4 May 2021

ADDENDUM NUMBER TWO (2)

Project: 68 Inmate Housing Addition to
Marshall County Justice Complex
PN: 20078

FROM: Dean and Dean/Associates Architects, P.A.
4400 Old Canton Road, Suite 200
Jackson, MS 39211
(601) 939-7717

The following additions, changes, clarifications and/or substitutions to the Project Drawings as indicated, are hereby made a part of the Contract Documents. Acknowledge receipt of this Addendum by inserting its number and date in the Proposal Form where indicated.

General

Item #1: A Pre-Bid Conference was held on Wednesday, April 28, 2021 at 10:00 a.m. The attached Pre-Bid Meeting Attendees List is provided for informational purposes only.

Item #2: Marshall County will provide a culvert and access road to the site on the south end of the property. This roadway will allow access to the jail addition site just south of the current Justice Court Building construction site. The general contractor shall maintain access road and demo, regrade and grass the site at the conclusion of the project.

Architectural Specifications:

Item #1: Section 004100, Bid Form, remove existing Bid Form and replace with the revised Bid Form.

Note: Added Alternate No. 1 – steel framing at roof in lieu of bar joist.

Item #2: Section 011000, Summary of Work, paragraph 1.04.C.1, change subparagraph to read as follows:

1. Permits – City and County (permit fee has been waived but submitting documents and pulling a permit is required). General contractor is required to pay tap fees for water, sewer and power.

Item #3: Section 012300, Alternatives, add Section 012300 Alternatives to the project manual. Added Alternate No. 1 Steel roof framing in lieu of bar joist.

Item #4: Section 014000 Quality Requirements, paragraph 3.01.A, Mock-Ups.

Remove reference to EIFS and replace with metal wall panel.

Item #5: Section 323113, Security Chain Link Fencing, as follows:

Add in its entirety.

Architectural Drawings:

Item #1: Sheet A101, Partial Floor Plan, Room #117, Central Control:

Anticipate a maximum of 3 individuals possibly working in this room.

Item #2: Sheet A102, Partial Floor Plan, Room #141, Housing Control:

Anticipate a maximum of 1 individual working in this room.

Item #3: Sheet A102, Partial Floor Plan, clarify the following:

At door opening #133A, change the reference to the door frame type to read “21”.

Item #4: Sheet A502, detail 5/A502, clarify and adjust as follows:

At Central Control #117 and Housing Control #141, all countertops shall be 30” deep.

Item #5: Sheet A601, Interior Door/Window Frame Schedule, revise as follows:

Omit from the bidding documents these door/window frame designations: #3, #6 and #15.

Item #6: Sheet A601, Door Type Schedule, add the following:

At door “D” set the dimensions of the view window to be 20” x 22”. Security glazing shall be type “S3”.

Item #7: Sheet A601, Door Schedule, add the following:

At door #119A and #128A, the security glazing shall be type “S3”.

Item #8: Sheet A601, Door Schedule, change as follows:

Change door #124A to door type “C”
Change door #124B to door type “C”
Change door #126A to door type “E” and omit the vision panel

Structural

SEE ATTACHED STRUCTURAL ITEMS PROVIDED BY SPENCER ENGINEERING

Electrical

SEE ATTACHED ELECTRICAL ITEMS PROVIDED BY EDMONDS ENGINEERING

68 Inmate Housing Addition to
Marshall County Justice Complex
PN: 20078

END OF ADDENDUM NUMBER TWO (2)

Dean and **Dean/Associates**
architects p.a.

Kenneth A. Oubre, AIA, Principal

PLEASE ATTACH THIS ADDENDUM TO THE INSIDE FRONT COVER OF EACH SET OF SPECIFICATIONS.

PRE-BID MEETING
MEETING ATTENDEES

PROJECT NAME	OWNER	DD/A PN	DATE
68-Inmate Housing Addition	Marshall County	20078	April 28, 2021 @ 10:00 a.m.

Name/Title	Entity	Telephone	E-Mail	Prime Bidder
Kenneth Oubre, Architect	DD/A	601-939-7717	koubre@deandean.com	no
Bill Westerfield, CA	DD/A	601-939-7717	bwesterfield@deandean.com	no
Justin Crone	Smith Doyle	(901)213-3993	jcrone@smithdoyle.com	yes
Mark Bradley	JP Corp	662-296-2119	Mark.Jpcorpms@gmail	yes
Ron Wilson	Datacomm	901-20-9357	ron.wilson@dscdatacomm.com	no (LV)
Alex Jones	Roberts Builders Inc	662-837-7835	alex@robertsbuildersinc.com	yes
Jim Tyler	Legacy Construction	9013016843	bracey.herin@gmail.com	yes
STEVE BARBER	DPS GROUP	334-552-5815	STEVE@DPSGROUP.NET	No
David Hardy	Tri STAR Co.	662 578 4440	chris@tristar.cc	
Andy Clemmer	Elliott & Britt Eng.	662 816 5887	andy@elliottbritt.com	no
Patton Ford	Hill's Construction	662-473-1031	patton@hillsconstructionllcms.com	yes
Steven Hill	Hill's Construction	662-473-1031	*	yes
Jonathan Logan	Castle Black Construction	901-447-0851	jo.logan@castleblackinc.com	yes

PRE-BID MEETING
MEETING ATTENDEES

PROJECT NAME	OWNER	DD/A PN	DATE
68-Inmate Housing Addition	Marshall County	20078	April 28, 2021 @ 10:00 a.m.

Name/Title	Entity	Telephone	E-Mail	Prime Bidder
Kenneth Oubre, Architect	DD/A	601-939-7717	koubre@deandean.com	no
Bill Westerfield, CA	DD/A	601-939-7717	bwesterfield@deandean.com	no
Mike Parker, PM	Flagstar Construction	662-200-2564	mikeparker@flagstarconstruction.com	yes
Kenneth Jones	Marshall Co. Permits	662-252-3663	KJones@marshallcoms.org	
Larry Hall	Marshall Co. Adm.	662-252-7908	administrator@marshallcoms.org	
Trey Risle	Cyber technology	713-907-8408	Trisle@ctspage.com	
Christy Gross	CM Builders	9013781071	Christyg@cmbuilders.com	
Donald Green	Edminds Engineering	601-362-6418	DGREEN@EDMINDSENGINEERING.COM	

SECTION 004100

BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

A. Owner
   1. Marshall County Board of Supervisors
      Holly Springs, MS

1.02 FOR:

A. 68-Inmate Housing Addition - Marshall County Justice Complex - Holly Springs, MS

B. Project Number: 20078

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____
   Address _____
   City, State, Zip_____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Bid Documents prepared by Dean and Dean/Associates Architects for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

B. Base Bid - 68-INMATE HOUSING ADDITION
   _____ dollars
   ($_____), in lawful money of the United States of America.

C. Alternate #1 (Steel Roof Framing in Lieu of Bar Joist) (Note: add or deduct)
   Add _____ or Deduct _____
   _____ dollars
   ($_____), in lawful money of the United States of America.

D. We have included the required security deposit as required by the Instruction to Bidders.

E. We have included the required performance assurance bonds in the Bid Amount as required by the Instructions to Bidders.

F. All applicable federal taxes are included and State of Mississippi taxes are included in the Bid Sum.

G. All Cash Allowances described in Section 012100 are included in the Bid Sum.

1.06 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for sixty days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:
   1. Execute the Agreement within seven days of receipt of Notice of Award.
   2. Furnish the required bonds within seven days of receipt of Notice of Award.

C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.07 CONTRACT TIME

A. If this Bid is accepted, we will:

B. Complete the Work in _____ calendar days from the commencement of work date set in the Notice to Proceed. (Bidder to enter number of calendar days.)

2.01 CHANGES TO THE WORK

A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions and Supplemental Conditions identified in Section 007300.
   1. 10 percent overhead and profit on the net cost of our own Work.
   2. 10 percent on the cost of work done by any Subcontractor.
   3. Markup for profit and overhead will not be allowed for items to be paid from project allowances identified in Section 012100.

2.02 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
   1. Addendum # _____ Dated _____.
   2. Addendum # _____ Dated _____.
   3. Addendum # _____ Dated _____.
   4. Addendum # _____ Dated _____.
   5. Addendum #_____Dated _____.

2.03 BID FORM SUPPLEMENTS

A. The following information is included with Bid submission:
   1. Subcontractors: Mechanical, Electrical, Plumbing.

B. The following Supplements are attached to this Bid Form and are considered an integral part of this Bid Form:
   1. Document 004336 - Supplement A - Subcontractors: Include the names of the listed Subcontractors. Attach Supplement A to the Bid Form.

2.04 BID FORM SIGNATURE(S)

A. The Corporate Seal of

_____

(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

_____

(Authorized signing officer, Title)

B. If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

END OF BID FORM

SECTION 012300
ALTERNATIVES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Description of Alternates.

B. Procedures for pricing Alternates.

1.02 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms prepared by the Archirtect will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Owner-General Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.03 SCHEDULE OF ALTERNATES

A. Alternate No. 1 - In lieu of steel bar joist shown on the structural framing plans for the roof, the GC shall provide rolled steel framing as show and descibed in Spencer Engineers Addendum No. 2 narrative. Price to be all inclusive of this change and incluide all labor, materials and shop drawing for a complete roof framing package.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 323113

SECURITY CHAIN LINK FENCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fence framework, fabric, and accessories.

B. Excavation for post bases; concrete foundation for posts.

C. Manual man gates and related hardware.

D. Horizontal Sliding Security Gates – Power Operated.

1.02 RELATED REQUIREMENTS

A. Section 033000 – Cast-In-Place Concrete: Concrete anchorage for posts.

1.03 REFERENCES STANDARDS

A. ASTM A121 – Standard Specification for Metallic-Coated Carbon Steel Barbed Wire; 2013.

B. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.

C. ASTM A153/A153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

D. ASTM A392 – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a.

E. ASTM A491 – Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric; 2011.

F. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

G. ASTM F567 – Standard Practice for Installation of Chain-Link Fence; 2014a.

H. ASTM F1083 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 2013.

1.04 SUBMITTALS

A. See Section 013000 – Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.

C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

D. Manufacturer’s Installation Instructions: Indicate installation requirements and details.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Chain Link Fences and Gates:

1. Master-Halco, Inc: www.masterhalco.com
2. Merchants Metals: www.merchantsmetals.com
3. Substitutions: See Section 016000 – PRODUCT REQUIREMENTS.

2.02 MATERIALS

A. Posts, Rails and Frames: ASTM F1083 Schedule 40 hot-dipped galvanized steel pipe, welded construction, minimum yield strength of 30 ksi.

B. Wire Fabric: ASTM A392 zinc coated steel chain link fabric.

C. Barbed Tape: Stainless steel, 0.025 inch thick by 1 inch wide, coil diameter of 24 inch, die stamped to produce 4 barbed points at 4 inch on center; cold clench over stainless steel core.

