YUKON KUSKOKWIM CORRECTIONAL CENTER | Bethel, Alaska
STATEWIDE SECURITY HARDWARE UPGRADE

SPECIFICATIONS
Bid Set

State of Alaska
Department of Corrections

Project No. 190003516

June 10, 2019

Consultant Team:

Architecture	Steve Fishback Architect
Electrical Engineering	RSA Engineering Inc.

YUKON KUSKOKWIM CORRECTIONAL CENTER
STATEWIDE SECURITY HARDWARE UPGRADES

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PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work: Extent of selective demolition work is indicated on Drawings and specified within this document. Work includes careful removal of security doors, frames and/or hardware in inmate occupied areas. Work also includes limited removal of existing wall assemblies to facilitate installation of new doors and frames. Work is to be conducted in close coordination with prison staff. The prison security lines are to be maintained at all times. All demolition work conducted in MAX A and MAX B are part of the base bid. Demolition associated with the gate is an alternate.

1.2 ASBESTOS

A. The work does not include asbestos or lead paint removal. Should the contractor discover asbestos/lead or suspect the presence of asbestos/lead containing materials, the Project Manger shall be notified immediately and stop work in that area until authorized to resume.

1.3 JOB CONDITIONS

A. Condition of Structures: Contractor shall verify actual condition of items or structures to be demolished. The contractor shall be responsible to notify owner's representative of discrepancies between actual conditions and information contained in documents.

B. Partial Demolition and Removal: Items indicated to be removed but salvaged for reuse on the project shall be carefully removed and stored until re-installation. Protect salvaged products from damage.

C. Protection: Provide temporary barricades and other forms of protection as required to protect building occupants from injury due to demolition work.

1. Provide shoring, bracing or support to prevent movement, settlement or collapse of structure or element to be demolished, project adjacent facilities or work to remain.

2. Protect from damage the existing finish work that is to remain in place and becomes exposed during demolition operations. Repair any such damage to the building at no additional cost to the Owner.

3. Protect floors, walls and ceilings with suitable coverings.

4. Construct temporary insulated solid dustproof partitions where required to contain dust that may result from the demolition process.

5. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.

6. Remove protection as required by security staff.

D. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

E. Traffic: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks and other adjacent occupied or used facilities.

F. Explosives: Use of explosives will not be permitted.

G. Utility Service: Maintain existing utilities and low voltage security systems to remain in service and protect against damage during demolition operations.

H. Dust Control: Control dust resulting from demolition and removal work to avoid creation of a nuisance in the surrounding area. Do not use water to control dust.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 DEMOLITION

A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.

1. Demolish concrete in small sections. Cut concrete at junctures with construction to remain using power-driven masonry saw or hand tools. Do not use power-driven impact tools without prior approval.

2. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.

3.2 SALVAGE MATERIALS

A. Where indicated on Drawings as "Salvage - For Owner Use", carefully remove indicated items, clean, store and turn over to Owner and obtain receipt.

3.3 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Transport and legally dispose of materials off site.

B. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws and ordinances concerning removal, handling and protection against exposure or environmental pollution.

C. Burning of removed materials is not permitted.

3.4 CLEAN-UP AND REPAIR

A. Repair demolition performed in excess of that required. Repair surfaces, which are to remain but have become soiled or damaged by demolition work, to new condition.

END OF SECTION 02 41 19

PART 1 – GENERAL

1.1 DESCRIPTION

A. Description of Work: The extent of work is shown on the Drawings and specified within this document and includes furnishing metal fabrications including metal enclosures in Max-A and Max-B and floor grills in Max-A and Max-B as well as stainless steel sheet metal camera enclosures and miscellaneous supports and fasteners. All metal fabrication work in MAX A and MAX B is part of the base bid.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Requirements of the International Building Code and ADA, if more restrictive or demanding, govern those of this specification.

B. Qualifications of Welders: Employ only certified welders who have been qualified in accordance with the procedures outlined in AWS Publication DI.1-80, Section 5, Parts A, B, C, D and E, as applicable, and with Alaska Board of Welding Examiners Regulation 12 AAC 72, Article 2.

1.3 PRODUCT DELIVERY, HANDLING AND STORAGE

A. Shipping and Storage: Afford materials the degree of preservation, packaging and packing necessary to prevent deterioration and/or damage which might result from the hazards to which they will be subjected during shipment, handling and storage. Fabricated, shop painted items shall be packaged prior to shipping to protect against damage during shipping. Store materials off the ground with provisions for drainage of rain and/or snow. Repair or replace damaged materials as directed or as necessary.

1.4 SUBMITTALS

A. Shop Drawings: Submit shop drawings showing complete details and schedules for the fabrication, shop assembly and installation of all metal fabrications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: For the fabrication of metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, rolled marks and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and applying surface finishes including zinc coating.

B. Miscellaneous Steel Fabrications: Fabricate from rolled steel shapes and plates conforming to requirements of ASTM Designation A36, and from hot-formed steel tubular shapes conforming to requirements of ASTM Designation A501. Hot-dip galvanize those units which will be exposed to the exterior or where built into exterior walls or slabs.

C. Rough Hardware:

1. General: Provide zinc coated fasteners for exterior use and where built into exterior walls.

2. Bolts and Nuts: Hexagon head type, conforming to requirements of ASTM Designation A307, Grade A.

3. Security bolts with break off heads.

4. Lag Bolts: Square head type, conforming to requirement of Federal Specification FF-B-561.

5. Plain Washers: Round, general assembly grade carbon steel washers, conforming to requirements of Federal Specification FF-W-92.

6. Lock Washers: Helical spring type, conforming to requirements of Federal Specification FF-W-84.

7. Machine Screws: Cadmium plated steel screws conforming requirements of Federal Specification FF-S-92.

8. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

D. Ferrous Metals:

1. Metal Surfaces: For fabrication of miscellaneous metal work, which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, aggregate, sharp protrusions, release agents, or other contaminants.

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

3. Steel Tubing: Cold-formed, ASTM A500; or hot-rolled, ASTM A501.

4. Structural Steel Sheet: Hot-rolled, ASTM A570; or cold-rolled, ASTM A501.

5. Galvanized Structural Steel Sheet: ASTM A 46, of grade required for design loading. Coating designation as indicated, or if not indicated, G90.

6. Steel Pipe, Seamless: ASTM A53; Type and grade as selected by fabricator and as required for design loading; black finish standard weight (schedule 40), unless otherwise indicated.

7. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

8. Woven Wire Mesh: Intermediate crimp, square pattern 2 inch woven wire mesh made from 0.1875 inch nominal diameter wire complying with ASTM A510.

E. Stainless Steel: ASTM A666, Type 304 No. 4 Finish stainless steel sheet metal used for camera enclosures shall be 16 gauge reinforced with 12 gauge inserts welded to interior shell.

F. Miscellaneous Materials

1. Shop Prime Coating: Rust inhibitive metal primer.

2.2 WOVEN-ROD-MESH ASSEMBLES

A. Main Framing: Formed from 2 x 2 x 3/16 inch steel angles and 3/16 inch retaining plates for securing woven rod mesh.

B. Supplementary Framing: Formed from 2-inch-square and 1-1/2 x 2-1/2 inch by 3/16-inch-thick steel tubing.

C. Braces: Formed from same material as main framing.

D. Woven-Rod Panels: Formed from double crimped, 3/16 inch-diameter (11 gauge) steel rod, woven horizontally and vertically into a rigid grille with rods at 2 inches o.c.

1. Steel Rod for Nongalvanized Assemblies: Mild steel.

E. Floor Anchor Clips: 2-by-2-by-3/16-inch mild steel angles for straight framing; 1-1/2-by-1-1/2-by-3/16-inch mild steel angles for corners.

F. Wall and Ceiling Anchorage and Trim: Continuous 2-by-2-by-3/16-inch mild steel angle with 2-by-3/16-inch mild steel flat bar retainer.

G. Finishes:

1. Interior Locations: Shop primed and painted. Metal components requiring field welding shall be cleaned, ground smooth, site touched up with primer and matching paint.

2.3 SECURITY VENTS

A. Perforated-Plate Security Floor Grills:

1. Faceplate: 3/16-inch-thick, mild steel plate.

2. Opening Sleeve: 3/16-inch-thick steel plate welded to faceplate.

3. Perimeter Frame: 1-by-1-by-3/16-inch-thick, mild steel angles.

4. Provide sleeve for installation through floor into existing duct below floor.

5. Finish: Factory finish.

6. Basis of Design: Krueger 13SD Security Grill, www.krueger-hvac.com/file6883/13SD.

7. The contractor is to assume scope includes 6 vents with a face of 8” x 20” and 10 vents with a face of 5” x 14” inclusive of flange.

2.4 STEEL AND IRON FINISHES

A. Shop prime iron and steel items as specified.

B. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:

1. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

C. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

2.5 FABRICATION

A. General: Fabricate metal parts and assemblies in accordance the Reference Standards. Match configurations shown on the Drawings. Form accurate shapes having smooth, flat surfaces and straight, sharp edges. Form bent metal corners to the smallest radius possible without causing grain separation. Cut, drill and tap for hardware and anchors shown on the Drawings or, if not shown, as required for a secure installation. Provide connections for the work of other trades.

B. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.

C. Welding: Perform all shop and field welding of steel fabrications in accordance with the “Structural Welding Code, AWS D1.1-80”, of the American Welding Society, including applicable addenda and interpretative reading. Weld corners and seams continuously. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

D. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended.

E. Form camera enclosures by forming enclosure to fit tightly to corners at wall/ceiling intersections where shown on electrical drawings. Bends, folds, seams and joints shall be tight and straight. Conceal fasteners where possible.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous

G. Shop Painting: Clean surfaces of steel or iron fabrications accordance with requirements of Steel Structures Painting Council Specification SSPC-SP-1-63. Apply one coat of shop primer to all steel or iron fabrications, producing a uniform, dry film thickness of not less than 2.0 mils. Apply two coats of specified paint in shop.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.

3.2 INSTALLATION OF WOVEN-ROD-MESH ASSEMBLIES

A. Floor Anchorage: Fasten anchor clips and continuous angles to floor with 3/8-inch-diameter stainless steel bolts with double- expansion shields and security-type anchor bolts with break-off heads.

B. Wall and Ceiling Anchorage: Anchor continuous angle to walls and ceilings with 3/8-inch-diameter, through bolts with security-type, "break-off" heads. Provide 1/4 inch thick steel back plate and nut. Weld lock bolt in place.

C. Screw adjacent main framing members to each other with Number 10 screws at 6 inches o.c. on both sides of framing.

D. Provide supplementary framing at three-way connections and multiple-panel-height partitions. Screw main framing to supplementary framing with Number 10 machine screws at 6 inches o.c.

E. Provide additional field bracing as shown or as necessary for rigid, secure installation.

F. Loctite all screws and bolts.

3.3 INSTALLATION OF SECURITY GRILLES

A. Locations: Unless otherwise indicated, install security grilles and vents in floor ducts in A MAX and B MAX Housing Units in existing penetrations and openings. Contractor shall field verify mounting method and confirm grill dimensions prior to shop drawing submittal.

B. Support Frames: Set support frames in adjacent construction.

C. Attachment: Field bolt duct sleeves to ducts below floor.

D. Bed grill in pick-resistant sealant around flange/slab overlap.

3.4 INSTALLATION OF CAMERA ENCLOSURES

A. Locations: Fabricate camera enclosures where shown on electrical drawings.

B. Enclosure Fit: Camera enclosures are to fit tight against odd angled wall and ceiling corners. Field fabrication will likely be required.

C. Attachment: Attach sheet metal enclosure to plaster walls and ceilings with power driven 24 gauge pins or small expansion anchors.

D. Bed enclosures to wall/ceiling interfaces with pick proof sealant.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

END OF SECTION 05 50 00

PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work: the extend of the work is referenced on the drawings and specified within this document and includes seal joints to protect against the intrusion of moisture, dust or contraband. Work includes urethane, including “pick resistant” sealants and epoxy “pick proof” sealants as well as latex and silicone products.

B. Non-flexible security joint sealants.

1.2 REFERENCES, CODES AND STANDARDS AND QUALITY ASSURANCE

A. EPA – Environmental Protection Agency

B. ASTM – American Society of Testing and Materials

C. ACI – American Concrete Institute

D. Qualifications of Workers: For sealant work, employ only skilled workers who are thoroughly trained and experienced with the application of the sealant product furnished and who are completely familiar with the Drawings and this Specification.

1.3 PRODUCT DELIVERY, HANDLING AND STORAGE

A. Deliver materials in original containers with manufacturer’s labels thereon. Store in a warm dry place. Replace damaged materials as directed or as necessary.

1.4 SUBMITTALS

A. Manufacturer’s Data: Submit manufacturer’s specifications and installation instructions for sealant and sealant backing. Include data substantiating compliance with specified requirements.

B. Samples: Submit samples in the manufacturer’s standard range of colors.

C. Guarantee: Before commencement of work, furnish two copies of a written guarantee, signed by the Contractor and the installer, agreeing to repair or replace sealants that fail in joint adhesions, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance or general durability, or appear to deteriorate in any other manner not clearly specified as an inherent quality of the material in submitted manufacturer’s data.

1.5 SUBMITTALS

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B. Samples: Submit samples in the manufacturer’s standard range of colors.

C. Guarantee: Before commencement of work, furnish two copies of a written guarantee, signed by the Contractor and the installer, agreeing to repair or replace sealants that fail in joint adhesions, cohesion,

abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance or general durability, or appear to deteriorate in any other manner not clearly specified as an inherent quality of the material in submitted manufacturer's data.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weather proofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

B. Liquid-Applied Joint Sealants: Comply with ASTM C920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.

2.2 URETHANE JOINT SEALANTS

A. Urethane Joint Sealant: ASTM C920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Sika Corporation; Construction Products Division.
   b. Tremco Incorporated.
2. Type: Single component (S) or multicomponent (M).

3. Grade: Nonsag (NS).

4. Class 25.

5. Uses Related to Exposure and Application: Traffic (T) and Nontraffic (NT); for use in non-secure interior and exterior, vertical and horizontal applications.

B. Security Grade, Pick-Resistant Urethane Joint Sealant: ASTM C920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. BASF Building Systems.
   b. Bostik Findley.
   c. Parchem, an Alesco Company.
   d. Pecora Corporation.

2. Hardness: 50 Shore A.

3. Type: Single component (S).

4. Grade: Nonsag (NS).

5. Class: 25.

6. Uses Related to Exposure and Application: Traffic (T) and Nontraffic (NT); for use in security related applications in locations accessible to inmates.

2.3 EPOXY JOINT SEALANTS

A. Security Grade, Pick-Proof Epoxy Joint Sealant: ACI 302.1R (4.10-Joint Materials).

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems.
b. Chase Construction Products.
c. Polygem, Inc.
d. Sika Corporation.

2. Hardness: 75 Shore A, minimum.

3. Type: Multicomponent (M).

4. Grade: Nonsag (NS) and Self Leveling (SL).

5. Uses Related to Exposure and Application: Traffic (T) and Nontraffic (NT); for use in security related applications in locations where inmates are present.

2.4 SILICONE JOINT SEALANT

A. Interior Standard Sealant for Wet Areas: One part silicone base building sealant exhibiting the following characteristics

1. Hardness: (Shore A Scale)15 points.

2. Ultimate tensile strength: (at maximum elongations)100 psi (0.07 kgf/mm2).

3. Peel strength: 25 lbs/inch (4.5 kg/cm).

4. Ozone resistance: Excellent.

5. Weathering exposure: No change in hardness or color after 4500 hours.

6. Recovery: 100% recovery from 50% compression or extension by 1/8 inch per hour.

7. Movement capabilities: Plus or minus 50%.

8. Tear strength: (die B) 25 lb./inch (4.5kg/cm).

9. Provide sealant in a color selected by the Contracting Officer. One product meeting these requirements is DOW Corning “790 Building Sealant.”

2.5 LATEX JOINT SEALANT

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems.
b. Bostik Findley.
c. May National Associates, Inc.
d. Pecora Corporation.
e. Schnee-Morehead, Inc.
f. Tremco Incorporated.

2. Uses: For use in non-secure interior joints between opening frames and adjacent construction.

2.6 JOINT SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to production optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 GENERAL

A. Sealant shall be applied to all open construction joints to form moisture and dust tight joints.

3.2 INSPECTION

A. Carefully examine the substrate and observe conditions under which the work is to be performed. Do not proceed with the work, or allow it to proceed, until unsatisfactory conditions have been corrected. Commencement of work by the installer constitutes acceptance of the substrate.

3.3 PREPARATION

A. Precautions: Do not proceed with preparation of joints or installation of materials until final finish coatings have been applied to adjacent surfaces.

B. Preparation of Joints: Clean joint surfaces immediately prior to sealing. Remove laitance, dirt, moisture and other substances that would interfere with proper bonding. Prime or seal joint surfaces when manufacturer's recommendations warrant. Protect adjacent surfaces with masking tape when necessary.

3.4 INSTALLATION

A. Installation of Backing Materials: Install bond breaker tape and sealant backer rod in accordance with manufacturer's instructions.

B. Installation of Sealant: Apply sealant in accordance with manufacturer's printed instructions for the specific conditions including manufacture range of installation using a handgun with nozzle of proper size. Fill joints and voids solid. Superficial pointing and skin beading will not be accepted. Tool joints with equipment designed especially for that purpose, leaving surfaces uniform, smooth, and free of sags, gaps, bulges, air pockets and other inconsistencies. Remove excess material immediately. Leave adjacent surfaces clean. Cure sealed joints for a period of not less than 48 hours.

END OF SECTION 07 92 00

PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. The Section includes the purchase, transporting and installation of security doors, wall panels and frames. Work will take place in a fully inhabited prison, although MAX Units will be vacated during the time of construction.

