction thereof over 54", spaced at 18" maximum between anchors (fire ratings can require additional anchors).

Masonry: Provide a minimum of three T type 10 ga. masonry anchors for each jamb mounted in masonry up to 84" in length. Locate anchors 8" from top and bottom of frame and a third one at approximately the mid point between. Anchors shall have holes in them permitting insertion of reinforcing bar. For longer jambs, provide sufficient anchors to permit maximum spacing of 24" between the top and bottom anchors, or as indicated on the details. Where dictated by fire rating testing laboratory procedures, supply anchors complying with such requirements.

Locate head and sill anchors 8" maximum from ends of frame and 24" o.c. between, but no less than two anchors per opening.

Provide all frames with two temporary steel spreaders welded to the feet of the jambs to serve as bracing during shipping and handling only. Remove these prior to installation and do not use for setting of proper frame tolerances.

2.7 INTERIOR GLAZING FRAME REQUIREMENTS:

Provide a list of styles as indicated/scheduled and that comply with requirements. Form frames using 12 gage hot-rolled steel sheets. Comply with all applicable requirements for swing door metal frames.

2.8 EXTERIOR GLAZING FRAME REQUIREMENTS:

Provide a list of styles as indicated/scheduled and that comply with requirements. Form frames using 12 gage galvanized steel sheets. Comply with all applicable requirements for swing door metal frames.

Fabricate for exterior glazing.

2.9 SURFACE PREPARATION AND PRIME PAINTING:

Paint doors and frames with one coat of the manufacturer's standard shop epoxy primer which will be compatible with topcoats specified in Section 09 90 00.

Surface Preparation: Solvent clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).

Factory Priming for Field Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has compatibility to provide a sound foundation for field applied topcoats. Apply primer immediately after surface preparation and pretreatment.

Bituminous Protective Coating: Apply bituminous asphalt coating to the non-exposed, interior face of all non-galvanized hollow metal window and door frames that are scheduled to receive grout fill.

Prior to painting, pressure sand doors on both faces to minimize welding marks and to remove dirt or grease. High temperature wash and phosphatize frames to ensure paint adhesion. Prepare galvanized doors and frames as required to accept paint. Apply paint to a minimum dry film thickness of 3 mils and in an even manner without drips or runs, and in accordance with paint manufacturer's specifications. Use painting methods which will result in full coverage of joints, corners, edges and exposed surfaces.

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55PART 3 - EXECUTION3.1 GENERAL:

Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment".

3.2 BUILT-IN INSERTS AND ANCHORS:

Coordinate installation of anchorages for detention frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, anchor bolts, and items with integral anchors, that are to be embedded in masonry. Deliver such items to Project site in time for installation.

3.3 EXAMINATION:

Examine substrates, areas and conditions, with Detention Equipment Contractor present, for compliance with requirements for installation tolerances and other conditions affecting performance of detention enclosures.

Examine roughing-in for embedded and built-in anchors to verify actual locations of detention enclosure connections before installation.

Prepare written report, endorsed by Installer, listing conditions detrimental to performance of detention enclosures.

Inspect built-in and cast-in anchor installations, before installing detention enclosures, to verify that anchor installations comply with requirements. Prepare inspection reports.

Remove and replace anchors where inspections indicate that they do not comply with specified requirements. Reinspect after repairs or replacements are made.

Perform additional inspections to determine compliance of replaced or additional work. Prepare inspection reports.

Verify locations of detention enclosures with those indicated on Shop Drawings.

Proceed with installation only after unsatisfactory conditions have been corrected.

3.4 PREPARATION:

Remove welded-in shipping spreaders installed at factory.

Prior to installation and with shipping spreaders removed, adjust detention frames for squareness, alignment, twist and plumbness to the following tolerances:

Squareness: $\pm 1/16$ " measured at door rabbet on a line 90 degrees from jamb and perpendicular to frame head.

Alignment: $\pm 1/16$ " measured at jambs on a horizontal line parallel to plane of face.

Twist: $\pm 1/16$ " measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of door rabbet.

Plumbness: $\pm 1/16$ " measured at jambs on a perpendicular line from head to floor.

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00 3.5 INSTALLATION: 00

01 02 General: 01 02

03 04 Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment". 03 04

05 06 Prior to installation, frame erector shall check frames for size, swing, squareness, alignment, twist 05 06
07 and plumbness. Check conduit connections to assure that they have not loosened during shipment. 07
08 Check screw protection, if provided, to assure that it has not been removed or tampered with. 08

09 10 Install frames as set forth in manufacturer's instructions with jambs parallel; frame faces in the same 09 10
11 plane and parallel with wall surfaces; frames set squarely in openings. 11

12 13 Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for 12 13
14 securing detention enclosures to in-place construction. Include threaded fasteners for inserts, security 14
15 fasteners and other connectors. 15

16 17 Proprietary Built-in Masonry Anchors: Install integral with unit masonry. Comply with 16 17
18 requirements in Section 04 20 00. 18

19 20 Expansion anchoring is only acceptable for the lock cover box which is anchored to a wall, for 19 20
21 floor anchors and for frame anchors concealed behind a removable face. 21

22 23 Cutting, Fitting and Placement: Obtain manufacturer's written approval for cutting, drilling and fitting 22 23
24 required for installing detention enclosures. Set detention enclosures accurately in location, alignment 24
25 and elevation; with edges and surfaces level, plumb, true and free of rack; and measured from 25
26 established lines and levels. 26

27 28 Assemble detention frames fabricated in sections. Install angle splices at each corner, of same 27 28
29 material and thickness as detention frame, and extend at least 4" on both sides of joint. 29

30 31 Field splice only at approved locations. Weld, grind, and finish as required to conceal evidence 30 31
32 of splicing on exposed faces. 32

33 34 Continuously weld and finish smooth joints between faces of abutted, multiple-opening, 33 34
35 detention frame members. 35

36 37 Hand trowel grout in to fully grouted frames. If pumped or very fluid grout is used, additionally protect 36 37
38 frame openings to prevent grout leakage and remove any grout from openings and surface of frames. 38

39 40 Provide access to locks and other equipment to allow for wire pulling and wire terminations where 39 40
41 required by others. Properly secure access locations following adjustments, repair, replacement and 41
42 inspections. 42

43 44 For frames installed after adjacent materials, provide grout holes of size as required with plugs to be 43 44
45 welded and ground smooth. Locate grout holes to provide for fully grouted frames. 45

46 47 Field install metal body putty at all metal to metal joints or field welded frame connections. Grind 46 47
48 smooth and prepare surface for painting. 48

49 50 Fire-Rated Doors and Frames: Install with clearances as specified in NFPA 80. 49 50

51 52 Smoke-Control Detention Doors and Frames: Install according to NFPA 105. 51 52

53 54 Installation Tolerances: Comply with installation tolerances indicated in HMMA 863. 53 54
55 55

Welding:

Welds to be of type, size and space required. Where not specifically indicated on the drawings, provide stitch welds a minimum of 1.5" long, 6" o.c.; plug welds 0.5" diameter, 4" o.c. There must be a minimum of two per side of any opening.