D. Concrete: Type specified in Section 033000.

2.03 COMPONENTS

A. Line Posts: 2.38 inch diameter.

B. Corner and Terminal Posts: 4.0 inch.

C. Gate Posts: 4.5 inch diameter.

D. Top and Brace Rail. 1.66 inch diameter, plain end, sleeve coupled.

E Gate Frame: 1.66 inch diameter for welded fabrication.

F. Fabric: 2 inch diamond mesh interwoven wire, 6 gage, 0.1620 inch thick, top selvage knuckle end closed bottom selvage twisted tight.

G. Tension Wire: 6 gage, 0.1620 inch thick steel, single strand.

2.04 ACCESSORIES

A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

C. Extension Arms: Cast steel galvanized, to accommodate 3 strands of barbed wire, single arm, vertical.

D. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp; keeper to hold gate in fully open position.

2.05 FINISHES

A. Hardware: Hot-dip galvanized to weight required to ASTM A153/A153M.

B. Accessories: Same finish as framing.

2.06 HORIZONTAL SLIDING SECURITY GATES

A. Horizontal sliding gates with integral ground track with 3 HP motor. Gates shall be connected to the emergency generator to ensure consistent operation in the event of a power failure. Five (5) year warranty. Single Phase, 208 volt 60hz operation. Standard gray spray finish, approved manufactures:

1. Hy Security, 6623 South 228th Street, Kent, Washington 98032, (800) 321-9947, www.hysecurity.com.
2. Tymetal, 4441 Drayton Lane, Oviedo, FL 32765, (407) 408-4051
3. Cornerstone, 14000 Highway 20, Madison, AL (877) 298-7351

B. Sizes: 12’-0” Tall by 24-’0” Wide and 12’-0” Tall by 25’-6” Wide – See plans.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install framework, fabric, accessories and gates in accordance with ASTM F567.

B. Place fabric on outside of posts and rails.

C. Set intermediate posts plumb, in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.

D. Line Post Footing Depth Below Finish Grade: ASTM F567.

E. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F567.

F. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

G. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

H. Install center brace rail on corner gate leaves.

I. Do not stretch fabric until concrete foundation has cured 28 days.

J. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

K. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 16 inches on centers.

L. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

M. Install bottom tension wire stretched taut between terminal posts.

N. Install support arms sloped inward and attach barbed wire; tension and secure.

O. Install hardware and gate with fabric and barbed wire overhang to match fence.

3.02 TOLERANCES

A. Maximum Variation From Plumb: ¼ inch.

B. Maximum Offset From True Position: 1 inch.

C. Components shall not infringe adjacent property lines.

END OF SECTION

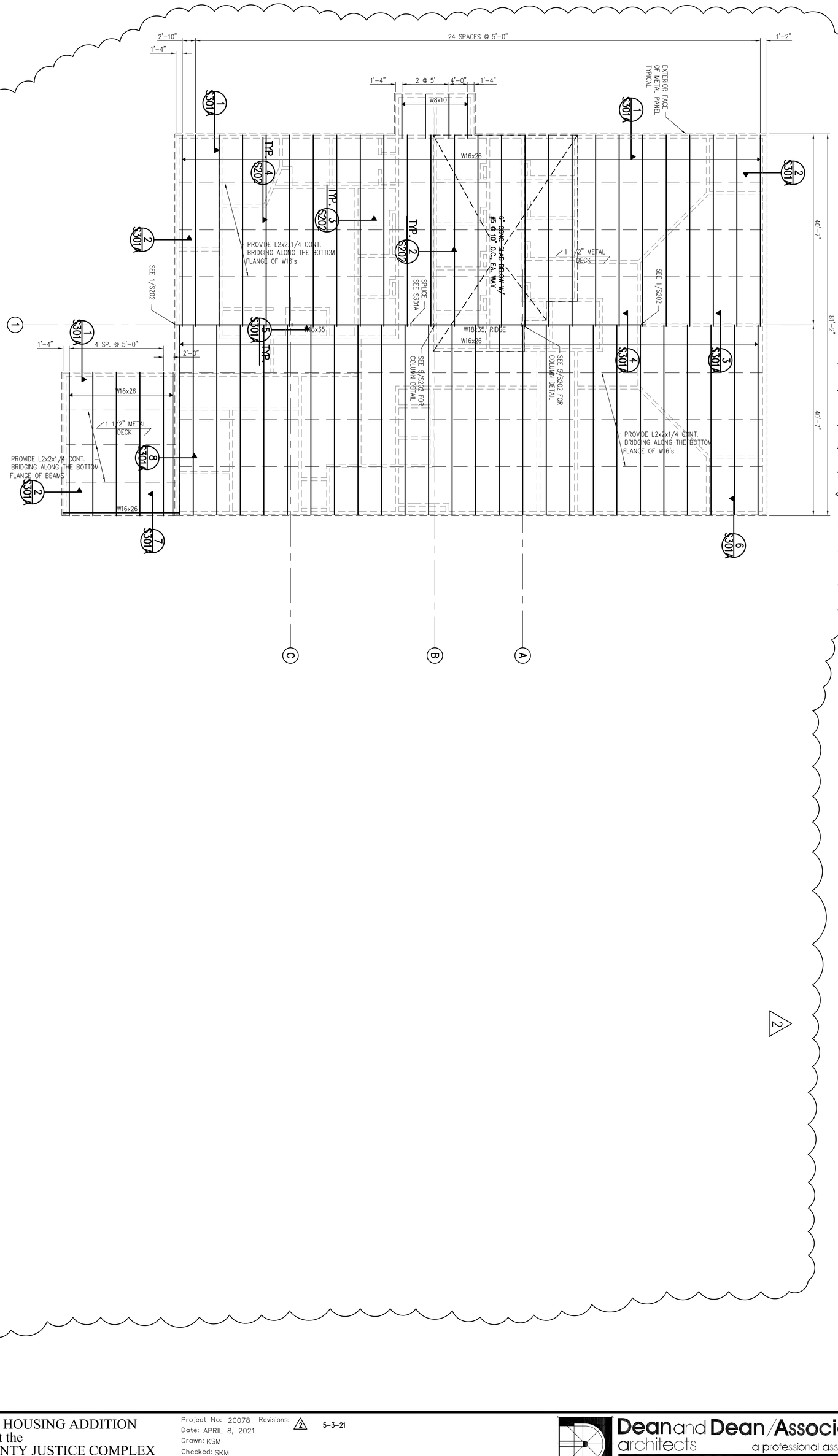
May 3, 2021

A NEW 68-INMATE HOUSING ADDITION at
THE MARSHALL COUNTY JUSTICE COMPLEX
HOLLY SPRINGS, MISSISSIPPI

STRUCTURAL ADDENDUM #2

Item No. 1 Add Alternate #1 – Omit joist framing and replace with wide flanges per attached sheets S102A and S301A.

0 1 2 3 4 8 16 — ?" =1'-0" GRAPHIC SCALE
0 1 2 3 4 8 — ?" =1'-0" GRAPHIC SCALE
0 6" 1 2 3 4 — ?" =1'-0" GRAPHIC SCALE
0 6" 1 2 3 — ?" =1'-0" GRAPHIC SCALE
0 6" 1 2 3 — 1" =1'-0" GRAPHIC SCALE
0 2" 6" 1 2 — 1½" =1'-0" GRAPHIC SCALE
0 2" 6" 1 — 3" =1'-0" GRAPHIC SCALE



ROOF FRAMING PLAN – ALTERNATE #1

1/8"=1'-0"

NOTES:
1. VERIFY ALL DIMENSIONS WITH ARCHITECT.
2. TOP OF CMU WALLS MUST BE BRACED PER DETAILS ON S202, U.N.O.

2

SE #17045
Spencer-Engineers, Inc.
Consultants
(601) 982-7788
JACKSON, MS 39216

MISSISSIPPI STATE OF KENNETH SIMMONS MOORE REGISTERED PROFESSIONAL ENGINEER 11982 4-7-21

Sheet Number : S102A

A NEW 68-INMATE HOUSING ADDITION
at the
THE MARSHALL COUNTY JUSTICE COMPLEX
HOLLY SPRINGS, MISSISSIPPI

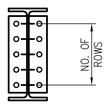
Project No: 20078
Date: APRIL 8, 2021
Drawn: KSM
Checked: SKM
Revisions: 2 5-3-21

Dean and Dean/Associates architects
a professional association
ARCHITECTURE • PLANNING • INTERIOR DESIGN

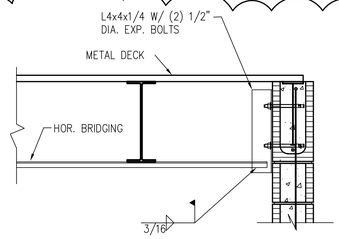
P.O. Box 4685 Jackson, MS 39296 4400 Old Canton Rd. Suite 200 Highland Bluff Jackson, MS39211 (601) 939-7717
www.deandean.com

DOUBLE ANGLE BOLTED CONNECTION TYPICAL UNLESS SHOWN OTHERWISE

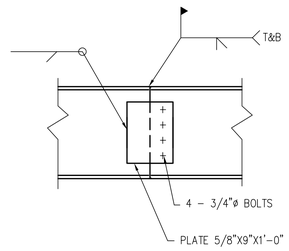
BEAM SIZE	NO. OF ROWS	BOLT SIZE	MIN. ANGLE THICKNESS	REMARKS
W8	2	3/4"	1/4"	
W10	2	3/4"	1/4"	
W12	3	3/4"	1/4"	
W14	3	3/4"	5/16"	
W16	4	3/4"	5/16"	
W18	5	3/4"	5/16"	
W21	6	3/4"	5/16"	
W24	6	3/4"	5/16"	
W27	7	3/4"	5/16"	
W30	8	3/4"	5/16"	
W36	10	3/4"	5/16"	



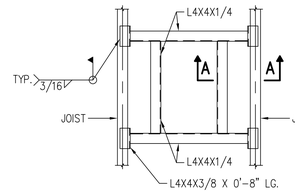
DETAIL



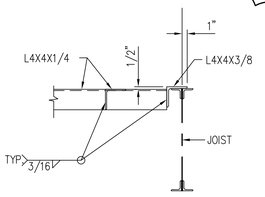
TYPICAL HOR. BRIDGING TO BEAM CONN.