1.2 QUALITY ASSURANCE

A. ASTM A1008/A1008M-03, Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

B. ASTM A1011/A1011M-03, Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

C. ASTM A653/A653M-02, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dipped Process, (Commercial Steel).

D. ASTM A666-00, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.

E. ASTM C143/C143M-00, Standard test Method for slump of Hydraulic Cement Concrete.

F. ANSI A250.10 – 1998, Standard Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

G. ASTM F1450-97 (2004), Standard Test methods for Hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities.

H. ASTM F1592-01, Standard Test Methods for Detention Hollow Metal Vision Systems.

I. ANSI / NAAMM HMMA 801-98, Glossary of Terms for Hollow Metal Doors and Frames.

J. NAAMM HMMA 803-98, Steel Tables.

K. NAAMM HMMA 820-87, Hollow Metal Frames.

L. HMMA-820 TN01-03, Grouting Hollow Metal Frames.

M. NAAMM HMMA 840-99, Installation and Storage of Hollow Metal Doors and Frames.

N. NAAMM HMMA 850-00, Fire-Rated Hollow Metal Doors and Frames, Second Edition.

O. ANSI / NAAMM HMMA 866-01, Guide Specifications for Stainless Steel Hollow Metal Doors and Frames.

P. ANSI / NFPA 80-1999, Fire Doors and Windows.

Q. ANSI / NFPA 105-1999, Recommended Practice for the Installation of Smoke Control Door Assemblies.

R. ANSI / NFPA 252-1999, Standard Methods of Fire Tests of Door Assemblies.

S. ANSI / NFPA 257-2000, Methods for Fire Test of Window Assemblies.

T. ANSI / UL 9-2000, Fire Test of Window Assemblies, 7th Edition.

U. ANSI / UL 10B-2001, Fire Test of Door Assemblies, 9th Edition.

V. ANSI / UL 10C-2001, Standard for Positive Pressure Fire Tests of Door Assemblies, 1st Edition.

W. UL 1784-01, Air Leakage Tests of Door Assemblies, 3rd Edition.

X. ICBO UBC 7-2 (1997), Fire Tests of Door Assemblies.

Y. ICBO UBC 7-4 (1997), Fire Tests of Window Assemblies.

Z. UL 752-00, 10th Edition, Bullet Resisting Equipment.

1.3 TESTING AND PERFORMANCE

A. Performance grades for each opening shall be as indicated on the contract documents. Performance test requirements for each opening shall be as indicated for individual grade number designations shown in the tables in ASTM F1450 and ASTM F1592. Test procedures shall be performed on door and frame designs as described in Paragraphs A, B, C, D and E.

B. Door Assembly Impact Test:

1. Two 3-foot by 7-foot doors shall be constructed in accordance with Article 2.1, each with 100 square inch vision panel, 4 inch by 25 inch clear opening positioned generally as shown in ASTM F1450, Figure 1. Doors shall have a maximum weight for Grades 1 and 2 of 230 lbs and for Grades 3 and 4 of 190 lbs. Two accompanying frames shall be constructed in accordance with Article 2.3. One door and frame assembly shall be equipped with hardware in accordance with ASTM F1450, Section 6.1.1.3. The other assembly shall be equipped with hardware in accordance with ASTM F1450, Section 6.1.1.4. Test doors and frames shall be installed and tested in accordance with ASTM F1450, Section 6, “Specimen Preparation” and Section 7.2, “Door Assembly Impact Test.” The test assemblies shall meet the acceptance criteria in Section 7.2 in order to qualify under this Specification.

C. Detention Hollow Metal Vision System Impact Test in Accordance with ASTM F1592:

1. A four (4) equal light multi-light security hollow metal assembly, overall dimensions of 50 inch width by 50 inch height, shall be constructed in accordance with this Specification, Article 2.3, and shall be impact tested in accordance with ASTM F1592, Sections 5, 6 and 7.2. The test assembly shall meet the acceptance criteria in Section 7.2 in order to qualify under this Specification.

2. A single sidelight security hollow metal assembly, door dimensions 3 feet by 7 feet and sidelight dimensions with clear opening size of 28 inches wide by 33 inches high plus or minus 1 inch, shall be constructed in accordance with Articles 2.1 and 2.3, and shall be impact tested in accordance with ASTM F1592, Sections 5, 6, and 7.2. The test assembly shall meet the acceptance criteria in Section 7.2 in order to qualify under this Specification.

D. Door Static Load Test

1. Two (2) doors constructed identically to each of the test doors required for Article 1.5, Paragraph A, “Door Assembly Impact Test,” 3 feet by 7 feet, with 4 inch by 25 inch vision panel, and with hardware preparations, shall be tested in accordance with ASTM F1450, Section 7.3, “Door Static Load Test.” The test doors shall meet the acceptance criteria in Section 7.3 in order to qualify under this Specification.

E. Door Rack Test

1. Two (2) doors constructed identically to each of the test doors required in Article 1.05, Paragraph A, “Door Assembly Impact Test,” 3 feet by 7 feet, with 4 inch by 25 inch vision panel, and with hardware preparations shall be tested in accordance with ASTM F1450, Section 7.4, “Door Rack Test.” The test doors shall meet the acceptance criteria in Section 7.4 in order to qualify under this Specification.

F. Door Edge Crush Test

1. One (1) door constructed identically to either of the test doors required in Article 1.5, Paragraph A, “Door Assembly Impact Test,” 3 feet by 7 feet, with 4 inch by 25 inch vision panel, and with hardware preparations, shall be tested in accordance with ASTM F1450, Section 7.7 “Door Edge Crush Test.”

G. Test Reports: The manufacturer shall provide test reports and documentation by an independent testing laboratory in accordance with the reporting requirements of ASTM F1450 and ASTM F1592 certifying compliance with ANSI/NAAMM/HMMA 863, Article 1.5.

H. Labeled Fire Rated Doors and Frames

1. Fire labeled doors, frames, transom frames and side light assemblies shall be provided for those openings requiring fire protection, temperature rise, or smoke and draft control ratings as scheduled. Such products shall be tested in accordance with requirements of International Building Code and constructed as listed and/or classified by a recognized testing agency having a factory inspection service.

2. Window frames shall be provided for those openings requiring fire protection ratings as scheduled. Such frames shall be tested in accordance with International Building Code and construction as listed for labeling by a recognized testing laboratory having a factory follow up inspection service.

3. If any door or frame required to be fire-rated cannot qualify for appropriate labeling because of its design, hardware, or any other reason, the Architect shall be advised in the submittal documents or prior to manufacture of the product if hardware, glazing or other options affecting the fire rating are unknown at the time of submittal document preparation.

1.4 MANUFACTURER’S QUALIFICATIONS

A. Manufacturer shall provide evidence of having personnel and plant equipment capable of fabricating hollow metal door and frame assemblies of the type specified herein. Manufacturer shall provide current documentation of the number of employees, a listing of their production equipment, and a description of their manufacturing facility.

B. Manufacturers shall be ISO 9001:2000 certified and shall be required to present their Certificate of Registration upon request. The manufacturer's registrar shall be nationally recognized and shall provide the manufacturer with periodic factory follow up audits reaffirming the manufacturer's continuing compliance with their written quality program.

C. Manufacturer's production welders shall be qualified under AWS D1.3 and upon request shall provide copies of Welders Certifications in accordance with AWS D1.3.

D. Manufacturers shall have a minimum of ten (10) years experience successfully producing detention hollow metal of the types and sizes required in the contract documents. Upon request the manufacturer shall provide a list of successfully completed projects and the dates they were completed.

E. Quality Criteria

1. All door and frame construction shall be in accordance with construction of assemblies.

2. Fire labeled doors and frames shall be provided for those opening indicated in the schedule as requiring fire protection ratings. Such doors and frames shall be constructed as tested in accordance with ASTM E152, UL-10B or NFPA-252 and labeled by a recognized testing agency having a factory inspection service.

3. If any door or frame specified to be fire-rated cannot qualify for appropriate labeling because of its design, hardware or any other reason, the Architect shall be so advised before fabricating work on that item is started.

4. Fabrication methods and product quality shall meet standards set by the Hollow Metal Manufacturers Association, HMMA, a Division of the National Association of Architectural Metal Manufacturers, NAAMM, as set forth in these Specifications.

5. Job Site Door Check

a. At the owner's option, a door at the job site shall be selected at random and sawed in half or otherwise taken apart as deemed necessary for verification that construction is in accordance with these Specifications. The manufacturer shall include the cost of the replacement door in their quotation. If the door construction does not conform to these Specifications the non-conforming doors shall be repaired or replaced at the manufacturer's expense.

1.5 INSTALLER QUALIFICATIONS

A. Security door installation company shall have previously installed security doors in no fewer than five detention projects within the past five years in which there were no fewer than 20 detention doors and of those 20 doors there was a combination of electronically monitored and controlled doors and manually operating doors.

B. Security door installation company is to employ a minimum of two (2) installers who have received training by the door manufacturer whose doors are to be installed. These certified installers are to be on site installing doors.

1.6 SUBMITTALS

A. Certificate of Acceptance by security door manufacturer that supplier is trained and endorsed by the manufacturer and that the installer is certified to install that manufacturer's doors, wall panels and frames.

B. Reference for a minimum of five door installation projects in which door installer has completed work. List facility, name of reference, individual, and contact information.

C. Certificates of Training for a minimum of two installers from door manufacturer that the individuals were trained and authorized to install security doors, wall panels and frames manufactured by door manufacturer.

D. Submittal Drawings

1. Show door and frame elevations and sections.

2. Show listing of opening descriptions including locations, material thicknesses, and anchors.

3. Show location and details of all openings.

4. Indicate performance grade levels on the submittal as they are shown on the contract drawings and schedules.

E. Test Report

1. Manufacturer shall submit an independent testing laboratory report certifying that door and frame assemblies meet the performance requirements of this Specification.

F. Qualifications

1. Manufacturer shall submit qualifications as required by this Specification.

1.7 WARRANTY

A. All hollow metal work shall be warranted from defects in workmanship and quality for a period of one (1) year from the date of substantial completion.

PART 2 - PRODUCTS

2.1 DETENTION SECURITY HOLLOW METAL DOORS AND HOLLOW METAL WALL PANELS

A. Materials:

1. Doors and wall panels shall be manufactured of commercial quality, level, cold-rolled steel conforming to ASTM A1008/A1008M CS type B or hot-rolled, pickled and oiled steel conforming to ASTM A1011/A1011M CS type B. the steel shall be free of scale, pitting, coil breaks, buckles, waves or other surface blemishes or defects.

2. Interior Doors and Wall Panels: Face sheets shall be 0.093 inch minimum thickness.

B. Construction:

1. All doors and wall panels shall be the types and sizes shown on the approved submittal drawings, shall be constructed in accordance with the Specifications and shall meet the performance requirements of this Specification. Alternate materials and methods of construction, which meet the aforementioned performance criteria, shall be permitted.

2. Door and wall panel face sheets shall be joined at their vertical edges by a continuous tungsten inert gas (TIG) weld extending the full height of the door. This edge seam weld shall be sanded smooth and be neat in appearance. The door vertical edges shall not be covered with auto body putty or metallic fillers.

3. Door and wall panel thickness shall be 2 inch nominal unless noted otherwise to accommodate detention hardware. Doors shall be neat in appearance and free from warpage or buckle. Edge bends shall be true and straight and of minimum radius for the thickness of material used.

4. Doors and wall panels shall be stiffened by one of the following systems:

   a. Continuous steel truss design core material, 0.015 inch minimum, having truncated triangular roll formed sections extending continuously from one door face to the other, spot welded to each face sheet 2-3/4 inches o.c. horizontally and 3 inches o.c. vertically. Core material shall extend full height and width of door.

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

   c. Continuous vertical hat sections, one such hat section welded to each face of the door, 0.053 inch, with vertical webs no more than 4 inches apart. Hat sections shall be welded to each other at least 6 inches o.c. both sides in order to prevent separation.

5. Spaces between stiffeners shall be filled with fiberglass or mineral rockwool batt- type material.

6. The vertical edges shall be reinforced by a continuous steel channel extending the full height of the door or wall panel and welded to both face sheets. The channels' thickness shall be not less than the thickness of the door face sheet. The top and bottom edges shall be closed with a continuous channel, the same thickness as the vertical edge channels and shall be spot-welded to the face sheet a maximum of 3 inches o.c. The closing end channel shall be continuously welded to the vertical reinforcing channel at all four corners producing a fully welded perimeter reinforcing channel.

7. The top and bottom end channel shall be fitted with an additional flush closing channel of the same material thickness. The flush closing channel shall be welded in place at the corners and at the center. Tops of exterior doors shall be made weather tight where specified.

8. Edge profiles shall be provided on both vertical edges of doors and panels as follows:

   a. Single acting (swinging) doors – beveled 1/8 inch in 2 inch profile.

   b. Sliding doors and wall panels – square profile.

9. Hardware Reinforcements:

   a. Doors shall be mortised, reinforced, drilled and tapped at the factory for completely templated mortised hardware only, in accordance with the final approved hardware schedule and templates provided by the hardware supplier. Where surface mounted hardware – or non-templated mortised hardware – is to be applied, doors shall be reinforced, and drilling and tapping shall be done by others in the field.

   b. Minimum thicknesses for hardware reinforcements shall be as follows:

      1) Full Mortise Hinges and Pivots: 0.167 inch.
      2) Surface Applied Maximum Security Hinges: 0.214 inch.
      3) Strikes: 0.167 inch.
      4) Slide Device Hanger Attachment: Follow manufacturer's recommendations.
      5) Lock Fronts, Concealed Holders, or Surface Mounted Closer: 0.093 inch.
      6) All Other Surface Applied Hardware: 0.093 inch.

   c. In cases where electrically operated hardware is required and where shown on approved submittal drawings, hardware enclosures and junction boxes shall be provided and shall be interconnected using UL approved 0.5 inch minimum diameter conduit and connectors. Also, where shown on submittal drawings, junction boxes with access plates shall be provided to facilitate the proper installation of wiring. Access plates shall be the same thickness as the face sheet and fastened with a minimum of four (4) #8-32 tamper-resistant machine screws, not to exceed 6 inches o.c.

10. Glass Moldings and Stops:

   a. Where specified, doors and wall panels shall be provided with steel moldings to secure glazing by others in accordance with glass sizes and thickness shown on approved submittal drawings.

   b. Fixed glass molding shall be not less than 0.093 inch and shall be spot- welded to both face sheets 3.0 inches o.c. maximum.

   c. In glass openings where security glazing is specified and where shown on the approved submittal drawings, pressed steel angle glazing stops, no less than 0.093 inch thickness, shall be provided. Angle stops shall be mitered or notched and tight fitting at the corner joints and secured in place using 1/4 – 20 or 1/4 – 28 button head tamper-resistant machine screws with spacing necessary to satisfy the performance criteria.

   d. Metal surfaces to which glazing stops are secured, the inside of the glazing stops shall be treated for maximum paint adhesion and painted with a rust inhibitive primer prior to installation in the door or shall be fabricated from A60 (ZF180) zinc coated steel.

11. Cuff Port Openings at Door Panel Edge:

   a. Opening shall be a flush opening fabricated using interior Zee shaped formed sections 0.093 inch minimum thickness, securely welded to the inside of both face sheets. The four corner seams shall be continuously arc welded and dressed smooth. The finished opening shall be of such construction that it cannot be dismantled or otherwise affected by tampering or scraping.

b. The cuff port shutter door shall be constructed from 0.067 inch thickness steel, press formed, hollow metal flush assembly with a 0.167 inch backup plate on the prisoner side.

c. The shutters shall be treated for maximum paint adhesion and given a shop coat of rust inhibitive primer. Shutters and pass hardware shall be factory installed.

d. Where noted, cuff ports shall be provided without shutters.

12. Relite Privacy Screen:

a. Provide relite privacy screens where indicated. Place on “dayroom” side of door.

b. Shutter shall be constructed of 7 gauge steel closure panel with 10 gauge shutter pull. Shutter closure panel shall travel in 14 gauge top and bottom guides with end receiver channels. Privacy screens shall be provided as part of the door assembly package.

13. Product Identification: Doors shall have the Architect’s mark number permanently stamped on the center hinge reinforcement for swing doors and on the horizontal Z for sliding door types.

2.2 HOLLOW METAL FRAMES

A. Materials:

1. Frames shall be constructed of commercial quality, cold rolled steel conforming to ASTM A366 or hot rolled, pickled steel conforming to ASTM A569. The steel shall be free of scale, pitting, coil breaks or other surface defects. Frames shall support detention doors and detention wall panels.

2. Interior Openings: Steel shall be 0.093 inch minimum thickness.

B. Construction:

1. All frames shall have integral stops and be welded units of the sizes and types shown on approved submittal drawings.

2. All finished work shall be neat in appearance, square, and free of defects, warps and buckles. Pressed steel members shall be straight and of uniform profile throughout their lengths.

3. Jamb, head and sill profiles shall be in accordance with the frame schedule as shown on the approved submittal drawings.

4. Corner joints shall have all contact edges closed tight with faces mitered and stops either butted or mitered. Corner joints shall be continuously welded and the use of gussets or splice plates shall be unacceptable.

5. Minimum height of stops in door openings shall be 0.625 inch. Height of stops on security glass or panel openings shall be as shown on approved submittal drawings.

6. When shipping or access limitations dictate, frames for large openings shall be fabricated in sections designated for splicing in the field by others. Where splicing is necessary, angle splices shall be installed at the corners of the profile and shall extend at least 4 inches on either side of the joint. Splicing angles shall be the same gauge thickness as the frame. Field splices shall be made in accordance with approved submittal drawings.

7. Frames for multiple openings shall have mullion members which, after fabrication, are closed tubular shapes conforming to profiles shown on approved submittal drawings. All joints between faces of abutted members shall be continuously welded and finished smooth.

8. Hardware Reinforcements and Preparation:

   a. Frames shall be mortised, reinforced, drilled and tapped for all templated mortised hardware only, in accordance with the final approved hardware schedule and templates provided by the hardware supplier. Where surface mounted hardware such as anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated mortised hardware is to be applied, frames shall be reinforced, and all drilling and tapping shall be done by others in the field.

   b. Minimum thickness of hardware reinforcing plates shall be as follows:

      1) Hinges and Pivots: 0.167 inch by 1.5 inch by 10 inch length.