Weld materials forming corners along each line of transition at the corner.

Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

Obtain fusion without undercut or overlap.

Remove welding flux immediately.

Where exposed to view, fill between all welds, grind and finish smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

Tack weld all exposed bolts in areas where inmates have access.

Continuously weld surface hinges and members 6" x 6" or less.

Design steel and stainless steel components not plant fabricated for plug or stitch weld field-welded connections, unless indicated otherwise.

Fasteners:

Set removable fasteners in locktite.

Set cinch anchors in an adhesive resin capsule.

Glazing:

Comply with installation requirements in Section 08 88 53 unless otherwise indicated.

3.6 FIELD QUALITY CONTROL

Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment".

Detention Equipment Contractor shall inspect installed products to verify compliance with requirements. Prepare inspection reports and indicate compliance with and deviations from the Contract Documents.

Remove and replace detention work if inspections indicate that work does not comply with specified requirements. Remove malfunctioning units; replace with new units.

Perform additional inspections to determine compliance of replaced or additional work. Prepare inspection reports.

Prepare field quality-control certification endorsed by Detention Equipment Contractor that states installed products and their installation comply with requirements in the Contract Documents.

3.7 ADJUSTMENT AND REPAIRING:

Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment".

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00	3.8	<u>PROTECTION AND CLEANING:</u>	00
01			01
02		Comply with requirements of Section 11 19 00 - "General Requirements for Detention Equipment".	02
03			03
04		Touchup Painting: Immediately after erection, clean bolted connections and abraded areas of shop	04
05		paint and paint exposed areas with same material used for shop painting to comply with SSPC-PA 1	05
06		for touching up shop-painted surfaces.	06
07			07
08		Galvanized Surfaces: Clean field welds, bolted connections and abraded areas; repair galvanizing to	08
09		comply with ASTM A780.	09
10			10
11		Clean grout and other bonding material off detention doors and frames immediately after installation.	11
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13		END OF SECTION 11 19 10	13
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NARRATIVE:

THE PURPOSE OF THIS PROJECT IS TO FORTIFY THE EXISTING POD "C" AND MAKE IT MORE SECURE FOR INMATES. THIS ENTAILS COSMETIC CHANGES TO DAYROOMS, CREATING A NEW CONTROL ROOM, AND CREATING SMALLER, SUB-DIVIDED DAYROOMS IN THE INMATE WORKER HOUSING POD. THE ESTABLISHMENT OF THE NEW CONTROL ROOM AS WELL AS THE SUB-DIVIDED DAYROOMS DOES NOT EFFECT THE FIRE SPRINKLER SYSTEM, AND NO PARTITIONS ARE STRUCTURAL.

EXISTING RATED WALL LEGEND:

(NOTE: THESE ARE DESCRIPTIONS OF EXISTING WALLS. NO NEW WALLS ARE IN THIS PROJECT AND THIS IS FOR INFORMATION ONLY.)

- "FOUR (4) HOUR BUILDING AREA SEPARATION" FOUR HOUR FIRE-RESISTIVE CONSTRUCTION WITH THREE (3) HOUR OPENING PROTECTION. AUTOMATIC-CLOSING FIRE DOOR AND SMOKE DAMPER AT DUCT PENETRATIONS. SMOKE DETECTOR IN DUCT SHALL ACTIVATE MOTORIZED SMOKE DETECTOR OR 165-DEGREE THERMAL HOLD-OPEN DEVICE.
- "ONE (1) HOUR OCCUPANCY SEPARATION" ONE (1) HOUR FIRE-RESISTIVE CONSTRUCTION WITH ONE (1) HOUR OPENING PROTECTION. FIRE DAMPER AT DUCT PENETRATION.
- "TWO (2) HOUR OCCUPANCY AND SMOKE SEPARATION" TWO (2) HOUR FIRE-RESISTIVE CONSTRUCTION WITH ONE AND A HALF (1-1/2) HOUR OPENING PROTECTION. FIRE / SMOKE DAMPERS AT DUCT PENETRATIONS.
- "ONE (1) HOUR EXIT ENCLOSURE" (EXIT PASSAGEWAY) ONE (1) HOUR FIRE-RESISTIVE CONSTRUCTION WITH THREE QUARTERS (3/4) HOUR OPENING PROTECTION. FIRE DAMPER AT DUCT PENETRATION. REQUIREMENTS FOR OPENINGS OTHER THAN DOORS OR DUCTS, SAME AS FOR CORRIDOR SEPARATION WITHOUT THE EXCEPTION.
- "ONE (1) HOUR EXIT ENCLOSURE AND SMOKE SEPARATION" ONE (1) HOUR FIRE-RESISTIVE CONSTRUCTION WITH THREE QUARTERS (3/4) HOUR OPENING PROTECTION. COMBINATION FIRE-SMOKE DAMPERS AT DUCT PENETRATIONS. SMOKE DETECTOR IN DUCT SHALL ACTIVATE MOTORIZED SMOKE DAMPER HOLD-OPEN DEVICE. REQUIREMENTS FOR OPENINGS OTHER THAN DOORS OR DUCTS, SAME AS FOR CORRIDOR SEPARATION WITHOUT THE EXCEPTION.
- SMOKE SEPARATION (OR BARRIER) ONE (1) HOUR FIRE-RESISTIVE CONSTRUCTION WITH 1/3-HOUR OPENING PROTECTION. SMOKE DAMPERS AT DUCT PENETRATIONS. DUCT PENETRATIONS WITH OPENINGS INTO CORRIDOR SHALL HAVE COMBINATION FIRE-SMOKE DAMPERS. SMOKE DETECTOR IN DUCT SHALL ACTIVATE MOTORIZED SMOKE DAMPER HOLD-OPEN DEVICE. REQUIREMENTS FOR OPENINGS OTHER THAN DOORS OR DUCTS, SAME AS FOR CORRIDOR SEPARATION BELOW.
- "CORRIDOR SEPARATION" ONE (1) HOUR FIRE-RESISTIVE CORRIDOR WALL CONSTRUCTION WITH 1/3-HOUR OPENING PROTECTION. FIRE DAMPERS AT DUCT PENETRATIONS WITH OPENINGS INTO CORRIDOR. OPENINGS OTHER THAN DOORS OR DUCTS SHALL HAVE FIXED 1/4-INCH WIRED GLASS PANELS WITH A MAXIMUM SIZE OF 1,296 SQ. IN. AND MAXIMUM SIDE OF 54" SET IN STEEL FRAMES. TOTAL AREA OF ALL OPENINGS.
- "ONE (1) HOUR OCCUPANCY AND SMOKE SEPARATION" 1-HOUR FIRE-RESISTIVE CONSTRUCTION WITH ONE (1) HOUR OPENING PROTECTION. COMBINATION FIRE-SMOKE DAMPERS AT DUCT PENETRATIONS. SMOKE DETECTOR IN DUCT SHALL ACTIVATE MOTORIZED DAMPER HOLD-OPEN DEVICE.