TYPICAL SPLICE
W16 OR W18



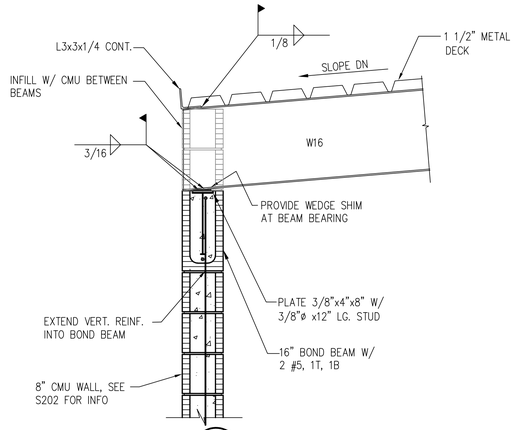
PLAN



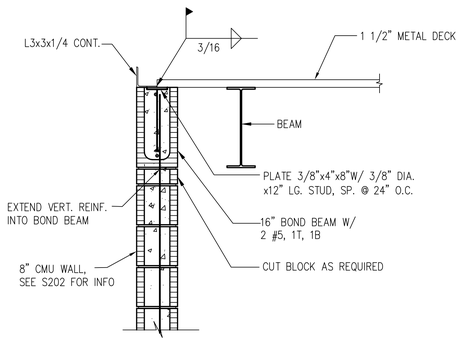
SECTION A–A

NOTE:
SEE MECH. / ARCH FOR OPENING SIZE

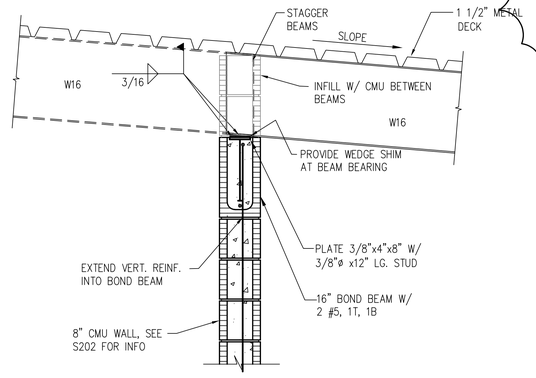
FRAMING FOR TYPICAL ROOF OPENING
SIMALAR AT BEAM CONDITIONS



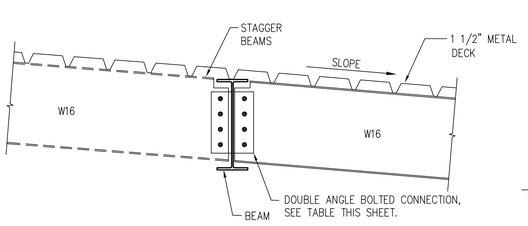
1 S301A 1" = 1'-0"



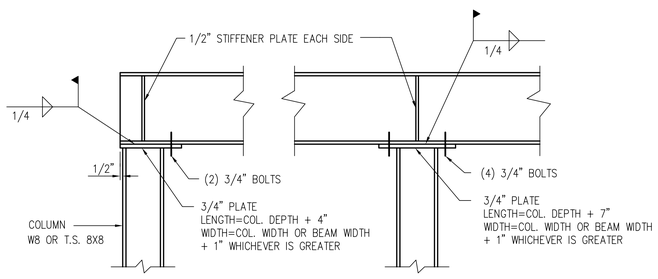
2 S301A 1" = 1'-0"



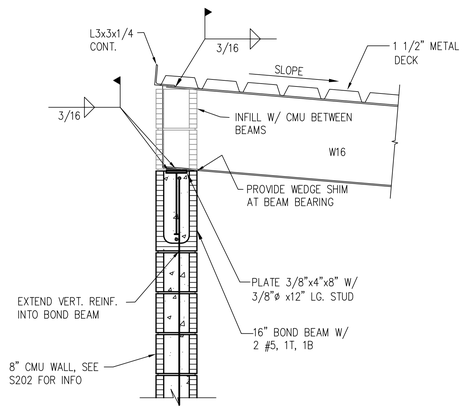
3 S301A 1" = 1'-0"



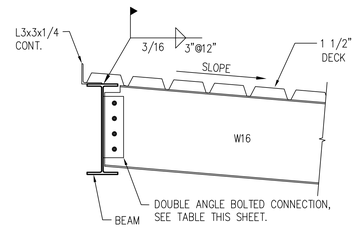
4 S301A 1" = 1'-0"



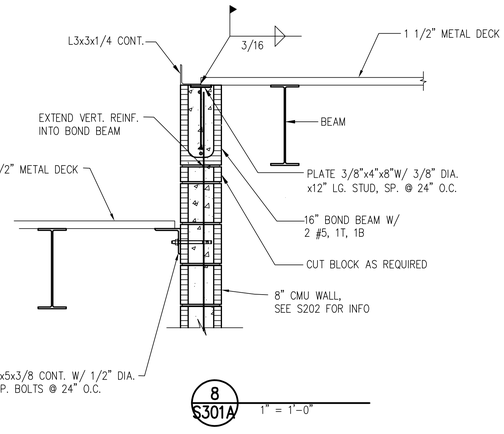
5 S301A TYPICAL BEAM TO COLUMN CONNECTION AT ROOF
1" = 1'-0" SIMILAR WHERE COLUMN TURN 90°



6 S301A 1" = 1'-0"



7 S301A 1" = 1'-0"



8 S301A 1" = 1'-0"

3" =1'-0" GRAPHIC SCALE
1 0 6" 2
1 1/2" =1'-0" GRAPHIC SCALE
2 1 0 6" 2
1" =1'-0" GRAPHIC SCALE
3 2 1 0 6"
9" =1'-0" GRAPHIC SCALE
3 2 1 0 6"
9" =1'-0" GRAPHIC SCALE
4 3 2 1 0 6"
9" =1'-0" GRAPHIC SCALE
8 4 3 2 1 0
9" =1'-0" GRAPHIC SCALE
16 8 4 3 2 1 0

80 INMATE HOUSING ADDITION FOR MARSHALL COUNTY JUSTICE COMPLEX
HOLLY SPRINGS, MISSISSIPPI
DEAN 17016

Dean and Dean/Associates architects
a professional association
ARCHITECTURE • PLANNING • INTERIOR DESIGN
P.O. Box 4685 Jackson, MS 39296 4400 Old Canton Rd. Suite 200 Highland Bluff Jackson, MS39211 (601) 939-7717
www.deandean.com

Project No: 20078
Date: APRIL 8, 2021
Drawn: KSM
Checked: SKM

Revisions:
2 5-3-21

A NEW 68-INMATE HOUSING ADDITION at the THE MARSHALL COUNTY JUSTICE COMPLEX
HOLLY SPRINGS, MISSISSIPPI

Sheet Number : S301A

2

KENNETH SIMMONS MISSISSIPPI LICENSED PROFESSIONAL ENGINEER 17092 STATE OF MISSISSIPPI
4-7-21

SE #17045
Spencer-Engineers, Inc.
Consultants
P.O. BOX 4328 JACKSON, MS 39216
(601) 982-7788

May 04, 2021

ADDENDUM NO. 2

PROJECT: Marshall County Jail Addition
Holly Springs, Mississippi

FROM: Edmonds Engineering, Inc.
1900 Lakeland Drive, Suite 1
Jackson, Mississippi 39216

The following additions, changes, clarifications and/or substitutions to the Project Drawings/Specifications as indicated are hereby made a part of the Contract Documents. Acknowledge receipt of this Addendum by inserting its number and date in the Proposal Form where indicated.

Item No. 1: Section 271500 – Voice and Data Cabling: 2.04(A) & (B) Clarified cable type as Cat. 6 CMP Plenum rated; 2.05(A & B)(2) - Clarified Optic Fiber type as Multimode, laser-optimized 50/125 um (OS3); 2.05(A & B)(3) – changed "Quantity of fibers as indicated on drawings" to "12 strand".

Item No. 2: Section 280000 - Integrated Security Systems General, 1.5(C): Change minimum period from Ten (10) years to Five (5) years; Delete 1.5(P) and 1.5(Q).

Item No. 3: Section 281000 – Touch Screen Control System, 1.2 Integrators Qualifications: Delete Paragraph G.

Item No. 4: Section 282000 – Security Monitoring And Control System, Part 2 Products 2.1(A)(4): Change last sentence to read "PLC Control Units must be nonproprietary and have an authorized dealer within 2 hours travel time"; 2.1 (H)(2): Change last sentence to read "The manufacturer must have been in business using the same name for a minimum period of five (5) years and have an ISO9001 certification".

END OF ADDENDUM NO. 2

SECTION 271500
VOICE & DATA CABLING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Communications system design requirements.

B. Communications pathways.

C. Copper cable and terminations.

D. Fiber optic cable and interconnecting devices.

E. Communications equipment room fittings.

F. Communications outlets.

G. Communications grounding and bonding.

H. Communications identification.

1.02 RELATED REQUIREMENTS

A. Section 260526 - Grounding.

B. Section 260533 - Raceways.

C. Section 260553 – Electrical Identification.

1.03 REFERENCE STANDARDS

A. EIA/ECA-310 - Cabinets, Racks, Panels, and Associated Equipment; Electronic Industries Alliance/Electrical Components Association; Revision E, 2005.

B. ICEA S-83-596 - Indoor Optical Fiber Cables; Insulated Cable Engineers Association; 2011 (ANSI/ICEA S-83-596).

C. ICEA S-90-661 - Category 3, 5, & 5e Individually Unshielded Twisted Pair Indoor Cables (With or Without An Overall Shield) For Use in General Purpose and LAN Communications Wiring Systems Technical Requirements; Insulated Cable Engineers Association; 2012. (ANSI/ICEA S-90-661)

D. NECA/BICSI 568 - Standard for Installing Building Telecommunications Cabling; National Electrical Contractors Association; 2006. (ANSI/NECA/BICSI 568)

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. TIA-455-21 - FOTP-21 - Mating Durability of Fiber Optic Interconnecting Devices; Telecommunications Industry Association; 2012.

G. TIA-492AAAA-B - Detail Specification for 62.5-um Core Diameter/125-um Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers; Telecommunications Industry Association; Rev B, 2009.

H. TIA-492AAAC-B - Detail Specification for 850-nm Laser-Optimized, 50-um Core Diameter/125-um Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers; Telecommunications Industry Association; 2009.

I. TIA-492CAAA - Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers; Telecommunications Industry Association; 1998 (R 2002).

J. TIA-526-7 - OFSTP-7 - Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant; Telecommunications Industry Association; 2002.

K. TIA-526-14 - OFSTP-14 - Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant; Telecommunications Industry Association; Rev B, 2010.

L. TIA-568-C.1 - Commercial Building Telecommunications Cabling Standard; Telecommunications Industry Association; Rev C, 2009 (with Addenda; 2012).

M. TIA-568-C.2 - Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted Pair Cabling Components; Telecommunications Industry Association; Rev C, 2009.

N. TIA-568-C.3 - Optical Fiber Cabling Components Standard; Telecommunications Industry Association; 2008 (with Addenda; 2011).

O. TIA-569-C - Telecommunications Pathways and Spaces; Telecommunications Industry Association; Rev C, 2012 (with Addenda; 2013).

P. TIA-598-C - Optical Fiber Cable Color Coding; Telecommunications Industry Association; Rev C, 2005.

Q. TIA-606-B - Administration Standard for the Telecommunications Infrastructure; Telecommunications Industry Association; Rev B, 2012.

R. TIA-607-B - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises; Telecommunications Industry Association; Rev B, 2012 (with Addenda; 2013).

S. UL 444 - Communications Cables; Current Edition, Including All Revisions.

T. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers; Current Edition, Including All Revisions.

U. UL 1651 - Fiber Optic Cable; Current Edition, Including All Revisions.

V. UL 1863 - Communications-Circuit Accessories; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate requirements for service entrance and entrance facilities with Communications Service Provider.
   2. Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.
   3. Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   4. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

B. Preinstallation Meeting: Convene one week prior to commencing work of this section to review service requirements and details with Communications Service Provider representative.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

C. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).