      2) Strikes: 0.167 inch

      3) Closers: 0.167 inch

      4) Flush Bolts: 0.167 inch

      5) All Other Surface Applied Hardware: 0.093 inch in cases where electrically operated hardware is required, and where shown on approved submittal drawings, hardware enclosures and junction boxes shall be provided, and shall be connected using UL approved conduit and connectors. Also, where shown on submittal drawings, junction boxes with access plates shall be provided to facilitate the proper installation of wiring. Access plates shall be the same thickness as the frame and fastened with a minimum of four (4) #8-32 tamper-resistant machine screws, not to exceed 6 inches o.c.

9. Anchors: Anchors remaining from removed frames may be reused if they are free of corrosion, securely attached to the wall, ceiling or floor, and compatible with the new frame assembly.

   a. Floor Anchors:

      1) Floor anchors shall be fastened inside jambs with at least four (4) spot welds, or MIG welded on both sides, per anchor.

      2) Thickness of floor anchors shall be the same as frame.

   b. Jamb Anchors:

      1) Anchor Spacing – The number of anchors provide on each jamb shall be as follows:

         a) Borrowed Lite Frames: 2 anchors plus 1 for each 16 inches or fraction thereof over 36 inches, spaced at 16 inch maximum between anchors.

b) Door Frames: 2 anchors plus 1 for each 16 inches or fraction thereof over 54 inches, spaced at 16 inches maximum between anchors (fire rating can require additional anchors).

c. Floor Anchors:

1) Expansion Bolt Type:

a) Frames for installation in existing masonry or concrete walls shall be prepared for expansion bolt type anchors. The preparation shall consist of a punch and dimpled hole for a 0.5 inch diameter bolt and a 0.093 inch spacer from the unexposed surface of the frame to the wall. The spacer shall be welded to the frame.

b) After sufficient tightening of the bolt, the bolt head shall be welded so as to provide a non-removal condition. The welded bolt head shall be ground, dressed and finished smooth.

2) Frames to be installed in pre-finished concrete, masonry or steel openings shall be constructed and provided with anchoring systems of suitable design as shown on the approved submittal drawings.

10. Grout guards shall be provided at all hardware preparations, glazing stop screws and silencer preparations on frames to be grout filled. Grout guards shall be sufficient to protect preparations from grout of a 4 inch maximum slump consistency. All hinge grout guards and lock pockets shall be caulked after priming to ensure maximum protection from grout seepage.

a. Grout Guards for glazing stop screws shall be factory installed and shall cover the exposed portion of the screws inside the frame throat, around the perimeter. Where mullions are required to be grouted, screws inside mullions shall be protected with grout guards.

b. Steel grout guards shall protect silencer preparations where accessible from the frame throat. Silencers shall be furnished and installed by the contractor responsible for frame installation except where limited access prevents installation of the metal grout guards in mullions, in which case silencers shall be factory furnished and installed.

11. All frames shall be provided with two (2) temporary steel spreaders welded to the bottom of the jambs to serve as bracing during shipping and handling. The installation contractor shall be responsible for removing, finishing, and touch-up of marks caused by construction activity.

12. Removable Glazing Stops:

a. In openings where security glazing is specified and where shown on the approved submittal drawings, pressed steel angle glazing stops, not less than 0.093 inch, shall be provided. Angle stops shall be mitered or butted and tight fitting at the corner joints and secured in place using machine screws of the size and spacing necessary to satisfy the performance criteria. Space fasteners 2 inch maximum from each end and 8 inch o.c. maximum. View window stop heights be specified to provide 1 inch glass engagement.

b. The frame underneath the glazing stops and the inside of the glazing stops shall be treated for maximum paint adhesion and painted with a rust inhibitive primer prior to installation in the frame.

2.3 MANUFACTURING TOLERANCES

A. Manufacturing tolerance shall be maintained within the following limits:

1. Frames for single doors or pairs of doors:

a. Width measured between rabbets at the head: Nominal opening width plus 1/16 inch, minus 1/32 inch.

b. Height (total length of jamb rabbet): Nominal opening height plus or minus 3/64 inch in 20 inches.

2. Cross sectional profile dimensions:

a. Face plus or minus 1/32 inch.
b. Stop plus or minus 1/32 inch.
c. Rabbet plus or minus 1/32 inch.
d. Depth plus or minus 1/32 inch.
e. Throat plus or minus 1/16 inch.

3. Flatness of large frames 1/8 inch in 10 feet of length or width.

4. Doors – doors are undersized to fit the frame. Edge clearances are based upon individual door manufacturer's designs. Tolerance on actual door sizes are as follows:

a. Width plus or minus 3/64 inch.
b. Height plus or minus 3/64 inch.
c. Thickness plus or minus 1/16 inch.
d. Bow/flatness plus or minus 1/8 inch in 7 feet.

5. Hardware:
a. Cutout and template dimensions plus or minus 0.015 inch, minus 0 inch.
b. Location plus or minus 1/32 inch.
c. Between hinge centerlines plus or minus 1/64 inch.

2.4 FINISH

A. After fabrication, all tool marks and surface imperfections shall be filled and sanded as required to make face sheets, vertical edges and weld joints free from irregularities. After appropriate metal preparation, all exposed surfaces of doors and frames shall receive a rust inhibitive primer which meets or exceeds ANSI A 250.10, "Test Procedures and Acceptance Criteria for Prime Painting Steel Surfaces for Steel Doors and Frames.

PART 3 - EXECUTION

3.1 SITE STORAGE AND PROTECTION OF MATERIALS

A. The contractor responsible for installation shall remove wraps or covers from doors and frames upon delivery at the building site. The contractor responsible for installation shall ensure that any scratches or disfigurement caused in shipping or handling are promptly sanded smooth, cleaned and touched up with a compatible rust inhibitive Direct to Metal (DTM) primer.

B. The contractor responsible for installation shall ensure that materials are properly stored on planks or dunnage in a dry location. Doors and frames shall be stored in a vertical position and spaced by blocking. Materials shall be covered to protect them from damage but in such a manner as to permit air circulation.

3.2 INSTALLATION OF DOORS, FRAMES AND WALL PANELS

A. Prior to installation, all frames shall be checked for correct size and swing, and with temporary spreaders removed, be corrected for squareness, alignment, twist and plumb. Permissible installation tolerances shall not exceed 1/16 inch:

1. Squareness: Measured at rabbet on a line from jamb, perpendicular to frame head.

2. Alignment: Measured at jambs on a horizontal line parallel to the plane of the face.

3. Twist: Measured at opposite face corners of jambs on parallel lines, perpendicular to the plane of the door rabbet.

4. Plumbness: Measured at jambs on a perpendicular line from the head to the floor.

5. During the setting of the frames, check and maintain these tolerances for squareness, alignment, twist and plumbness.

B. Frame jambs shall be fully grouted to provide added security protection against battering, wedging, spreading and other means of forcing open the door. Jamb mounted lock preparations, grout guards for hardware preparation and glazing stop screws, and junction boxes are intended to protect hardware mortises, exposed removable screws, and tapped mounting holed from masonry grout of 4 inch maximum slump consistency which is hand troweled in place. If a light consistency grout (greater than 4 inch slump in accordance with ASTM C143/C143M) is to be used, special precautions shall be taken in the field by the installation contractor to protect tapped holes, electrical know-outs, lock pockets, grout guards, junction boxes, etc. in the frames.

C. Large frame sections, such as lock columns and lock jambs, are not intended or designed to act as forms for grout or concrete. Grouting of large hollow metal sections shall be done in “lifts” or precautions shall otherwise be taken by the contractor to ensure that frames are not deformed or damaged by the hydraulic forces that occur during this process.

D. Hardware shall be applied in accordance with hardware manufacturer’s templates and instructions.

E. Any grout or other bonding material shall be cleaned off frames or doors immediately following installation. Exposed hollow metal surfaces shall be kept free of grout, tar, or other bonding material or sealer.

F. Exposed field welds shall be finished smooth and touched up with a rust inhibitive primer.

G. Primed or painted surfaces which have been scratched or otherwise marred during installation, cleaning, and/or field welding, including marks caused by spreader removal, shall promptly be finished smooth, cleaned, treated for maximum paint adhesion and touched up with a rust inhibitive Direct to Metal primer.

H. Install door silencers.

I. Install glazing materials in accordance with 08 88 53 Security Glazing.

3.3 CLEARANCES

A. Edge clearances for swinging doors shall provide for the functional operation of the assembly and shall not exceed the following:

1. Between doors and frames at head and jambs: 3/16 inch maximum.

2. Between edges of pairs of doors: 3/16 inch maximum.

3. At doorsills where a threshold is used: 3/8 inch maximum.

4. At doorsills where no threshold is used: 3/4 inch maximum.

5. Between door bottom and nominal surface of floor coverings at fire rated openings: As required by ANSI/NFPA 80, 1/2 inch.

END OF SECTION 08 34 53

PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work: The extent of the work is shown on the drawings and specified in this document and includes providing new detention door hardware in existing and new doors and frames. Hardware includes mechanical, electronic and electrical activated devices. Installation requires integration of security controls with detention hardware.

1.2 QUALITY OF ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer and an authorized representative of detention door hardware manufacturer for installation and maintenance of units required for this Project. No fewer than two (2) installers on the site at any time shall have successfully completed not less than three years or five projects that are similar to this project.

B. Supplier Qualifications: Detention door hardware supplier who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about detention door hardware and keying.

1. Detention Door Hardware Supplier Qualifications: An experienced detention door hardware supplier who has completed projects with electrified detention door hardware similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance, and who is acceptable to manufacturer of primary materials.

a. Engineering Responsibility: Prepare data for electrified detention door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

2. Scheduling Responsibility: Preparation of door hardware and keying schedules.

C. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for detention door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

1. Detention Door Hardware Consultant Qualifications: Experienced in providing consulting services for electrified detention door hardware installations.

D. Source Limitations for Detention Door Hardware: Obtain each type of detention door hardware from single source from single manufacturer.

1. Provide electrified detention door hardware from same manufacturer as mechanical detention door hardware unless otherwise indicated.

E. Regulatory Requirements: Comply with provisions of the following:

1. Where indicated to comply with accessibility requirements, comply with ICC/ANSI A117.1 as follows:

a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.

b. Security Door Closers: Comply with the following maximum opening-force requirements indicated:

1) Interior Hinged Doors: 5 lbf applied perpendicular to door.

2) Sliding Doors: 5 lbf applied parallel to door at latch.
3) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

2. NFPA 101: Comply with the following for means-of-egress doors:

a. Latches and Locks: Not more than 15 lbf to release the latch.

b. Security Door Closers: Not more than 30 lbf to set door in motion and not more than 15 lbf to open door to minimum required width.

c. Sliding Detention Door Devices: Not more than 50 lbf to slide door to its fully open position with a perpendicular force of 50 lbf against door.

3. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

F. Fire-Rated Detention Door Assemblies: Provide detention door hardware for assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252.

G. Keying Conference: Conduct conference at Project site. Incorporate keying conference decisions into the final Keying Schedule after reviewing detention door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area and degree of security required.
2. Preliminary key system schematic diagram.
3. Requirements for key-control system including key exclusivity and duplication control.
4. Address for delivery of keys.

H. Preinstallation Conference: Conduct conference at Project site.

1. Inspect and discuss electrical and control system roughing-in and other preparatory work performed by other trades.
2. Review sequence of operation for each type of electrified detention door hardware.
3. Review and finalize a construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Certifying procedures.

1.3 PERFORMANCE REQUIREMENTS

A. Swinging Detention Door Assemblies: Provide detention door hardware as part of a detention door assembly that complies with security grade indicated, when tested according to ASTM F 1450, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

1. Bullet Resistance: Listed and labeled as bullet resisting by a testing agency acceptable to authorities having jurisdiction.

2. Tool-Attack Resistance: Comply with small-tool-attack-resistance rating when tested according to UL 1034 and UL 437.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of detention door hardware.

B. Shop Drawings: For each type of detention door hardware. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring; differentiate between manufacturer-installed and field-installed wiring for electrified detention door hardware. Include the following:

    a. System schematic.
    b. Point-to-point wiring diagram, including location of connections.
    c. Riser diagram.
    d. Elevation of each detention door type.

2. Detail interface between electrified detention door hardware and perimeter security, detention monitoring and control, fire-alarm and building control system.

C. Samples: For each type of exposed finish for each type of detention door hardware indicated below, full size. Tag with full description for coordination with the detention door hardware sets. Submit Samples before, or concurrent with, submission of the final Door Hardware Schedule.

1. Detention Door Hardware: As follows:

    a. Detention hinges.
    b. Detention door stops.

2. Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

D. Other Action Submittals:

1. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with detention doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

    a. Hardware Schedule Content: Based on hardware indicated, organize schedule into “hardware sets” indicating complete designations of every item required for each door or opening. Include the following information:

        1) Type, style, function, size, and finish of each hardware item.
        2) Name and manufacturer of each item.
        3) Fastenings and other pertinent information.
        4) Location of each hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
            a) Door numbers and frame types in schedule to match door numbers and frame types shown on Drawings.
        5) Explanation of all abbreviations, symbols, and codes contained in schedule.
        6) Mounting locations for hardware.
        7) Door and frame sizes and materials.

    b. Submittal Sequence: Submit schedule at earliest possible date, particularly where acceptance of Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.

2. Keying Schedule: Develop key schedule with Owner at the project site. Coordinate detention keying with existing doors.

    a. Indicate each lock and type of key using the following prefixes: "P" for paracentric, "M" for mogul, "HS" for high security, and "C" for commercial.

b. Keying Conference: Conduct conference at Project site. Incorporate keying conference decisions into the final Keying Schedule after reviewing detention door hardware keying system including, but not limited to, the following:

1) Function of building, flow of traffic, purpose of each area and degree of security required.

2) Preliminary key system schematic diagram.

3) Requirements for key-control system including key exclusivity and duplication control.

4) Address for delivery of keys.

E. Qualification Data: For qualified Installer, supplier and Architectural Hardware Consultant.

1. Installer Experience: List not less than five percent hardware installations by workers who will be on site at all times work is underway. List projects, locations and owner reference phone number.

F. Product Certificates: For each type of electrified detention door hardware, from manufacturer.

1. Certify that detention door hardware approved for use on types and sizes of labeled fire doors complies with listed fire door assemblies.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency or performed by a qualified testing agency, for each type of detention lock and latch, security door closer and sliding detention door device.

H. Operating/Maintenance Manuals: Furnish O&M Manuals for all security hardware and all security locking devices. These manuals shall include instructions for the care of the materials, parts list to aid the Owner in ordering replacement parts, as well as instructions for contacting the appropriate personnel not only during the warranty period, but beyond. The Contractor must have full time employees trained in the maintenance and repair of this equipment. Manuals shall also include "as built" shop drawings of all components.

I. Operation and Maintenance Data: For electrified detention door hardware to include in emergency, operation, and maintenance manuals.

1. Normal remote security operation.
2. Normal local security operation.
3. Emergency security operation.

J. Warranties: Sample of special warranties.

K. Other Informational Submittals:

1. Examination reports documenting inspections of substrates, areas, and conditions.
2. Anchor inspection reports documenting inspections of existing and new anchors.
3. Field quality-control reports documenting inspections of installed products.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing and Marking: Each piece of security hardware furnished under this Section shall be packaged and marked according to the hardware set and door number listed in the approved hardware schedule.

B. Deliver all components cartoned or crated to provide protection during transit and job storage.

C. Inspect all components upon delivery for damage. Damages may be repaired, provided the repaired items are equal in all respects to new work and acceptable to the Architect-Engineer; otherwise, remove and replace damaged items as directed.

D. Store all detention hardware components in a locked storage area. Do not store any materials directly on the ground or concrete. Provide adequate ventilation and protection to insure materials are kept dry, clean and secure.

1.6 COORDINATION

A. Examine the drawings and specifications of other trades whose work may influence the installation and/or operation of the detention hardware. Prior to the start of work, review the project drawings and specifications and coordinate work with all other trades and Divisions of the Specifications affecting Work of this Section.

1. Responsibilities for electrical and mechanical hardware installation shall include the following:

a. Furnish and install door locks, door position switches, limit switches, lock feature switches and push buttons, as required for the system to perform the functions as defined.

b. Coordinate the integration and interfacing of the products and equipment specified in this section and in accordance with shop drawings and approved submittals.

c. Review all door control submittals and confirm that all scheduled controls and monitoring will function in accordance with the specified function. A written confirmation of this review shall be submitted.

d. Coordinate the power requirements with all equipment furnished in this section.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of detention door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.

b. Faulty operation of operators and detention door hardware.

c. Deterioration of metals, metal finishes, and other materials beyond normal weathering or detention use.

B. Warranty Period: Three years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of detention door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide 12 months maintenance assistance by skilled employees of detention door hardware Installer. Include monthly discussions with DOC maintenance staff on preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper detention door hardware operation. Provide parts and supplies the same as those used in the manufacture and installation of

original equipment. At the end of the first year following substantial completion, the hardware installer is to visit the project site and adjust, lubricate and inspect each installed hardware component.

PART 2 - PRODUCTS

2.1 GENERAL

A. Security design criteria is based upon the requirements and features of the products listed herein which form the “Basis of Design”. The use of one manufacturer's numeric designation does not imply other manufacturer's products will not be accepted. Better or equal substitutions are welcome.

2.2 DETENTION HINGES, GENERAL

A. Full Mortise Detention Hinges shall be 4-1/2” x 4-1/2” x 0.188” thick investment cast 304 stainless steel with hospital tips and integral studs on both leaves. Pins shall be hardened stainless or alloy steel, concealed and non-removable. Each hinge shall be supplied with flat head machine screws. All hinges shall be US32D finished.

B. Furnish three hinges for door through 84-inches in height and one additional hinge for each additional 30-inches of height or fraction thereof. Furnish three hinges for doors through 36-inches in width and one additional hinge for each additional 12-inches of width or fraction thereof.

C. Except where otherwise indicated, hinges shall be mortised, 4-1/2" x 4-1/2", cast steel or stainless steel, ball bearing, with pins made non-removable by a concealed hardened roll pin. All hinges shall be furnished with specified security fasteners.

D. Hinges shall be certified, by an independent testing lab, to meet or exceed the cycle requirements of ASTM 1758, Grade 1A.