NEW RATED WALL LEGEND:

- "CORRIDOR SEPARATION" ONE (1) HOUR FIRE-RESISTIVE CORRIDOR WALL CONSTRUCTION WITH 1/3-HOUR OPENING PROTECTION. FIRE DAMPERS AT DUCT PENETRATIONS WITH OPENINGS INTO CORRIDOR. OPENINGS OTHER THAN DOORS OR DUCTS SHALL HAVE FIXED 1/4-INCH WIRED GLASS PANELS WITH A MAXIMUM SIZE OF 1,296 SQ. IN. AND MAXIMUM SIDE OF 54" SET IN STEEL FRAMES. TOTAL AREA OF ALL OPENINGS.

BUILDING INFORMATION:

BOULDER COUNTY JAIL
3200 AIRPORT ROAD
OCCUPANCY: I-3 (CONDITION 3)
CONSTRUCTION TYPE: 1A
(FULLY SPRINKLERED)
(ALL I-3 HOUSING PROVISIONS APPLY)

PLAN NOTES:

1. NEW 1 HOUR PARTITION. SECURE. SEE PARTITION TYPES
2. EXISTING ONE (1) HOUR PARTITION. SEE EXISTING RATED WALL LEGEND. NO CHANGES
3. NEW DOOR AND FRAME. 20 MIN. RATING IN EXISTING PARTITION.
4. NEW ONE (1) HOUR PARTITION
5. EXISTING DOOR IN 1 HOUR RATED WALL. 20 MINUTE RATING. NO CHANGES TO DOOR.
6. EXISTING TOILET ROOM. NO CHANGES.
7. COSMETIC CHANGE ONLY IN TOILET ROOM
8. NEW DOOR BETWEEN DAYROOMS
9. EXISTING DOOR. NO CHANGES.
10. NEW INMATE SHOWER. ADA COMPLIANT. ACCOUNTS FOR 20% OF PROJECT COST UPGRADE PER 2012 IBC CHAPTER 34.
11. NEW SECURITY PARTITION TO SUBDIVIDE DAYROOM.
12. NEW DOOR AND FRAME IN NEW ONE (1) HOUR PARTITION
13. NEW SECURITY DOOR AND FRAME IN CORRIDOR
14. EXISTING 1 HOUR CORRIDOR. NO CHANGES.
15. EXISTING DAYROOM - NEW LIGHTS
16. EXISTING SLEEPING ROOM. NEW LIGHTS.
17. NEW CONTROL ROOM



PROGRESS DRAWINGS
NOT FOR CONSTRUCTION

REILLY JOHNSON ARCHITECTURE
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DRAWN: POG
CHECKED: DPP

DRAWING TITLE
ENLARGED POD C FIRST FLOOR FIRE CODE PLAN

DATE: MAY 7, 2019

SCALE: AS SHOWN

A0.2

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PART 1 - GENERAL1.0 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1-Specification sections, apply to work of this section.

1.1 SUMMARY:Section Includes:

"Builder's" or "Finish" hardware as shown on the drawings and in schedules.

Include lock cylinders for locks furnished in other sections where so specified, including Section 11 19 20.

Furnish hardware items of proper design for use on doors and frames of the thicknesses, profile, swing security and similar requirements indicated, as necessary for proper installation and function.

Related Sections:

Installation of finish hardware: Section 06 10 00.

Cabinet hardware: Section 06 40 00.

Hardware for access door units: Section 08 31 00. Lock cylinders, if any, are furnished in this section.

Detention Equipment Hardware: Section 08 19 20.

1.2 SUBMITTALS:Hardware Schedule:

Submit copies of the hardware schedule complying with the actual construction progress schedule requirements for each draft. Hardware schedules are intended for the coordination of the work. Review and acceptance by the Architect or Owner does not relieve the Contractor of his exclusive responsibility to fulfill the requirements as shown and specified.

Format for all schedule submittals to the same method and opening numbers as in this Section and on the drawings.

Final Hardware Schedule: Based on the hardware requirements indicated, showing complete designation of every item required for each door or opening.

Furnish initial draft of schedule at the earliest possible date, in order to facilitate the fabrication of other work (such as hollow metal frames) which may be critical in the project construction schedule.

Furnish final draft of schedule after samples, manufacturer's data sheets, coordination with shop drawings for other work, delivery schedules and similar information has been completed and accepted.

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Key Schedules:

Prepare keying schedules for approval, and key locks in accordance with approved schedule. Furnish in triplicate, complete schedule of key marking and master key system to Architect prior to final acceptance.

Templates:

Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware. Upon request, check the shop drawings of such other work, to confirm that adequate provisions are made for the proper installation of hardware.

1.3 QUALITY ASSURANCE:

Acceptability of substitute items may be determined by the Architect solely on the basis of design, appearance, function or finish.

Standards:

Hardware Brands: All locks and latch sets must be one brand, all overhead closers one brand, all floor checks one brand, all hinges one brand, all panic devices one brand.

Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80. This requirement takes precedence over other requirements for such hardware. Provide only hardware which has been tested and listed by UL or FM for the types and sizes of doors required, and complies with the requirements of the door and door frame labels.

Provide hardware for fire-rated doors tested for positive pressure in accordance with UL 10(c).

Fasteners:

Manufacture hardware to conform to published templates, generally prepared for security screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws.

Furnish screws for hardware installation, with each hardware item. Finish exposed (exposed under any condition) screws to match the hardware finish or, if exposed in surfaces of other work, to match the finish of other such work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.

Furnish security screws as specified in Section 01 73 25 for all locations.

Suppliers:

A recognized builders hardware supplier who has been furnishing hardware in the project's vicinity for a period of not less than 2 years, and who is, or employs an experienced AHC certified hardware consultant who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements.