D. Evidence of qualifications for installer.

E. Test Plan: Complete and detailed plan, with list of test equipment, procedures for inspection and testing, and intended test date; submit at least 60 days prior to intended test date.

F. Field Test Reports.

G. Project Record Documents: Prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
   1. Record actual locations of outlet boxes and distribution frames.
   2. Show as-installed color coding, pair assignment, polarization, and cross-connect layout.
   3. Identify distribution frames and equipment rooms by room number on contract drawings.

1.06 QUALITY ASSURANCE

A. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

B. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.

C. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:
   1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
   2. Supervisors and installers factory certified by manufacturers of products to be installed.
   3. Employing BICSI Registered Cabling Installation Technicians (RCIT) for supervision of all work.

D. Products: Listed, classified, and labeled as suitable for the purpose intended.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Keep stored products clean and dry.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a 2 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cabling and Equipment:
   1. 3M Communications Technologies
   2. METZ CONNECT USA Inc; P|Cabling Products
   3. Siemon Company
   4. TE Connectivity:
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SYSTEM DESIGN

A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.
   1. Comply with TIA-568 (cabling) and TIA-569 (pathways), latest editions (commercial standards).
   2. Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.
   3. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F (0 to 60 degrees C) at relative humidity of 0 to 95 percent, noncondensing.
   4. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.

B. System Description:
   1. Backbones - Within Building: Fiber optic, number of strands as indicated.
   2. Offices and Work Areas: Provide minimum of one voice outlet and one data outlet in each work area or as noted on plans.
   3. Provide additional outlets where indicated on drawings.

C. Main Distribution Frame (MDF): Centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider.
   1. Locate main distribution frame as indicated on the drawings.
   2. Capacity: As required to terminate all cables required by design criteria plus minimum 25 percent spare space.

D. Intermediate Distribution Frames (IDF): Support structures for terminating horizontal cables that extend to telecommunications outlets.
   1. Locate intermediate distribution frames as indicated on the drawings.

E. Backbone Cabling: Cabling, pathways, and terminal hardware connecting intermediate distribution frames (IDF's) with main distribution frame (MDF), wired in star topology with main distribution frame at center hub of star.

F. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".

2.03 PATHWAYS

A. Conduit: As specified in Section 16130.

2.04 COPPER CABLE AND TERMINATIONS

A. Copper Backbone Cable:
   1. Description: 100 ohm, balanced twisted pair cable complying with TIA-568, ICEA S-90-661, and listed and labeled as complying with UL 444; arranged in 25-pair binder groups.
   2. Cable Type: TIA-568 Category 6 UTP (unshielded twisted pair); 24 AWG.
   3. Cable Capacity: Quantity of pairs as indicated on drawings.
   4. Cable Applications:
      a. Plenum Applications: Use listed NFPA 70 Type CMP plenum cable.
      b. Riser Applications: Use listed NFPA 70 Type CMP plenum cable.

B. Copper Horizontal Cable:
   1. Description: 100 ohm, balanced twisted pair cable complying with TIA-568 and listed and labeled as complying with UL 444.

2. Cable Type - Voice and Data: TIA-568 Category 6 UTP (unshielded twisted pair); 23 AWG.
3. Cable Capacity: 4-pair.
4. Cable Applications:
    a. Plenum Applications: Use listed NFPA 70 Type CMP plenum cable.
    b. Riser Applications: Use listed NFPA 70 Type CMP plenum cable.
    c. General Purpose Applications: Use listed NFPA 70 Type CMP plenum cable.
5. Cable Jacket Color - Voice and Data Cable: Blue.

C. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.

D. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.
1. Performance: 500 mating cycles.
2. Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.

E. Copper Patch Cords:
1. Description: Factory-fabricated 4-pair cable assemblies with 8-position modular connectors terminated at each end.
2. Patch Cords for Patch Panels:
    a. Quantity: One for each pair of patch panel ports.
3. Patch Cords for Work Areas:
    a. Quantity: One for each work area outlet port.

2.05 FIBER OPTIC CABLE AND INTERCONNECTING DEVICES

A. Fiber Optic Backbone Cable:
1. Description: Tight buffered, non-conductive fiber optic cable complying with TIA-568, TIA-598, ICEA S-83-596 and listed as complying with UL 444 and UL 1651.
2. Cable Type: Multimode, laser-optimized 50/125 um (OM3) complying with TIA-492AAAC~~.~~
3. Cable Capacity: 12 Strand.
4. Cable Applications:
    a. Plenum Applications: Use listed NFPA 70 Type OFNP plenum cable.
    b. Riser Applications: Use listed NFPA 70 Type OFNR riser cable or Type OFNP plenum cable.
5. Cable Jacket Color:
    a. Laser-Optimized Multimode Fiber (OM3/OM4): Aqua.
    b. Multimode Fiber (OM1/OM2): Orange.

B. Fiber Optic Horizontal Cable:
1. Description: Tight buffered, non-conductive fiber optic cable complying with TIA-568, ICEA S-83-596 and listed as complying with UL 444 and UL 1651.
2. Cable Type: Multimode, laser-optimized 50/125 um (OM3) complying with TIA-492AAAC.
3. Cable Capacity: 12 Strand.
4. Cable Applications:
    a. Plenum Applications: Use listed NFPA 70 Type OFNP plenum cable.
    b. Riser Applications: Use listed NFPA 70 Type OFNP plenum cable.
    c. General Applications: Use listed NFPA 70 Type OFNP plenum cable.

5. Cable Jacket Color:
    a. Laser-Optimized Multimode Fiber (OM3/OM4): Aqua.
    b. Multimode Fiber (OM1/OM2): Orange.
    c. Single-Mode Fiber (OS1/OS2): Yellow.

C. Fiber Optic Interconnecting Devices:
1. Connector Type: Type SC.
2. Connector Performance: 500 mating cycles, when tested in accordance with TIA-455-21.
3. Maximum Attenuation/Insertion Loss: 0.3 dB.

D. Fiber Optic Patch Cords:
1. Description: Factory-fabricated 2-fiber cable assemblies with suitable connectors at each end.
2. Patch Cords for Patch Panels:
    a. Quantity: One for each pair of patch panel ports.
3. Patch Cords for Work Areas:
    a. Quantity: One for each work area outlet port.

2.06 COMMUNICATIONS EQUIPMENT ROOM FITTINGS

A. Copper Cross-Connection Equipment:
1. Connector Blocks for Category 5e and Up Cabling: Type 110 insulation displacement connectors; capacity sufficient for cables to be terminated plus 25 percent spare.
2. Patch Panels for Copper Cabling: Sized to fit EIA/ECA-310 standard 19 inch (482.6 mm) wide equipment racks; 0.09 inch (2.2 mm) thick aluminum; cabling terminated on Type 110 insulation displacement connectors; printed circuit board interface.
    a. Jacks: Non-keyed RJ-45, suitable for and complying with same standard as cable to be terminated; maximum 48 ports per standard width panel.
    b. Capacity: Provide ports sufficient for cables to be terminated plus 25 percent spare.
    c. Labels: Factory installed laminated plastic nameplates above each port, numbered consecutively; comply with TIA-606.
    d. Provide incoming cable strain relief and routing guides on back of panel.

B. Fiber Optic Cross-Connection Equipment:
1. Patch Panels for Fiber Optic Cabling: Sized to fit EIA/ECA-310 standard 19 inch (482.6 mm) wide equipment racks; 0.09 inch (2.2 mm) thick aluminum.
    a. Adapters: As specified above under FIBER OPTIC CABLE AND INTERCONNECTING DEVICES; maximum of 24 duplex adaptors per standard panel width.
    b. Labels: Factory installed laminated plastic nameplates above each port, numbered consecutively; comply with TIA-606.
    c. Provide incoming cable strain relief and routing guides on back of panel.
    d. Provide rear cable management tray at least 8 inches (203 mm) deep with removable cover.
    e. Provide dust covers for unused adapters.

C. Backboards: Interior grade plywood without voids, 3/4 inch (19 mm) thick; UL-labeled fire-retardant.
1. Size: As indicated on drawings.
2. Do not paint over UL label.

D. Equipment Racks and Cabinets: EIA/ECA-310 standard 19 inch (482.6 mm) wide component racks.
    1. Wall Mounted Racks: Steel construction, hinged to allow access to back of installed components.
    2. Floor Mounted Racks: Aluminum or steel construction with corrosion resistant finish; vertical and horizontal cable management channels, top and bottom cable troughs, and grounding lug.
    3. Freestanding Cabinets: Front and rear doors with locks; removable side panels with locks; vented top and rear door; adjustable leveling feet; cable access in roof and base; grounding bar.
    4. Wall Mounted Cabinets: Front doors with locks, louvered side panels, top and bottom cable access, and ground lug.
        a. Cover inside of cabinet back with plywood backboard as specified.
    5. Cabinets: Steel construction with corrosion resistant finish.
    6. Locks: Keyed alike.

2.07 COMMUNICATIONS OUTLETS

A. Outlet Boxes: Comply with Section 26 0537.
    1. Provide depth as required to accommodate cable manufacturer's recommended minimum conductor bend radius.
    2. Minimum Size, Unless Otherwise Indicated:
        a. Voice Only Outlets: 4 inch by 2 inch by 2-1/8 inch deep (100 by 50 by 54 mm) trade size.
        b. Data or Combination Voice/Data Outlets: 4 inch square by 2-1/8 inch deep (100 by 54 mm) trade size.
        c. Fiber Optic Outlets: 4-11/16 inch square by 2-1/8 inch deep (119 by 54 mm) trade size.

B. Wall Plates:
    1. Comply with system design standards and UL 514C.
    2. Accepts modular jacks/inserts.
    3. Capacity:
        a. Voice Only Outlets: 4 ports.
        b. Data or Combination Voice/Data Outlets: 4 ports.
    4. Wall Plate Material/Finish - Flush-Mounted Outlets: High impact thermoplastic, color to be selected.

2.08 GROUNDING AND BONDING COMPONENTS

A. Comply with TIA-607.

2.09 IDENTIFICATION PRODUCTS

A. Comply with TIA-606.

2.10 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Factory test cables according to TIA-568.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Comply with latest editions and addenda of TIA-568 (cabling), TIA-569 (pathways), TIA-607 (grounding and bonding), NECA/BICSI 568, NFPA 70, and SYSTEM DESIGN as specified in PART 2.

B. Comply with Communication Service Provider requirements.

C. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.

D. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

3.02 INSTALLATION OF PATHWAYS

A. Install pathways with the following minimum clearances:
   1. 48 inches (1220 mm) from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.
   2. 12 inches (300 mm) from power conduits and cables and panelboards.
   3. 5 inches (125 mm) from fluorescent and high frequency lighting fixtures.
   4. 6 inches (150 mm) from flues, hot water pipes, and steam pipes.