E. Hinges furnished for use on labeled fire doors shall also comply with the requirements of NFPA 80.

F. Detention Doors with Security Closers: Unless otherwise indicated, provide antifriction-bearing detention hinges.

G. Detention Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Stainless steel, with stainless-steel pin.

H. Fastening: Comply with the following:

1. Welding: Where indicated, weld hinges to detention doors and frames with continuous fillet weld around three sides of hinge perimeter.

2. Security Fasteners: Provide security head machine screws; finish screw heads to match surface of detention hinges. Install into drilled and tapped holes.

2.3 DETENTION HINGES

A. Hinges: Extra heavy weight; two heavy-duty thrust bearings with hardened-steel ball bearings; fabricated from stainless steel plate; 1/2-inch-diameter, case-hardened, fully welded, steel hinge pin with security stud.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Southern Folger Model No. 204 FMSS or equal.

2.4 STRIKES:

A. All locks and latches shall be furnished with manufacturer's standard strikes complete with dust boxes. Where monitor strikes are specified, provide strikes as appropriate for the lock specified. All monitor strikes shall be designed to fit within a 2" face frame without protruding beyond the 2" frame depth.

2.5 FASTENERS

A. Manufacturer hardware to conform to published template, generally prepared for machine screw installation. Do not provide hardware, which has been prepared for self-tapping of sheet metal screws.

B. Furnish screws for installation with each hardware item. All exposed screw heads, whether door is open or closed, shall be Torx (with security stud) flat-head or oval head screws except as otherwise indicated. Screws shall be finished to match the applied hardware item. See Section 11 98 16 Tamper Resistant Fasteners.

2.6 PULLS

A. Grip Type Door Pulls shall be cast of brass or bronze with satin finish of approximately US26D unless specified otherwise in hardware schedule. Approximate overall length, 811/16”; handhold, 5-1/4”; grip clearance, 1-1/2”; attachment holes, 7-3/4” o.c. Provide two (2) 3/8-16 x 5/8” oval head screws.

B. Flush Type Door Pulls shall be formed by door manufacturer approximately 4” x 5” x pocket rip 1 “ deep.

2.7 DOOR POSITION SWITCH

A. Basis of Design: SOUTHERN 200MRS-TB, or as required by hardware schedule

B. Recessed Magnetic Door Position Switch-Triple Biased shall be a five-reed switch magnet mortised type assembly used for remotely monitoring the door status/position. The device shall be triple bias for tamper resistance.

C. The device shall be moisture resistant and fit within a 2” hollow metal jamb or head. The device shall be field adjustable on 2 axis and supplied with a 5’ vinyl jacketed lead wire and a 3-pin Molex connector. The device shall be all steel construction. The switch and magnet shall be encased in epoxy resin.

2.8 CONCEALED DOOR CLOSERS

A. Basis of Design: (LCN #2210 series) shall be concealed in surface of door and frame with security screws and shall have fully adjustable spring tension. Maximum opening allowed shall be 180 degrees. Provide standard finish of powder coat aluminum.

2.9 HIGH SECURITY CLOSER

A. Basis of Design: (LCN #4210/4510 series) shall be surface mounted with security screws at all exposed locations and shall have fully adjustable spring tension. Closers shall have cast iron cylinders and two separately adjustable non-critical valves for closing speed and latching speed, plus a third valve for adjusting the hydraulic backcheck. A smooth molded case cover shall conceal the closer body. Closer to be located on the side of door/frame farthest from inmate contact. Maximum opening clearance shall be 180-degrees. Parallel arm shall be used. Provide finish of standard powder coated aluminum.

2.10 WALL MOUNTED DOOR STOPS (WALL MOUNT ONLY)

A. Basis of Design: (McMaster-Carr 9540K28) shall be a tamper resistant device that is fastened onto the wall with a 1/4-inch security screw. Bumper shall be 1-1/2" diameter x 3/4" long and made from SBR rubber, durometer 70A.

1. Circulation and Room Doors: Provide wall-mounted door bumper 8" off of the floor and 8" from edge of door when in the opened position. If the above conditions cannot be achieved, request direction from the Architect.

2.11 SMOKE GASKETS

A. Provide gasketing equal to Basis of Design: Pemko S88D at all 20 minute fire rated openings installed per manufacturers' recommendations. After installation, razor cut gasketing into pieces not over 12" in length. All fire or smoke rated stairs doors shall be provided with Reese Pemko S88D head and jamb gasketing and Pemko 368CN sill sweeps (or approved equal).

2.12 DOOR SILENCERS

A. Basis of Design: (Ives SR64) shall be standard resilient type and removable for replacement.

2.13 DETENTION LOCKS AND LATCHES, GENERAL

A. Swinging Detention Door Lock and Latch Performance: Provide detention door locks and latches that comply with security grade indicated, when tested according to ASTM F 1577, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Detention Lock Construction: Fabricate detention lock case and cover plate from steel plate. Fabricate bolts from solid sections; laminated construction unacceptable.

C. Detention Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
1. Latchbolts: Minimum 3/4-inch latchbolt throw.
2. Deadbolts: Minimum 1-inch bolt throw.

D. Detention Lock Trim:
1. Levers: Solid stainless steel.
2. Escutcheons for Paracentric Locks: 1/8-inch-thick, 3-inch-diameter stainless steel. Attach with security fasteners.
3. Cylinder Shields for Paracentric Locks: 1/8-inch-thick, 3-inch-diameter stainless steel with swinging cover to protect keyhole. Attach with security fasteners.

E. Acceptable Manufacturers
1. Basis of Design: Southern Folger Detention Equipment Company (SOUTHERN), San Antonio, TX

F. Mechanical Locks and Accessories for Swinging Doors
1. Standard Features
   a. Lock case to be high tensile strength alloy steel with cold rolled steel cover
   b. All locks to operate by inserting a key into matching cylinder and rotating key to unlock the lock.
   c. All lock steel parts shall be zinc plated for corrosion protection and are suitable for both interior and exterior applications.
   d. Keyed One Side (K1) or Keyed two Sides (K2).

G. Products

1. Mechanical Deadbolt with Mogul Cylinder, Basis of Design, SOUTHERN 1010A:
   a. Lock size to be approximately 4/1/2" x 3" x 1-1/4". Deadbolt to be ¾" x 1-1/2" hot rolled steel with 5/8" throw. Deadbolt locking and unlocking activated by key only.
   b. The lock shall be supplied with a six (6) pin paracentric key cylinder.
2. Mechanical Latch, Basis of Design, SOUTHERN 1017A:
   a. Lock size to be approximately 4" x 2-3/4" x 1-1/4". Beveled latchbolt to be 7/16" x 1" stainless steel with 7/16" throw.
   b. Beveled latch bolt to be retracted by key operation only. Latchbolt to snap-lock on closing.
   c. The lock shall be supplied with a six (6) pin paracentric key cylinder.
3. Manual Locking Sliding Device, Basis of Design, (SOUTHERN 1300 series)
   a. Operation:
      1) Sliding door devices shall be manually unlocked at the door with a paracentric type key cylinder. Key cylinders shall be located in the receiving jamb, hip high at each door, approximately 40"above finish floor. Doors shall be manually opened and closed. Moving the door to the full open or closed position shall cause the door to automatically lock and deadlock.
      2) Door rollers shall be of self-lubricating construction with lifetime lubricated bearings. Rollers shall have a concave accurate engaging surface to provide for smooth quiet operation.
      3) Roller axles shall be constructed of 8620 alloy cold drawn steel with a hardness of 5862 Rockwell C. Roller axle assembly shall provide for up/down and in/out adjustment of door.
      4) Roller track shall be constructed of a single solid piece of 1018 cold drawn steel.
      5) The locking device shall be two-point locking and lock at the top and bottom of the door in both the opened and closed position.
      6) The locking mechanism shall include an automatic mechanical deadlock feature. Mechanisms that hold the lock bar in place with spring or gravity pressure will not be accepted.
      7) Vertical locking column or receiver shall be made from 10 gauge steel tubing.
      8) Door guides shall be capable of holding the door to a +/- 0.030" movement with replaceable non-metallic wear pads to prevent rattling of the door.
   b. Housing:
      1) Housing covers to be constructed of 10 gauge steel plate and shall be secured in place with security screws.
      2) Housing cover shall be one-piece construction security enclosing the top, front and bottom of the device.
      3) There shall be no flat surfaces on the housing or in the baffle that could be used to hide contraband. The hanger slot shall be constructed so that any material that might be inserted cannot be retrieved and will not interfere with the operation of the device.

4) The rear of the housing shall be constructed of 3/16" steel plate.

5) In cases where device housings are not continuous, ends shall be neatly closed and welded with 10 gauge steel plate.

c. Features:

1) The following features shall be provided:

a) Keyed two sides (K2) keyed one side (K1) as required by the architectural schedule.

b) Door skirt to decrease standard door undercut to ½" from the finished floor.

c) Provide Hollow Metal lock mount as required for lock installation.

d) Lock equal to the Southern Folger 1058MD-1 as required for mechanical or electrical function.

4. Accessories

a. Mortise keeper with dust box

b. Mortise strike keeper switch

c. Mortise strike keeper

d. Provide double wing escutcheons where paracentric locks are scheduled unless otherwise specified by the architect/consultant.

e. Provide door indication switch in track housing.

2.14 ELECTRO-MECHANICAL LOCKS AND SLIDING DEVICES FOR SECURITY DOORS

A. Acceptable Manufacturers

1. Basis of Design, Southern Folger Detention Equipment Company (SOUTHERN), San Antonio, TX .

B. Fully Electric Sliding Corridor Door Operator, Basis of Design, SOUTHERN 3165LXP Series:

1. Function:

a. Unlock, open and lock open a 3'-0" door in not more than six (6) seconds.

b. Unlock, close and deadlock closed a 2'-0" door in not more than five (5) seconds.

c. Stop the movement of any door in mid-travel so that it may be manually opened or closed by applying approximately 35 lbs. of pressure on the door.

d. After the blocking obstruction is removed, the door will continue to move in the selected direction and lock automatically, unless power has timed-out. The blocking of one or more doors will not affect the operation of other doors.

e. Although the door movement can be stopped by the application of approximately 35 lbs. of pressure, the direction cannot be reversed at the door. However, the operator, by use of electronic controls, can reverse the direction electrically from control panel, with a minimum of 1.5 seconds delay (contingent on controls provided with system).

f. Loss of electrical power will cause a door or doors in transit to be held in that location. A free wheeling door shall not be acceptable, whether in electric, manual or emergency release position.

g. Normal force exerted by a door in travel is 40 lbs. This force shall be field adjustable from 15 lbs. to 110 lbs. to accommodate various door conditions.

h. Device shall hold preset pressure on door at all times of operation regardless of voltage.

i. The locking device shall be designed so that there will be no projecting lugs on the receiver column. Door shall automatically deadlock closed at two points at rear of door.

j. Device shall be designed so that by inserting a paracentric key in the front release column, a door may be operated from either side electrically.

k. In event of a power failure, each door shall have capabilities of being unlocked with a paracentric key, from either side of door. This shall enable door to be moved manually to an open position.

2. Components:

a. All motors shall be 1/10 horsepower, single phase, 115 VAC, 1.4 Amp, as manufactured by a nationally recognized manufacturer.

b. Drives mechanism shall be rack and pinion.

c. Hanger guides shall be 1/4" thick steel plates.

d. Hanger shall interlock with track support with a clearance of not more than 1/4".

e. Hanger support rollers shall be milled from solid steel 3-3/4" O.D. grooved 3/8" deep to engage 1/2" cold drawn track.

f. Rollers shall have anti-friction ball bearings with hardened members and grease shields on both sides.

g. Roller studs shall be high alloy treated steel with eccentric bushing for adjustment and an automatic self-locking nut.

h. Include rubber bumpers to cushion doors.

i. Paint entire assembly, except track, rollers and drive mechanism with rust inhibitive primer.

3. Housings:

a. The horizontal mechanism housing shall be constructed of 3/16" mild steel plate.

b. Housing covers shall be constructed of 10-gauge sheet steel --- all openings shall be baffled.

c. All removable housing covers shall be hinged to allow access to mechanism without removal of housing cover.

d. The vertical lock bar housing and cover shall be constructed of 7 gauge sheet steel.

4. The vertical lock cover shall be removable only when the horizontal cover has been removed.

C. All electrically operated hardware shall be furnished with both male and female Molex connectors.

2.15 KEYING AND KEYS

A. Keying and Keys

1. The Contractor is responsible for scheduling and meeting with the Owner, Architect/Consultant and other involved parties to determine keying requirements. A complete keying schedule shall be submitted for review and approval. During the submittal review the key schedule may be modified as desired by the Owner.

2. Mogul type cylinders shall be keyed in sets matching existing.

a. Provide two (2) keys per opening.

3. Paracentric prison locks shall be keyed in sets matching existing.

B. Key Control System:

1. Keying: Provide key system as directed by the Owner.
2. The Contractor shall be responsible for all keys and in the unlikely event any key is lost, the Contractor shall bear all costs incurred in having locks re-keyed. The Contractor shall turn all keys over to the Owner as directed by the Owner for inclusion into the key cabinet.
3. When requested by the Owner, in writing, the Contractor shall surrender any or all keys assigned to him.
4. All keys shall be stamped with a maximum of six (6) characters, as directed by Owner.

2.16 SWITCHES

A. General: Provide switches configured with type of contacts required for functions indicated, including multiple circuiting where required.

B. Concealed, Magnetic Door Position Switches: Consisting of actuating magnet mortised into detention door and switch mortised into frame; with stainless-steel faceplates; 24-V dc, factory wired with plug connector. Wire in series with lock monitors. Attach with security fasteners.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Southern Steel Series 200MRS.

2.17 DETENTION OPERATING TRIM

A. Standard: BHMA A156.6, Grade 1.

B. Surface-Mounted Door Pulls: 8-11/16-inch overall length and 2 3/8-inch projection; attach to door with two security fasteners.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Southern Steel Series 212C.
2. Material: Cast stainless steel with BHMA 630 finish.

2.18 SECURITY DOOR CLOSERS

A. Standard: BHMA A156.4, Grade 1.

1. Certified Products: Provide security door closers listed in BHMA's "Directory of Certified Products."

B. Concealed Security Door Closers with DPS:

1. Basis of Design Product: Subject to compliance with requirements, provide LCN Closers, an Ingersoll-Rand company (LCN); Series 2210.
2. Construction: Forged-steel arm; security roller; with track concealed in head of detention door, designed to eject foreign objects during opening and closing; fabricated with joints designed to prevent disassembly with ordinary hand tools. Closer arm and track fully concealed when door is closed.
3. Cover Plates: Heavy-duty metal, attached with security fasteners.
4. Provide door position switch integral to closer.

C. Unit Size: Unless otherwise indicated, comply with manufacturer’s written recommendations for size of security door closers depending on size of door, exposure to weather, and anticipated frequency of use.

2.19 DETENTION DOOR STOPS

A. Detention Wall Stops: Basis of Design: McMaster-Carr 9540K28 as scheduled.

B. Silencers for Detention Door Frames: Ives SR64, neoprene or rubber, minimum 1/2-inch diameter; fabricated for drilled-in application to detention door frame. Attach with security fasteners.

2.20 SLIDING DETENTION DOOR DEVICE ASSEMBLIES

A. Performance Requirements: Provide sliding detention door device assemblies, including locking device, receiver, overhead door hanger, bottom door guide, lock column, and enclosure, as a complete assembly.

B. Assembly Construction: As follows:

1. Enclosure: Fabricated from 0.179-inch nominal-thickness steel plate, with 0.134-inch nominal thickness steel hinged cover. Baffle openings in enclosure. Provide closures for ends of housings.

   a. Provide sloping-top housings.

2. Lock Column: Vertical tube enclosure fabricated from 0.134-inch nominal-thickness steel, providing mechanical locking control of detention sliding door at door location; operated by paracentric key. Doors shall be capable of being locked at top and bottom, at rear of door, in both open and closed positions, with no components projecting into door opening.

3. Receiver: Fabricated from 0.134-inch nominal-thickness steel plate.

4. Hanger Assembly: Extend steel carrier full width of door and door travel required for clear door opening. Provide antifriction ball-bearing steel rollers with hardened members and grease shield.

5. Finish: Factory prime painted.

C. Electromechanical-Locking, Electromechanical-Door-Movement, Sliding Door Device Assemblies: Operated from remote-control panel that activates electric motors to unlock sliding doors and motorized rack-and-pinion drive mechanisms to open and close doors. Doors lock in open position and deadlock when closed. Provide factory-wired cable harness with plug connectors for each motor unit.

1. Basis of design product: Subject to compliance with requirements, provide Southern Steel Model 3165LX.

2. Single-Door Function: In an emergency or if power fails, individual doors can be unlocked using a manual-release tool and manually moved; doors relock in either fully open or fully closed position.

3. Electric Key Switch: Operated by paracentric key and providing electric control of detention sliding door operation at door location; where indicated.

2.21 OTHER HARDWARE ITEMS

A. Other Hardware Items: The following are Basis of Design products: Subject to compliance with requirements, provide the following as scheduled:

1. Smoke seal: Basis of Design: Pemko S88D
2. Threshold: Basis of Design: Pemko 171A
3. Sweep: Basis of Design: Pemko 368CN
4. Weatherstripping: Basis of Design: Pemko 701A/DS78A

2.22 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise approved by Architect.

B. Base Metals: Produce detention door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified detention door hardware units and BHMA A156.18 finishes. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Provide flat-head security fasteners with finished heads to match surface of detention door hardware unless otherwise indicated.

1. Security Fasteners: Fabricate detention door hardware using security fasteners with head style appropriate for fabrication requirements, strength, and finish of adjacent materials. Provide stainless-steel security fasteners in stainless-steel materials.

2. Concealed Fasteners: For detention door hardware units that are exposed when detention door is closed except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching detention door hardware. Where through bolts are used on hollow-metal detention door and frame construction, provide sleeves for each through bolt.

3. Steel Machine Screws: For the following fire-rated applications:

   a. Mortise detention hinges to detention doors.
   b. Strike plates to detention frames.
   c. Security door closers to detention doors and frames.

4. Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:

   a. Surface detention hinges to detention doors.
   b. Security door closers to detention doors and frames.