1.4 DELIVERY, STORAGE AND HANDLING:

Provide secure lock-up for hardware delivered to the project, but not yet installed. Control the handling and installation of hardware items which are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses, both before and after installation.

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Packaging of hardware is the responsibility of the supplier. As material is received by the hardware supplier from the various manufacturers, sort and repackage, if necessary, in containers marked with the hardware set number.

Hardware supplier shall apply an easily identified separate label to each carton identifying clearly in large lettering the hardware group, door number, door location, product number, hand of door.

Inventory hardware jointly with representatives of the hardware supplier and the hardware installer until each is satisfied that the count is correct.

Coordinate hardware with other work. Tag each item or package separately, with identification related to the final hardware schedule, and include basic installation instructions in the package.

Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

1.5 WARRANTY:

Furnish 2 copies of following written warranties and insert in each maintenance manual:

Mechanical failure of door closers for 5 years.

Mechanical failure of panics for 3 years.

Failure of parts of all hardware except door closers and panics for 2 years.

1.6 MAINTENANCE:

Furnish a complete set of specialized tools as needed for Owner's continued adjustment, maintenance, and removal and replacement of builders hardware.

Furnish 2 copies of maintenance manuals covering finish hardware for this project. Include printed sheets from hardware manufacturers, bound in a three-ring binder and properly indexed.

Include name, address, phone number of hardware supplier, maintenance instructions and parts list for each type of operating hardware including locks, exit devices, closers.

PART 2 - PRODUCTS

2.1 HARDWARE:

Furnish hardware in accordance with the hardware schedule at the end of this section and as indicated on the door schedule. Schedule is intended as a guide to indicate hardware functions. Provide all items needed for door function including fire-rating and labeling requirements for fire-rated doors.

General:

Conform to ANSI/BHMA A156 except as otherwise indicated.

Provide silencers for all non-fire-rated doors in metal frames, except doors with weatherstrips or smoke seals, equal to Trimco 1229A or Ives No. 20.

Provide smoke seals for all fire-rated doors equal to Pemko S88D on head and jams.

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Furnish all items in US26D except where otherwise noted or directed.

2.2 KEYING:

Supplier will meet with Owner to finalize keying requirements and obtain final instructions in writing.

Scotts Bluff County has an End User Keyway Agreement with ASSA. The commercial hardware supplier shall provide all lock cylinders for the project. All sidebars for both the commercial and detention cylinders are to be ASSA End User Sidebars. Keying for the entire job is to be designed by an ASSA representative. Mogul cylinders to be used in detention locks are to be shipped from ASSA directly to the lock manufacturer (Southern Steel) for installation of the cam. The cylinder supplier shall prepare a parts list for review and approval by the detention equipment contractor prior to placement of an order. The detention equipment contractor is responsible for final installation of the locks and cylinders on the job.

System:

Except as otherwise indicated, provide new grandmaster and master key system for project with selected areas of the building masterkeyed as directed by the Owner.

Existing System: Grandmaster and master key the locks to the Owner's existing system. Existing system is by ASSA.

Cylinders:

Equip locks with ASSA high security cylinders for interchangeable-core. Furnish only temporary inserts for the construction period, and remove these when directed.

Provide final inserts and keys directly to the Owner prior to occupancy in accordance with the approved Keying Schedule.

Keys:

Final Change and Master Keys: Retained by hardware supplier until any area or entire building is ready for occupancy. At such time and when directed, make necessary modification to locks so that construction keys will no longer work and permanent keys and keying system will be operative.

Provide keys of nickel silver only.

Furnish 3 change keys for each lock; 5 master keys for each new master system.

Deliver keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION:

Perform installation under Section 06 10 00 as specified herein.

Mount hardware units at heights recommended in "Recommended Locations for Builder's Hardware" by DHI for standard steel frames or custom steel frames as applicable, except as otherwise specifically indicated or required to comply with governing regulations including handicapped accessibility.

Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be

00 painted or finished in another way, coordinate removal, storage, reinstallation or application of surface 00
 01 protections with finishing work of finish Installers specified in Division 09 sections. Do not install 01
 02 surface-mounted items until finishes have been completed on the substrate. 02
 03

04 Installer may leave hardware items in place during finishing work provided such items are fully 04
 05 masked and protected. Remove finish materials which may penetrate masking, without 05
 06 damage to hardware or its finish or replace as required. 06
 07

08 Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as 08
 09 necessary for proper installation and operation. 09
 10

11 Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners 11
 12 and anchors in accordance with industry standards. 12
 13

14 Cut and fit threshold to profile of door frames. Use single piece units. 14
 15

16 Screw thresholds to substrate with No. 10 or larger screws, of the proper type for permanent 16
 17 anchorage and of bronze or stainless steel which will not corrode in contact with the threshold metal. 17
 18

19 3.2 ADJUST AND CLEAN: 19

20 General: 20

21 Adjust and check each operating item of hardware and each door, to ensure proper operation or 21
 22 function of every unit. Lubricate moving parts with type lubrication recommended by manufacturer 22
 23 (graphite-type if no other recommended). 23
 24

25 Replace units which cannot be adjusted and lubricated to operate freely and smoothly as intended for 25
 26 the application made. Hardware supplier shall make final check and adjustment of locks, closers, 26
 27 other items requiring fine adjustment. 27
 28

29 Final Adjustment: 29

30 Wherever hardware installation is made more than one month prior to acceptance or occupancy of a 30
 31 space or area, return to the work during the week prior to acceptance or occupancy, and make a final 31
 32 check and adjustment of all hardware items in such space or area. 32
 33

34 Clean and relubricate operating items as necessary to restore proper function and finish of hardware 34
 35 and doors. Adjust door control devices to compensate for final operation of heating and ventilation 35
 36 equipment. 36
 37

38 Instructions: 38

39 Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware 39
 40 finishes, during the final adjustment of hardware. 40
 41

42 3.3 HARDWARE SCHEDULE: 42

43 Manufacturer Legend: 43

44 (ASA) ASSA High Security Locks 44
 45 (SCH) Schlage 45
 46 (ACC) Accurate Lock Co. 46
 47 (GLY) Glynn Johnson 47
 48 (RIX) Rixson 48
 49 (ROC) Rockwood Manufacturing 49
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00	(PEM) Pemko	00
01	(KNO) Knox Box	01
02	(TEL) TelKee	02
03	(TRI) Trimco	03
04	(VON) Von Duprin	04
05	(IVE) Ives	05
06	(BYO) By Others	06
07	(LCN) LCN	07

