

REQUIRED DOCUMENTS

**AFFIDAVIT AND WAIVER OF LIEN
PRIME CONTRACTOR**

STATE OF _____

COUNTY OF _____

Personally appeared before me, the undersigned Notary Public for said County and State (Name of Individual), _____ (Title) of _____ (Prime Contractor), who being duly sworn by me states on oath that all product suppliers and Subcontractors, payrolls, sales tax, privilege tax or license, old age benefits tax, state and federal unemployment insurance, and other liabilities incurred in the performance of _____ (Type of Contract) Contract for the construction of improvements at _____ (Name of Project), have been paid in full and that the above named Prime Contractor waives any claims and released (Owner) from any rights or claims (including lien rights) for debts due and owing by virtue of the furnishing of any labor, products, and supplies furnished for such improvements.

The above named Prime Contractor agrees to indemnify the Owner and save him harmless on account of any loss he may sustain in reliance upon this Affidavit and Waiver of Lien including the amount of any lien he may be compelled to pay all costs relating thereto and a reasonable attorney's fee.

(Prime Contractor)

By: _____
Type/Print Name

Title: _____

Date: _____

Sworn to and subscribed before me

this the ____ day of _____, 20__.

Notary Public

(Corporate Seal)

My Commission Expires: _____

**RELEASE AND WAIVER OF CLAIMS BY
SUBCONTRACTORS AND PRODUCT VENDORS**

STATE OF _____

COUNTY OF _____

Personally appeared before me the undersigned authority in and for said County and State (Name of Individual), _____ (Title) of _____ (Company), who, being duly sworn by me states on oath that all bills for labor and products, sales tax, privilege tax or license, old age benefits tax, state and federal unemployment insurance and other liability have been paid in full, or that funds are in hand to discharge such liabilities when due, incurred in the performance of its Subcontract for furnishing labor or products in the construction of improvements at (Name of Project), _____ (Location), upon receipt of check in the amount \$ _____, the undersigned company waives any claims and releases _____ (Owner) (Contractor) from any rights or claims for debts due and owing by virtue of the furnishing of any labor or products and any lien therefore.

(Name of Company)

By: _____
Type/Print Name

Title: _____

Date: _____

Sworn to and subscribed before me

this _____ day of _____, 20____.

Notary Public

My Commission Expires: _____

(Corporate Seal)

**CONTRACTOR'S AFFIDAVIT
AS TO STATUS OF LIENS**

STATE OF _____

COUNTY OF _____

Personally appeared before me, the undersigned Notary Public for said County and State, (Name of Individual), _____ (Title), of _____ (Prime Contractor), who being duly sworn by me states on oath that to the best of his knowledge and belief, except as listed below, the Releases and Waivers of Claim attached hereto include all Subcontractors and all suppliers of labor, products, and equipment provided by all persons who may have lien against the property of (Owner), located at _____ (Location of Project), arising out of the construction of improvements thereon.

Exceptions: (If none, write "NONE." Any exception listed shall be bonded by the Contractor to indemnify the Owner, and a copy of each such bond shall be attached hereto.)

- 1.
- 2.
- 3.
- 4.

(Name of Company)

By: _____
Type/Print Name

Title: _____

Date: _____

Sworn to and subscribed before me

this ____ day of _____, 20____.

Notary Public

My Commission Expires: _____

(Corporate Seal)

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

WAGE RATES

SECTION 00820

PART 1. GENERAL

1.1 Requirements:

- A. Pay not less than the minimum wage scale and benefits accepted within the local construction industry.
- B. No claims for additional compensation will be considered by the Owner because of payments of wage rates in excess of the applicable rate contained in this contract.
- C. All contractors and subcontractors shall be equal opportunity employers.

1.2 Workmanship Standards:

Comply with the recognized workmanship quality standards within the industry as applicable to each unit of work, including ANSI standards where applicable. Project workmen should be paid in accordance with accepted pay scales for similar experience level and work in the area. It is a requirement that each category of tradesman or installer performing the work be pre-qualified, to the extent of being familiar with the applicable and recognized quality standards for his category of work, and being capable of workmanship complying with those standards.

1.3 Payroll:

- A. In compliance with Article 515a, Sections 2 and 3, and Article 5159d, Section II of the Revised Civil Statute referenced above, the Owner reserves the following rights:
 - 1. To receive weekly payroll records.
 - 2. To have the Contractor provide required earning statements to employees.

1.4 Minimum Wage Rates:

- A. Pay prevailing basic wage listed, plus any applicable fringe benefits.
- B. In no case shall wages be less than the federally determined prevailing (Davis-Bacon and Related Acts) wage rate, as issued by the U.S. Department of Labor and contained in the contract documents. In addition the successful proposer must ensure that employees and applicants for employment are not discriminated against because of race, sex, age or national origin.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PREVAILING WAGE SCALE NOTICE

1. This determination of prevailing wages shall not be construed to prohibit the payment of more than the rates named. Under no conditions shall any laborer, workman or mechanic employed on this job be paid less than the minimum wage scale.
2. In execution of this contract, the contractor must comply with all applicable state and federal laws, including but not limited to laws concerned with labor, equal employment opportunity, safety, and minimum wage.

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SUMMARY

SECTION 01100

PART 1 GENERAL

1.1 SUMMARY

B. Section Includes:

1. Contract description.
2. Contractor's use of site and premises.
3. Future work.
4. Work sequence.
5. Owner occupancy.
6. Permits.
7. Specification conventions.

1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes renovations at the HCSO ADC and LEC.
- B. Work will be performed under a single prime contract.
- C. Project location = Edinburg, Texas.

1.3 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow:
 1. Owner occupancy.
- B. Access to Site: Limited to locations shown in drawings.
- C. Construction Operations: Limited to areas noted on Drawings.
 1. Noisy and Disruptive Operations (such as Use of Jack Hammers and Other Noisy Equipment): Not allowed in close proximity to existing building during regular hours of operation. Coordinate and schedule such operations with Owner to minimize disruptions.
- D. Time Restrictions for Performing Interior work at ADC kitchen 7:00pm – 2:00am on working days. All other interior/exterior work to be performed on working days only.
- E. Utility Outages and Shutdown:

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Coordinate and schedule electrical and other utility outages with Owner.
2. Outages: Allowed only at previously agreed upon times.

F. Construction Plan: Before start of construction, submit three copies of construction plan regarding access to work, use of Site, and utility outages for acceptance by Owner. After acceptance of plan, construction operations shall comply with accepted plan unless deviations are accepted by Owner in writing.

1.7 WORK SEQUENCE

- A. Construct Work in phases during construction period. Coordinate construction schedule and operations with Engineer and Owner.
- B. Sequencing of Construction Plan: Before start of construction, submit three copies of construction plan regarding phasing of renovation and new Work for acceptance by Owner. After acceptance of plan, construction sequencing shall comply with accepted plan unless deviations are accepted by Owner in writing at least 7 days in advanced.

1.8 OWNER OCCUPANCY

- A. The Owner will occupy the premises during the entire period of construction.
- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.
- D. Temperature control in the facility must be maintained at all times.

1.9 PERMITS

- A. Furnish all necessary permits for construction Work.

1.10 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PRICE AND PAYMENT PROCEDURES

SECTION 01200

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Allowances.
- B. Contingency allowances.
- C. Testing and inspection allowances.
- D. Schedule of Values.
- E. Application for Payment.
- F. Change procedures.
- G. Defect assessment.
- H. Unit prices.

1.2 ALLOWANCES

- A. Costs Included in Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.
- B. Costs Not Included in Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.
- C. Architect/Engineer Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
 - 3. Prepare Change Order.
- D. Contractor Responsibilities:
 - 1. Assist Architect/Engineer in selection of products, suppliers, and installers.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.
 - 3. Upon notification of selection by Engineer, execute purchase agreement with designated supplier and installer.
 - 4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.
 - 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- E. Differences in costs will be adjusted by Supplemental Instructions.
- F. Allowance Schedule:
 - 1. Section 05120: Include the stipulated sum of \$25,000 for purchase, delivery, and installation and delivery of steel support column as per structural drawings.
 - 2. Section 03600: Include the stipulated sum of \$5,000 for purchase, delivery and installation of grout repair at existing tilt walls.
 - 3. Include the stipulated sum of \$7,500.00 to replace Doors and Re-heat wiring at thresholds of (2) coolers and (1) Freezer.
 - 4. Include the stipulated sum of \$19,000.00 to replace single exterior cooler/freezer condensing unit with two (2) condensing units. Unit 1 shall serve freezer; unit 2 shall serve coolers.

1.3 CONTINGENCY ALLOWANCES

- A. Include in Contract a stipulated sum/price of \$130,000 for use upon Owner's instruction as a contingency allowance.
- B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, will be included in Supplemental Instructions authorizing expenditure of funds from this contingency allowance. No bonding, overhead, and profit will be included.
- C. Funds will be drawn from contingency allowance only by Supplemental Instructions.
- D. At closeout of Contract, funds remaining in contingency allowance will be credited to Owner by Change Order.