B. Conduit, in Addition to Requirements of Section 26 0534:
   1. Arrange conduit to provide no more than the equivalent of two 90 degree bend(s) between pull points.
   2. Conduit Bends: Inside radius not less than 10 times conduit internal diameter.
   3. Arrange conduit to provide no more than 100 feet (30 m) between pull points.
   4. Do not use conduit bodies.

C. Outlet Boxes:
   1. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of telecommunications outlets provided under this section.
      a. Mounting Heights: Unless otherwise indicated, as follows:
         1) Telephone and Data Outlets: 18 inches (450 mm) above finished floor.
         2) Telephone Outlets for Side-Reach Wall-Mounted Telephones: 54 inches (1.4 m) above finished floor to top of telephone.
         3) Telephone Outlets for Forward-Reach Wall-Mounted Telephones: 48 inches (1.2 m) above finished floor to top of telephone.
      b. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
      c. Provide minimum of 24 inches (600 mm) horizontal separation between flush mounted outlet boxes installed on opposite sides of fire rated walls.
      d. Unless otherwise indicated, provide separate outlet boxes for line voltage and low voltage devices.
      e. Locate outlet boxes so that wall plate does not span different building finishes.
      f. Locate outlet boxes so that wall plate does not cross masonry joints.

3.03 INSTALLATION OF EQUIPMENT AND CABLING

A. Cabling:
   1. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
   2. Do not over-cinch or crush cables.
   3. Do not exceed manufacturer's recommended cable pull tension.
   4. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.

B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:
   1. At Distribution Frames: 120 inches (3000 mm).

2. At Outlets - Copper: 12 inches (305 mm).
3. At Outlets - Optical Fiber: 39 inches (1000 mm).

C. Copper Cabling:
1. Category 5e and Above: Maintain cable geometry; do not untwist more than 1/2 inch (12 mm) from point of termination.
2. For 4-pair cables in conduit, do not exceed 25 pounds (110 N) pull tension.
3. Use T568B wiring configuration.

D. Fiber Optic Cabling:
1. Prepare for pulling by cutting outer jacket for 10 inches (250 mm) from end, leaving strength members exposed. Twist strength members together and attach to pulling eye.
2. Support vertical cable at intervals as recommended by manufacturer.

E. Wall-Mounted Racks and Enclosures:
1. Install to plywood backboards only, unless otherwise indicated.
2. Mount so height of topmost panel does not exceed 78 inches (1980 mm) above floor.

F. Floor-Mounted Racks and Enclosures: Permanently anchor to floor in accordance with manufacturer's recommendations.

G. Identification:
1. Use wire and cable markers to identify cables at each end.
2. Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.
3. Use identification nameplate to identify cross-connection equipment, equipment racks, and cabinets.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Comply with inspection and testing requirements of specified installation standards.

C. Visual Inspection:
1. Inspect cable jackets for certification markings.
2. Inspect cable terminations for color coded labels of proper type.
3. Inspect outlet plates and patch panels for complete labels.

D. Testing - Copper Cabling and Associated Equipment:
1. Test backbone cables after termination but before cross-connection.
2. Test backbone cables for DC loop resistance, shorts, opens, intermittent faults, and polarity between connectors and between conductors and shield, if cable has overall shield.
3. Test operation of shorting bars in connection blocks.
4. Category 5e and Above Backbone: Perform near end cross talk (NEXT) and attenuation tests.

E. Testing - Fiber Optic Cabling:
1. Backbone: Perform optical fiber end-to-end attenuation test using an optical time domain reflectometer (OTDR) and manufacturer's recommended test procedures; perform verification acceptance tests and factory reel tests.
2. Multimode Backbone: Perform tests in accordance with TIA-526-14 Method B.
3. Single Mode Backbone: Perform tests in accordance with TIA-526-7 Method B.
4. Links: Perform optical fiber end-to-end attenuation tests and field reel tests.

F. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

END OF SECTION

SECTION 280000 INTEGRATED SECURITY SYSTEMS GENERAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. The Division 28 series of specifications describe systems that are integrated and or connected together to provide coordinated operations; therefore, individual sections do not stand alone. The installation and operation of any given system may be determined only by review of the total series of Division 28 specifications, as well as other referenced specifications.

C. Related Work specified elsewhere:

1. Division 33 Site Utilities
2. Division 3 Concrete
3. Division 8 Door Hardware
4. Division 9 Finishes
5. Division 8 Detention Door Hardware
6. Division 21 Fire Protection
7. Division 23 Mechanical
8. Division 26 Power
9. Division 26 Electrical

1.2 DESCRIPTION

A. The work covered by this Section of the Specifications shall include all labor, equipment, materials and services to furnish and install, calibrate, adjust, document, and test the total system as required herein and on the drawings. All materials and labor specified under this Specification Section shall be furnished by a single pre-qualified Electronic Security System Contractor (ESSC), who shall assume responsibility for the detailing, coordinating, supplying, installing, programming, performance and warranty of this work, in accordance with this specification section. This project consists of providing, installing, start-up, testing, and training of Owner personnel in the use of new Electronic Security System equipment.

B. The system shall be computer based and shall seamlessly integrate the following security systems into a single unified system with a common Touch screen control interface.

C. All interconnections between systems shall be data connections only and shall be coordinated by the programmable logic controller (PLC) and software. All

operations shall be as herein described and as shown on the drawings.

1.3 SUMMARY

A. The ESSC scope of work shall consist of, but shall not be limited to the following as defined in the details of this division of the specifications and as shown on the plans:

1. Electronic Security Systems, General
2. Touch Screen Control System
3. Programmable Logic Controller
4. Relay Control System
5. Intercommunication System
6. Closed Circuit Television System

B. Coordination

1. The successful ESSC shall attend the Owner's pre-construction kick off meeting. The meeting shall include all related trades and sub-contractors. The Owner shall notify the ESSC at least two weeks prior to the meeting. This meeting will be to coordinate with all other related trades to ensure that all work under this section is carried out in an orderly, complete and coordinated fashion. Continuing periodic coordination meetings shall be required by ESSC until satisfactory completion of this project.

1.4 PERMITS AND APPROVALS

A. Permits necessary for installation of the work shall be obtained prior to the commencement of work. All permit costs and inspections fees shall be included by the ESSC as part of the required work.

B. All applicable portions of the National Electrical Code shall be implicitly followed, in particular with regard to material type and quality, circuitry extensions from and connections to outlet and junction boxes, panel boards and similar appurtenances.

1.5 CONTRACTOR PRE-QUALIFICATION REQUIREMENTS

A. Any contractor wishing to submit a bid under this section must be prequalified and listed herein or in a pre-bid addendum.

B. Contractors not listed herein who wish to bid the project must meet the following requirements and must request approval and submit the following qualification information in writing to the Owner:

C. The Electronic Security System Contractor shall be a company specializing in the provision and installation of Detention Control Systems. The Contractor must have been in business using the same name for a minimum period of Five

(5) years, providing security control equipment of similar scope and complexity as this project.

D. Provide a company history.

E. Provide a “Company Profile” describing the type and scope of the work of the installing company.

F. Provide a list of at least ten (10) projects of equal (or larger) size and scope as this project. Include: general contractor name and contact, electrical contractor name and contact, owner’s name and contact (name of person in charge of maintenance is preferred). Include address and phone numbers of all.

G. The ESSC shall be a security systems contractor familiar with the installation of Detention Control Systems and an authorized and certified dealer or distributor in good standing with all sub system manufacturers. All of the ESSC’s employees who work on project must hold current manufacturer certification for the type of system being installed.

H. Provide evidence of authorized dealer status for control system manufacturer, such as a current dealer license.

I. Provide evidence that all installers hold current manufacturer’s certification as installers or technicians.

J. Where the contractor is a branch office or other division of a larger organization, the qualifications of the branch office or other division shall meet the requirements of the Contract Documents.

K. The installer shall provide a project manager/ coordinator/ superintendent for the overall management and supervision of the work. The manager/coordinator/ superintendent shall have the following qualifications:

L. Provide resume for the individual including at least five (5) projects of the same size and complexity of this one.

1. Individual must be a full time employee of the installer.

2. Individual must be minimally certified as an installer/technician by the system manufacturers.

M. Applications for approval will not be considered unless they are complete. Partial or incomplete applications will be rejected without comment.

N. Approval of a contractor does not alleviate the contractor from any of the requirements of the contract drawings or documents or nullify any terms or conditions contained herein unless explicitly set forth in an addendum.

O. The Owner reserves the right to disqualify contractors who do not comply with the requirements of this section of the specifications.

1.6 ACCEPTABLE CONTRACTORS

A. All materials and labor specified under this Specification Section shall be furnished by a single pre-qualified ESSC, (Electronic Security System

Contractor), who shall assume responsibility for the detailing, coordinating, supplying, installing, programming, performance and warranty of this work, in accordance with this specification section. The following ESSC's are pre-qualified to perform the work under this section:

1. Cornerstone Detention
2. DPS Group, LLC
3. CML Security

B. Pre-Approval of the contractor does not alleviate the contractor from any of the requirements of the contract drawings or documents or nullify any terms or conditions contained herein unless explicitly set forth in an addendum.

1.7 SUBMITTALS

A. Provide descriptive literature, catalog data sheets, illustrations, schematics, technical data sheets, and test data necessary for the owner to ascertain that the proposed equipment and materials comply with the specification's requirements. Include manufacturer's name, model, and catalog or part numbers. Catalog cuts shall be letter size (8.5" x 11") and shall be legible and clearly identify specific equipment being submitted.

B. Provide load calculations for all electrical and electronic equipment provided under this division of the specifications.

C. Provide system one-line drawings, device layout drawings, device riser drawings equipment schedules, equipment room, control room layouts, cabinet layout mounting details and other system design drawings in ARCH E1 (30" x 42") format. Organize drawings by specification section.

D. Provide seven (7) sets of touch screen layouts in color.

E. Provide seven (7) submittal sets.

F. Provide a complete set of submittals. Partial or incomplete submittals will be rejected.

G. Provide detailed drawings of the security equipment cabinets including exact layout of all components.

H. Provide description of operation of each system similar to that provided in this specification, to include any and all exceptions, variances, or substitutions listed at the time of bid. Any such exceptions, variances or substitutions which were not listed at the time of bid and are identified in the submittal, shall be grounds for immediate disapproval.

1.8 DEMONSTRATION

A. Upon completion of the submittal process a system demonstration and test shall be

performed by the Systems Integrator. All systems integrators cost for this demonstration shall be borne by the Systems Integrator. The System Integrator will be responsible for the costs of (4) representatives of the Owner to observe the test and provide input for any changes to the software deemed necessary. Provide for all subsistence and travel costs for four individuals from the owner's staff. The complete security control and monitoring system shall be demonstrated. Upon acceptance of the tested system all changes or corrections to the software shall be completed within two weeks of the demonstrations test.

1.9 MAINTENANCE MANUALS

A. Provide five (5) hard copy sets of a complete operation and maintenance manual and updated as-built installation drawings prior to the final inspection. Also include five (5) sets of the Operation and Maintenance manual and as-built drawings on CD's or thumb drives in Adobe Acrobat .PDF file format. Include the most current version of the Adobe Acrobat viewing software on the CD's or thumb drives. All letter size drawings shall be compiled in a single file and shall be cataloged and bookmarked for convenient navigation. Provide bookmarks for each section heading as well as for each sub section. Also provide an index or outline page that lists the contents of the manual, with links to each section and sub section of the manual.