08
09 Schedule Notes:
10

11 It is the intention that the hardware specified shall be of sufficient quantities necessary to complete
12 the Work. Notify the Architect of omissions or discrepancies prior to bid date for clarifications or
13 instructions. Adjustments to the Contract Sum will not be allowed for omissions not clarified prior to
14 bid opening.
15

16 Hardware supplier shall be a certified direct distributor and be a full sales and service organization for
17 the manufacturer's listed. Compliance with this Section shall include letters of certification from the
18 manufacturers certifying the hardware supplier is a factory direct authorized distributor. Certifications
19 shall be submitted for approval with and be incorporated with hardware schedule submittal.
20 Submittals will not be considered without the certifications.
21

22 All substitution requests shall be submitted within the procedures and time frame as outlined in
23 Division 01, General Requirements. Approval of products is at the discretion of the architect and his
24 consultant.
25

26 Furnish all items in US26D (BHMA 626/652), satin chrome unless otherwise specified. Thresholds
27 and weatherstrip to be mill finish aluminum. Closers to be powder coated aluminum. Trim and flat
28 goods may be furnished in US32D, satin stainless steel.
29

30 Use two pair butts or two each intermediate pivots at doors 7'-6" and over.
31

32 Use 5" x 4.5" butts at doors 3'-6" and over.
33

34 Hinges at out-swinging doors with locksets shall have a non-removable pin (NRP).
35

36 Hardware supplier shall verify all lock functions with Owner prior to ordering material.
37

38 After installation of all vertical rod exit devices, General Contractor to have Manufacturer's
39 representative inspect installation and advise if devices are adjusted correctly.
40

41 Hardware supplier to coordinate electrified hardware with electrical, security and detention
42 contractors. Furnish wiring diagrams prior to electrical rough-in: Detail wiring for power, signal, and
43 control systems and differentiate between manufacturer-installed and field-installed wiring. Include
44 the following:
45

- 46 . System schematic.
- 47 . Point-to-point wiring diagram.
- 48 . Riser diagram.
- 49 . Elevation of each door.
- 50 . Detail interface between electrified door hardware and fire alarm, access control, security,
51 and building control systems.
- 52 . Description of each electrified door hardware function, including location, sequence of
53 operation, and interface with other building control systems.
54
55

00 Sequence of Operation: Include description of component functions that occur in the 00
 01 following situations: authorized person wants to enter; authorized person wants to exit; 01
 02 unauthorized person wants to enter; unauthorized person wants to exit. 02
 03 03

04 The door and frame supplier is responsible for providing mortise cutouts for the monitoring contacts 04
 05 that maintains the fire rating of the door. 05
 06 06

07 Refer to door and frame details and furnish accessories such as drop plates, special templates, 07
 08 spacers and supports as required to correctly install door closers. State degree of door swing in the 08
 09 hardware schedule. Place closers inside building, stairs and rooms. 09
 10 10

11 Where RX and LX and used at exit devices hardware supplier to confirm current draw, low current 11
 12 (LC) option may be required. 12
 13 13

14 Hardware supplier shall provide point-to-point wiring diagrams for automatic operator(s) to general 14
 15 and electrical contractor prior to electrical rough in. Electrical contractor shall provide 120VAC to 15
 16 operator and provide and install wiring low voltage wiring from operator to actuators. 16
 17 17

18 Hardware supplier and/or cylinder manufacturer to meet with the Architect and Owner to finalize 18
 19 keying requirements and obtain keying instructions in writing. Both the cylinders and keyblanks shall 19
 20 be protected from unauthorized manufacture and distribution by the manufacturer's United States 20
 21 patents. The cylinder manufacturer to provide the Owner with an exclusive side bar for the facility. All 21
 22 cylinders shall be masterkeyed by supplier, combined in sets or subsets, masterkeyed or 22
 23 grandmaster keyed, as directed by Owner. Quantities of permanent keys will be as determined by the 23
 24 Owner. Permanent keys shall be stamped with the applicable key mark as determined by the Owner 24
 25 for identification, and sequentially numbered per change on the reverse side of the key that the key 25
 26 mark is stamped on. Permanent keys shall also be stamped "Do Not Duplicate". Deliver all 26
 27 permanent keys and cores direct to Owner from supplier by secure courier return receipt requested. 27
 28 Owner shall be responsible to change out the permanent cores. All cylinders shall be furnished with 28
 29 temporary cores. Furnish 20 construction keys and 2 construction control keys. 29
 30 30

31 Pre-Installation Conference: Prior to installation of hardware, this Contractor Installer to meet at the 31
 32 project site or other mutually agreed location with installers of related work, General Contractor, 32
 33 Hardware Supplier, Electrical Contractor, Security System Installer, Detention Contractor and Project 33
 34 Manager. Record discussion and provide copy to each participant. 34
 35 35

36 Prior to final inspection, the Installer, accompanied by the representative of the latch and lock 36
 37 manufacturer, shall return to the project and inspect hardware to insure proper function of doors and 37
 38 hardware. Consult with and instruct Owner's personnel in recommended additions to the 38
 39 maintenance procedures. Replace hardware items that have deteriorated or failed due to faulty 39
 40 design, materials or installation of hardware units. Prepare a written report of current and predictable 40
 41 problems in the performance of the hardware. 41
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PART 1 - GENERAL1.0 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-01 Specification sections, apply to work of this section.

1.1 SUMMARY:Section Includes:

Glass and glazing work as shown on the drawings for:

Exterior "storefront" windows.

Interior doors, borrowed light frames, partitions, and miscellaneous interior glazing.

Related Sections:

Hollow Metal Systems: Section 08 11 13.

Aluminum-Framed Storefronts: Section 08 41 13.

Glazing Surface Films: Section 08 87 00.

Security Glazing: Section 08 88 53.

Packaged mirror units: Sections 10 28 00 and 11 09 50.

1.2 PERFORMANCE REQUIREMENTS:General:

Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

Glass Design:

Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E1300, according to the following requirements:

Specified Design Wind Loads: As indicated on the drawings. As indicated on the drawings, but not less than wind loads applicable to Project as required by ASCE 7 "Minimum Design Loads for Buildings and Other Structures": Section 6.0 "Wind Loads." Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33 feet above grade, according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 6.5, "Method 2-Analytical Procedure," based on mean roof heights above grade indicated on Drawings, but not less than required by the 2009 International Building Code utilizing the following values.

Basic Wind Speed: 90 miles per hour.