1.4 TESTING AND INSPECTION ALLOWANCES

- A. Costs Included in Testing and Inspecting Allowances:
 - 1. Cost of engaging testing and inspecting agency.
 - 2. Execution of tests and inspecting.
 - 3. Reporting results.
- B. Costs Not Included in Testing and Inspecting Allowance but Included in Contract Sum/Price:
 - 1. Costs of incidental labor and facilities required to assist testing or inspecting agency.
 - 2. Costs of testing services used by Contractor separate from Contract Document requirements.
 - 3. Costs of retesting upon failure of previous tests as determined by Architect/Engineer.
- C. Payment Procedures:
 - 1. Submit one copy of inspecting or testing firm's invoice with next Application for Payment.
 - 2. Pay invoice upon approval by Architect/Engineer.
- D. Testing and Inspecting Allowance Schedule:
 - 1. Include sum of \$10,000 for payment of inspecting laboratory services.
- E. Differences in cost will be adjusted by Change Order.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.5 SCHEDULE OF VALUES

- A. Submit printed and electronic file schedule on AIA G702 - Continuation Sheet for G703 or similar document provided by Engineer.
- B. Submit Schedule of Values as electronic file within 15 days after notice of award for approval by Owner and Engineer.
- C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section. Also identify Site mobilization, bonds, insurance, general conditions and all major tasks involved throughout the project scope of work sufficiently itemized to accurately reflect monthly progress.
- D. Include in each line item amount of allowances as specified in this Section. For unit cost allowances, identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.
- E. Include separately from each line item, direct proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders with each Application for Payment.

1.6 APPLICATION FOR PAYMENT

- A. Submit three copies AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702 or similar document provided by Engineer.
- B. Content and Format: Use Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Agreement.
- E. Submit three copies of waivers requested by Owner.
- F. Substantiating Data: When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
 - 1. Partial release of liens from major Subcontractors and vendors.
 - 2. Record Documents as specified in Section 01700 - Execution Requirements, for review by Owner, which will be returned to Contractor.
 - 3. Affidavits attesting to off-Site stored products.
 - 4. Construction Progress Schedule, revised and current as specified in Section 01330 - Submittal Procedures.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Submittals Schedule (preliminary if not final).
5. List of Contractor's staff assignments.
6. List of Contractor's principal consultants.
7. Initial progress report.
8. Report of preconstruction conference.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds.

H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. "Contractor's Affidavit of Payment of Debts and Claims."
5. "Contractor's Affidavit of Release of Liens."
6. "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

1.7 CHANGE PROCEDURES

- A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Architect/Engineer of any error, inconsistency, omission, or apparent discrepancy.
- C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Architect/Engineer; establish procedures for handling queries and clarifications.
 1. Use Standard - Request for Information document for requesting interpretations.
 2. Architect/Engineer may respond with a direct answer on the Request for Interpretation form.
- D. Architect/Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- E. Architect/Engineer may issue Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change. Contractor will prepare and submit estimate within 7 days.
- F. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation .
- G. Unit Price Change Order: For Contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of that which are not predetermined, execute Work under Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Change Order.
- H. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- I. Correlation of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
 - 2. Promptly revise Progress Schedules to reflect change in Contract Time, revise subschedules to adjust times for other items of Work affected by the change, and resubmit.
 - 3. Promptly enter changes in Record Documents.

1.8 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct appropriate remedy or adjust payment.
- C. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.
- D. Authority of Engineer to assess defects and identify payment adjustments is final.
- E. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of the required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

1.9 UNIT PRICES

- A. Authority: Measurement methods are delineated in individual Specification Sections.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Measurement methods delineated in individual Specification Sections complement criteria of this Section. In event of conflict, requirements of individual Specification Section govern.
- C. Take measurements and compute quantities. Architect/Engineer will verify measurements and quantities.
- D. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Actual quantities provided shall determine payment.
 - 1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at contracted unit sum/prices.
- E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Architect/Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.
- G. Measurement of Quantities:
 - 1. Weigh Scales: Inspected, tested, and certified by applicable State of Texas weights and measures department within past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
 - 3. Metering Devices: Inspected, tested, and certified by applicable State of Texas department within past year.
 - 4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
 - 5. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
 - 6. Measurement by Area: Measured by square dimension using mean length and width or radius.
 - 7. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
 - 8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

H. Unit Price Schedule:

ITEM NO.	ITEM DESCRIPTION	UNIT PRICE
	FIRE ALARM DEVICES WITH ROUGH-IN	
1.	Pull Station with Stopper II (1 each)	\$ _____
2.	Audio Visual Device (1 each)	\$ _____
3.	Visual Device (1 each)	\$ _____
4.	Ceiling Smoke Detector (1 each)	\$ _____
5.	Smoke Detector Guard (1 each)	\$ _____
6.	Audio Visual Guard (1 each)	\$ _____
7.	Duct Detector (1 each)	\$ _____
8.	Fire Alarm Relay Module (1 each)	\$ _____
9.	Fire Alarm Monitor Module (1 each)	\$ _____
10.	Fire Alarm Notification Power Supply(1 each)	\$ _____
11.	Fiber Optic cable per 100 ft six strand multimode 62.5 Micron Plenum Rated (1 each)	\$ _____
	ADC KITCHEN	
12.	A/C diffusers in Kitchen (1 each)	\$ _____
13.	Drop In lights In kitchen (1 each)	\$ _____
	MISCELLANEOUS STRUCTURAL	
	2 Welded ½" rods at (e) steel joist	

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

14.	bottom chord, 20' lengths each	\$ _____
	ROOFING	
15.	Replacement of wet roof areas identified by the Thermocore® Infrared Scan. Description: Provide wet roof area replacement according to Section 07551 Modified Bitumen Membrane Roofing (Re-Cover). Unit of Measurement: 1 square foot.	\$ _____
16.	Deteriorated existing metal roof decking repair or replacement. Description: Provide deteriorated metal roof decking repair or replacement with new metal roofing to match existing according to Section 05310 Steel Deck Repair/Replacement (If Required). Unit of Measurement: 1 square foot.	\$ _____
17.	Deteriorated existing wood blocking or nailer repair or replacement. Description: Provide deteriorated wood blocking and nailer repair or replacement with new pressure-treated wood blocking or nailers according to Section 06105 Miscellaneous Carpentry. Unit of Measurement: 1 board foot. Supply Cost for 2x4 2x6 2x8	 \$ _____ \$ _____ \$ _____

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

**HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX**

PAYMENT PROCEDURES

SECTION 01290

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:

1. Division 1 Section "Allowances" for procedural requirements governing handling and processing of allowances.
2. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
3. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with Continuation Sheets.
 - b. Submittals Schedule.
 - c. Contractor's Construction Schedule.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PAYMENT PROCEDURES

2. Submit the Schedule of Values to Engineer at earliest possible date but no later than fifteen days after notice of award for submittal of initial Applications for Payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Engineer.
 - c. Owner's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Submit draft of AIA Document G703 Continuation Sheets or similar format.
 3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

PAYMENT PROCEDURES

- a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
- b. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 or similar format Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. Each copy shall include waivers of lien and similar attachments.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

PAYMENT PROCEDURES

- F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Submittals Schedule (preliminary if not final).
 5. List of Contractor's staff assignments.
 6. List of Contractor's principal consultants.
 7. Initial progress report.
 8. Report of preconstruction conference.
 9. Certificates of insurance and insurance policies.
 10. Performance and payment bonds.
- H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. "Contractor's Affidavit of Payment of Debts and Claims."
 5. "Contractor's Affidavit of Release of Liens."
 6. "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

ADMINISTRATIVE REQUIREMENTS

SECTION 01300

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination and Project conditions.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Preinstallation meetings.
- F. Closeout meeting.
- G. Alteration procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - 1. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.
- D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- E. In finished areas conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- F. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion.
- G. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after Notice of Award.
- B. Attendance Required: Architect/Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, Construction Project Manager, and Contractor.
- C. Minimum Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
 - 5. Designation of personnel representing parties in Contract, and Architect/Engineer.
 - 6. Communication procedures.
 - 7. Procedures and processing of requests for interpretations, field decisions, field orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
 - 8. Scheduling.
 - 9. Critical Work sequencing.
- D. Construction Project Manager: Record minutes and distribute copies to participants within seven days after meeting, with Architect/Engineer, Owner, and those affected by decisions made.

1.4 SITE MOBILIZATION MEETING

- A. Construction Project Manager will schedule and preside over meeting at Project Site prior to Contractor occupancy.
- B. Attendance Required: Architect/Engineer, Owner, Contractor, Contractor's superintendent, Construction Project Manager.
- C. Minimum Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements.
 - 3. Construction facilities and controls.
 - 4. Temporary utilities.
 - 5. Security and housekeeping procedures.
 - 6. Schedules.
 - 7. Procedures for testing.
 - 8. Procedures for maintaining record documents.
 - 9. Requirements for startup of equipment.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

10. Inspection and acceptance of equipment put into service during construction period.

- D. Construction Project Manager: Record minutes and distribute to participants within 7 days after meeting.

1.5 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum bi-weekly intervals.
- B. Construction Project Manager shall make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, and Architect/Engineer, Owner, as appropriate to agenda topics for each meeting.
- D. Minimum Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems impeding planned progress.
 5. Review of submittal schedule and status of submittals.
 6. Review of off-Site fabrication and delivery schedules.
 7. Maintenance of Progress Schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on Progress Schedule and coordination.
 13. Other business relating to Work.
- E. Construction Project Manager: Record minutes and distribute to participants within 7 days after meeting.