5. Spacers or Security Bolts: For through bolting of hollow-metal detention doors.

2.23 FINISHES

A. Standard: Comply with BHMA A156.18.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. BHMA Designations: Comply with base material and finish requirements indicated by the following:

1. BHMA 630: Stainless steel, satin, over stainless-steel base metal.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Examine and inspect all surfaces, anchors, and grounds that are to receive materials, fixtures, assemblies, and equipment specified herein. Check location, "rough in", and field dimensions prior to

beginning work. Report all unsatisfactory conditions in writing to the Architect-Engineer and general contractor.

1. Do not begin installation until all unsatisfactory conditions have been corrected.

B. Verify all dimensions and be responsible for their correctness. No extra compensation will be allowed for differences between actual measurements and the dimensions indicated on the drawings.

3.2 INSTALLATION

A. Install security materials and accessories in accordance with the final shop drawings, manufacturer's data, and as herein specified.

1. Provide manufacturer's supervision of installation, including testing and interfacing of systems.

B. Install all components and complete system as indicated and in accordance with manufacturer's recommendations and instructions.

C. Nuts of all bolted work shall be drawn tight and threads battered or welded. Bolting may be used in the installation of detention equipment provided that the nuts are not accessible to inmates or exposed to view. Bolts shall be special oval head or flat head Torx security type. Other types of security bolts are unacceptable unless specifically approved by the Architect-Engineer. Provide two sets of wrenches for each size bolt used.

3.3 ADJUSTING

A. Final Adjustments: Prior to final inspection check and re-adjust all components to operate within their designed capacity. All components shall be adjusted and tested to verify correct operation prior to final inspection.

B. All devices shall be tested for specified and manufacturer described operation.

C. All tests required by local agencies shall be performed.

D. All tests required by Owner and Owner's representative shall be performed.

E. Systems not meeting the minimum level of acceptability as defined in the test procedures shall be repaired and retested.

F. Provide documentation of test procedures and results.

G. Equipment manufacturer's representative shall certify that the systems are installed and operate as specified.

H. All costs to test and retest systems shall be the responsibility of the Detention Equipment Contractor.

3.4 SECURITY HARDWARE SCHEDULE

A. GENERAL NOTES:

1. Provide smoke gaskets at all rated door openings.
2. Provide threshold and weatherstrip at exterior door openings.
3. Provide a doorstop at all door openings unless otherwise noted.
4. Any door greater than 3’-4” in width and/or 7’4” in height shall receive four (4) hinges.

Food Pass Hinge(s): The Security Hollow Metal Manufacturer shall provide food pass hinge(s) as an integral part of the food pass.

HARDWARE SET NO. SH4
DOORS: GATE G-1

UNIT	PART	CATALOG NO.	FINISH	MANUFACTURER
1 EA	SLIDING DEVICE	3165LXHCPM-2		SOUTHERN FOLGER
1 EA	RAISED PULL	212C		SOUTHERN FOLGER
1 EA	INTEGRAL PULL	BY DOOR MANUFACTURER		

HARDWARE SET NO. SH1
DOORS: A1, A2, A3, A4, A5, B1, B2, B3, B4, B5 - MAX CELLS

UNIT	PART	CATALOG NO.	FINISH	MANUFACTURER
1 EA	SLIDING DEVICE	1300 TRACK SET WITH INDICATING SWITCH IN TRACK		SOUTHERN FOLGER
1 EA	CUFF / ANKLE PORT	BY DOOR MANUFACTURER		
2 EA	CUFF PORT LOCK	1010 AM1	US26D	SOUTHERN FOLGER
1 EA	RAISED PULL	212C	US26D	SOUTHERN FOLGER
1 EA	INTEGRAL PULL	BY DOOR		MANUFACTURER
1 EA	LOCK	1058 MD-1	GALV	SOUTHERN FOLGER
1 EA	DOOR SKIRT	BY DOOR		MANUFACTURER

HARDWARE SET NO. SH2
DOORS: AS, BS - MAX SHOWERS

UNIT	PART	CATALOG NO.	FINISH	MANUFACTURER
3 EA	HINGE	204FMSS	US32D	SOUTHERN FOLGER
1 EA	LOCK	1080AHM-1	US26D	SOUTHERN FOLGER
1 EA	CUFF / ANKLE PORT	OPENING ONLY - BY DOOR MANUFACTURER		
1 EA	BOLT KEEPER	4C	US26D	SOUTHERN FOLGER
1 EA	RAISED PULL	212C	US26D	SOUTHERN FOLGER
1 EA	RECESSED PULL	214S	US26D	SOUTHERN FOLGER
1 EA	DOOR STOP	9540K28	----	MCMASTER-CARR
3 EA	SILENCERS	SR64	----	IVES

HARDWARE SET NO. SH3
DOORS: A-LAW, A-REC, B-LAW, B-REC

UNIT	PART	CATALOG NO.	FINISH	MANUFACTURER
2 EA	HINGE	204FMSS	US32D	SOUTHERN FOLGER
1 EA	LOCK	1017AM-1	US26D	SOUTHERN FOLGER
1 EA	BOLT KEEPER	4C	US26D	SOUTHERN FOLGER
1 EA	RAISED PULL	212C	US26D	SOUTHERN FOLGER
1 EA	CUFF / ANKLE PORT	OPENING ONLY - BY DOOR MANUFACTURER		

PART 1 – GENERAL

1.1 DESCRIPTION

A. Description of Work: The extent of the work is shown on the Drawings and specified within this document and includes furnishing and installing security glass and glazing materials.

1.2 QUALITY ASSURANCE

A. Reference Standards: Comply with recommendations and specifications of the International Building Code (IBC) as modified and supplemented on the Drawings and Specifications.

B. Certified Safety Glazing: Category II products complying with test requirements of 16 CFR 1201 and ANSI Z97.1, certified by Safety Glazing Certification Council, and permanently labeled.

C. Ballistics-Resistant and Forced-Entry Resistant Performance: Provide products identical to those tested for compliance with requirements indicated per tests specified for specific glazing types.

1. Tests may be performed by manufacturer, if witnessed and reported on by independent testing agency.

2. Tests shall be performed by qualified independent testing agency.

3. Testing Agency Qualifications: Demonstrate to Architect's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM E699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.

4. Testing Agencies: Subject to compliance with requirements, acceptable testing agencies are:

a. ETL Testing Laboratories, Inc.
b. H. P. White Laboratory, Inc.
c. Underwriters Laboratories, Inc.
d. Warnock-Hersey International, Inc.
e. Wiss, Janney, Elstner Associates, Inc.

D. H. P. White Test (HPW TP-0500.01): Test Procedure – Transparent Materials and Assemblies for Use in Forced Entry or Containment Barriers; 22 August 1988. Previous editions of this test method are not acceptable, unless manufacturer can show that test results are equivalent.

E. UL Test: Underwriters' Laboratories, Inc., UL 752 Standard for Bullet Resisting Equipment. Provide UL labeled products.

F. Manufacturer's Qualifications: Firm experienced in producing security glazing products that are similar to those indicated for this Project and that have a record of successful in-service performance.

G. Installer Qualifications: Engage an experienced Installer who has specialized in installing security glazing similar to that required for this Project.

1.3 SUBMITTALS

A. Product data for each security glazing type, including type of materials, thickness, method of test, test reports showing compliance with specified requirements and performance.

B. Certification by manufacturer that products supplied comply with performance requirements specified.

C. Letter from glazing manufacturer stating that installer is qualified to install specified products.

D. Maintenance data covering cleaning and protection requirements.

E. Warranty.

1.4 PRODUCT DELIVERY, HANDLING AND STORAGE

A. General: Afford materials the degree of preservation, packaging and packing necessary to prevent deterioration and/or damage which might result from the hazards to which they will be subjected during shipment, handling and storage. Store materials off the ground with provisions for drainage of rain and/or snow. Repair or replace damaged materials as directed or as necessary.

1.5 SPECIFIED PRODUCT WARRANTY

A. Warranty: Submit a written warranty, executed by manufacturer, agreeing to replace security glazing units which fail as a result of the listed manufacturing deficiency within the specified number of years from date of Substantial Completion. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

1. Glass-clad Polycarbonate: Provide 5 year written warranty.

a. Against delamination.
b. Against units becoming opaque under normal wear and tear.

2. Laminated Polycarbonate:

a. Provide 5 year written warranty.
1) Against delamination.

b. Provide 10 year written warranty.
1) Against units becoming opaque or yellowing under normal wear and tear.
2) Against coating failure by delamination or flaking from substrate.

3. Warranty to include removal of failed units, furnishing and installation of replacement units.

a. Be willing and able to furnish and install replacement units within one month.

4. Warranty to be signed by installer to cover installation including air and water integrity. Warranty to be signed by manufacturer/fabricator against failure.

1.6 EXTRA STOCK

A. General: Provide two (2) pieces of each size and type of security glazing used on this project as extra stock. Extra stock shall be crated and protected from damage. Store extra stock, in labeled protective wrapping, within building where directed by Contracting Officer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Laminated Glass and Polycarbonate/Glass Laminate Products:

a. Global Security Glazing.
b. Laminated Glass Corporation.
c. Insulguard Corporation.

2.2 GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2. For heat-strengthened float glass, comply with requirements for Kind HS.

3. For fully tempered float glass, comply with requirements for Kind FT.

4. For uncoated glass, comply with requirements for Condition A.

2.3 LAMINATED GLASS

A. Laminated Glass: ASTM C 1172 and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

1. Construction: Laminate glass with polyvinyl butyral interlayer or urethane to comply with interlayer manufacturer's written recommendations.

2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.

3. Interlayer Color: Clear unless otherwise indicated.

2.4 POLYCARBONATE SECURITY GLAZING

A. Polycarbonate Sheet: ASTM C 1349, Appendix X1, Type II, coated, mar-resistant, UV-stabilized polycarbonate with coating on exposed surfaces and Type I, standard, UV-stabilized polycarbonate where no surfaces are exposed.

B. Laminated Polycarbonate: Polycarbonate sheets laminated with clear urethane interlayer that complies with ASTM C 1349, Appendix X2, and has a proven record of no tendency to bubble, discolor, or lose

physical and mechanical properties after fabrication and installation. Provide laminated units that comply with requirements of ASTM C 1349 for maximum allowable laminating process blemishes and haze.

C. Glass-Clad Polycarbonate: ASTM C 1349, and other requirements specified.

1. Provide glass-clad polycarbonate that complies with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified.

D. Laminated Glass and Polycarbonate: ASTM C 1349, and other requirements specified.

1. Provide laminated glass and polycarbonate that complies with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified.

2.5 GLAZING SEALANTS

A. General:

1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including security glazing, seals of insulating security glazing, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and security glazing manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals, LLC; Omniseal 50.
b. Dow Corning Corporation; 795.
c. GE Advanced Materials - Silicones; SilPruf SCS2000.
d. May National Associates, Inc.; Bondaflex Sil 295.
e. Pecora Corporation; 895.
f. Polymeric Systems, Inc.; PSI-641.
g. Sika Corporation, Construction Products Division; SikaSil-C995.
h. Tremco Incorporated; Spectrem 2.

2.6 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and security glazing manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.

2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of security glazing and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by security glazing manufacturer to maintain security glazing lites in place for installation indicated.

E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.8 FABRICATION OF SECURITY GLAZING

A. Fabricate security glazing in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

2.9 GLASS-CLAD POLYCARBONATE SECURITY GLAZING TYPES

A. Security Glazing Type SG1: Clear glass-clad polycarbonate.

1. Products: Subject to compliance with requirements, provide the following or a comparable product conforming to specified performance:

a. “3/4 inch Secur-Tem + Poly, SP019” (Global Security Glazing).

2. Detention Security Grade: Grade 2 per ASTM F 1915.

3. Forced-Entry Resistance: Level III per HPW-TP-0500.03 (40 minute, monolithic).

4. Overall Unit Thickness: 3/4 inch, nominal.

5. Outer Ply: 3-mm heat-strengthened or chemically strengthened float glass.

6. Multiple Core:

a. Outer Core Ply: 0.250-inch polycarbonate.
b. Inner Core Ply: 0.125-inch polycarbonate.

7. Inner Ply: 3-mm heat-strengthened or chemically strengthened float glass.

8. Interlayer Thickness: 0.025 inch between polycarbonate plies and 0.050 inch between glass and polycarbonate plies.

B. Security Glazing Type SG2: Clear glass-clad polycarbonate.

1. Products: Subject to compliance with requirements, provide the following or a comparable product conforming to specified performance:

a. "11/16 inch Secur-Tem + Poly, 2116" (Global Security Glazing).

2. Detention Security Grade: Grade 3 per ASTM F 1915.

3. Forced-Entry Resistance: Level II per HPW-TP-0500.03 (20 minute, monolithic).

4. Overall Unit Thickness: 11/16 inch, nominal.

5. Outer Ply: 3-mm heat-strengthened or chemically strengthened float glass.

6. Single Core: 0.375-inch polycarbonate.

7. Inner Ply: 3-mm heat-strengthened or chemically strengthened float glass.

8. Interlayer Thickness: 0.050 inch.

2.10 MONOLITHIC GLASS

A. Security Glazing Type SG 4: Clear heat treated tempered glass.

B. Products: Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2. For heat-strengthened float glass, comply with requirements for Kind HS.

3. For fully tempered float glass, comply with requirements for Kind FT.

4. For uncoated glass, comply with requirements for Condition A.

C. Unit Thickness: 1/2 inch nominal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine frames and rabbets in which glazing is to be installed for possible damaging conditions with frame installer present. In particular, check for conditions that would void the manufacturer's warranty. Proceed with glazing installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean surfaces to receive glazing just before installing glazing.

3.3 INSTALLATION - GENERAL

A. Comply with recommendations for installation contained in the FGMA “Glazing Manual” and “Sealant Manual” except when specifically not recommended or prohibited by the glazing or glazing accessory manufacturer; comply with manufacturer’s recommendations.

B. Protect glazing from edge and surface damage during handling and installation.

C. Do not install glazing that has edge or surface damage or defects that reduce glazing strength or diminish appearance.

D. Install unsymmetrical laminates with proper side out, according to their tested configuration.

E. Permanently adhere setting and edge blocks to frame.

F. Do not block weep holes.

G. Applied Stops: Fasten as indicated, after glazing has been set in frame. Do not exert excess force on glazing and glazing spacers.

H. Remove applied coatings from surfaces, unless such coatings have been tested to show acceptable adhesion and compatibility.

I. Use continuous spacers.

J. Use primer, where required, for proper adhesion.

K. Tool sealant, eliminating air pockets, with a definite slope away from glazing.

L. Clean off excess sealant as work progresses using methods that will not damage glazing.

3.4 TAPE GLAZING

A. Install tape continuously, placed so that when compressed the exposed face will be flush with the face of the framing.

B. Do not use joints in tape except at corners; seal joints with compatible sealant.

C. After installation of stops, apply fillet bead of glazing sealant over exposed tape on both sides of glazing.

3.5 PROTECTION AND CLEANING

A. Apply warning tape or bands across opening without touching glazing immediately after installing glazing in frames.

B. Cover exposed polycarbonate surfaces with heavy paper secured with tape without touching glazing.

C. Do not apply tape or labels to glazing; remove temporary labels.

D. Protect glazing during subsequent construction operations; remove dirt, contaminants, staining agents and other deposits promptly using manufacturer's recommended procedures. Clean surfaces using only methods recommended by manufacturer.

E. Replace glazing that is damaged.

F. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer that ensures that security glazing is without damage or deterioration at the time of Substantial Completion.

G. Wash both sides of glazing immediately prior to Substantial Completion inspection.

3.6 OWNER PERSONNEL INSTRUCTION

A. Have manufacturer's maintenance instructions on hand at time of instruction.

B. Instruct designated Owner personnel on maintaining security glazing.

END OF SECTION 08 88 53

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Work includes the repair, patching and painting of gypsum board and plaster surfaces that become damaged through the demolition and reconstruction of products scheduled for replacement, or inadvertent damage that occurs as a result of construction activities. Work includes patching/repair work as indicated or as required as a result of demolition.

1.2 SUBMITTALS

A. Manufacturer's Data: Submit materials list including manufacturer's specification, installation instructions, VOC content range and MSD sheets.

PART 2 - PRODUCTS

2.1 GYPSUM WALLBOARD ACCESSORIES

A. General: Complying with ASTM C1629. ASTM D3273.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Georgia-Pacific Gypsum, LLC.
b. National Gypsum Company.
c. USG Corporation.

B. Impact/Mold Resistant Gypsum Board: For use on walls and ceilings in all areas.

1. Gypsum Wallboard: U.L. Labeled Type "X", 5/8 inch thick gypsum board with tapered edges. Gypsum board shall be fiberglass faced and constructed with properties similar to National Gypsum Gold Bond eXP Interior Extreme AR. Provide this product or an approved product with the same or better characteristics.

C. Metal Trims

1. Edge Trim: U-shaped galvanized steel casing bead, U.S. Gypsum Company "No.200-A" or approved. Reveal type edge trim will not be accepted.

2. Control Joint: One-piece galvanized steel expansion assembly, U.S. Gypsum Company "No. 093" or approved.

D. Mechanical Fasteners: Provide screws, nails, and other fasteners in varieties recommended by the gypsum wallboard manufacturer and in quantities required.

E. Finishing Materials:

1. Joint Treatment Tapes: Plain or perforated tape conforming to requirements of ASTM Designation C475.

2. Joint Treatment Compound: Commercially formulated compound conforming to requirements of ASTM Designation C475.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, as well as adjacent painted surfaces.

2. The facility to provide paint.

B. Colors: Match existing.

PART 3 - EXECUTION

3.1 INSPECTION

A. Carefully examine the substrate and observe conditions under which the work is to be performed. Do not proceed with the work until unsatisfactory conditions including backing, gypsum board gaps or holes have been corrected.

3.2 PREPARATION

A. Temperature and Ventilation: During the installation of gypsum wallboard maintain a temperature in the building at not less than 50 degrees F. Provide ventilation as required to prevent moisture accumulation.