00	Importance Factor: 1.15.	00
01	Exposure Category: C.	01
02	Minimum Design Pressures: As specified in Section 08 41 13.	02

03		03
04	Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not	04
05	more than 15 degrees off vertical and under wind action.	05

06		06
07	Load Duration: 60 seconds or less 3 seconds.	07

08		08
09	Maximum Lateral Deflection: For the following types of glass supported on all 4 edges,	09
10	provide thickness required that limits center deflection at design wind pressure to 1/50	10
11	times the short side length or 1 inch, whichever is less.	11

12		12
13	For insulating glass.	13

14		14
15	Minimum Glass Thickness for Exterior Lites: Not less than 0.25".	15

16		16
17	Thickness of Tinted and Heat-Absorbing Glass: Provide the same thickness for each	17
18	tint color indicated throughout Project.	18

19		19
20	Elevation of Installation: 3,911 feet above sea level.	20

21		21
22	<u>Thermal Movements:</u>	22

23		23
24	Provide glazing that allows for thermal movements resulting from the following maximum change	24
25	(range) in ambient and surface temperatures acting on glass framing members and glazing	25
26	components. Base engineering calculation on surface temperatures of materials due to both solar	26
27	heat gain and nighttime-sky heat loss.	27

28		28
29	Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.	29

30		30
31	<u>Thermal and Optical Performance Properties:</u>	31

32		32
33	Provide glass with performance properties specified based on manufacturer's published test data, as	33
34	determined according to procedures indicated below:	34

35		35
36	For insulating-glass units, properties are based on units of 1" thickness for overall unit and	36
37	0.25" for each lite, non-laminated.	37

38		38
39	Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.2 computer program for the	39
40	following methodologies:	40

41		41
42	U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F.	42

43	Solar Heat Gain Coefficient: NFRC 200.	43
----	--	----

44	Solar Optical Properties: NFRC 300.	44
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45		45
46	1.3 <u>SUBMITTALS:</u>	46

47		47
48	<u>Product Data:</u>	48

49		49
50	Submit product data for each glass product and glazing material indicated. Include product test	50
51	reports for the following:	51

52		52
53	Tinted float glass.	53

54	Coated float glass.	54
----	---------------------	----

55	Fire-resistive ceramic glazing products.	55
----	--	----

00 Insulating glass.
 01 Glazing sealants.
 02 Glazing gaskets.
 03

04 Samples:

05
 06 Submit 6" square glass samples and 12" long samples of glazing compounds. Samples will be
 07 reviewed for appearance only. Submit 2 samples of each of the following:
 08

09 Each color of tinted float glass.
 10 Coated vision glass.
 11 Fire-resistive ceramic glazing products.
 12 For each color (except black) of exposed glazing sealant indicated.
 13

14 Glazing Schedule:

15
 16 Submit glazing schedule using same designations indicated in the schedule at the end of this section
 17 for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening
 18 and location.
 19

20 Certification:

21
 22 Submit product certificates signed by manufacturers of glass and glazing products certifying that
 23 products furnished comply with requirements.
 24

25 For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer
 26 of coated glass is certified by coating manufacturer.
 27

28 1.4 QUALITY ASSURANCE:

29 Standards:

30
 31 Prime Glass: ASTM C1036.
 32

33
 34 Safety Glass: Comply with Nebraska State Statutes, IBC Section 2406, ANSI Z97.1 and testing
 35 requirements of 16 CFR Part 1201 for category II materials, with certifying label on each piece.
 36

37 Where glazing units, including Kind FT glass and laminated glass, are specified herein for
 38 glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products
 39 that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one
 40 side, provide glazing products that comply with Category I or II materials, except for hazardous
 41 locations where Category II materials are required by 16 CFR 1201 and regulations of
 42 authorities having jurisdiction.
 43

44 Heat-Treated Glass: ASTM C1048.
 45

46 Fire-Resistant Ceramic Glass: Tested per ASTM E163 (UL 9) and listed by UL for "fire resistance".
 47 Provide glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing
 48 and inspecting agency acceptable to the City of Gering, for fire ratings indicated, based on testing
 49 according to NFPA 257.
 50

51 Insulating Glass: Seal standard ASTM E774, Class A. Provide units manufactured by SIGMA
 52 member and bearing IGCC certification numbers.
 53

54 Glazing Standards: Comply with recommendations of Flat Glass Marketing Association "Glazing
 55 Manual" and "Sealant Manual".

Elastomeric Sealant Standard: Comply with ASTM C920 requirements for Type, Grade, Class and Uses.

Installer (Glazier):

Engage an experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

Glass Product Testing:

Obtain glass test results for product test reports required herein from a qualified testing agency based on testing glass products.

Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E548.

Elastomeric Glazing Sealant Product Testing:

Obtain sealant test results for product test reports required herein from a qualified testing agency based on testing current sealant formulations within a 36-month period.

Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated, as documented according to ASTM E548.

Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C920, and where applicable, to other standard test methods.

Preconstruction Adhesion and Compatibility Testing:

Submit to elastomeric glazing sealant manufacturers, for testing indicated below, samples of each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member that will contact or affect elastomeric glazing sealants:

Use ASTM C1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.

Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.

Schedule sufficient time for testing and analyzing results to prevent delaying the Work.

For materials failing tests, obtain sealant manufacturer's written instructions for corrective measures, including the use of specially formulated primers.

Testing will not be required if elastomeric glazing sealant manufacturers submit data based on previous testing of current sealant products for adhesion to, and compatibility with, glazing materials matching those submitted.

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Glazing for Fire-Rated Door Assemblies:

Glazing for assemblies that comply with NFPA 80 and 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 252.

1.5 DELIVERY, STORAGE AND HANDLING:

Comply with manufacturer's instructions for shipping, handling, storing and protecting glass and glazing materials. Exercise exceptional care to prevent edge damage to glass, and damage/deterioration to coatings (if any) on glass.

Where insulating glass units will be exposed to substantial altitude changes, comply with insulating glass fabricator's recommendations for venting and sealing.

1.6 PROJECT/SITE CONDITIONS:

Weather Conditions: Do not proceed with installation of liquid sealants under adverse weather conditions, or when ambient and substrate temperatures are below or above manufacturer's recommended limitations for installation.

1.7 WARRANTY:

Provide insulating glass manufacturer's written warranty, agreeing to, within specified warranty period, furnish FOB project site, replacements for insulating glass units which have defective hermetic seals (excluding that due to glass breakage); defined to include intrusion of moisture or dirt, internal condensation or fogging, deterioration of internal glass coatings, and other visual evidence of seal failure or performance failure; provided manufacturer's instructions for handling, installation, protection and maintenance have been adhered to during warranty period.

Warranty period is 10 years after seal date permanently imprinted on unit, but not less than 9 years after date of substantial completion.

Provide coated glass manufacturer's written warranty agreeing to, within specified warranty period, furnish FOB project site, replacements for insulated glass units exhibiting defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.