1.6 PREINSTALLATION MEETINGS

- A. When required in individual Specification Sections, convene preinstallation meetings at Project Site before starting Work of specific Section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Prepare agenda and preside over meeting:
1. Review conditions of installation, preparation, and installation procedures.
 2. Review coordination with related Work.
- E. Record minutes and distribute to participants within seven days after meeting.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.7 CLOSEOUT MEETING

- A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.
- B. Attendance Required: Contractor, Construction Project Manager, Major Subcontractors, Architect/Engineer, Owner, and others appropriate to agenda.
- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Minimum Agenda:
 - 1. Start-up of facilities and systems.
 - 2. Operations and maintenance manuals.
 - 3. Testing, adjusting, and balancing.
 - 4. System demonstration and observation.
 - 5. Operation and maintenance instructions for Owner's personnel.
 - 6. Contractor's inspection of Work.
 - 7. Contractor's preparation of an initial "punch list."
 - 8. Procedure to request Architect/Engineer inspection to determine date of Substantial Completion.
 - 9. Completion time for correcting deficiencies.
 - 10. Inspections by authorities having jurisdiction.
 - 11. Certificate of Occupancy and transfer of insurance responsibilities.
 - 12. Partial release of retainage.
 - 13. Final cleaning.
 - 14. Preparation for final inspection.
 - 15. Closeout Submittals:
 - a. Project record documents.
 - b. Operating and maintenance documents.
 - c. Operating and maintenance materials.
 - d. Affidavits.
 - 16. Final Application for Payment.
 - 17. Contractor's demobilization of Site.
 - 18. Maintenance.
- E. Record minutes and distribute copies to participants within 7 days after meeting.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 ALTERATION PROCEDURES

- A. Entire facility will be occupied for normal operations during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.
 - 1. Perform Work not to interfere with operations of occupied areas.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Keep utility and service outages to a minimum and perform only after written approval of Owner.
 3. Indoor temperature control must be maintained at all times.
 4. Clean Owner-occupied areas daily. Clean spillage, overspray, and heavy collection of dust in Owner-occupied areas immediately.
- B. Materials: As specified in product Sections; match existing products with new **[and salvaged]** products for patching and extending Work.
- C. Employ skilled and experienced installer to perform alteration and renovation Work.
- D. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion. Comply with Section 01700 - Execution Requirements.
- E. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- F. Remove debris and abandoned items from area and from concealed spaces.
- G. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
- H. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
- I. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to original condition.
- J. Refinish existing visible surfaces to remain in renovated rooms and spaces, to renewed condition for each material, with neat transition to adjacent finishes.
- K. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

CONSTRUCTION PROGRESS SCHEDULES

SECTION 01323

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. Format for network analysis schedules.
- D. Network analysis schedules.
- E. Bar chart schedules.
- F. Review and evaluation.
- G. Updating schedules.
- H. Distribution.

1.2 SUBMITTALS

- A. Within 10 days after date of Owner-Contractor Agreement, submit proposed preliminary network diagram defining planned operations for first **60** days of Work, with general outline for remainder of Work.
- B. Participate in review of preliminary and complete network diagrams jointly with Architect/Engineer.
- C. Within 20 days after joint review of proposed preliminary network diagram, submit draft of proposed complete network diagram for review. Include written certification that major Subcontractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete network analysis consisting of network diagrams and mathematical analyses.
- E. Submit updated network schedules every 14 days.
- F. Any changes to schedule must be submitted at least 7 days in advance.
- G. Post as electronic file to Project Team.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- H. Submit network schedules under transmittal letter form specified in Section 01330 - Submittal Procedures.
- I. Schedule Updates:
 - 1. Overall percent complete, projected and actual.
 - 2. Completion progress by listed activity and sub activity, to within **five working** days prior to submittal.
 - 3. Changes in Work scope and activities modified since submittal.
 - 4. Delays in submittals or resubmittals, deliveries, or Work.
 - 5. Adjusted or modified sequences of Work.
 - 6. Other identifiable changes.
 - 7. Revised projections of progress and completion.
- J. Narrative Progress Report:
 - 1. Submit with each monthly submission of Progress Schedule.
 - 2. Summary of Work completed during the past period between reports.
 - 3. Work planned during the next period.
 - 4. Explanation of differences between summary of Work completed and Work planned in previously submitted report.
 - 5. Current and anticipated delaying factors and estimated impact on other activities and completion milestones.
 - 6. Corrective action taken or proposed.

1.3 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel specializing in CPM scheduling with two years' minimum experience in scheduling construction work of complexity comparable to the Project and having use of computer facilities capable of delivering detailed graphic printout within 48 hours of request.
- B. Contractor's Administrative Personnel: 2 years' minimum experience in using and monitoring CPM schedules on comparable Projects.

1.4 FORMAT FOR NETWORK ANALYSIS SCHEDULE

- A. Listings: Reading from left to right, in ascending order for each activity. Identify each activity with applicable Specification Section number.
- B. Scale and Spacing: To allow for notations and revisions.

1.5 NETWORK ANALYSIS SCHEDULES

- A. Prepare network analysis diagrams and supporting mathematical analyses using critical path method.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Illustrate order and interdependence of activities and sequence of Work; how start of given activity depends on completion of preceding activities, and how completion of activity may restrain start of subsequent activities.
 - C. Illustrate complete sequence of construction by activity, identifying Work of separate stages. Indicate dates for submittals and return of submittals; dates for procurement and delivery of critical products; and dates for installation and provision for testing. Include legend for symbols and abbreviations used.
 - D. Mathematical Analysis: Tabulate each activity of detailed network diagrams using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum **15**-day intervals. Status of critical activities.
 - 4. Earliest start date.
 - 5. Earliest finish date.
 - 6. Actual start date.
 - 7. Actual finish date.
 - 8. Latest start date.
 - 9. Latest finish date.
 - 10. Total and free float; accrue float time to Owner and to Owner's benefit.
 - 11. Monetary value of activity, keyed to Schedule of Values.
 - 12. Percentage of activity completed.
 - 13. Responsibility.
 - E. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, of accepting revised completion dates, and of recomputing of scheduled dates and float.
 - F. Required Sorts: List activities in sorts or groups:
 - 1. By preceding Work item or event number from lowest to highest.
 - 2. By longest float, then in order of early start.
 - 3. By responsibility in order of earliest possible start date.
 - 4. In order of latest allowable start dates.
 - 5. In order of latest allowable finish dates.
 - 6. Contractor's periodic payment request sorted by Schedule of Values list.
 - 7. List of basic input data-generating report.
 - 8. List of activities on critical path.
 - G. Prepare subschedules for each stage of Work and Sequencing of Construction Plan identified in Section 01100 – Summary.
 - H. Coordinate contents with Schedule of Values in Section 01330 - Submittal Procedures.
- 1.6 BAR CHART SCHEDULES
- A. Format: Bar chart Schedule, to include at least:

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:
 - a. Subcontract Work.
 - b. Major equipment design, fabrication, factory testing, and delivery dates including required lead times.
 - c. Move-in and other preliminary activities.
 - d. Equipment and equipment system test and startup activities.
 - e. Project closeout and cleanup.
 - f. Work sequences, constraints, and milestones.
2. Listings identified by Specification Section number.
3. Identification of the following:
 - a. Horizontal time frame by year, month, and week.
 - b. Duration, early start, and completion for each activity and subactivity.
 - c. Critical activities and Project float.
 - d. Subschedules to further define critical portions of Work.

1.7 REVIEW AND EVALUATION

- A. Participate in joint review and evaluation of schedules with Architect/Engineer at each submittal.
- B. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.
- C. After review, revise schedules incorporating results of review, and resubmit within 10 days.

1.8 UPDATING SCHEDULES

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update schedules to depict current status of Work.
- C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- D. Upon approval of a Change Order, include the change in the next schedule submittal.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit sorts as required to support recommended changes.
- G. Prepare narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken or proposed and its effect including effects of changes on schedules of separate Contractors.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.9 DISTRIBUTION

- A. Following joint review, distribute copies of updated schedules to Contractor's Project site file, to Subcontractors, suppliers, Architect/Engineer, Owner.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SUBMITTAL PROCEDURES

SECTION 01330

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Construction progress schedules.
- D. Proposed product list.
- E. Product data.
- F. Use of electronic CAD files of Project Drawings.
- G. Shop Drawings.
- H. Samples.
- I. Other submittals.
- J. Design data.
- K. Test reports.
- L. Certificates.
- M. Manufacturer's instructions.
- N. Manufacturer's field reports.
- O. Erection Drawings.
- P. Construction photographs.
- Q. Contractor review.
- R. Architect/Engineer review.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect/Engineer's and Construction Project Manager's responsive action.
- B. Informational Submittals: Written and graphic information and physical Samples that do not require Architect/Engineer's and Construction Project Manager's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Transmittal Letter.
- B. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite Project, and deliver to Engineer at business address. Coordinate submission of related items.
- E. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
- F. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- G. Allow space on submittals for Contractor and Architect/Engineer review stamps.
- H. When revised for resubmission, identify changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- J. Submittals not requested will not be recognized nor processed.
- K. Incomplete Submittals: Architect/Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Architect/Engineer.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Comply with Section 01323 - Construction Progress Schedules.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.5 PROPOSED PRODUCT LIST

- A. Within 15 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PRODUCT DATA

- A. Product Data: Action Submittal: Submit to Architect/Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus two copies Engineer will retain.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01700 - Execution Requirements.

1.7 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Architect/Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit number of opaque reproductions Contractor requires, plus **two** copies Engineer will retain.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01700 - Execution Requirements.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.8 SAMPLES

- A. Samples: Action Submittal: Submit to Architect/Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to Architect/Engineer for aesthetic, color, and finish selection.
 - 2. Submit Samples of finishes, textures, and patterns for Architect/Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01700 - Execution Requirements.

1.9 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 01700 - Execution Requirements.
- B. LEED Submittals: Comply with Section 01351 - Sustainable Project Requirements.
- C. Permits: Within 15 days after date of Owner-Contractor Agreement, submit a list of permits and licenses to be obtained, identifying the granting agency and the required date of permit submittal.

1.10 DESIGN DATA

- A. Informational Submittal: Submit data for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 TEST REPORTS

- A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.12 CERTIFICATES

- A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Architect/Engineer.