3.3 INSTALLATION

A. Gypsum Board Repair: Infill door openings as indicated. Fill and repair all holes, gaps, broken corners or existing framing. Sand gypsum board, repair smooth with no evidence of texture or wall plane patch. Allow adequate time to dry between successive layers of finish material.

B. Paint: Clean surfaces to be painted before applying paint. Paint shall be applied and cut in neatly so as to dry uniformly to the color and sheen of the adjacent existing surfaces. See specification section 09 91 00

3.4 CLEAN UP AND PROTECTION

A. Clean Up: During the progress of the work, remove from the site all discarded materials, rubbish, cans and rags at the end of each work day.

B. Upon completion of work, clean paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

C. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Owner's Representative.

D. At the completion of work of all trades, touch up and restore all damaged or defaced painted surfaces. Should touch up paint be visually noticeable, repaint entire wall.

E. Repairs: The Contractor is responsible for defective work, whatever the cause. Replace coatings which do not comply with requirements of the Specification and repair damaged surfaces at no expense to the Owner. Leave surfaces clean, smooth and free of defects at the time of final acceptance.

END OF SECTION 09 01 70

PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work: The extent of the work is shown on the Drawings and specified within this document and includes furnishing materials, preparing and painting interior surfaces. It is the intent of this Section to include finish for all new visually exposed material and surfaces including factory primed or unfinished materials, unless specifically indicated as not requiring finish. Surface preparation, prime coats and finish coats specified are in addition to surface treatments and prime coats specified in other Sections of the Specification. The number of coats specified is to be interpreted as the minimum number required. Apply additional coats if required to achieve complete coverage and concealment of surface receiving finish or to achieve uniformity of color, sheen and texture. The work includes preparing substrates, and installing paint on new cell fronts, doors, frames, metal enclosures, gypsum board walls and other new or patched surfaces.

B. Items Requiring No Finish:

1. Concealed Surfaces: Unless specifically indicated on the Drawings, painting is not required on concealed surfaces such as walls above ceilings or in pipe spaces.
2. Finished Metal Surfaces: Do not paint anodized aluminum, stainless steel, chromium plate, brass, bronze, copper or other similar metals.
3. Finished Plastic Surfaces: Do not paint acrylic fiberglass, polycarbonate, polyethylene, vinyl or other similar plastic surfaces.
4. Pre-Finished Materials: Do not paint such items as (but not limited to) pre-finished architectural woodwork, pre-finished metal roofing and siding, acoustic materials, pre-finished mechanical and electrical items and equipment except where indicated on the Drawings.
5. Concealed Mechanical Piping and Ductwork: Except for color coding and painting specified in other sections of this Specification, do not paint concealed piping and ductwork except in finished spaces.
6. Operating Parts: Do not paint moving parts of operating units such as valve and damper operators, linkages, sensing devices and motor and fan shafts.
7. Labels: Do not paint over code-required labels or equipment name, identification, performance or nomenclature plates.

1.2 QUALITY ASSURANCE

A. Reference Standards: Comply with manufacturer's printed instructions, as modified and supplemented on the Drawings and herein.

B. MPI Standards:

1. Products: Complying with Master Painters Institute (MPI) standards indicated and listed in "MPI Approved Products List." Where MPI standard is omitted, provide specified product or comparable equal.
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.3 SUBMITTALS

A. Materials List: Submit a complete materials list showing the intended use of each item listed. Include certificates from suppliers of painting materials stating that each material is the best of its respective kind and suitable for the intended purpose.

B. Manufacturer's Data: With the materials list, submit MSD sheets and manufacturer's specifications and printed instructions for preparation of surfaces and for mixing and thinning and application of each material used. Include data substantiating with specified requirements.

C. Manufacturer's Colors: Match existing colors from manufacturer's standard colors.

D. Samples: Prepare 12 x 12 inch samples of selected colors. Allow ample time for review. Obtain approval from the Contracting Officer before applying paint to finished surfaces. If work is commenced without approval of the Owner Representative, finish is subject to rejection and the Contractor may be required to remove all wood materials from the project and replace with new materials.

E. Overages: Upon completion of work, furnish one (1) gallon can of each type and color of paint for maintenance purposes. Label for positive identification; list tinting formulas. Store on the premises where directed.

1.4 PRODUCT DELIVERY, HANDLING AND STORAGE

A. General: Deliver materials in original and unbroken containers with manufacturer's labels thereon. Store in a clean, dry, well-ventilated space.

PART 2 - PRODUCTS

2.1 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on resting and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Colors: As selected.

C. Volatile Organic Compound (VOC) Content Limit for interior paints and coatings.

Product Type	**Maximum VOC Level (g/L)**
Flat Topcoat	50
Non-Flat Topcoat	100
Primer or Undercoat	100
Floor Paint	100

2.2 INTERIOR PAINT SYSTEMS

A. IPT-1 Latex Primer/Sealer and Paint: For existing interior metal wall panels, plaster and gypsum board surfaces. One coat. Basis of Design: Sherwin Williams Multipurpose Latex Primer/Sealer B51-450.

Interior Acrylic Latex: Gloss Level 5 for existing interior metal walls, CMU. Two coats. Basis of Design: Sherwin Williams “Duration Home”.

B. IPT-2 Pro-Cryl Universal Primer: For miscellaneous metal and new metal wall panels, metal doors and frames. One coat. Basis of Design: Sherwin Williams Pro-Cryl Universal Primer B66 W01310.

Pre-catalyzed Water Based Epoxy: Gloss Level 5 for Miscellaneous metal, new metal wall panels, metal doors and metal door frames. Two coats. Basis of Design: Sherwin Williams, Pre-Catalyzed Water Based Epoxy K46W01151.

PART 3 - EXECUTION

3.1 INSPECTION

A. Applicator must examine the areas and conditions under which painting work is to be applied. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Starting of painting work will be construed as the applicator’s acceptance of the surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces or conditions otherwise detrimental to the formation of a durable paint film.

3.2 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in strict accordance with the paint manufacturer’s instructions as herein specified, for each particular substrate condition.

1. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures and similar items in place and not to be finish-painted or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

2. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly painted surfaces.

3.3 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer’s directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density and stir as required during the application the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

3.4 APPLICATION

A. General:

1. All materials shall be applied and cut in neatly so as to dry uniformly to the color and sheen specified, free from any runs, sags, crinkles, shiners, streaks, holidays and brush marks. Vary colors of successive coats slightly to avoid skipping.

2. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to ensure that all surfaces including edges, corners, crevices, welds and exposed fasteners receive a dry-film thickness equivalent to that of flat surfaces.

B. Scheduled Painting:

1. Apply the first coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

2. Allow sufficient time between successive coating to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Minimum Coating Thickness: Apply each material at not less than the manufacturer's recommended spreading rate to establish a total dry-film thickness as recommended by coating manufacturer.

D. Electrical Work:

1. Electrical items to be painted include, but are not limited to, the following:

a. New conduit and fittings.

2. Prime Coats: Apply a prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

3. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

4. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

5. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.5 CLEAN UP AND PROTECTION

A. Clean Up: During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.

B. Upon completion of painting work, clean paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

C. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Owner's Representative.

D. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

E. At the completion of work of other trades, touch up and restore all damaged or defaced painted surfaces. Should touch up paint be visually noticeable, repaint entire wall.

F. Repairs: The Contractor is responsible for defective work, whatever the cause. Replace coatings which do not comply with requirements of the Specification and repair damaged surfaces at no expense to the Owner. Leave surfaces clean, smooth and free of defects at the time of final acceptance.

END OF SECTION 09 91 00

PART 1 – GENERAL

1.1 DESCRIPTION

A. Description of Work: The extent of the work is referenced on the drawings and specified within this document and includes furnishing tamper resistant fasteners. Tamper resistant fasteners shall be provided in all secure locations in addition to other locations indicated.

B. Items Not Requiring Tamper Resistant Fasteners:

1. Concealed Surface: Tamper resistant fasteners are not required above suspended ceilings, behind access panels and within pipe of duct chases.

2. Plaster and Gypsum Board Construction: Tamper resistant fasteners are not required for the installation of Portland cement plaster or gypsum wallboard.

3. Mechanical and Electrical Equipment: Tamper resistant fasteners are not required for the manufacture and installation of mechanical, electrical, generator or communications equipment that is not accessible to inmates.

4. Non-Secure Areas: Tamper resistant fasteners are not required in any area outside the secure perimeter of the facility unless inmates are expected to be present.

1.2 QUALITY ASSURANCE

A. Product Standards: Manufacturers with products which comply with specified requirements include:

1. Tamper-Pruf Screw Company
Paramount, CA
(310) 531- 9340 / 9364

1.3 SUBMITTALS

A. Tools: Deliver the six (6) sets of operating tools for tamper resistant fasteners to the Owner packaged in tool kits for easy handling and storage.

1.4 PRODUCT DELIVERY, HANDLING AND STORAGE

A. General: Afford materials the degree of preservation, packaging and packing necessary to prevent deterioration and/or damage which might result from the hazards to which they will be subjected during shipment, handling and storage. Store in a warm, dry, clean and well-ventilated space, protected from damage, soiling and moisture.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel: Black Grade 9 alloy steel or austenitic stainless steel with cadmium, zinc, nickel, phosphate and chrome plating as required to match adjacent materials.

B. Stainless Steel: Provide 18-8 stainless steel fasteners in exposed, exterior or wet areas.

2.2 TAMPER RESISTANT FASTENERS

A. General: Select material, head style and plating as appropriate for installation requirements, strength and finish of adjacent materials, except use stainless steel screws in all painted materials. Provide five (5) lobe socket with center pin (TORXplus).

PART 3 - EXECUTION

3.1 GENERAL

A. General: Tamper resistant fasteners as specified herein shall be obtained by the manufacturer, supplier or installer of each component requiring their use and it shall be their responsibility to assure use of proper size and type of tamper resistant fasteners for each application.

3.2 INSTALLATION

A. Install tamper resistant fasteners in accordance with manufacturer's recommendations, with uniform contact against materials being fastened.

B. Add thread-grip compound equal to "Lok-Tite" where specified and where fasteners can be removed with fingers.

END OF SECTION 11 98 16

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General Requirements specifically applicable to Division 26 and 28, in addition to Division 01 provisions.

1.2 WORK SEQUENCE

A. Construct Work in sequence under provisions of Division 01.

1.3 COORDINATION

A. Coordinate the Work specified in this Division under provisions of Division 01.

B. Prepare drawings showing proposed rearrangement of Work to meet job conditions, including changes to Work specified under other Sections. Obtain permission of Owner/Engineer prior to proceeding.

1.4 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code, latest adopted edition including all state and local amendments.

B. NECA - Standard of Installation.

1.5 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 70.

B. Conform to the latest adopted edition of the International Building Code and the International Fire Code including all state and local amendments thereto.

C. Obtain electrical permits, plan review, and inspections from authority having jurisdiction.

1.6 SUBMITTALS

A. Submit inspection and permit certificates under provisions of Division 01.

B. Include certificate of final inspection and acceptance from authority having jurisdiction.

C. Submittal review is for general design and arrangement only and does not relieve the Contractor from any requirements of Contract Documents. Submittal not checked for quantity, dimension, fit or proper operation. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provisions of a complete and satisfactory working installation is the sole responsibility of the Contractor.

D. In addition to requirements referenced in Division 01, the following is required for work provided under this division of the specification.

1. Provide material and equipment submittals containing complete listings of material and equipment shown on Electrical Drawings and specified herein, separate from work furnished under other divisions. Index and clearly identify all material and equipment by item, name or designation used on drawings and in specifications.
2. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring diagrams and controls; component parts; finishes; dimensions; and required clearances.
3. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.
4. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
5. Coordinate submittals with requirements of work and of Contract Documents.
6. Sign or initial each sheet of shop drawings and product data, and each sample label to certify compliance with requirements of Contract Documents. Notify Owner/Engineer in writing at time of submittal, of any deviations from requirements of Contract Documents.
7. Electronic submittals in PDF format are acceptable. All indexing and identification requirements hold for organization of submittals.
8. Do not fabricate products or begin work which requires submittals until return of submittal with Engineer acceptance.
9. Equipment scheduled by manufacturer's name and catalog designations, manufacturer's published data and/or specification for that item, in effect on bid date, are considered part of this specification. Approval of other manufacturer's item proposed is contingent upon compliance therewith.
10. Submittals shall be complete and submitted at one time. Unless given prior approval, partial submittals will be returned unreviewed.

1.7 PROJECT RECORD DRAWINGS

A. Maintain project record drawings in accordance with Division 01.

B. In addition to the other requirements, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all electrical work which will become permanently concealed. Show routing of work in permanently concealed blind spaces within the building. Show complete routing and sizing of any significant revisions to the systems shown.

C. Record drawing field mark-ups shall be maintained on-site and shall be available for examination of the Owner’s Representative at all times.

1.8 OPERATION AND MAINTENANCE MANUALS

A. Provide operation and maintenance manuals for training of Owner's Representative in operation and maintenance of systems and related equipment. In addition to requirements referenced in Division 01, the following is required for work provided under this section of the specifications.

B. Manuals shall be hard cover, loose-leaf binders with pages reinforced to prevent pullout and shall be separate from work furnished under other divisions. Prepare a separate chapter for instruction of each class of equipment or system. Index and clearly identify each chapter and provide a table of contents.

C. Unless otherwise noted in Division 01, provide one copy of all material for approval. After approval, provide five corrected approved copies, unless directed otherwise by the Owner. Initial submittal for approval may be electronic.

D. The following is the suggested outline for operation and maintenance manuals and is presented to indicate the extent of items required in manuals.

1. List chapters of information comprising the text. The following is a typical Table of Contents:

   a. Touchscreen Security System
   b. IP Video System
   c. Other chapters as necessary

2. Provide the following items in sequence for each chapter shown in Table of Contents:

   a. Give complete instructions for energizing equipment and making initial settings and adjustments whenever applicable.
   b. Include test results of all tests required by this and other sections of the specifications.
   c. Provide manufacturers' descriptive literature including approved shop drawings covering devices used in system, together with illustrations, exploded views, etc. Also include special devices provided by the Contractor.
   d. Provide any information of a maintenance nature covering warranty items, etc., which have not been discussed elsewhere.
   e. Include list of all equipment furnished for project, where purchased, technical representative if applicable and a local parts source with a tabulation of descriptive data of all electrical-electronic spare parts and all mechanical spare parts proposed for each type of equipment or system. Properly identify each part by part number and manufacturer.

1.9 DEMONSTRATION OF ELECTRICAL SYSTEMS

A. During substantial completion inspection:

1. Conduct operating test for approval under provisions of Division 01.
2. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents.
3. Should any portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.
4. Have instruments available for measuring light intensities, voltage and current values, and for demonstration of continuity, grounds, or open circuit conditions.
5. Provide personnel to assist in taking measurements and making tests.

1.10 WARRANTY AND MAINTENANCE CONTRACT

A. Warrant all materials and equipment to be new and free from defects in material and workmanship for a period of one year under provisions of Division 01.

B. Copies of manufacturer product warranties for all equipment shall be included in the operation and installation manuals.

C. Provide a maintenance contract to maintain the security system for one year from the date of substantial completion for the project. At the end of one year, the Owner shall have the option of extending or canceling the contract.

1.11 ELECTRICAL DRAWINGS

A. Drawings are diagrammatic and not intended to show all features of work. Install material not dimensioned on drawings in a manner to provide a symmetrical appearance. Do not scale drawings for exact equipment locations. Field verification of dimensions, locations and levels is directed.

1.12 DEFINITIONS

A. “BASIS OF DESIGN” - Particular specialized products around which a system was designed. In such cases, the products specified may be critical with regard to physical sizes and performance characteristics. Where variations or substitutions to products are made, the Contractor is solely responsible for resolving all impacts of such a deviation. Approval of a substitution and/or variation request does not relieve the Contractor of responsibility for complying with the design intent.

B. “EQUAL” - A product, system or installation which:

1. Meets or exceeds all ratings, performance characteristics, standard features and denoted options of specified item.
2. Includes primary characteristics identified in the drawings and specifications.
3. Complies with requirements similar to the “Basis of Design.”
4. Is produced by a manufacturer specifically listed as an acceptable manufacturer on the drawings, or in the specifications.
5. Is acceptable and approved to the Engineer specifically addressed in writing.

C. “EXPOSED” - Exposed to view after construction is completed.

D. “FURNISH” - Purchase materials as shown and specified. Deliver to project site at location shown to be installed by supporting crafts.

E. “INSTALL” - Set in place and connect equipment furnished by others for a complete and ready to use installation.

F. “PRODUCT” - Term which includes materials, equipment, fixtures, devices for any tangible item used on the project.

G. “PROVIDE” - Furnish all products, equipment, subcontracts, labor, testing, etc., required and install for a complete ready to use installation.

H. “SHOP DRAWING” - Detailed, dimensioned working construction drawing drawn to a particular scale adequately showing installation intent, details and coordination of interrelated trades.

I. “SUBSTITUTION” - A product, system or installation which is not listed as an acceptable manufacturer, but the Contractor warrants meets or exceeds specified equipment denoted in the contract documents. Approval through submittal process is required to establish product or system is “equal”.

J. “WIRING” - Electrical conductors, raceway, devices, connections and associated accessories, or any combination of labor and material thereof in order to provide a complete and operable system.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. All Materials and Equipment shall be new and shall be listed by Underwriter's Laboratories or equivalent third party listing agency for the use intended.

B. Materials and Equipment shall be acceptable to the authority having jurisdiction as suitable for the use intended when installed per listing and labeling instructions.

C. No materials or equipment containing asbestos in any form shall be used. Where materials or equipment provided by this Contractor are found to contain asbestos such items shall be removed and replaced with non-asbestos containing materials and equipment at no cost to the Owner.

D. In describing the various items of equipment, in general, each item will be described singularly, even though there may be numerous similar items.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. Install Work using procedures defined in NECA Standard of Installation and/or the manufacturer's installation instructions.

3.2 PENETRATIONS OF FIRE BARRIERS

A. All holes or voids created to extend electrical systems through fire rated floors, walls or ceiling shall be sealed with an asbestos-free intumescent fire stopping material capable of expanding 8 to 10 times when exposed to temperatures 250º F or higher.