Warranty period is 10 years after seal date permanently imprinted on unit, but not less than 9 years after date of substantial completion.

PART 2 - PRODUCTS2.1 MANUFACTURERS:

Approved Basic Manufacturers and Fabricators:

AFG Industries, Inc.	Ford Glass Div.
Guardian Industries	Pilkington
PPG Industries, Inc.	Saint-Gobain/Euroglass
Old Castle Glass	Viracon, Inc.
Approved equal	

00	2.2	<u>PRIME GLASS:</u>	00
01			01
02		<u>Clear Float Glass:</u>	02
03			03
04		Type I, Class 1 (clear) Quality q3 (glazing select), 0.25" thick.	04
05			05
06		<u>Tinted Float Glass:</u>	06
07			07
08		Type I, Class 2 (tinted heat absorbing and light reducing), Quality q3 (glazing select), 0.25" thick,	08
09		manufacturer's standard aqua blue color matching color of existing exterior glass on the building and	09
10		meeting performance requirements specified for low E coated glass.	10
11			11
12		Provide Azuria by PPG Industries, Inc. or approved equal by listed manufacturer.	12
13			13
14		<u>Ceramic Glass:</u>	14
15			15
16		Provide solid, clear, polished to eliminate distortions, ceramic glass without gel core, thicknesses as	16
17		indicated or required to meet indicated fire-rating, by Technical Glass Products (TGP,	17
18		1-800-426-0279) or approved equal by O'Keeffes or St. Gobain with UL label to meet fire-rating	18
19		scheduled on the drawings. The following listed products are by TGP.	19
20			20
21		90 Minute Fire and Safety Rated Openings: "FireLite Plus Premium", 0.313" thick.	21
22			22
23	2.3	<u>HEAT TREATED GLASS:</u>	23
24			24
25		Provide prime glass of color and type indicated, which has been heat-treated to strengthen glass in	25
26		bending, Kind HS (heat strengthened) or FT (fully tempered) as specified, horizontally heat treated	26
27		with minimal waviness or distortion at bottom edge of glass and free of tong marks.	27
28			28
29		Provide Kind FT glass where safety glass is indicated or where required by applicable laws and	29
30		Codes.	30
31			31
32	2.4	<u>COATED GLASS:</u>	32
33			33
34		<u>General:</u>	34
35			35
36		Except where otherwise indicated, provide heat strengthened coated float glass. Provide tempered	36
37		units where coated safety glass is designated or required.	37
38			38
39		Performance characteristics are for 1" insulating glass units.	39
40			40
41		<u>Low Emissivity Coated Glass:</u>	41
42			42
43		Manufacturer's standard durable neutral color, low emissivity metallic coating deposited by either	43
44		pyrolytic or vacuum process on glass and surface indicated.	44
45			45
46		Glass: 0.25" thick, tinted aqua blue.	46
47		Kind: HS, except FT where indicated or required by Code or as scheduled.	47
48		Surface Coated: 2.	48
49			49
50		Performance Characteristics: Visible light transmittance of not less than 54 percent, summer	50
51		daytime U-value of not more than 0.27, winter nighttime U-value of not more than 0.29,	51
52		shading coefficient of not more than 0.32, solar heat gain coefficient of not more than 0.28 and	52
53		outdoor visible reflectance of not more than 8 percent.	53
54			54
55			55

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00	Performance characteristics are based on Solarban 60 (2) Azuria + Clear by PPG Industries,	00
01	Inc.	01
02		02
03	2.5 <u>INSULATING GLASS UNITS:</u>	03
04		04
05	<u>Vertical Insulating Glass Units:</u>	05
06		06
07	Provide preassembled units consisting of organically double sealed panes of glass enclosing a	07
08	hermetically sealed dehydrated air space as follows:	08
09		09
10	Use two thicknesses of glass of specified prime or coated types as scheduled at the end of	10
11	this section with thermally improved spacer channel (such as Technoform TGI Spacer) of	11
12	dimension scheduled with welded or sealed corners as standard with the manufacturer and	12
13	double sealed units with polyisobutylene primary sealant and polyurethane secondary sealant.	13
14		14
15	Spacer Color: To match natural aluminum.	15
16		16
17	2.6 <u>GLAZING SEALANTS AND TAPES:</u>	17
18		18
19	<u>General:</u>	19
20		20
21	Provide black exposed glazing materials, unless another color is indicated, or unless another color is	21
22	selected by Architect from manufacturer's standard colors.	22
23		23
24	Provide hardness of materials as recommended by the manufacturer for the required application and	24
25	condition of installation in each case. At fire rated assemblies, provide materials in compliance with	25
26	the tested UL assembly. Provide only sealants and tapes which are known (proven) to be fully	26
27	compatible with surfaces contacted, including glass products, seals of insulating glass units and	27
28	glazing channel surfaces.	28
29		29
30	<u>1-Part Acrylic Glazing Sealant:</u> (Use for Interior Glazing of Hollow Metal or Wood Work)	30
31		31
32	Water-based, acrylic emulsion sealant; nonsag, mildew resistant, paintable; complying with ASTM	32
33	C834.	33
34		34
35	<u>Back-Bedding Mastic Glazing Tapes:</u>	35
36		36
37	Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and	37
38	nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in	38
39	writing by tape and glass manufacturers for application indicated; packaged on rolls with a release	39
40	paper backing; and complying with ASTM C1281 and AAMA 800 for products indicated below:	40
41		41
42	AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.	42
43	AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.	43
44		44
45	<u>Expanded Cellular Glazing Tapes:</u>	45
46		46
47	Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with	47
48	release liner protecting adhesive; and complying with AAMA 800 for the following types:	48
49		49
50	Type 1: For glazing applications in which tape acts as the primary sealant.	50
51		51
52	Type 2: For glazing applications in which tape is used in combination with a full bead of liquid	52
53	sealant.	53
54		54
55		55

00 2.7 GLAZING GASKETS: 00

01 01

02 Glazing gaskets for aluminum framing systems are furnished by Installer of Section 08 41 13 and 02
03 installed as herein specified. 03

04 04

05 Cellular Glazing Gaskets: (Use for "Dry Glazing" Aluminum Work) 05

06 06

07 Molded or extruded closed cell integral-skinned neoprene gaskets for watertight construction; 07
08 complying with ASTM C509, Type II, black. 08

09 09

10 Manufacturer: Provide by one of the following or approved equal: 10

11 11

12 D.S. Brown Company 12

13 Maloney Precision Products Company 13

14 Tremco, Inc. 14

15 Mantaline Corp. 15

16 16

17 Elastomeric Compression Glazing Gaskets: (Use for "Dry-Glazing" Aluminum Work). 17

18 18

19 Extruded, flexible gaskets of EPDM of the profile and hardness as required for watertight 19
20 construction; comply with ASTM C864. 20