    1. The following information shall be inscribed on the cover of the manuals:
        a. "OPERATION AND MAINTENANCE MANUAL"
        b. Building location.
        c. The name, address, and phone number of the Contractor.

B. The manual shall be legible, well organized and easily read. Included in the manual shall be product operation manuals, software manuals, circuit drawings, wiring and control diagrams and shop drawings with data to explain detailed operation and control of each item of equipment and a control sequence describing start up instructions. Also included shall be installation instructions, maintenance instructions, safety precautions, test procedures, performance data, and other necessary documentation.

C. A copy of the system certification and final tests results, as specified in Part 3 .5 of this section of specifications, shall be included in this manual.

D. Upon completion of the installation of the Electronic Security System equipment, the ESSC shall provide to the Owner a signed written statement, substantially in form as follows:

    1. "The undersigned, having been engaged as the Locking control system installer on the (NAME AND ADDRESS OF THE PROJECT), confirms that the Touch screen control system was installed in accordance with the wiring diagrams, instructions and directions provided by the manufacturer and the manufacturer has provided an acknowledgement of proper installation and operation; a copy of which is herein attached."

1.10 WARRANTY

A. For a period of one (1) year from the date of final acceptance, the system shall be under full warranty (at no cost to the owner for materials or labor). Service technicians and replacement components for the system specified shall be provided by service representatives. During the one (1) year warranty period reported problems shall be responded to within four (4) hours by phone and within eight (8) hours on site if deemed necessary. Replacement components or spare parts replacement shall be delivered and installed within five (5) days of determination of the problem.

B. The ESSC shall provide a single source warranty for all of the equipment provided under this division of the specifications. The ESSC shall warrant equipment regardless of the respective product manufacturer's warranty.

C. Any products with original equipment manufacturer warranties exceeding the requirements of these specifications shall be transferred to the owner at the end of the warranty period.

1.11 SPARES

A. See subsections for spare parts requirements for each system.

PART 2 - PRODUCTS

2.1 SYSTEM WIRING

A. Existing wiring that is to be reused shall be tested and if found to be faulty, shorted, water damaged, or corroded, shall be reported to the Owner.

B. All Lock and low voltage system wiring shall be installed and terminated by a licensed Electrical Contractor. The ESSC must either be properly licensed or subcontract the work to a licensed Electrical contractor.

C. All Lighting and power circuit wiring shall be provided and installed by a licensed Electrical contractor. The ESSC must either be properly licensed or subcontract the work to a licensed Electrical contractor.

D. Coordinate with Owner for access to existing door lock wiring.

E. Wiring that extends from the electronic control relay terminal strips to the locks, lights, etc. shall be class 1, 2, or 3 as defined by Article 725 of the National Electric Code.

F. All conductors to locks, doors, position switches, or gates shall be stranded wire and shall be a minimum number 14 THHN or THWN, 600 volt rated, and shall be installed in raceways and equipment enclosures with other conductors, within limitations defined by Article 725 of the National Electric Code.

2.2 CONDUIT AND RACEWAY

A. Any additional conduit, raceway and standard boxes and fittings needed for the proper installation of the security electronic system shall be the responsibility of the

ESSC. The ESSC must either be properly licensed or subcontract the work to a licensed Electrical contractor.

2.3 PROTECTION OF EQUIPMENT

A. Materials and equipment excepting wire shall be stored in a protected environment and must be protected from harmful conditions such as extreme temperature, moisture, humidity, and dirt.

B. Repair or replace any damaged equipment or components prior to substantial completion.

C. Remove temporary tags coverings, and construction debris from interior and exterior surfaces of equipment.

D. Clean internal air filters, grills, and fans before substantial completion.

2.4 EQUPMENT ENCLOSURES

A. Provide floor mounted enclosed 19” racks and wall mounted NEMA 1 hinged door enclosures to house control equipment.

B. Provide ventilation fans as required to maintain adequate air flow and recommended temperature threshold for electronic equipment.

2.5 UPS SYSTEMS

A. Provide a UPS for all electronic equipment to protect the connected equipment for a minimum of thirty (30) minutes under “worst case” conditions in the event of a utility power failure.

B. All UPS systems must have a connected equipment warranty that covers at least 150% of the value of all connected equipment. All original warranty documentation for each UPS shall be turned over to the owner along with the operation and maintenance manuals.

C. UPS systems manufactured by Liebert, Tripp Lite and APC shall be acceptable.

PART 3 - EXECUTION

3.1 GENERAL

A. The entire system shall be installed in a workmanlike manner, in accordance with approved manufacturer's instructions. All wiring shall be of the type and quantity recommended by the controls manufacturer, and hardware manufacturer, and approved by the local authority having jurisdiction.

B. The Contractor shall comply with the current edition of the following codes and

standards as applicable:

1. National Electrical Code (NEC)
2. National Fire Alarm Codes (NFAC)
3. Uniform Building Code (UBC)
4. All State, County, and local codes and ordinances
5. American National Standards Institute (ANSI)
6. American Society for Testing and Materials (ASTM)
7. Electronics Industry Association (EIA)
8. Federal Communications Commission (FCC)
9. National Electrical Manufacturers Association (NEMA)
10. National Fire Protection Association (NFPA)
11. Occupational Safety Health Act (OSHA)
12. Underwriter's Laboratories (UL)

C. Install all equipment in accordance with the manufacturer's recommendations, and accepted shop drawings.

D. Install all equipment in compliance with NEC requirements, NECA's "Standard of Installation" and recognized industry practices.

3.2 WIRING

A. All wiring shall be installed in dedicated conduit throughout. Conductors routed to the individual device shall be continuous from the head end cabinet to the device; it is not permitted to use a common wire either neutral or phase wire to a chase to power multiple devices.

B. All Lock and low voltage system wiring shall be installed and terminated by a licensed Electrical Contractor. The ESSC must either be properly licensed or subcontract the work to a licensed Electrical contractor.

C. All Lighting and power circuit wiring shall be provided and installed by a licensed Electrical contractor. The ESSC must either be properly licensed or subcontract the work to a licensed Electrical contractor.

D. Each lockset must work independent from the other locksets. All home runs from field devices shall be continuous: there shall be no splices in wiring between the control equipment and the door locks, position switches, gates, etc.

E. All wiring shall be clearly identified and labeled according to the device it controls. Where possible, use architectural door numbers to identify groups of wires.

F. All penetrations of floor slabs and fire walls shall be fire stopped in accordance with local fire codes. All wiring shall be color coded throughout, to National Electrical Code standards.

3.3 EQUIPMENT ENCLOSURES

A. Maintain 3-foot working clearances in front of equipment or equipment racks where

access is required to inspect, service or adjust.

B. All equipment cabinets, boxes, enclosures or racks shall be clearly labeled and identified. Use identifiers and abbreviations defined in the Drawings wherever possible. Use plain designation for labeling, unless indicated otherwise.

C. Check equipment against available mounting space indicated on the drawings. Coordinate location of equipment with other devices to minimize interference. Any conflicts or clearance problems shall be brought to the attention of the architect.

3.4 GROUNDING

A. Furnish and install a #6 AWG bare ground from the grounding lug in the equipment cabinet(s) to the building ground system.

B. Connect the ground in each set of field wires to the ground terminal in the control equipment for that field device.

3.5 FIELD QUALITY CONTROL/TESTING

A. The system shall be installed and fully tested under the supervision of a technician, trained and certified by the manufacturer as a master technician for the said system.

B. The system shall be demonstrated to perform ail of the functions shown on the plans and as specified herein.

C. Document all test procedures and protocols and provide a copy of test results for each system to the owner at project closeout.

3.6 TRAINING

A. The ESSC shall provide on-site training for a period of up to twenty (20) hours, during normal business hours, to instruct the Owner's designated personnel on the operation and maintenance of the entire system.

END OF SECTION 28 00000

SECTION 281000 TOUCH SCREEN CONTROL SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. The Touch screen Control System (TCS) shall provide the Human to Machine Interface (HMI) for control of all electrically controlled hardware, motorized gates and doors, and other devices as indicated, including, but not limited to, electric locks, lighting circuits, water valves, inmate telephones, inmate televisions, CCTV camera switching and Intercom . The system shall monitor and annunciate the status condition of electrically equipped hardware, doors, gates, control conditions, security conditions, Intercom calls, call-in signals, Panic alarm signals, and shall provide on screen CCTV Camera ICON'S for Camera switching and other functions as described herein and on the drawings. The system shall perform logic functions to provide operational characteristics as described herein. The system shall interface with other systems for control and annunciation including, but not limited to, the electrical and mechanical.

1.2 INTEGRATORS QUALIFICATIONS

A. Manufacturers desiring to provide equipment under this section must be pre-qualified and listed herein.

B. Manufacturers not listed herein who wish to provide equipment for this project must request approval and submit the same qualifications listed in Division 28 0000.

C. The Touch screen Control System manufacturer shall be a company specializing in the design and manufacture of Detention Control Systems. The manufacturer must have been in business using the same name for a minimum period of Ten (10) years, providing security control equipment of similar scope and complexity as this project.

D. Applications for approval will not be considered unless they are complete. Partial or incomplete applications will be immediately rejected without comment.

E. Approval of the Manufacturer does not alleviate the Manufacturer from any of the requirements of the contract drawings or documents or nullify any terms or conditions contained herein unless explicitly set forth in an addendum.

F. The Owner/Architect reserves the right to disqualify manufacturers who do not comply with the requirements of this section of the specifications.

1.3 ACCEPTABLE INTEGRATORS

A. The following Integrators are pre-qualified to provide equipment under this section:

1. Cornerstone Detention
2. DPS Group, LLC
3. CML Security

1.4 SYSTEM ARCHITECTURE

A. The Touch screen control system shall be located in the facility as shown on the drawings and communicates to the Programmable Logic Controller through TCP/IP communication utilizing hub and spoke topology.

B. Each Touch Screen shall be independent of other touch screens.

C. The touch screens shall display the floor plan of the area being controlled.

D. Control and navigation icons shall be clearly identified and differentiated by symbol and color.

E. All touch screens are capable of controlling any part of the facility; however each station will have pre-defined primary screens.

1.5 SYSTEM FUNCTIONS

A. Door Unlock - Mechanical re-lock hardware. Where doors are equipped with solenoid, or motor operated locks, the following operation shall apply. Momentarily pressing the ICON shall provide an unlock output to the hardware. If the hardware is provided with a mechanical hold-open feature, the pulse shall be of sufficient duration to bring the hardware to full unlock. If the hardware is not provided with a mechanical hold-open feature, then the pulse shall be sufficient to provide an adjustable 2 to 10 second unlock period. MULTIPLE PRESSES OF THE UNLOCK ICON IN PAPID SUCCESSION SHALL NOT CAUSE THE LOCK TO ACTIVATE IN RAPID SUCCESSION OR CHATTER. Activation of the ICON is annunciated by a change in state of the ICON and an audible beep. The ICON shall function as an indicator for each door to indicate the status of the door. A portion of the ICON shall be gray when the door is *closed and locked* (secure). A portion of the ICON shall be red when the door is *open and unlocked* (unsecure). The ICON shall only display gray when the door hardware gives positive indication of secure status.