B. Materials shall be suitable for the fire stopping of penetrations made by steel, glass, plastic and shall be capable of maintaining an effective barrier against flame, smoke and gases in compliance with the requirements of ASTM E814 and UL 1479.

C. The rating of the fire stops shall be the same as the time-rated floor, wall or ceiling assembly.

D. Install fire stopping materials in accordance with the manufacturer's instructions.

END OF SECTION 26 05 00

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Electrical demolition.

1.2 RELATED SECTIONS

A. Division 01 - Alteration Project Procedures.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on Drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition Drawings are based on casual field observation and existing record documents. Report discrepancies to Owner/Engineer before disturbing existing installation.

D. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

A. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Demolish and extend existing electrical work under provisions of Division 01 and this Division.

B. Remove, relocate, and extend existing installations to accommodate new construction.

C. Remove abandoned wiring to source of supply.

D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

E. Remove exposed abandoned wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch and paint surfaces where removed cables pass through building finishes that are existing to remain.

F. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.

G. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

H. Repair adjacent construction and finishes damaged during demolition and extension work. T-bar ceiling tiles damaged under normal construction conditions or having voids where junction boxes were removed shall be replaced by the Contractor.

I. Maintain access to existing electrical installations which remain active.

J. Extend existing installations using materials and methods as specified.

3.4 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment which remain or are to be reused.

3.5 INSTALLATION

A. Install relocated materials and equipment under the provisions of Division 01.

END OF SECTION 26 05 05

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building Wire.

B. Cable.

C. Wiring Connections and Terminations.

1.2 RELATED SECTIONS

A. Section 26 05 53 – Identification for Electrical Systems.

1.3 REFERENCES

A. Federal Specification FS-A-A59544 – Cable and Wire, Electrical (Power, Fixed Installation).

B. Federal Specification FS-J-C-30B – Cable Assembly, Power, Electrical.

C. ANSI/NEMA WC 70-2009 – Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.

D. NETA ATS – Acceptance testing specifications for Electrical Power Distribution and Systems.

E. NFPA 70 – National Electrical Code.

F. NFPA 262 – Standard Method of test for flame travel and smoke of wires and cables for use in air-handling spaces.

G. UL 62 – Flexible Cords and Cables.

H. UL 83 – Thermoplastic Insulated Wire and Cable.

I. UL 1479 – Standard for Fire Tests of Through Wall Penetration Fire Stops.

J. UL 1569 – Standard for Metal Clad Cable.

K. UL 1581 – Reference Standard for Electrical Wires, Cables and Flexible Cords.

1.4 SUBMITTALS

A. Submittals are not requested for this section.

1.5 QUALITY ASSURANCE

A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5m) when tested in accordance with NFPA 262.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

A. Thermoplastic-insulated Building Wire: NEMA WC 70.

B. Branch Circuits 8 AWG and Smaller: Copper conductor, 600 volt insulation, THHN/THWN or XHHW-2. 8 AWG, stranded conductor; smaller than 8 AWG, solid or stranded conductor.

C. Branch Circuit Wire Color Code:

1. Color code wires by line or phase as follows:

   a. Black, red, blue and white for 120/208V systems.
2. For conductors 6 AWG and smaller, insulation shall be colored.
3. Grounding conductors 6 AWG and smaller shall have green colored insulation.

D. Control Circuits: Copper, stranded conductor 600 volt insulation, THHN/THNN or XHHW-2.

2.2 REMOTE CONTROL AND SIGNAL CABLE

A. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 90º C, individual conductors twisted together, shielded, and covered with an overall PVC jacket; UL listed.

B. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 90º C, individual conductors twisted together, shielded or unshielded (as required), and covered with a PVC jacket; UL listed.

C. Plenum Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 90º C, individual conductors twisted together, shielded or unshielded (as required), and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

2.3 WIRING CONNECTIONS AND TERMINATIONS

A. For conductors 8 AWG and smaller:

1. Dry interior areas: Spring wire connectors, pre-insulated “twist-on” rated 105 degrees C per UL 468C. Where stranded conductors are terminated on screw type terminals, install crimp insulated fork or ring terminals. Thomas & Betts Sta-Kon or equal.
2. Motor connections: Spring wire connectors, pre-insulated “twist-on” rated 105 degrees C per UL 468C. Provide a minimum of 8 wraps of Scotch 33+ electrical tape around conductors and connector to eliminate connector back off.

PART 3 - EXECUTION

3.1 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 18 AWG for control wiring.

B. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet.

C. Splice only in junction or outlet boxes.

D. Neatly train and lace wiring inside boxes, equipment, and panelboards.

E. Do not share neutral conductors. Provide a dedicated neutral conductor for each branch circuit that requires a neutral.

3.2 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Verify that raceway is complete and properly supported prior to pulling conductors.

B. Install wire in raceway after all mechanical work likely to injure conductors has been completed.

C. Do not install XHHW-2 conductors when ambient temperatures are below –5 degrees C and THHN/THWN conductors when ambient temperatures are below 0 degrees C.

D. Conductors shall be carefully inspected for insulation defects and protected from damage as they are installed in the raceway. Where the insulation is defective or damaged, the cable section shall be repaired or replaced at the discretion of the Owner and at no additional cost to the Owner.

E. Place an equal number of conductors for each phase of a circuit in same raceway or cable.

F. Route conductors from each system in independent raceway system and not intermix in the same raceway, enclosure, junction box, wireway, or gutter as another system unless otherwise shown on the plans.

G. Completely and thoroughly swab raceway system before installing conductors.

H. When two or more neutrals are installed in one conduit, identify each with the proper circuit number in accordance with Section 26 05 53.

3.3 CABLE INSTALLATION

A. Provide protection for exposed cables where subject to damage.

B. Support cables above accessible ceilings; do not rest on ceiling tiles. Use spring metal clips or cable ties to support cables from structure. Do not support cables from ceiling suspension system. Include bridle rings or drive rings.

C. Use suitable cable fittings and connectors.

3.4 WIRING CONNECTIONS AND TERMINATIONS

A. Stranded wire shall not be wrapped around screw terminals.

B. Splice only in accessible junction boxes.

C. Thoroughly clean wires before installing lugs and connectors.

D. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

E. Terminate spare conductors with twist on connectors or heat shrink insulation to proper voltage rating.

F. Do not exceed manufacturer's recommended pull tensions.

3.5 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 01.

B. Inspect wire and cable for physical damage and proper connection.

C. Torque conductor connections and terminations to manufacturer's recommended values.

3.6 WIRE AND CABLE INSTALLATION SCHEDULE

A. All Locations: Building wire and/or remote control and signal cable in raceways.

END OF SECTION 26 05 19

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Conduit and equipment supports.

B. Fastening hardware.

1.2 SUBMITTALS

A. None required for this section.

1.3 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

A. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.

B. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.

C. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.

D. Conduit clamps - general purpose: As specified in Section 26 05 33.

2.2 FORMED STEEL CHANNEL

A. U-Channel Strut: 12-gauge steel.

B. Dry Interior Areas: Zinc or Cadmium-plated.

2.3 SPRING STEEL CLIPS

A. “Caddy” spring steel electrical support systems, suitable and listed for use for intended application.

B. Provide only where concealed in walls or above ceilings.

2.4 SEISMIC SUPPORT WIRE AND CABLE

A. #12 gauge ceiling support wire where concealed. Aircraft stainless steel cable where exposed.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, beam clamps, or spring steel clips. Conduit support plates shall not be used to support conduits entering junction or outlet boxes.

B. Use toggle bolts or hollow wall fasteners in hollow masonry partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

C. Do not support raceways, low voltage pathways, cables, telecommunication pathways or boxes from ceiling suspension wires or suspended ceiling systems. Provide support from building structure independently to allow ceiling removal and replacement without removal of electrical system. If dedicated support wires are used, wires and wire clips must be painted or color-coded.

D. Do not fasten supports to piping, ductwork, mechanical equipment, conduit, or ceiling suspension system.

E. Power-driven fasteners are prohibited for tension load applications (such as supporting luminaries or conduit racks from ceiling above). Use drilled-in expansion anchors, or drilled and screw-in anchors such as Kwik-Con II or Tapcon.

F. Do not penetrate by drilling or screwing into metal roof decking. All penetrations into metal roof decking must be approved by the Project Manager in writing.

G. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

H. Securely fasten fixtures and equipment to building structure in accordance with manufacturer's recommendations and to provide necessary earthquake anchorage.

I. Replace or repair any fireproofing damaged by the installation of supporting equipment or devices.

END OF SECTION 26 05 29

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Metal conduit.

B. Flexible metal conduit.

C. Electrical metallic tubing.

D. Fittings and conduit bodies.

E. Wall and ceiling outlet boxes.

F. Pull and junction boxes.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions,

B. Division 01 - General Requirements, Summary, Administrative Requirements

C. Section 26 05 00 – Common Work Results for Electrical.

D. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.

E. Section 26 05 53 – Identification for Electrical Systems.

F. Section 28 23 00 – Video Surveillance System.

G. Section 28 40 00 – Detention Monitoring and Control System.

1.3 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
2. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.

B. American Society for Testing and Materials (ASTM):

1. ASTM A 123 – Specification for Zinc Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strip.

C. National Electrical Manufacturers Association (NEMA):

1. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
2. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
3. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

D. Underwriters Laboratory (UL):

1. UL 514B – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

E. National Fire Protection Association (NFPA):

1. NFPA 70 - National Electrical Code.

1.4 RACEWAY AND BOX INSTALLATION SCHEDULE

A. Raceway Minimum Size:

1. Provide 1/2 inch minimum. Size all raceways not shown on the drawings to not exceed the percentage fill specified in the NEC Table 1, Chapter 9 using the conduit dimensions of the NEC Table 4, Chapter 9 and conductor properties of the NEC Table 5, Chapter 9. Where specific cable is not listed, use cable diameter provided by the manufacturer.

B. Damp or Wet Interior Locations:

1. Raceway: Provide rigid steel conduit or intermediate metal conduit.
2. Boxes and Enclosures: Provide weatherproof malleable iron for branch circuit junction and outlet boxes. Provide weatherproof NEMA 3R sheet metal enclosures for safety and disconnect switches and NEMA 4 sheet metal enclosures with gaskets for motor controllers and control panels.
3. Fittings: Provide galvanized malleable iron with gaskets. Provide Myers threaded hubs for all conduit entries into top and side of sheet metal enclosures.

C. Concealed Dry Locations:

1. Raceway: Provide rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
2. Boxes and Enclosures: Provide sheet-metal boxes.
3. Fittings: Provide galvanized malleable iron and steel.

D. Exposed Dry Locations Not Accessible to Inmates:

1. Raceway: Provide rigid steel conduit or intermediate metal conduit. EMT conduit may be used where exposed conduit is allowed, where it is not subject to physical damage, or where installed on the ceiling or a minimum of ten feet above the floor or adjacent platforms.
2. Boxes and Enclosures: Provide sheet-metal boxes with raised steel covers.
3. Fittings: Provide galvanized malleable iron and steel.
4. Surface Raceway and Boxes. Where specifically noted on the Drawings, provide surface raceway and boxes.

E. Exposed Dry Locations in Inmate-Accessible Areas:

1. Raceway: Provide rigid steel conduit or intermediate metal conduit.
2. Boxes and Enclosures: Provide cast boxes with no pre-punched knockouts.
3. Fittings: Provide galvanized malleable iron and steel. Conduit straps shall be 2-hole type and installed at half the distance shown in NEC table 344.30(B)(2) to allow conduit to be secured to wall without any gaps between conduit and wall.
4. Fasteners: Provide center-pin torx plus screws for all exposed fasteners.

1.5 DESIGN REQUIREMENTS

A. Raceway Minimum Size:

1. Line Voltage Circuits: Raceway is sized on the drawings for copper conductors with 600-Volt type XHHW insulation, unless otherwise noted. Where a raceway size is not shown on the drawings, it shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9 using the conduit dimensions of the NEC Table 4, Chapter 9 and conductor properties of the NEC Table 5, Chapter 9.
2. Low-Voltage Circuits: Raceway size shall be calculated to not exceed the percentage fill specified in the NEC Table 1, Chapter 9, using the conduit dimensions of the NEC Table 4, Chapter 9, and cable diameter provided by the manufacturer.

B. Box Minimum Size: Provide all boxes sized and configured per NEC Article 370 and as specified in this section.

1.6 SUBMITTALS

A. Submit product data under provisions of Division 01.

B. Product Data: Submit data for products to be provided.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

PART 2 - PRODUCTS

2.1 RIGID METAL CONDUIT (RMC)

A. Rigid Steel Conduit: ANSI C80.1, UL 6.

B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; Galvanized malleable iron with threaded hubs for all conduit entries. Provide threaded connections and couplings only. Set Screw and running thread fittings are not permitted.

C. Provide insulated throat bushings at all conduit terminations.

2.2 INTERMEDIATE METAL CONDUIT (IMC)

A. Product Description: ANSI C80.6, UL 1242; Galvanized Steel Conduit.

B. Fittings and Conduit Bodies: NEMA FB 1, UL 514B; use fittings and conduit bodies specified above for rigid steel conduit.

2.3 FLEXIBLE METAL CONDUIT (FMC)

A. Product Description: UL 1, FS WW-C-566; galvanized or zinc-coated flexible steel, full-wall or reduced-wall thickness.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron with insulated throat bushings. Die cast zinc or threaded inside throat fittings are not acceptable.

2.4 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description: ANSI C80.3, UL 797; galvanized steel tubing.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron, compression or set screw type with insulated throat bushings. Zinc die cast or indentor fittings are not acceptable.

C. Maximum size shall be 2". Provide factory elbows on sizes 1-½" and larger.

2.5 OUTLET BOXES

A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, UL514A galvanized steel, with plaster ring where applicable.

1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.
2. Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required. Minimum Size: 4 inches square or octagonal, 2-1/8

B. Cast Boxes: NEMA FB 1, Type FD, galvanized malleable iron. Furnish gasketed cover by box manufacturer. Furnish threaded hubs. “Bell” boxes are not acceptable.

C. Wall Plates: As specified in Section 26 27 26.

2.6 PULL AND JUNCTION BOXES

A. Sheet Metal Pull and Junction Boxes: ANSI/NEMA OS 1, UL514A galvanized steel.

1. Minimum Size: 4 inches square or octagonal, 1-1/2 inches deep, unless otherwise noted.

B. Sheet Metal Boxes Larger Than 12 Inches in Any Dimension: Hinged enclosure.

2.7 EXPANSION FITTINGS

A. Galvanized malleable iron, galvanized with grounding bond jumper.

2.8 BUSHINGS

A. Non-grounding: Threaded impact resistant plastic.

B. Grounding: Insulated galvanized malleable iron/steel with hardened screw bond to raceway and conductor lug.

2.9 LOCKNUTS

A. Threaded Electro Zinc Plated Steel designed to cut through protective coatings for ground continuity.

2.10 WIREWAY

A. Product Description: General purpose type wireway. Size per NEC minimum fill capacity required.

B. Knockouts: Field-installed, no factory knockouts acceptable.

C. Cover: Screw cover.

D. Fittings and Accessories: Include factory couplings, offsets, elbows, adapters and support straps required for a complete system. Provide internal ground bonding jumper bonded to each section.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Ground and bond raceway and boxes in accordance with NEC Requirements.

B. Provide seismic support and fasten raceway and box supports to structure and finishes in accordance with Section 26 09 23.

C. Identify raceway and boxes with origin and destination in accordance with Section 26 05 53.

D. Unless otherwise noted, do not inter-mix conductors from separate panelboards or any other system in the same raceway system or junction boxes.

3.2 INSTALLATION - GENERAL RACEWAY

A. Install raceway for all systems, unless otherwise noted.

B. Install an equipment grounding conductor inside of all raceways containing line voltage conductors.

C. Provide raceways concealed in construction unless specifically noted otherwise, or where installed at surface cabinets, motor and equipment connections and in Mechanical and Electrical Equipment rooms. Do not route conduits along the surface of interior finished walls unless specifically noted on the plans.

D. Raceway routing and boxes are shown in approximate locations unless dimensioned. Where raceway routing is not denoted, field-coordinate to provide complete wiring system.

E. Do not route raceways on floor. Arrange raceway and boxes to maintain a minimum of 6 feet 6 inches of headroom and present a neat appearance. Install raceways level and square to a tolerance of 1/8” per 10 feet. Route exposed raceways and raceways above accessible ceilings parallel and perpendicular to walls, ceiling, and adjacent piping.

F. Maintain minimum 6-inch clearance between raceway and mechanical and piping and ductwork. Maintain 12-inch clearance between raceway and heat sources such as flues, steam pipes, heating pipes, heating appliances, and other surfaces with temperatures exceeding 104 degrees F.

G. Seal raceway penetrations of fire-rated walls, ceilings, floors in accordance with the requirements of Section 26 05 00.

H. Where raceway penetrates fire-rated walls and floors, provide firestopping with UL listed fire rating equal to wall or floor rating. Seal opening around conduit with UL listed firestop sealant or intumescent firestop, preserving the fire time rating of the construction. Install in accordance with manufacturer requirements.

I. No cutting of reinforcing bars shall be permitted unless specifically approved. Should structural members prevent the installation of conduit or equipment, notify the Contracting Officer before proceeding.

J. Arrange raceway supports to prevent misalignment during wiring installation. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

K. Do not attach raceway to ceiling support wires or other piping systems and do not fasten raceway with wire or perforated pipe straps. Remove all wire used for temporary raceway support during construction, before conductors are pulled. Raceway shall be installed to permit ready removal of equipment, piping, ductwork, or ceiling tiles.

L. Group raceway in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps, as specified in Section 26 09 23. Provide space on each rack for 25 percent additional raceway.

M. Cut conduit square; de-burr cut ends. Bring conduit to the shoulder of fittings and couplings and fasten securely. Where locknuts are used, install with one inside box and one outside with dished part against box

N. Use threaded raintight conduit hubs for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations. Sealing locknuts are not acceptable.

O. Install no more than the equivalent of three 90-degree bends between boxes.

P. Install conduit bodies to make sharp changes in direction, such as around beams. “Goosenecks” in conduits are not acceptable.