21 21

22 Manufacturer: Provide by one of the following or approved equal: 22

23 23

24 D.S. Brown Company 24

25 Maloney Precision Products Company 25

26 Tremco, Inc. 26

27 Mantaline Corp. 27

28 28

29 2.8 MISCELLANEOUS GLAZING MATERIALS: 29

30 30

31 Compatibility: Provide materials compatible with surfaces and sealants contacted in installation. 31

32 32

33 Setting Blocks: Neoprene, EPDM or silicone 80-90 Shore A durometer hardness, with proven 33
34 compatibility with sealants used. 34

35 35

36 Spacers and Edge Blocks: Neoprene, EPDM or silicone with proven compatibility with sealants used, 36
37 of size, shape and hardness as recommended by glass and sealant manufacturers. Provide edge 37
38 blocks to limit lateral movement of glass. 38

39 39

40 Cleaners, Primers and Sealants: Type recommended by sealant or gasket manufacturer. 40

41 41

42 PART 3 - EXECUTION 42

43 43

44 3.0 EXAMINATION: 44

45 45

46 Refer to Section 01 73 00 for examination of substrate and job conditions. 46

47 47

48 Examine framing glazing, with Installer present, for compliance with the following: 48

49 49

50 Manufacturing and installation tolerances, including those for size, squareness, and offsets at 50
51 corners. 51

52 52

53 Presence and functioning of weep system. 53

54 54

55 Minimum required face or edge clearances. 55

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00		00
01	Effective sealing between joints of glass-framing members.	01
02		02
03	Proceed with installation only after unsatisfactory conditions have been corrected.	03
04		04
05	3.1 <u>PREPARATION:</u>	05
06		06
07	Clean the glazing channel or other framing members to receive glass, immediately before glazing.	07
08	Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces	08
09	wherever elastomeric sealants are used.	09
10		10
11	3.2 <u>INSTALLATION:</u>	11
12		12
13	<u>Performance:</u>	13
14		14
15	Watertight and airtight installation of each piece of glass is required, except as otherwise shown.	15
16	Each installation must withstand normal temperature changes, wind loading and impact loading (for	16
17	operating doors) without failure of any kind including loss or breakage of glass, failure of sealants or	17
18	gaskets to remain watertight and air-tight, deterioration of glazing materials and other defects in the	18
19	work.	19
20		20
21	<u>General:</u>	21
22		22
23	Protect glass from edge damage at all times during handling, installation and operation of the	23
24	building.	24
25		25
26	Glazing channel dimensions as shown are intended to provide for necessary minimum bite on the	26
27	glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. The	27
28	Glazier is responsible for correct glass size for each opening, within the tolerance and necessary	28
29	dimensions established.	29
30		30
31	Comply with combined recommendations of glass manufacturer and manufacturer of sealants and	31
32	other materials used in glazing, except where more stringent requirements are shown or specified,	32
33	and except where manufacturer's technical representatives direct otherwise.	33
34		34
35	Comply with "Glazing Manual" and other applicable publications by Flat Glass Marketing Association	35
36	except as shown and specified otherwise, and except as specifically recommended otherwise by the	36
37	manufacturers of the glass and glazing materials.	37
38		38
39	Apply primers to joint surfaces where required for adhesion of sealants, as determined by	39
40	preconstruction sealant-substrate testing.	40
41		41
42	Inspect each piece of glass immediately before installation, and discard any which have observable	42
43	edge damage or face imperfections.	43
44		44
45	Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.	45
46		46
47	Unify appearance of each series of lights by setting each piece to match others as nearly as possible.	47
48	Set with pattern, draw and bow oriented in the same direction as other pieces.	48
49		49
50	Cut and install colored (tinted) and heat absorbing glass as recommended in TSR No. 130,	50
51	"Installation Recommendations Tinted and Reflective Glass", by PPG Industries, or similar reports by	51
52	other manufacturers.	52
53		53
54		54
55		55

Install insulating glass units to comply with recommendations by SIGMA and TSR No. 230, "Installation Recommendations Twindow" by PPG Industries, Inc., except as otherwise specifically indicated or recommended by glass and sealant manufacturers.

3.3 GLAZING:

General:

Install setting blocks of proper size at quarter points of sill rabbet but not less than 6" from corner of glass to edge of setting block. Set blocks in thin course of the heel-based compound, if any.

Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

Provide spacers inside and out, and of proper size and spacing, for all glass sized larger than 50 united inches, except where gaskets or glazing tapes are used for glazing. Provide 0.125" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

Force sealants into channel to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

Clean and trim excess glazing materials from the glass and stops or frames promptly after installation, and eliminate stains and discoloration.

Tape and Sealant Glazing:

Cut glazing tape to length and set against permanent stop 3/16" below sightline. Butt tape at corners and daub joint with butyl sealant.

Place setting blocks and rest glass pane on blocks and push against tape to attain full contact with glass perimeter.

Place glazing tape on glass and install removable stop.

Apply cap bead of acrylic sealant along external and internal void to uniform line and with "wash" away from glass. Tool or wipe sealant with solvent for smooth appearance.

Gasket Glazing:

Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to dynamic movement.

Square cut wedge-shaped gaskets at corners and install gasket as recommended by gasket manufacturer to prevent pull away at corners. Seal corner and butt joints with sealant as recommended by gasket manufacturer.

Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

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.

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

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to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

Install gaskets so they protrude past face of glazing stops.

Sealant Glazing (Wet):

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.

Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.4 CURE, PROTECTION AND CLEANING:

Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

Protect exterior glass from breakage immediately upon installation, by attachment of crossed streamers to framing held away from glass. Do not apply markers of any type to surface of glass.

Remove nonpermanent markers and clean surfaces.

Remove and replace glass which is broken, chipped, cracked, abraded, or damaged in other ways during the construction period, including natural causes, accidents and vandalism.

Washing of glass is specified in Section 01 74 19.

3.5 SCHEDULE:

Type 1: (Interior Glazing Not Otherwise Indicated)

0.25" clear, Kind FT, float glass.

Type 2: (Exterior Vertical Glazing)

Total Thickness: 1".

Exterior Light: 0.25" tinted, Kind HS, float glass pane with Low E coating on Number 2 surface.

Air Space: 0.5".

Interior Light: 0.25" clear, Kind HS, float glass.

Type 3: (Interior UL Label Openings)

Laminated ceramic glazing in thickness to meet required fire and safety ratings.

END OF SECTION 08 80 00

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