B. Door Unlock - Electrical re-lock hardware. Where doors are equipped with Motor operated locks, requiring one output to cycle the lock to the unlocked state and a second operation to cycle the lock to the locked state, the following operation shall apply. Momentarily pressing the ICON shall provide an unlock output to the hardware. The unlock pulse shall be of sufficient duration to bring the hardware to full unlock. The

system shall allow the hardware to remain unlocked for three (3) seconds and shall automatically send the relock output. Output times shall be adjusted to match the requirements of the lock manufacturer. Activation of the ICON is annunciated by a change in state of the ICON and an audible beep. The ICON shall function as an indicator for each door to indicate the status of the door. A portion of the ICON shall be gray when the door is *closed and locked* (secure). A portion of the ICON shall be red when the door is *open and unlocked* (unsecure). The ICON shall only display gray when the door hardware gives positive indication of secure status.

C. Interlock and Interlock Override - Where two or more doors or gates with electric hardware form a sally port or where interlocks between hardware sets are indicated on the plans, the operation of the individual hardware sets shall be as specified elsewhere with the following modifications. Each door within the interlock group shall have a yellow interlock active indicator. The indicators in the group shall not be visible unless the group is interlocked. The controls shall allow only one of the hardware sets in the interlock group to be un-secure at any given time unless the interlock override function is activated. The interlock override function shall be activated by pressing the interlock override ICON. Interlock override shall then latch on until reset by the pressing the interlock override reset button. Activating the interlock override function shall allow the operator to control all hardware with no interlock restrictions. All Touch screen control stations controlling interlocked doors shall have the interlock override ICON'S and annunciator provisions. The yellow interlock active ICON'S over the interlocked doors shall illuminate on all Touch screens controlling hardware in a given interlock scheme. One and only one unsecured door shall cause a hardware set to become interlocked. Emergency release or Fire release shall override all interlock restrictions. The interlock shall not prevent the authorized door from operating multiple times in both open and closed functions, provided all other doors in the interlock scheme are secure.

D. Motorized Doors and Gates, Vehicle Sally-Ports & Cell Sliders - Where motor operated doors and gates are installed, the following operation shall apply. Pressing the "open" ICON shall cause the door or gate to travel to the open position. Pressing the "close" ICON shall cause the door or gate to travel to the locked, closed position. Pressing the "stop" ICON while the door is traveling in either direction shall stop the door. Operating the door from "open" to "close" or "close" to "open", without pressing "stop" shall stop the door for a minimum of 1 (one) second and then reverse the direction of travel. There shall be an ICON indicator for each door to indicate the status of the door. The indicator shall illuminate gray when the door is *closed and locked* (secure). The indicator shall illuminate red anytime the door is *open or unlocked* (un-secure).

E. Monitored Only Door Status - There shall be an ICON indicator for each door that is equipped with monitoring hardware to indicate the status of the door. This shall be the case even for doors that do not have electrically operated locks but are equipped with a door position switch or a bolt position switch. The indicator shall illuminate gray when the door is *closed and locked* (secure). The indicator shall illuminate red anytime the door is *open or unlocked* (un-secure). The ICON shall only display gray when the door hardware provides positive indication of secure status.

F. Provide a screen that appears after pressing the release ICON that prompts the user to verify if they are sure that they want to activate emergency release. If the user selects "NO" return to normal operation. If the user selects "YES" the system will activate emergency release function. Coordinate with the Owner to define which doors will be

emergency released.

G. Lighting and Power Control - Lighting circuits, as shown on the plans, shall be switched by relays with 20 amp contacts, UL rated for lighting control applications. Relays shall be controlled by ICON'S Touch screen control station. Activating the ICON shall turn on the lights and cause the ICON to change state to indicate that the light is on. Activating the ICON again shall turn off the lights and cause the ICON to return to its initial state. Activation of the ICON is annunciated by a change in the ICON'S state and an audible beep. The lighting control relay panel shall be provided by this section.

H. CCTV Cameras - CCTV cameras shall be represented on the Touch screen Control Stations by distinct ICON'S. Each camera is further identified with its number adjacent to the CCTV camera symbol location. Activating the camera ICON shall cause the selected camera to be switched to a viewing monitor in the control room.

I. Intercom stations - Intercom sub stations shall be represented on the Touch screen Control Stations by distinct ICON'S. Each Intercom station or paging zone shall further be identified with its number adjacent to the intercom ICON symbol. When a call is received, the ICON shall flash, and an audible beep shall sound. If the operator is not viewing the screen where the call originated, then a flashing intercom ICON shall appear on the screen navigation bar over the link for the screen where the call is. Selecting the ICON shall open the talk path and allow the operator to listen. Pressing the PTT (Push to Talk) ICON shall allow the operator to talk to the selected station. Selecting the station ICON shall reset that station.

J. Auto Switching - Provide automatic CCTV camera switching when the select button of an Intercom station that is in direct view of a CCTV camera is pressed. This shall take place without action required by the operator. When the select button on the intercom button is pressed, the associated CCTV camera shall be automatically switched to a "spot" monitor located at the control desk.

1.6 GRAPHIC USER INTERFACE (GUI)

A. The Touch screen Control Station shall provide an ICON for each door lock, lighting circuit, intercom station, Paging speakers, CCTV camera, or other devices, as designated on the plans or indicated by the specifications.

B. ICON'S for different functions shall be clearly distinguished by color and by design. Use symbols to graphically represent the type of hardware being controlled by each ICON such as a speaker symbol for intercom stations, or a lock for door control. Screens shall reflect a graphic layout of each area that is being controlled.

C. The Touch screen shall provide audible feedback for any touch activation unless specified otherwise.

D. Unless necessary to a specific function ICON'S shall not activate on the "touch" but on the "release". This means that when an operator presses the ICON, no action will occur. Only when the operator removes their finger will the action take place. If an operator presses an ICON unintentionally, simply sliding their finger off the ICON to an empty part of the screen and then releasing it shall prevent any action from taking place.

E. The Touch screen shall offer easy navigability from any screen to any screen and shall always display which screen is currently being viewed. Provide a navigation bar that will allow one-touch navigation to any of the other screens that the operator is authorized to view. Also provide a “Global" ICON that displays the floor plan of the area that the operator can control. Touching any area of the Floor plan shall load the page that controls that area.

F. The maximum time permitted for page turns shall be 500 ms. The maximum time permitted for the execution of a command (the time between the activation of an ICON and when the selected function takes place) shall be 500 ms.

PART 2 - PRODUCTS

2.1 TOUCH SCREEN

A. Provide the touch screens at designated locations as shown on the plans.

2.2 WORKSTATION COMPUTER

A. Provide at each touch screen control location an industrial grade type computer manufactured for harsh environments which shall meet these minimum requirements:

1. 2.13 Ghz Intel Pentium Core 2 Duo or Dual Core processor
2. 8 Gb RAM Min.
3. 250 Gb Solid State hard drive
4. High resolution video graphics card
5. 10/100/1000 Mbps Ethernet card
6. button mouse
7. Keyboard
8. Microsoft Windows 10 Professional operating system or newer.
9. Touch screen HMI / GUI software and necessary license and software key.

2.3 TOUCH SCREEN SOFTWARE

A. Provide a licensed copy of all necessary GUI (Graphic User Interface) software for each Touch Screen Computer.

B. The software will convey a Graphic floor plan for all areas that require display on the LCD displays. The software will utilize the maximum resolution and colors of the display to enhance and simplify the displayed control and status information. Fast orientation and ergonomics will be the goal of all system displays.

C. The following GUI Software providers shall be acceptable

1. Rockwell Automation
2. Indusoft
3. Wonderware

2.4 NETWORK EQUIPMENT

A. Provide a 100/1000 Mbps Base T Ethernet system (IEEE 802.3u), for communication between Touch screen Workstations and Programmable Logic Controllers, and other connectable devices to be installed under this section of work within a given section of the facility (less than 300 feet).

B. The 100/1000 Mbps Base T Ethernet switches shall be as manufactured by Cisco Systems, MOXA, or approved equal. Provide the quantity of nodes as required to accommodate the equipment to be connected.

C. Ethernet cabling shall be Category 6 minimum. End-of-line terminations at PLC's shall be to eight-pin (RJ-45 style) connectors.

D. Provide a Fiber Optic (50/125 Multi-Mode) backbone connection between PLC systems. This is required due to the distance and possible EMF interference along cable path.

PART 3 - EXECUTION

3.1 INTERCOM SYSTEM INTERFACE

A. The Touch screen system shall communicate with the Intercom system through a data interface.

B. Provide any data converters, or extenders as required.

3.2 CCTV SYSTEM INTERFACE

A. The CCTV system shall communicate with the Touch screen system through a data interface.

B. Provide any data converters, or extenders as required.

3.3 OWNER REVIEW MEETING

A. See Division 28 0000 section.

3.4 PROTECTION

A. Deliver each piece of equipment in durable shipping containers. Maintain cartons through shipping, storage and handling as required to prevent damage and eliminate dirt and moisture. Wrap all equipment in heavy packing cellophane for moisture protection.

B. All equipment MUST be stored in a climate-controlled environment. On site storage trailers or containers that are not climate controlled are strictly prohibited.

3.5 TESTING

A. All equipment shall be factory tested prior to delivery to the jobsite.

B. The system shall be fully field tested under the supervision of a technician, trained and certified by the manufacturer as a master technician for the said system. The system shall be demonstrated to perform all of the functions shown on the plans and as specified herein. Verify that related conditions, including equipment that has been installed under other sections, are acceptable for product installation in accordance with the manufacturer's recommendations.

C. All devices connected to equipment specified in this section shall near the UL, Cul or CSA label and comply with all applicable National Electrical Code (NEC) standards.

3.2 INSTALLATION

A. The ESSC shall furnish all equipment, tools, labor, system setup and other services necessary for the proper installation and testing of the products and system as described herein and shown on the drawings.

B. Install in accordance with manufacturers handling and installation instructions.

C. Install in accordance with all NEC, local and applicable codes and regulations.

D. All ladder logic, HMI files, and any other custom developed software or configuration files shall be delivered on CD's to the owner at the project closeout.

E. All software licenses shall be transferred to the Owner at completion of the project. This shall include but not be limited to all original installation disks, software manuals, equipment manuals, etc.; all project specific application software shall be transferred at the end of warranty period.

3.3 WARRANTY

A. Provide a one-year material and labor warranty on all equipment provided per this section.

3.4 SPARE PARTS

A. Provide to the owner at project closeout the following spare parts:

1. Provide one (1) complete spare touch screen.

END OF SECTION 28 1000

SECTION 282000 SECURITY MONITORING AND CONTROL SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Provide a distributed installation of Programmable Logic Controllers (PLC) to interface the Touch screen Workstation with the field wire interface equipment that is hardwired to the end-of-line devices that are to be controlled and / or monitored.