Q. Provide protective plastic bushings or insulated throat bushings at each raceway termination not installed to an enclosure. Bushings shall be threaded to the raceway end or connector.

R. Use cable sealing fittings forming a watertight non-slip connection to pass cords and cables into conduit. Size cable sealing fitting for the conductor outside diameter. Use Appleton CG series or equal cable sealing fittings.

S. Use suitable caps to protect installed raceway against entrance of dirt and moisture.

T. Provide nylon "jet-line" or approved equal pull string in empty raceway, except sleeves and nipples. Where an existing pull string is used to pull cables into an existing raceway, it shall be replaced with a new pull string that is pulled in with new cables.

3.3 INSTALLATION – GENERAL BOXES

A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance. All electrical box locations shown on Drawings are approximate unless dimensioned.

B. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Where installation is inaccessible, install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaries. Coordinate locations and sizes of required access doors.

C. Coordinate layout and installation of boxes to provide adequate headroom and working clearance. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

D. Adjust box location up to 6 feet prior to rough-in to accommodate intended purpose.

E. Locate and install boxes to maintain headroom and to present a neat appearance.

F. Provide knockout closures for unused openings.

G. Install boxes in walls without damaging wall insulation or reducing its effectiveness.

H. Do not fasten boxes to ceiling support wires or other piping systems.

I. Support boxes independently of conduit.

J. Clean interior of boxes to remove dust, debris, and other material and clean exposed surfaces and restore finish

K. Provide blank covers or plates for all boxes that do not contain devices.

END OF SECTION 26 05 33

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Nameplates and tape labels.

B. Wire and cable markers.

1.2 RELATED WORK

A. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.

B. Section 26 05 33 – Raceway and Boxes for Electrical Systems.

1.3 SUBMITTALS

A. None required.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.1 TAPE LABELS

A. Product Description: Adhesive tape labels, with 3/16 inch Bold Black letters on clear background.

B. Embossed adhesive tape will not be permitted for any application.

2.2 WIRE MARKERS

A. Power Description: Cloth tape type wire markers for all neutrals and Phase conductors.

B. Low Voltage System Description: Self-adhesive machine printed label with unique wire number that is shown on shop drawing for system.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Degrease and clean surfaces to receive nameplates and tape labels.

B. Install tape labels parallel to equipment lines.

3.2 LABEL INSTALLATION

A. Low-Voltage System Device Labels: Provide label on each device, denoting device ID or address where applicable. Affix label to device faceplate for ceiling-mounted devices or wall-mounted devices above 8'-0" AFF. Affix label inside backbox for exterior devices.

3.3 WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identification shall be as follows:

1. Markers shall be located within one inch of each cable end, except at panelboards, where markers for branch circuit conductors shall be visible without removing panel deadfront.
2. Each wire and cable shall carry the same labeled designation over its entire run, regardless of intermediate terminations.
3. Color code phases, neutral, and ground per NEC requirements and Section 26 05 19.
4. Color-code all low-voltage system wires and cables in accordance with the individual sections in which they are specified.
5. For power circuits, identify with branch circuit or feeder number.
6. Control Circuits: Control wire number as indicated on schematic and shop drawings.
7. Provide cable markers on each cable, indicating device designation (e.g. "Camera YK-3") for all security, door control and IP Video systems. Cables shall be labeled at each end, as well as at any intermediate junction boxes or pullboxes.

B. Provide wire markers on each conductor on all new and existing terminal backboards and security cabinets. Identify with door number for locks and intercoms, room name for lights, camera number for IP Video cameras, or other unique identifier for other equipment as required. All identification tags on all wire markers shall match what is shown on the security system shop drawings.

C. Security Device Identification: All doors, locks, cameras, etc. shall be identified using the existing naming/numbering scheme already in use at the facility. Do not re-number or re-name any devices without prior approval from the Owner.

D. Where a wire color code is used (i.e. white/brown) for multi-conductor control cables, individual wire markers shall not be required but the wire color-code and cable ID shall be shown on the security system shop drawings.

E. Provide pull string markers at each end of all pull strings. Marker shall identify the location of the opposite end of the pull string.

F. At the end of the project, all conductors entering or leaving the main terminal cabinets in the Crawlspace or Control Room shall be identified as specified above. Where existing wires are not identified, the Contractor shall trace the circuits as necessary to determine where the wire is terminated at the opposite end. If a wire cannot be identified using these means, the Contractor shall notify the Project Manager for possible assistance from the facility maintenance personnel.

3.4 JUNCTION BOX IDENTIFICATION

A. Label each power junction box with the panelboard name and circuit number.

B. Label all junction boxes for security and IP Video systems with the type of system cables contained in the box.

C. For junction boxes above ceilings, mark the box cover with the circuit or system designation using permanent black marker. For junction boxes in finished areas, mark the inside of the cover with the circuit or system designation using permanent black marker.

3.5 LOW-VOLTAGE SYSTEM IDENTIFICATION

A. Install all labeling in accordance with the requirements of this section and of each section where the individual systems are specified.

END OF SECTION 26 05 53

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Video Management Software.

B. Video Storage Appliance.

C. Fixed cameras.

D. PoE Network Switch.

E. Video Cable.

1.2 RELATED SECTIONS

A. The Work under this section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements and Section 26 05 00 – Basic Electrical Requirements.

B. Section 05 50 00 – Metal Fabrication.

C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.

D. Section 26 05 53 – Identification for Electrical Systems.

E. Section 28 40 00 - Detention Monitoring and Control System.

1.3 REFERENCE CODES AND STANDARDS

A. The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by basic designation only, latest edition. The reference codes and standards are minimum requirements:

1. ANSI/NFPA 70 National Electrical Code, latest adopted edition.

1.4 SYSTEM DESCRIPTION

A. Provide an extension of the existing IP Video system in the facility to include new interior cameras and licensing for the existing video management system (VMS) software. All cameras shall be connected to the existing video storage appliance and shall be connected to the existing VMS software. The IP Video system shall be compatible with the Detention Monitoring and Control System to display camera views on monitors when called for either via call-up or manual control.

B. All new equipment and assemblies shall be Underwriters Laboratories approved if applicable.

C. IP Video System Manufacturers: Companies specializing in the specified systems with a minimum of three years documented experience.

D. IP Video System Suppliers: Companies specializing in supplying the products specified in this Division with minimum three years documented experience, and authorized by product manufacturers.

E. All systems and components shall be provided with an explicit manufacturer warranty.

1.5 SUBMITTALS

A. Product Data: Submit data for each component specified, showing electrical characteristics and connection requirements.

B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

C. Camera Names: All camera names that are displayed on the monitors and programmed into the VMS system shall be approved by the Owner prior to programming.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site, store and protect under provisions of Division 01.

B. Store products in clean, dry area; maintain temperature to NEMA ICS 1.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Maintain area free of dirt and dust during and after installation of products. Protect other surfaces against damage and discoloration caused by work of this section.

1.8 COORDINATION

A. The necessity to coordinate this work with the Owner is emphasized. The Contractor shall be responsible for any omissions, delays and additional cost due to lack of coordination or approval from the same.

B. Coordinate all work with existing lighting, power, ventilation, sprinklers and other systems in the areas of work to avoid interferences.

C. Continuity of Service:

1. Take no action that will interfere with, or interrupt, any existing building services unless previous arrangements have been made with the Owner. If system shutdown is required arrange the work to minimize shutdown time.

D. Should services be inadvertently interrupted, immediately furnish labor, including overtime, material, and equipment necessary for prompt restoration of interrupted service.

E. Use of site:

1. Use of the site shall be at the Owner's direction in matters in which the Owner deems it necessary to place restriction.
2. Access to building wherein the work is performed shall be as directed by the Owner.

3. The Owner will occupy all of the facilities during the entire period of construction for conducting normal business operations. Cooperate with the Owner to minimize conflict and to facilitate the Owner's operations.

1.9 QUALITY ASSURANCE

A. Provide complete testing of the IP Video system in accordance with this Section.

B. After installation, and before termination, all wiring shall be checked and tested to ensure there are no grounds, opens, or shorts on any conductors or shields. The Contractor shall maintain a complete log of all such quality assurance tests and make them available for inspection by the Owner at any time during the construction phase. At the completion of the installation all test results shall become part of the maintenance documentation.

C. Inspection:

1. The Contractor shall carry out the inspection requirements of the Contract and shall provide the Owner with documentation to the effect that off-site work is being properly fabricated, and in accordance with the contract documents.
2. The Contractor shall notify the Owner sufficiently in advance of the time when quality control tests are to be performed so that the Owner or their designee may witness such tests, if desired. The presence or absence of the Owner from these tests shall not relieve the Contractor from completing the tests in accordance with the contract documents. Contractors QA documentation and practices shall be subject to Engineer or Owner inspection at any time. The field-certified installer must be present during final testing and calibration.

1.10 CLOSEOUT SUBMITTALS

A. Project Record Drawings:

1. Accurately indicate actual locations of all cameras, power supplies, etc.

B. Operation and Maintenance Manuals:

1. Document ratings of system and of each major component.
2. Identify operating limits, which may result in hazardous or unsafe conditions, or in equipment damage.
3. List special tools, maintenance materials, and replacement parts.
4. Include copies of manufacturer product warranties for all equipment.

1.11 SYSTEM DEMONSTRATION AND ACCEPTANCE

A. Provide systems demonstration under provisions of Division 01 and this Section.

B. All IP Video system components shall be installed and fully operational at the time of the system demonstration.

C. The Engineer shall review the demonstration with the Owner’s Representatives and provide the Contractor with a list of modifications and/or adjustments deemed appropriate for the proper operation of the system. The Contractor shall make all modifications prior to final completion and at no additional cost to the Owner.

D. System demonstration shall be conducted as directed by the Owner and Engineer but generally described as follows:

1. Call up each camera on one of the Client Workstations not in the Control Room, using the VMS software.

1.12 WARRANTY

A. Warrant all materials and equipment to be new and free from defects in material and workmanship for a period of one year under provisions of Division 01.

PART 2 - PRODUCTS

2.1 PRODUCT SPECIFICATIONS

A. Throughout this specification, specific manufacturers and manufacturer's catalog numbers are cited. Unless otherwise noted, these citations are for the purpose of establishing quality and performance criteria and are not intended to be proprietary.

B. Where no manufacturer is specified, provide products of manufacturers in compliance with requirements. Any item of equipment or material not specifically addressed on the drawings or in this document and required to provide a complete installation shall be provided in a level of quality consistent with other specified items.

C. The Contractor shall provide the latest product model and software version available from each manufacturer at the time of installation. No "beta version" or "test software" products will be accepted. All proposed and provided equipment and products shall be from the specified and approved manufacturers only, unless previously approved by the Engineer or Owner.

D. All products and materials are to be new and free of defects, damage and corrosion. All materials shall be in compliance to all applicable codes and designed specifically for the function intended.

E. Quantity and location of all devices and equipment shall be as specified in Contract Documents or as required for a complete and operable system.

2.2 MANUFACTURERS – VIDEO MANAGEMENT SYSTEM (VMS) SOFTWARE

A. Existing System is Milestone "XProtect Expert". Provide licenses for all new cameras.

2.3 VIDEO STORAGE APPLIANCE

A. Existing appliance shall be used for all cameras, no work is required.

2.4 FIXED IP VIDEO CAMERAS

A. Indoor Day/Night Vandal-Resistant Corner-Mount Camera: Vicon V-Cell-HD high-resolution, day/night IP color camera.

1. **NO SUBSTITUTIONS ALLOWED.**

2.5 GENERAL HARDWARE AND MOUNTS

A. Anchoring:

1. Anchoring shall be rated for the load and mounting surface.
2. All anchoring sets shall be installed per manufacturers' instructions and be appropriate for the surface to which they are mounted.
3. All manufacturers' torque specifications shall be adhered to as applicable and be appropriate for the surface to which the anchoring sets are mounted.
4. All hardware shall be installed so that it cannot be removed without the use of hand tools.

2.6 NETWORK SWITCH

A. Existing.

2.7 CAMERA PoE FIELD CABLE AND NEW NETWORK HORIZONTAL CABLE

1. Cabling is existing to each cell, and is terminated with a male adapter for connection to cameras.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Prior to beginning equipment installation, examine areas to receive equipment. Verify that all conditions are acceptable.

B. Install all equipment in accordance with the manufacturer's instructions.

C. Fabricate metal face from top of cameras to angled ceiling where indicated on drawings to prevent top of camera from being accessible.

D. Provide boxes for mounting devices under provisions of Section 26 05 33.

3.2 INTERFACE WITH OTHER WORK

A. Coordinate all camera locations with Facility Representative prior to rough-in and avoid conflicts with existing equipment and objects that may obstruct the field of view or, in the case of light fixtures, may affect the camera performance and quality of the video image.

B. Coordinate all camera, outlet box, J-hook, and conduit locations to avoid conflicts with mechanical piping and ductwork, structural members, and other materials above the accessible ceilings and along the entire cable pathway.

C. Any camera that is located so that camera performance or field of view is adversely affected shall be relocated by the Contractor at no additional cost to the Owner.

D. All cameras shall be added to the PLC/Touchscreen system. Cameras shall be accessible from the touchscreen for individual selection. Call-ups for each cell door shall include the associated dayroom and cell camera.

3.3 LABELING

A. Label all video junction boxes and cables. Confirm naming convention with Owner. For junction boxes above ceilings, mark the box cover with “IP Video” using permanent black marker. For junction boxes in finished areas, mark the inside of the cover.

3.4 ADJUSTING, PROGRAMMING, AND CONFIGURATION

A. VMS Software: The Contractor shall completely configure each video input for camera title, frame rate, resolution, compression, motion detection, alarms, pre/post event recording, macros, and all other features of the software. The software shall be initially configured with the following parameters:

1. Camera Title: Coordinate with Owner for approval of camera title.
2. Resolution: High for all cameras.
3. Record Rate: 1-2 FPS continuous, 15 FPS upon motion for all cameras.
4. Motion Detection: ON. Coordinate with Owner for which areas within each camera view will be masked.
5. Pre/Post Event Recording: 5 seconds pre-event, 15 seconds post-event.

END OF SECTION 28 23 00

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Touchscreen Security Control System.

1.2 RELATED SECTIONS

A. Section 26 05 00 – Common Work Results for Electrical.

B. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables.

C. Section 26 05 33 – Raceway and Boxes for Electrical Systems.

D. Section 26 05 53 –Identification for Electrical Systems.

E. Section 28 23 00 – Video Surveillance System.

1.3 SYSTEM DESCRIPTION

A. Modify the existing touchscreen control system to add cameras.

B. The Contractor shall field verify the power and control requirements of all devices and provide all materials and labor required to accomplish intended function.

1.4 REGULATORY REQUIREMENTS

A. All systems shall comply with applicable federal, state, and local building codes. Conduit and wire installation shall comply with all of the provisions of Division 26. All equipment and assemblies shall be Underwriters Laboratories approved if applicable.

1.5 QUALIFICATIONS

A. The Security Systems Integrator shall submit qualifications in accordance with Division 01. Qualifications shall include the following:

1. The Security Systems Integrator shall have demonstrable experience modifying the type of control system in use at the facility.

1.6 SUBMITTALS

A. None required for this section.

1.7 SYSTEM DEMONSTRATION AND ACCEPTANCE

A. Provide systems demonstration under provisions of Division 01 and Division 26.

B. At the time of the Substantial Completion Inspection, the Contractor and Security System Integrator shall be on-site to demonstrate the operation of the security system to the Owner's Representatives and Engineer. All security system components shall be installed and fully operational at the time of the system demonstration.

C. All new cameras shall be accessible from the touchscreen, and shall populate with the associated call-up for each door.

D. All existing doors receiving new hardware shall demonstrate operation and status.

1.8 CLOSEOUT SUBMITTALS

A. Project Record Drawings

1. Submit documents under provisions of Division 01 and Division 26.
2. Accurately indicate actual location of all security devices, including door position switches, relays, electric door locks, cameras, etc.
3. Show the location and routing of all conduit and cable, including locations of major pull and junction boxes.
4. Include a reduced set (11" x 17") set of the project record drawings in the operation and maintenance manual. Shop drawings for this system are not required, any modifications can be noted on the project redlines.

1.9 EXTRA MATERIALS

A. All touchscreen software: Three full backup copies of the final touchscreen program on CD or flash drive. Prior to the final copies being made, provide one interim backup copy of the touchscreen program to the Owner whenever changes are made to the system during the inspection and training stage of the project

1.10 WARRANTY AND MAINTENANCE CONTRACT

A. As specified in Section 26 05 00.

PART 2 - PRODUCTS

2.1 EXISTING SYSTEM

A. Touchscreen Monitor: EloTouch Solutions 2201.

B. Software: Vijeo Citect.

C. Controller: Dell OptiPlex 7040M.

D. PLC: Modicon M340.

E. Relays: Phoenix, various part numbers.

2.2 TOUCHSCREEN SYSTEM OPERATION

A. General Functions

1. All new cameras shall be added to the touchscreen.
2. All cameras shall be available for call-up both manually and as part of call-up groups.

3. Updated keyboard interface with the VMS shall be provided for automatic action by that system.
4. Call-up groups for each Segregation cell door shall be created and shall include dayroom cameras and cell cameras.
5. All doors receiving work as part of this project that are connected to the system shall be tested for proper operation after hardware replacement.
6. For doors with field wiring being replaced, terminate new wiring on existing relays and re-test operations. See Door Schedule on electrical drawings for affected doors.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install all new wiring associated with the Detention Monitoring and Control System in a dedicated conduit system separate from other systems. Low-voltage wiring shall not be intermixed with 120 Volt wiring.

C. Label all wires and cables under provisions of Section 26 05 53.

D. Circuits shall be configured as "fail secure". A wire break or component failure shall prevent a security breach rather than cause one.

E. Connect input and output devices as indicated. In some cases a single output device (camera, lock, etc.) may be controlled by two or more subsystems. Full functioning of all subsystems shall be maintained at all times. Isolation of the multiple systems involved shall be provided as necessary to achieve the results specified herein.

3.2 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 01 and Division 26.

B. Perform operational testing on control systems to verify proper operation of hardware and software.

END OF SECTION 28 40 00