1.13 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Architect/Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.14 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit report within 5 days of observation to Architect/Engineer for information.
- C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.15 ERECTION DRAWINGS

- A. Informational Submittal: Submit Drawings for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Architect/Engineer or Owner.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.16 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of construction throughout progress of Work produced by an experienced photographer acceptable to Architect/Engineer.
- B. Twice monthly submit photographs.
- C. Digital Images: Deliver complete set of digital image electronic files on CD-ROM to Owner with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.
 - 1. Digital Images: Uncompressed TIFF format, produced by digital camera with minimum sensor size of 4.0 megapixels, and image resolution of not less than 1024 by 768 pixels.
 - 2. Date and Time: Include date and time in filename for each image.

1.17 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.
- B. Contractor: Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Architect/Engineer.

1.18 ARCHITECT/ENGINEER REVIEW

- A. Do not make "mass submittals" to Architect/Engineer. "Mass submittals" are defined as six or more submittals or items in one day or **15** or more submittals or items in one week. If "mass submittals" are received, Architect/Engineer's review time stated above will be extended as necessary to perform proper review. Architect/Engineer will review "mass submittals" based on priority determined by Architect/Engineer after consultation with Owner and Construction Project Manager.
- B. Informational submittals and other similar data are for Architect/Engineer's information, do not require Architect/Engineer's responsive action, and will not be reviewed or returned with comment.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, or Construction Change Directive.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

QUALITY REQUIREMENTS

SECTION 01400

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality control.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Mockup requirements.
- F. Testing and inspection services.
- G. Manufacturers' field services.

1.2 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform Work using persons qualified to produce required and specified quality.
- D. Products, materials, and equipment may be subject to inspection by Architect/Engineer and Owner at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.
- C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 LABELING

- A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
 - 1. Model number.
 - 2. Serial number.
 - 3. Performance characteristics.
- C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.
- B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mockups shall be comparison standard for remaining Work.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- D. Where mockup has been accepted by Architect/Engineer and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Architect/Engineer.

1.7 TESTING AND INSPECTION SERVICES

- A. Employ and pay for services of an independent testing agency or laboratory acceptable to Owner to perform specified testing.
 - 1. Before starting Work, submit testing laboratory name, address, and telephone number, and names of full-time Professional Engineer or specialist and responsible officer.
 - 2. Submit copy of report of laboratory facilities' inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
- B. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Architect/Engineer.
 - 1. Laboratory: Authorized to operate at Project location.
 - 2. Laboratory Staff: Maintain full-time Professional Engineer or specialist on staff to review services.
 - 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Architect/Engineer or Owner.
- D. Reports shall be submitted by independent firm to Architect/Engineer, Contractor, and authorities having jurisdiction, indicating observations and results of tests and compliance or noncompliance with Contract Documents.
 - 1. Submit final report indicating correction of Work previously reported as noncompliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Architect/Engineer and independent firm 24 hours before expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.
- F. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.
- G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Architect/Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- H. Agency Responsibilities:
 - 1. Test Samples of mixes submitted by Contractor.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Provide qualified personnel at Site. Cooperate with Architect/Engineer and Contractor in performance of services.
 3. Perform indicated sampling and testing of products according to specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Architect/Engineer and Contractor of observed irregularities or nonconformance of Work or products.
 6. Perform additional tests required by Architect/Engineer.
 7. Attend preconstruction meetings and progress meetings.
- I. Agency Reports: After each test, promptly submit copies of report to Architect/Engineer, Contractor, and authorities having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
1. Date issued.
 2. Project title and number.
 3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and Specification Section.
 6. Location in Project.
 7. Type of inspection or test.
 8. Date of test.
 9. Results of tests.
 10. Conformance with Contract Documents.
- J. Limits on Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency or laboratory may not approve or accept any portion of the Work.
 3. Agency or laboratory may not assume duties of Contractor.
 4. Agency or laboratory has no authority to stop the Work.

1.8 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment and commissioning as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations. Observer is subject to approval of Architect/Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Refer to Section 01330 - Submittal Procedures, "Manufacturer's Field Reports" Article.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 01400 - QUALITY REQUIREMENTS- ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Owner.
- C. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Owner for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Owner for a decision before proceeding.

1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- F. Factory-Authorized Technical Representative Qualifications: An authorized, full-time technical specialist employee representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of roofing systems that are similar in material, design, and extent to those indicated for this Project.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
 - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a manufacturer-authorized technical representative to inspect field-assembled components. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Owner and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Owner and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections, including minor cutting and patching.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage of test samples.
 5. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

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

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
 - C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

TEMPORARY FACILITIES AND CONTROLS

SECTION 01500

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary facilities under Construction Management Agreement.
- B. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating.
 - 4. Temporary cooling.
 - 5. Temporary ventilation.
 - 6. Communication services.
 - 7. Temporary water service.
 - 8. Temporary sanitary facilities.
- C. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Vehicular access.
 - 3. Parking.
 - 4. Progress cleaning and waste removal.
 - 5. Project identification.
 - 6. Traffic regulation.
 - 7. Fire-prevention facilities.
- D. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Water control.
 - 5. Dust control.
 - 6. Erosion and sediment control.
 - 7. Noise control.
 - 8. Pest and rodent control.
 - 9. Pollution control.
- E. Removal of utilities, facilities, and controls.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.3 TEMPORARY FACILITIES UNDER CONSTRUCTION MANAGEMENT AGREEMENT

- A. Temporary Provisions Provided by Contractor:
 - 1. Temporary barriers, barricades, covered walkways, fencing, exterior closures, and interior closures.
 - 2. Temporary field offices.
 - 3. Cleaning during construction.
 - 4. Access roads and approaches.
 - 5. Temporary elevator.
 - 6. Temporary sanitary facilities.
 - 7. Temporary heating and ventilating after enclosure.
 - 8. Temporary electrical service and distribution system for power and lighting.
 - 9. Temporary telephone and internet service.
- B. Each Contractor: Coordinate provisions with Construction Project Manager and provide the following items as necessary for execution of the Work including associated costs:
 - 1. Construction aids.
 - 2. Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
 - 3. Temporary barriers, barricades, and similar devices as necessary for safety and protection of construction personnel and public.
 - 4. On Construction Manager's approval, may provide temporary field office including electrical service and temporary telephone.
 - 5. Temporary tree and plant protection.
 - 6. Temporary heating before building enclosure.
 - 7. Electrical service required in addition to temporary service and distribution provided by Construction Manager.
 - 8. Temporary provisions for protection of installed Work.

1.4 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from utility source as needed for construction operation.
- B. Complement existing power service capacity and characteristics as required for construction operations.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- C. Provide power outlets with branch wiring and distribution boxes located as required for construction operations. Provide suitable, flexible power cords as required for portable construction tools and equipment.
- D. Permanent convenience receptacles shall not be used during construction.

1.5 COMMUNICATION SERVICES

- A. Telephone Service: Provide, maintain, and pay for telephone service to field office at time of Project mobilization and until completion of Work.
- B. Facsimile Service: Provide, maintain, and pay for facsimile service including dedicated telephone line to field office at time of Project mobilization and until completion of Work.

1.6 TEMPORARY WATER SERVICE

- A. Provide and pay for suitable quality water service as needed to maintain specified conditions for construction operations.

1.7 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

1.8 FIELD OFFICES AND SHEDS

- A. Designated existing spaces may be used for field offices.
- B. Do not use existing facilities for field offices or for storage.
- C. Field Office: Weathertight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture including conference table, drawing rack, filing cabinets, and drawing display table.
- D. Provide space for Project meetings, with table and chairs to accommodate six persons.
- E. Do not use permanent facilities for field offices or for storage.
- F. Construction: Portable or mobile buildings, or buildings constructed with floors raised aboveground, securely fixed to foundations with steps and landings at entrance doors.
 - 1. Construction: Structurally sound, secure, weathertight enclosures for office and storage spaces. Maintain during progress of Work; remove enclosures at completion of Work.
 - 2. Thermal Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
 - 3. Exterior Materials: Weather-resistant, finished in colors acceptable to Architect/Engineer.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

4. Interior Materials in Field Offices: Sheet-type materials for walls and ceilings, prefinished or painted; resilient floors and bases.
 5. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.
- G. Environmental Control:
1. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain comfort conditions.
 2. Storage Spaces: Heating and ventilating as needed to maintain products according to Contract Documents; lighting for maintenance and inspection of products.
- H. Storage Areas and Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and inspection of products to suit requirements in Section 01600 - Product Requirements.
- I. Preparation: Fill and grade Sites for temporary structures sloped for drainage away from buildings.
- J. Installation:
1. Install field office spaces ready for occupancy 15 days after date established by Notice to Proceed.
 2. Employee Residential Occupancy: Not allowed on Owner's property.
- K. Maintenance and Cleaning:
1. Daily janitorial services for field offices; periodic cleaning and maintenance for sheds and storage areas.
 2. Maintain walks free of mud, water, snow, and the like.
- L. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas to same or better condition as original condition.

1.9 VEHICULAR ACCESS

- A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes.
- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.
- D. Locate as indicated on Drawings and approved by Owner.
- E. Provide unimpeded access for emergency vehicles. Maintain 20 foot wide driveways with turning space between and around combustible materials.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- F. Provide and maintain access to fire hydrants and control valves free of obstructions.
- G. Provide means of removing mud from vehicle wheels before entering streets.
- H. Use existing on-Site roads for construction traffic.