B. The PLC shall provide all control and monitoring functions for systems ad described herein and on the drawings.

C. The control system shall be mounted in NEMA 1 hinged door enclosures or 19” EIA enclosed racks as shown on the plans.

1.2 WORK INCLUDED

A. Provide and install a complete PLC system to perform all logic, control and monitoring of all electronically operated devices including but not limited to:

1. Door locks
2. Door status switches
3. Roll up vehicular doors
4. Sliding vehicular gates
5. Lighting circuits
6. CCTV camera switching
7. Intercom station call and answer

B. Provide all programming, configuration, testing and setup to provide a complete PLC system as described herein and shown on the plans.

C. Provide all programming and equipment necessary to interface with other systems and equipment.

PART 2 - PRODUCTS

2.1 PLC CONTROL EQUIPMENT

A. DESCRIPTION

1. The PLC (s) shall be located in Electronic Equipment Rooms and shall be installed inside the same metal control cabinets or racks as the electronic control relays.

2. The PLC shall perform all necessary logic functions, timing, functions, input points, output points and communication necessary to meet all of the requirements of these

specifications.

3. The PLC shall be a standard off-the-shelf, commercially available PLC. Proprietary, custom controllers or drivers are strictly prohibited.

4. Except as otherwise specified, herein, or in the General Conditions, the equipment and materials of this Section shall be products of the following manufacturers, subject to compliance with specification requirements and provided each manufacturer meets all requirements of the Quality Assurance Section of this specification. Non-industrial type PLC Control Units shall not be acceptable. PLC Control Units must be nonproprietary and have an authorized within 2 hours travel tim.

B. The processor shall contain all programs necessary to control the system. The program shall be stored in a non-volatile memory unit. The processor shall communicate with all I/O points directly across the PLC back plane or communicate to local or remote I/O via Ethernet network.

C. All microprocessor-based equipment supplied shall be certified by the manufacturer to meet or exceed the following environmental operating specifications:

1. Ambient Temperature - Operational 0 to 60 C.
2. Storage 40 to +80 C.
3. Ambient Humidity - 50 to 95%, RH non-condensing

D. All local and remote I/O points must be addressed directly from the processor. Systems requiring data/communication hardwired cable to each I/O card will not be acceptable. All I/O cards must be interchangeable without requiring addressing or re-addressing to be moved from one card slot to another card slot. I/O cards requiring dipswitch addressing will not be acceptable.

E. All I/O devices shall be equipped with system self-diagnostic capabilities.

F. The processor shall, on a regular time interval not to exceed three seconds, perform a diagnostic test of all I/O points. This diagnostic test shall be a software test requiring all I/O points to report back to the processor. This test will annunciate any communication or I/O card failure.

G. Programming of the programmable controller shall be accomplished utilizing a high level language that utilizes ladder logic for all programs. The software shall be capable of converting all functions associated with locking, Lighting, CCTV and intercom control features and a completely automated method.

H. MANUFACTURER QUALIFICATIONS

1. Manufacturers desiring to provide equipment under this section must be prequalified and listed herein or in a pre-bid addendum.

2. The Programmable Logic Controller manufacturer shall be a company specializing in the design and manufacture of industrial grade PLC equipment with national and international distribution. The manufacturer must have been in business using the same name for a minimum period of five (5) years and have an ISO9001 certification.

3. Approval of the Manufacturer does not alleviate the Manufacturer from any of the requirements of the contract drawings or documents or nullify any terms or conditions contained herein unless explicitly set forth in an addendum.

4. The Owner reserves the right to disqualify manufacturers who do not comply with the requirements of this section of the specifications.

I. ACCEPTABLE MANUFACTURORS

1. The following Manufacturers are pre-qualified to provide equipment under this section:
    a. Allen Bradley
    b. GE Fanuc
    c. Omron

J. Custom or proprietary PLC's, controllers, or custom software drivers are strictly prohibited.

2.1 PROGRAMMING SOFTWARE

A. Utilize PLC programming software to accomplish all functions as described herein and as shown on the plans.

B. The software will be programmed and tailored to the specified functions and features described herein and shown on the drawings.

C. PLC programming and development software provided by the following manufacturers is acceptable:

1. Allen Bradley
2. GE Fanuc
3. Omron

2.2 RELAY CONTROL SYSTEM

A. Provide and configure all relays, sockets, terminals, wiring, mounting assemblies, power supplies, cabinetry, ground facilities, and other appurtenances as necessary to furnish a complete system as described herein and shown on the drawings.

B. Provide all interconnections to the PLC I/O for logical control of all equipment.

C. Consult device manufacturers published product data for each controlled and/or monitored device including but not limited to:

1. Door locks
2. Door Status switches
3. Gates
4. Light ballasts

D. Consult PLC manufacturers published product data for Input modules and output modules and match relay and terminal equipment to input and output electrical characteristics.

2.3 LOCKING CONTROL RELAYS

A. All outputs/inputs shall have an interposing relay interface. Relays shall be sized for highest load imposed on the relay. Relays shall be individual socket base type mounted on din rail within the security equipment cabinet.

1. Relays mounted on any type of circuit board are not acceptable.

2. Provide diodes across relays to protect contracts from counter EMF of lock sets where required (such as on 24 VDC lock sets.).
3. Provide individual circuit breaker for each relay output.

B. The device control relays shall be electromechanical type that are rated for at least 50% more current capacity than required for any given control function, but in no case less than 10 amps. The relays shall be operated at an input voltage of 24VDC, and the output shall be capable of switching any voltage up to 140 VAC, at the rated output current.

C. Solid State or optically isolated solid-state relays are not acceptable. The following requirements must be met for all locking control relays:

1. Coil indication must be given at the relay location.
2. Each relay is to be fused in such a way as to meet National Electric Code distribution requirements and to protect the relay and other circuitry from a short circuit failure at the lock.
3. Each relay shall be socketed to facilitate easy field replacement.
4. All relays and terminations are to be labeled clearly to show all field terminations.
5. All relay sockets and terminal strips shall be DIN rail mounted

2.4 LIGHTING CONTROL RELAYS

A. The lighting control relays shall be designed for insertion into a metal partition providing for separation of the high voltage circuit to be controlled and the controlling low voltage wiring.

B. The lighting control relay shall be a latching mechanical contact rated at a minimum of 20 amps. The following requirements must be met for all lighting control relays:

1. The relay must provide an auxiliary status contact that will be monitored by the control system for indication on the touch screen. The touch screen shall indicate actual relay status.
2. Each relay shall be rated with a minimum of a 20-amp contact and shall be rated for the line voltage controlled.
3. The lighting control relay shall be U.L. recognized.
4. The relay mounting shall be constructed in such a way that a metal partition shall separate the high voltage contacts and the low voltage switching circuitry.

2.1 CONTROL RELAY SOCKETS

A. Provide plug in type sockets for all locking control relays.

B. Control relay sockets shall have captive clamp type screw terminals.

2.2 POWER SUPPLIES

A. Provide logic power supplies as necessary to operate all relays and electronic equipment.

B. Power supplies shall be regulated, filtered switching type power supplies meeting the following minimum requirements:

1. Nominal Input voltage 120VAC
2. Nominal Output voltage 24 VDC
3. MTFF > 500,000 Hours
4. Ambient temperature operating range -25C to 70C
5. Din rail mountable
6. Enclosed frame

C. Size power supplies to accommodate 150% of the maximum load that could ever be imposed at any given time.

2.3 WIRE TERMINALS

A. Provide Din rail mountable terminals for all field wire connections.

B. Terminals shall have captive clamp or compression type screw terminals and shall be rate for 20 amps per circuit minimum.

C. Provide buss bars as necessary.

2.4 FUSE HOLDERS

A. Provide Din rail mounted fuse holders for each door lock.

B. All incoming power circuits shall be fused.

2.5 FUSES

A. Fuse all door locks and other devices using Littlefuse 3AG or Bussman AGC series 1 Vi" replicable glass fuses.

B. Size fuses in accordance with lock manufacturers recommendations.

2.6 ENCLOSURES AND RACKS

A. Wall mounted equipment shall be installed in NEMA 1 hinged door enclosures with a removable steel mounting plate.

1. Size enclosures in accordance with the number of relays and terminals required for the project.
2. Cabinets shall be ANSI 61 gray polyester powder coated. Mounting plates shall be painted white.
3. Rack mounted equipment shall be installed in floor mounted EIA equipment racks.

4. Provide adequate ventilation in enclosures and racks to dissipate excess heat.

2.7 WIRE MANAGEMENT

A. All wiring shall be routed in wire way or finger type wire duct. Provide snapping type covers for all wire ducts.

2.8 LABELING

A. Label all components clearly with a consistent labeling scheme. Labels shall be cross referenced to wiring schematics for easy reference.

B. Label all relays, terminal points, fuse holders, I/O modules, circuit breakers, power supplies and any other control equipment.

PART 3 - EXECUTION

3.1 PROTECTION

A. Deliver each piece of equipment in durable shipping containers. Maintain cartons through shipping, storage and handling as required to prevent damage and eliminate dirt and moisture. Wrap all equipment in heavy packing cellophane for moisture protection.

B. All equipment MUST be stored in a climate controlled environment. On site storage trailers or containers that are not climate controlled are strictly prohibited.

3.2 TESTING

A. All equipment shall be factory tested prior to delivery to the jobsite.

B. The system shall be fully field tested under the supervision of a technician, trained and certified by the manufacturer as a master technician for the said system. The system shall be demonstrated to perform all of the functions shown on the plans and as specified herein.

3.3 EXAMINATION

A. Verify that related conditions, including equipment that has been installed under other sections, are acceptable for product installation in accordance with the manufacturer's recommendations.

B. All devices connected to equipment specified in this section shall bear the UL , cUL or CSA label and comply with all applicable National Electrical Code (NEC) standards.

3.4 INSTALLATION

A. The ESSC shall furnish all equipment, tools, labor, system setup and other services necessary for the proper installation and testing of the products and system as described

herein and shown on the drawings.

B. Install in accordance with manufacturers handling and installation instructions.

C. Install in accordance with all NEC, local and applicable codes and regulations.

D. All ladder logic, HMI files, and any other custom developed software or configuration files shall be delivered on CD's to the owner at the project closeout.

E. All software licenses shall be transferred to the Owner at completion of the project. This shall include but not be limited to all original installation disks, software manuals, equipment manuals, etc.; all project specific application software shall be transferred at the end of warranty period.

3.5 WARRANTY

A. Provide one year parts and labor warranty on all equipment supplied under this section.

3.6 SPARE PARTS

A. Provide to the owner at project closeout the following spare parts:

1. Input module (one of each type used)
2. Output Module (one of each type used)
3. Power Supply (one of e ach type used)
4. Processor (one of each type used)
5. Ethernet communication module (one of each type used)
6. (5) Relays of each type used
7. (25) fuses of each type and value used
8. (1) Power supply of each type used

END OF SECTION 28 2000