1.10 PARKING

- A. **Provide** temporary surface parking areas to accommodate construction personnel.
- B. Locate as indicated on Drawings and approved by Owner.
- C. If Site space is not adequate, provide additional off-Site parking.
- D. Use of designated areas of existing on-Site streets and driveways used for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.
- E. Use of existing parking facilities used by construction personnel is not permitted.
- F. Do not allow heavy vehicles or construction equipment in parking areas.
- G. Do not allow vehicle parking on existing pavement.
- H. Permanent Pavements and Parking Facilities:
 - 1. Avoid traffic loading beyond paving design capacity. Tracked vehicles are not allowed.
 - 2. Use of permanent parking structures is not permitted.
- I. Maintenance:
 - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.
 - 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.
- J. Removal, Repair:
 - 1. Remove temporary materials and at Substantial Completion.
 - 2. Repair existing, permanent facilities damaged by use, to original condition.
- K. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.11 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.
- C. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from Site weekly and dispose of off-Site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 PROJECT IDENTIFICATION

- A. Project Identification Sign:
 - 1. One painted sign, 32 sq ft area, and bottom 6 feet aboveground.
 - 2. Content:
 - a. Project number, title, logo, and name of Owner.
 - b. Names and titles of authorities.
 - c. Names and titles of Architect/Engineer and Consultants.
 - d. Name of Prime Contractor.
 - 3. Graphic Design, Colors, and Style of Lettering: Designated by Architect/Engineer.
- B. Design sign and structure to withstand 105 wind velocity.
- C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.
- D. Sign Materials:
 - 1. Structure and Framing: New wood structurally adequate.
 - 2. Sign Surfaces: Exterior grade plywood with medium-density overlay, minimum of **3/4** inches thick, standard large sizes to minimize joints.
- E. Installation:
 - 1. Install Project identification sign within 15 days after date established by Notice to Proceed.
 - 2. Erect at designated location.
 - 3. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
 - 4. Install sign surface plumb and level, with butt joints. Anchor securely.
 - 5. Paint exposed surfaces of sign, supports, and framing.
- F. Maintenance: Maintain clean signs and supports; repair deterioration and damage.
- G. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.13 TRAFFIC REGULATION

- A. Signs, Signals, and Devices:
 - 1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
 - 2. Traffic Control Signals: As approved by local jurisdictions.
 - 3. Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
 - 4. Flag Person Equipment: As required by authorities having jurisdiction.
- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- D. Haul Routes:
 - 1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
 - 2. Confine construction traffic to designated haul routes.
 - 3. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.
- E. Traffic Signs and Signals:
 - 1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
 - 2. Provide, operate, and maintain **automatic** traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
 - 3. Relocate signs and signals as Work progresses, to maintain effective traffic control.
- F. Removal:
 - 1. Remove equipment and devices at Substantial Completion.
 - 2. Repair damage caused by installation.
 - 3. Remove post settings to depth of 2 feet.

1.14 FIRE-PREVENTION FACILITIES

- A. Prohibit smoking within buildings under construction and demolition. Designate area on Site where smoking is permitted. Provide approved ashtrays in designated smoking areas.
- B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
 - 1. Provide minimum of one fire extinguisher in every construction trailer and storage shed.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Provide minimum of one fire extinguisher on roof during roofing operations using heat-producing equipment.

1.15 ENCLOSURES AND FENCING

- A. Construction: Commercial-grade chain-link fence.
- B. Provide 6 foot high fence around construction Site; equip with vehicular of gates with locks.
- C. Exterior Enclosures:
 1. Provide temporary weathertight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual Specification Sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- D. Interior Enclosures:
 1. Provide temporary partitions as indicated on Drawings to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
 2. Paint surfaces exposed to view from Owner-occupied areas.

1.16 SECURITY

- A. Security Program:
 1. Protect Work on existing premises from theft, vandalism, and unauthorized entry.
 2. Initiate program in coordination with Owner's existing security system at Project mobilization.
 3. Maintain program throughout construction period until Owner's acceptance precludes need for Contractor's security.
- B. Entry Control:
 1. Restrict entrance of persons and vehicles to Project Site.
 2. Allow entrance only to authorized persons with proper identification.
 3. Maintain log of workers and visitors and make available to Owner on request.
 4. Owner will control entrance of persons and vehicles related to Owner's operations.
- C. Personnel Identification:
 1. Provide identification badge for each person authorized to enter premises.
 2. Badge to Include: Personal photograph, name, expiration date, and employer logo.
 3. Maintain list of accredited persons and submit copy to Owner on request.
 4. Require return of badges at expiration of employment on the Work.
- D. Restrictions:
 1. Do not allow cellular phones on Site or photographs taken except by written approval of Owner.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Do no work on days indicated in Owner-Contractor Agreement.

1.17 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water.

1.18 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into Owner-occupied areas.

1.19 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.

1.20 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise and noise produced by construction operations.

1.21 PEST AND RODENT CONTROL

- A. Provide methods, means, and facilities to prevent pests and insects from entering facility.
- B. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.22 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.23 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet.
- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PRODUCT REQUIREMENTS

SECTION 01600

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Equipment electrical characteristics and components.

1.2 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- D. Domestic Products: Except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in United States or its territories.
- E. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- F. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.
- B. Store products with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- D. For exterior storage of fabricated products, place products on sloped supports aboveground.
- E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- F. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- G. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- H. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and complying with Specifications; no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 01630 - Product Substitution Procedures.

PART 2 PRODUCTS

2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Include lugs for terminal box.

PART 3 EXECUTION - Not Used

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 01600 - PRODUCT REQUIREMENTS- ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

1.3 DEFINITIONS

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

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
 - 1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 - 2. Completed List: Within 7 days after date of Notice of Award, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - 3. Owner's Action: Owner will respond in writing to Contractor within 7 days of receipt of completed product list. Owner's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Owner's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.
- B. Substitution Requests: Submit 3 copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use CSI Form 13.1A or facsimile of form provided in this Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - c. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - f. Material test reports from a qualified independent testing agency indicating and interpreting test results for compliance with requirements indicated.
 - g. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - h. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - 3. Owner's Action: If necessary, Owner will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Owner will notify Contractor of acceptance or rejection of proposed substitution within 7 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

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

1.5 QUALITY ASSURANCE

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

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- C. Storage:
 - 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project structure.
 - 3. Store products that are subject to damage by the elements, under cover in a weather-tight enclosure above ground, with ventilation adequate to prevent condensation.
 - 4. Store cementitious products and materials on elevated platforms.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
- C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Owner will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Owner's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures:
 1. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
3. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
4. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
5. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Owner's sample. Owner's decision will be final on whether a proposed product matches.
 - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
6. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, and textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Owner will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Owner will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Owner will consider requests for substitution if received at least 7 days prior to bid date. Requests received after that time may be considered or rejected at discretion of Owner.
- B. Conditions: Owner will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Owner for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 4. Substitution request is fully documented and properly submitted.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

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

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PRODUCT SUBSTITUTION PROCEDURES

SECTION 01630

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.
- B. Product options.
- C. Product substitution procedures.

1.2 QUALITY ASSURANCE

- A. Contract is based on products and standards established in Contract Documents without consideration of proposed substitutions.
- B. Products specified define standard of quality, type, function, dimension, appearance, and performance required.
- C. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by Owner.

1.3 PRODUCT OPTIONS

- A. See Section 01600 - Product Requirements.

1.4 PRODUCT SUBSTITUTION PROCEDURES

- A. Architect/Engineer and Owner and Construction Project Manager will consider requests for substitutions only within 15 days after date of Owner-Contractor Agreement.
- B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents, including:
 - 1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.
 - 2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, and other pertinent characteristics.
 - 3. Reference to Article and Paragraph numbers in Specification Section.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum. Change must be a net credit for product consideration.
 5. Changes required in other Work.
 6. Availability of maintenance service and source of replacement parts as applicable.
 7. Certified test data to show compliance with performance characteristics specified.
 8. Samples when applicable or requested.
 9. Other information as necessary to assist Owner/ PCM evaluation.
- D. A request constitutes a representation that Contractor:
1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 2. Will provide same warranty for substitution as for specified product.
 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
 6. Will reimburse Owner for review or redesign services associated with reapproval by authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals without separate written request or when acceptance will require revision to Contract Documents.
- F. Substitution Submittal Procedure:
1. Submit requests for substitutions on CSI Form 13.1A Substitution Request-After the Bidding/Negotiating Stage.
 2. Submit three copies of Request for Substitution for consideration. Limit each request to one proposed substitution.
 3. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
 4. Substitution must include a credit to the Owner.
 5. Architect/Engineer will notify Contractor in writing of decision to accept or reject request.
- 1.5 INSTALLER SUBSTITUTION PROCEDURES
- A. Architect/Engineer will consider requests for substitutions only within 15 days after date of Owner-Contractor Agreement.
- B. Document each request with:
1. Installer's qualifications.
 2. Installer's experience in work similar to that specified.
 3. Other information as necessary to assist Architect/Engineer's evaluation.
- C. Substitution Submittal Procedure:

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Submit three copies Request for Substitution for consideration. Limit each request to one proposed substitution.
2. Architect/Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

EXECUTION REQUIREMENTS

SECTION 01700

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Starting of systems.
- C. Demonstration and instructions.
- D. Testing, adjusting, and balancing.
- E. Project record documents.
- F. Operation and maintenance data.
- G. Manual for materials and finishes.
- H. Manual for equipment and systems.
- I. Spare parts and maintenance products.
- J. Product warranties and product bonds.
- K. Maintenance service.
- L. Examination.
- M. Preparation.
- N. Execution.
- O. Cutting and patching.
- P. Protecting installed construction.
- Q. Final cleaning.

1.2 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
 - 1. Submit maintenance manuals, Project record documents, digital images of construction photographs and other similar final record data in compliance with this Section.
 - 2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
 - 3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
 - 4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
 - 5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

6. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
 7. Perform final cleaning according to this Section.
- B. Substantial Completion Inspection:
1. When Contractor considers Work to be substantially complete, submit to Engineer:
 - a. Written certificate that Work, or designated portion, is substantially complete.
 - b. List of items to be completed or corrected (initial punch list).
 2. Within seven days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.
 3. Should Engineer determine that Work is not substantially complete:
 - a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
 - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.
 4. When Engineer finds that Work is substantially complete, Engineer will:
 - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Architect/Engineer and Owner (final punch list).
 - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
 5. After Work is substantially complete, Contractor shall:
 - a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
 - b. Complete Work listed for completion or correction within 30 working days.
 6. Owner will occupy all of building as specified in Section 01100 - Summary.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
1. When Contractor considers Work to be complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been examined for compliance with Contract Documents.
 - c. Work has been completed according to Contract Documents.
 - d. Work is completed and ready for final inspection.
 2. Submittals: Submit following:
 - a. Final punch list indicating all items have been completed or corrected.
 - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
 - d. Accounting statement for final changes to Contract Sum.
 - e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
 - f. Contractor affidavit of release of liens.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.
 - 3. Perform final cleaning for Contractor-soiled areas according to this Section.
- D. Final Completion Inspection:
 - 1. Within seven days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
 - 2. Should Engineer consider Work to be incomplete or defective:
 - a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

1.3 STARTING OF SYSTEMS

- A. Coordinate schedule for startup of various equipment and systems.
- B. Notify Engineer and Owner seven days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.
- G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.
- H. Submit a written report according to Section 01330 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment and instructed by qualified representative who is knowledgeable about the Project.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- C. Video Recordings: Provide high-quality color video recordings of demonstration and instructional sessions. Engage commercial videographer to record sessions. Include classroom instructions, demonstrations, board diagrams, and other visual aids. Include menu navigation.
- D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- E. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at designated location.
- G. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- H. Required instruction time for each item of equipment and system is specified in individual Specification Sections.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 - 2. Include locations of concealed elements of the Work.
 - 3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
 5. Identify and locate existing buried or concealed items encountered during Project.
 6. Measured depths of foundations in relation to finish [first] [main] floor datum.
 7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 9. Field changes of dimension and detail.
 10. Details not on original Drawings.
- G. Submit marked-up paper copy documents to Engineer before Substantial Completion.
- H. Submit PDF electronic files of marked-up documents to Engineer before Substantial Completion.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Submit data bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable plastic covers.
- C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project.
- D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - g. Safety precautions to be taken when operating and maintaining or working near equipment.
 3. Part 3: Project documents and certificates, including the following:

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- a. Shop Drawings and product data.
- b. Air and water balance reports.
- c. Certificates.
- d. Photocopies of warranties and bonds.

1.7 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
- B. For equipment or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes before Substantial Completion. Draft copy be reviewed and returned after Substantial Completion, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit two sets of revised final volumes within ten days after final inspection.
- E. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom-manufactured products.
- F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- G. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- H. Additional Requirements: As specified in individual product Specification Sections.
- I. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.8 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes before Substantial Completion. Draft copy will be reviewed and returned after Substantial Completion, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- D. Submit two sets of revised final volumes within ten days after final inspection.
- E. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- F. Include color-coded wiring diagrams as installed.
- G. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
- H. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- I. Include servicing and lubrication schedule and list of lubricants required.
- J. Include manufacturer's printed operation and maintenance instructions.
- K. Include sequence of operation by controls manufacturer.
- L. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- M. Include control diagrams by controls manufacturer as installed.
- N. Include Contractor's coordination drawings with color-coded piping diagrams as installed.
- O. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- P. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- Q. Include test and balancing reports as specified in Section 01400 - Quality Requirements.
- R. Additional Requirements: As specified in individual product Specification Sections.
- S. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.9 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Deliver to Project Site and place in location as directed by Owner ; obtain receipt prior to final payment.

1.10 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include table of contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.11 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in Specification Sections during warranty period.
- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
 - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
 - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
 - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Architect/Engineer for final decision.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- E. Allow for expansion of materials and building movement.
- F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
 - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
 - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
 - 1. Refer questionable mounting heights choices to Architect/Engineer for final decision.
 - 2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
- H. Adjust operating products and equipment to ensure smooth and unhindered operation.
- I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

- A. Employ skilled and experienced installers to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and nonconforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products according to requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- I. At penetrations of fire-rated walls, partitions, ceiling, or floor construction, completely seal voids with fire-rated material, to full thickness of penetrated element.
- J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- K. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

3.5 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

3.6 FINAL CLEANING

- A. Execute final cleaning prior to final Project assessment.
 - 1. Employ experienced personnel or professional cleaning firm.
- B. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.
- C. Replace filters of operating equipment.
- D. Clean debris from roofs, gutters, downspouts, and drainage systems.
- E. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

CONCRETE FORMS AND ACCESSORIES

SECTION 03100

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Formwork for cast-in place concrete.
 - 2. Shoring, bracing, and anchorage.
 - 3. Architectural form liners.
 - 4. Form accessories.
 - 5. Form stripping.
- B. Related Sections:
 - 1. Section 03200 - Concrete Reinforcement.
 - 2. Section 03300 - Cast-in-Place Concrete.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
 - 2. ACI 301 - Specifications for Structural Concrete.
 - 3. ACI 318 - Building Code Requirements for Structural Concrete.
 - 4. ACI 347 - Guide to Formwork for Concrete.
- B. American Forest and Paper Association:
 - 1. AF&PA - National Design Specifications for Wood Construction.
- C. The Engineered Wood Association:
 - 1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.
- D. American Society of Mechanical Engineers:
 - 1. ASME A17.1 - Safety Code for Elevators and Escalators.
- E. ASTM International:
 - 1. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - 2. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
- F. West Coast Lumber Inspection Bureau:
 - 1. WCLIB - Standard Grading Rules for West Coast Lumber.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings:
 - 1. Submit formwork, shoring, and reshoring shop drawings.
 - 2. Indicate the following:
 - a. Pertinent dimensions, openings, methods of construction, types of connections, materials, joint arrangement and details, ties and shores, location of framing, studding and bracing, and temporary supports.
 - b. Means of leakage prevention for concrete exposed to view in finished construction.
 - c. Sequence and timing of erection and stripping assumed compressive strength at time of stripping, height of lift and height of drop during placement.
 - d. Vertical, horizontal and special loads in accordance with ACI 347, Section 2.2 and camber diagrams, when applicable.
 - e. Notes to formwork erector showing size and location of conduits and piping embedded in concrete in accordance with ACI 318, Section 6.3.
 - f. Procedure and schedule for removal of shores and installation and removal of reshores.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 347, ACI 301, and ACI 318.
- B. For wood products furnished for work of this Section, comply with AF&PA.

1.5 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate this Section with other sections of work, requiring attachment of components to formwork.

PART 2 PRODUCTS

2.1 PREFABRICATED FORMS

- A. Tubular Column Type: Round, spirally wound laminated fiber material, surface treated with release agent, as indicated on Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.
- C. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Engineer.

3.2 INSTALLATION

- A. Earth Forms:
 - 1. Trench earth forms neatly, accurately, and at least 2 inches wider than footing widths indicated on Drawings.
 - 2. Trim sides and bottom of earth forms.
 - 3. Construct wood edge strips at top of each side of trench to secure reinforcing and prevent trench from sloughing.
 - 4. Form sides of footings where earth sloughs.
 - 5. Tamp earth forms firm and clean forms of debris and loose material before depositing concrete.
- B. Formwork - General:
 - 1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
 - 2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
 - 3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
 - 4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
 - 5. Complete wedging and bracing before placing concrete.
- C. Forms for Smooth Finish Concrete:
 - 1. Use steel, plywood or lined board forms.
 - 2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
 - 3. Install form lining with close-fitting square joints between separate sheets without springing into place.
 - 4. Use full size sheets of form lines and plywood wherever possible.
 - 5. Tape joints to prevent protrusions in concrete.
 - 6. Use care in forming and stripping wood forms to protect corners and edges.
 - 7. Level and continue horizontal joints.
 - 8. Keep wood forms wet until stripped.
- D. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- E. Obtain Engineer's approval before framing openings in structural members not indicated on Drawings.
- F. Install fillet and chamfer strips on external corners of columns.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3.3 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's specifications. Do not coat forms for concrete indicated to receive "scored finish". Apply form coatings before placing reinforcing steel.

3.4 INSTALLATION - INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Install formed openings for items to be embedded in or passing through concrete work.
- B. Locate and set in place items required to be cast directly into concrete.
- C. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- D. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- E. Embedded Items:
 - 1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
 - 2. Do not embed wood or uncoated aluminum in concrete.
 - 3. Obtain installation and setting information for embedded items furnished under other Specification sections.
 - 4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
 - 5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.
- F. Openings for Items Passing Through Concrete:
 - 1. Frame openings in concrete where indicated on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
 - 2. Coordinate work to avoid cutting and patching of concrete after placement.
 - 3. Perform cutting and repairing of concrete required as result of failure to provide required openings.

3.5 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Engineer.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

D. Leave forms in place for minimum number of days as specified in ACI 347.

3.6 ERECTION TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301 and ACI 318.

3.7 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

C. Notify Engineer after placement of reinforcing steel in forms, but prior to placing concrete.

D. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

CONCRETE REINFORCEMENT
SECTION 03200

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Reinforcing bars.
 - 2. Welded wire fabric.
 - 3. Reinforcement accessories.
- B. Related Sections:
 - 1. Section 02470 - Drilled Concrete Piers and Shafts: Reinforcement for pile, drilled pier foundations.
 - 2. Section 03100 - Concrete Forms and Accessories.
 - 3. Section 03300 - Cast-in-Place Concrete.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 318 - Building Code Requirements for Structural Concrete.
 - 3. ACI 530.1 - Specifications for Masonry Structures.
 - 4. ACI SP-66 - ACI Detailing Manual.
- B. ASTM International:
 - 1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - 2. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
 - 3. A185/A185M-07 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 - 4. ASTM A496/A496M - Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
 - 5. ASTM A497/A497M - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
 - 6. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 7. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
 - 8. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
 - 9. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
 - 10. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

11. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
12. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
13. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.

- C. American Welding Society:
1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

- D. Concrete Reinforcing Steel Institute:
1. CRSI - Manual of Standard Practice.
 2. CRSI - Placing Reinforcing Bars.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel bending and cutting schedules, and supporting and spacing devices

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with CRSI - Manual of Standard Practice, ACI 301, and ACI 318.
- B. Prepare shop drawings in accordance with ACI SP-66.

1.5 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.1 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, billet bars.

2.2 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 16 gage annealed type
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic-coated steel type; size and shape to meet Project conditions.

2.3 FABRICATION

- A. Fabricate concrete reinforcement in accordance with CRSI Manual of Practice and ACI 318
- B. Form standard hooks as indicated on Drawings.
- C. Fabricate column reinforcement with offset bends at reinforcement splices.
- D. Form spiral column reinforcement from minimum 3/8 inch diameter continuous bar or wire.
- E. Locate reinforcement splices not indicated on Drawings, at point of minimum stress.

2.4 SOURCE QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Make completed reinforcement available for inspection at manufacturer's factory prior to packaging for shipment. Notify Architect/Engineer at least seven days before inspection is allowed.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.
 - 1. Do not weld crossing reinforcement bars for assembly.
- B. Do not displace or damage vapor retarder.
- C. Accommodate placement of formed openings.
- D. Space reinforcement bars with minimum clear spacing of one bar diameter, but not less than 1 inch.
 - 1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.

Reinforcement Location		Minimum Concrete Cover
Footings and Concrete Formed Against Earth		3 inches (75 mm)
Concrete exposed to	No. 6 (19) bars and larger	2 inches (50 mm)

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

earth or weather	No. 5 (16) bars and smaller	1-1/2 inches (38 mm)
Supported Slabs, Walls, and Joists	No. 14 (43) bars and larger	1-1/2 inches (38 mm)
	No. 11 (36) bars and smaller	3/4 inches (19 mm)
Beams and Columns		1-1/2 inches (38 mm)
Shell and Folded Plate Members	No. 6 (19) bars and larger	3/4 inches (19 mm)
	No. 5 (16) bars and smaller	1/2 inches (13 mm)

3.2 ERECTION TOLERANCES

- A. Section 01400 - Quality Requirements: Tolerances.
- B. Install reinforcement within the following tolerances for flexural members, walls, and compression members:

Reinforcement Depth	Depth Tolerance	Concrete Cover Tolerance
Greater than 8 inches	plus or minus 3/8 inch	minus 3/8 inch
Less than 8 inches	plus or minus 1/2 inch	minus 1/2 inch

- C. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.

3.3 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Field inspection and testing will be performed by Owner's testing laboratory in accordance with ACI 318 .
- C. Provide free access to Work and cooperate with appointed firm.
- D. Reinforcement Inspection:
 - 1. Placement Acceptance: Specified and ACI 318 material requirements and specified placement tolerances.
 - 2. Welding: Inspect welds in accordance with AWS D1.1.
 - 3. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.

3.4 SCHEDULES

- A. Reinforcement For Superstructure Framing Members: Deformed bars, unfinished.
- B. Reinforcement For Foundation Wall Framing Members and Slab-on-Grade: Deformed bars and wire fabric, galvanized finish.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- C. Reinforcement For Parking Structure Framing Members: Deformed bars, epoxy-coated finish.

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

CAST-IN-PLACE CONCRETE

SECTION 03300

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete for the following:
 - 1. Section 03100 - Concrete Forms and Accessories

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 305 - Hot Weather Concreting.
 - 3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
 - 4. ACI 308.1 - Standard Specification for Curing Concrete.
 - 5. ACI 318 - Building Code Requirements for Structural Concrete.
- B. ASTM International:
 - 1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 2. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - 3. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 4. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 5. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - 6. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
 - 7. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
 - 8. ASTM C150 - Standard Specification for Portland Cement.
 - 9. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
 - 10. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
 - 11. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 12. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - 13. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
 - 14. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
 - 15. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
 - 16. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

17. ASTM C685/C685M - Standard Specification for Concrete Made By Volumetric Batching and Continuous Mixing.
18. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
19. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
20. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
21. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
22. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
23. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
24. ASTM C1157 - Standard Performance Specification for Hydraulic Cement.
25. ASTM C1218/C1218M - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
26. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
27. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
28. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
29. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
30. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
31. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
32. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
33. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
34. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Submittal procedures.
- B. Design Data:
 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
 - a. Hot and cold weather concrete work.
 - b. Air entrained concrete work.
 2. Identify mix ingredients and proportions, including admixtures.
 3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.
- C. Manufacturer's Installation Instructions: Submit installation procedures and interface required with adjacent Work.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.4 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Closeout procedures.
- B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 318.
- B. Conform to ACI 305 when concreting during hot weather.
- C. Conform to ACI 306.1 when concreting during cold weather.
- D. Acquire cement and aggregate from one source for Work.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Section 01600 - Product Requirements: Environmental conditions affecting products on site.
- B. Maintain concrete temperature after installation at minimum 50 degrees F for minimum 7 days.

1.7 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal
- B. Normal Weight Aggregates: ASTM C33.
 - 1. Coarse Aggregate Maximum Size: 1 inches In accordance with ACI 318.
- C. Water: ACI 318; potable, without deleterious amounts of chloride ions.

2.2 ADMIXTURES

2.3 CONCRETE MIX

- A. Select proportions for concrete in accordance with ACI 318 field experience.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- D. Place concrete in continuous operation for each panel or section determined by predetermined joints.
- E. Consolidate concrete.
- F. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- G. Place concrete continuously between predetermined expansion, control, and construction joints.

3.4 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.5 FIELD QUALITY CONTROL

- A. Section 01400 – Quality Requirements, 01700 - Execution Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform field inspection and testing in accordance with ACI 318.
- C. Provide free access to Work and cooperate with appointed firm.
- D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.
- E. Concrete Inspections:
 - 1. Continuous Placement Inspection: Inspect for proper installation procedures.
 - 2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.
- F. Strength Test Samples:
 - 1. Sampling Procedures: ASTM C172.
 - 2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, standard cured.
 - 3. Sample concrete and make one set of three cylinders for every 75 or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
 - 4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
 - 5. Make one additional cylinder during cold weather concreting, and field cure.
- G. Field Testing:
 - 1. Slump Test Method: ASTM C143/C143M.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Air Content Test Method: ASTM C173/C173M.
 3. Temperature Test Method: ASTM C1064/C1064M.
 4. Measure slump and temperature for each compressive strength concrete sample.
 5. Measure air content in air entrained concrete for each compressive strength concrete sample.
- H. Cylinder Compressive Strength Testing:
1. Test Method: ASTM C39/C39M.
 2. Test Acceptance: In accordance with ACI 318.
 3. Test one cylinder at 7 days.
 4. Test two cylinders at 28 days.
 5. Retain one cylinder for 56 days for testing when requested by Architect/Engineer.
 6. Dispose remaining cylinders when testing is not required.
- I. Core Compressive Strength Testing:
1. Sampling and Testing Procedures: ASTM C42/C42M.
 2. Test Acceptance: In accordance with ACI 318.
 3. Drill three cores for each failed strength test from concrete represented by failed strength test.
- J. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.6 PATCHING

- A. Allow Architect/Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.
- C. Patch imperfections as directed by Architect/Engineer.

3.7 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by Architect/Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

STRUCTURAL STEEL

SECTION 05120

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Structural shapes.
 - 2. Channels and angles.
 - 3. Hollow structural sections.
 - 4. Structural pipe.
 - 5. Structural plates.
 - 6. Floor plates.
 - 7. Bolts, connectors, and anchors.
 - 8. Grout.

1.2 PRICE AND PAYMENT PROCEDURES

1.3 REFERENCE STANDARDS

- A. American Institute of Steel Construction:
 - 1. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.
 - 2. AISC 341 - Seismic Provisions for Structural Steel Buildings.
 - 3. AISC 360 - Specification for Structural Steel Buildings.
- B. American Society of Civil Engineers:
 - 1. ASCE 19 - Standard Applications of Steel Cables for Buildings.
- C. ASTM International:
 - 1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 3. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
 - 4. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 5. ASTM A193/A193M - Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
 - 6. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - 7. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - 8. ASTM A354 - Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.
 - 9. ASTM A449 - Standard Specification for Quenched and Tempered Steel Bolts and Studs.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

10. ASTM A490 - Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.
 11. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 12. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 13. ASTM A514/A514M - Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding.
 14. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
 15. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
 16. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
 17. ASTM A588/A588M - Standard Specification for High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4-in. (100-mm) Thick.
 18. ASTM A618/A618M - Standard Specification for Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing.
 19. ASTM A786/A786M - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
 20. ASTM A847/A847M - Standard Specification for Cold-Formed Welded and Seamless High Strength, Low Alloy Structural Tubing with Improved Atmospheric Corrosion Resistance.
 21. ASTM A852/A852M - Standard Specification for Quenched and Tempered Low-Alloy Structural Steel Plate with 70 ksi (485 MPa) Minimum Yield Strength to 4 in. (100 mm) Thick.
 22. ASTM A913/A913M - Standard Specification for High-Strength Low-Alloy Steel Shapes of Structural Quality, Produced by Quenching and Self-Tempering Process (QST).
 23. ASTM A992/A992M - Standard Specification for Structural Steel Shapes.
 24. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
 25. ASTM E94 - Standard Guide for Radiographic Examination.
 26. ASTM E164 - Standard Practice for Ultrasonic Contact Examination of Weldments.
 27. ASTM E165 - Standard Test Method for Liquid Penetrant Examination.
 28. ASTM E709 - Standard Guide for Magnetic Particle Examination.
 29. ASTM F436 - Standard Specification for Hardened Steel Washers.
 30. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.
 31. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
 32. ASTM F1852 - Standard Specification for Twist Off Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 33. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.
- D. American Welding Society:
1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
 2. AWS D1.1 - Structural Welding Code - Steel.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- E. California Department of Health Services:
 - 1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.
- F. Green Seal:
 - 1. GC-03[-**2nd Edition, January 7, 1997**] - Anti-Corrosive Paints.
- G. Research Council on Structural Connections:
 - 1. RCSC - Specification for Structural Joints Using ASTM A325 or Bolts.
- H. SSPC: The Society for Protective Coatings:
 - 1. SSPC - Steel Structures Painting Manual.
 - 2. SSPC Paint 15 - Steel Joist Shop Paint.
 - 3. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
 - 4. SSPC SP 3 - Power Tool Cleaning.
 - 5. SSPC SP 6 - Commercial Blast Cleaning.
 - 6. SSPC SP 10 - Near-White Blast Cleaning.

1.4 COORDINATION

- A. Section 01300 - Administrative Requirements: Requirements for coordination.

1.5 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and bolts.
 - 2. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Manufacturer's Mill Certificate: Certify products meet or exceed specified requirements.
- D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. Structural Steel: AISC 303.
 - 2. Architecturally Exposed Structural Steel: AISC 303, Section 10.
 - 3. High Strength Bolted Connections: RCSC Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.
 - 4. Steel Cable Structures: ASCE 19.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.7 QUALIFICATIONS

- A. Fabricator: Company specializing in performing Work of this section with minimum 5 years documented experience with current AISC Certification.
- B. Erector: Company specializing in performing Work of this section with minimum 5 years documented experience with AISC Certification.
- C. Welders and Welding Procedures: AWS D1.1 qualified within previous 12 months.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

- A. Channels and Angles: ASTM A36/A36M.

2.2 WELDING MATERIALS

- A. Welding Materials: AWS D1.1; type required for materials being welded.

2.3 FINISHES

- A. Shop prime structural steel members. Do not prime surfaces that will be field welded.

2.4 ACCESSORIES

2.5 SOURCE QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Shop test bolted and welded connections as specified for field quality control tests.
- C. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
 - 1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01700 - Execution Requirements: Requirements for installation examination.
- B. Verify bearing surfaces are at correct elevation.
- C. Verify anchors rods are set in correct locations and arrangements with correct exposure for steel attachment.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3.2 PREPARATION

- A. Section 01700 - Execution Requirements: Requirements for installation preparation.
- B. Furnish templates for installation of anchor rods and embedments in concrete and masonry work.

3.3 ERECTION

- A. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.
- B. Field weld components indicated on Drawings.
- C. Do not field cut or alter structural members without approval of Architect/Engineer.
- D. After erection, touch up welds and abrasions to match shop finishes.

3.4 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Requirements for inspecting, testing.
- B. Bolted Connections: Inspect in accordance with AISC 303.
 - 1. Visually inspect all bolted connections.
 - 2. For Direct Tension Indicators, comply with requirements of ASTM F959. Verify that gaps are less than gaps specified in Table 2.
- C. Welding: Inspect welds in accordance with AWS D1.1.
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
 - 2. Visually inspect all welds.
 - 3. Ultrasonic Inspection: ASTM E164; perform on all full penetration welds.
 - 4. Liquid Penetrant Inspection: ASTM E165.
 - 5. Magnetic Particle Inspection: ASTM E709; performed on <____>.
 - 6. Radiographic Inspection: ASTM E94; performed on <____>.
- D. Correct defective bolted connections and welds.

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 05310 - STEEL DECK REPAIR/REPLACEMENT (If Required)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Roof deck repair/replacement.

1.3 SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Product Certificates: For each type of steel deck, signed by product manufacturer.
- C. Welding certificates.
- D. Field quality-control test and inspection reports.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."
- B. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- C. FMG Listing: Provide steel roof deck evaluated by FMG and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Steel Deck:
 - a. Nucor Corp.; Vulcraft Division.
 - b. Roof Deck, Inc.
 - c. United Steel Deck, Inc.
 - d. Verco Manufacturing Co.
 - e. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.2 ROOF DECK

- A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:
 - 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade, G90 zinc coating.
 - 2. Deck Profile: Match existing.
 - 3. Profile Depth: Match existing.
 - 4. Design Uncoated-Steel Thickness: Match existing.
 - 5. Span Condition: Double span.
 - 6. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.3 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- F. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0747 inch thick, with factory-punched hole of 3/8-inch minimum diameter.
- G. Galvanizing Repair Paint: ASTM A 780.
- H. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 DEMOLITION AND DETERIORATED DECKING REPLACEMENT

- A. Demolition and disposal of existing roof deck system.
 - 1. Remove and properly dispose of all damaged or deteriorated components of existing roof deck system down to existing structural supports.
 - 2. Exercise extreme caution over all areas of the occupied building. Provide a safety monitor inside building or under decking to be removed at all times during demolition and insure all building occupants are relocated prior to any demolition of the roof deck overhead.

3.2 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.3 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels, if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- H. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.4 ROOF-DECK INSTALLATION

- A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:
 - 1. Weld Diameter: Match welds of existing deck to remain, but not less than 5/8 inch, nominal.
 - 2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds to match spacing of welds on existing deck units, but not less than 18 inches apart, maximum.
 - 3. Weld Washers: Install weld washers at each weld location.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 36 inches, and as selected from following to match existing deck unit installation :
 - 1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
 - 2. Mechanically clinch or button punch.
 - 3. Fasten with a minimum of 1-1/2-inch- long welds.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. End Joints: Lapped 2 inches minimum.
- D. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.
 - 1. Weld cover-plates at changes in direction of roof-deck panels, unless otherwise indicated.

3.5 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
 - 1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
- C. Repair Painting: Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces as required.

**HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX**

- D. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05310

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 06105 - MISCELLANEOUS CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Rooftop equipment bases and support curbs.
 - 2. Wood blocking, cants, and nailers.
 - 3. Wood Structural panels.

1.3 DEFINITIONS

- A. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NELMA - Northeastern Lumber Manufacturers Association.
 - 2. NLGA - National Lumber Grades Authority.
 - 3. SPIB - Southern Pine Inspection Bureau.
 - 4. WCLIB - West Coast Lumber Inspection Bureau.
 - 5. WWPA - Western Wood Products Association.

1.4 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
- B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - 1. Preservative-treated wood.

1.5 QUALITY ASSURANCE

- A. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria":

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Miscellaneous lumber.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
 1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
 3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 4. Provide dry lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.
- B. Wood Structural Panels:
 1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise indicated.
 2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
 3. Factory mark panels according to indicated standard.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWP C2 (lumber), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWP C31 with inorganic boron (SBX).
 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:
 - a. Chromated copper arsenate (CCA).
 - b. Ammoniacal copper zinc arsenate (ACZA).
 - c. Ammoniacal, or amine, copper quat (ACQ).
 - d. Copper bis (dimethyldithiocarbamate) (CDDC).
 - e. Ammoniacal copper citrate (CC).
 - f. Copper azole, Type A (CBA-A).
 - g. Oxine copper (copper-8-quinolinolate) in a light petroleum solvent.
 2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Kiln-dry material after treatment to a maximum moisture content of 15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 - 3. Wood framing members less than 18 inches above grade.
 - 4. Wood floor plates that are installed over concrete slabs directly in contact with earth.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including the following:
 - 1. Rooftop equipment bases and support curbs.
 - 2. Blocking.
 - 3. Cants.
 - 4. Nailers.
- B. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine, No. 2 grade; SPIB.
 - 2. Hem-fir or Hem-fir (north), Standard or 3 Common grade; NLGA, WCLIB, or WWPA.
 - 3. Spruce-pine-fir (south) or Spruce-pine-fir, Standard or 3 Common grade; NELMA, NLGA, WCLIB, or WWPA.
 - 4. Eastern softwoods, No. 3 Common grade; NELMA.
 - 5. Northern species, No. 3 Common grade; NLGA.
 - 6. Western woods, Standard or No. 3 Common grade; WCLIB or WWPA.

2.4 WOOD PANEL PRODUCTS

- A. Miscellaneous Concealed Plywood: Exterior sheathing, span rating to suit framing in each location, and thickness as required to match existing but not less than 1/2 inch.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Type 316 Stainless Steel, flat head, ring shank, diamond point roofing nails as manufactured by Stainless Fasteners, or equal. (Galvanized nails are not permitted to fasten into treated lumber.)

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Length: Sufficient to penetrate wood blocking or nailers 1-1/4 inches.
- B. Wood Screws: ASME B18.6.1.
- C. Lag Bolts: ASME B18.2.1.
- D. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- E. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Apply field treatment complying with AWWA M4 to cut surfaces of preservative-treated lumber and plywood.
- D. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.
- E. Countersink fastener heads on exposed carpentry work and fill holes with wood filler.
- F. Use fasteners of appropriate type and length. Pre-drill members when necessary to avoid splitting wood.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 WOOD PANEL PRODUCT INSTALLATION

- A. Wood Structural Panels: Comply with applicable recommendations contained in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.

END OF SECTION 06105

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 07210 - FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Spray-in-place semi-rigid open cell, ½ pound foam polyurethane foam insulation in various assemblies, to provide an air barrier and improved thermal resistance.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 2. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- B. International Code Council – International Building Code:
 - 1. Section 104.11 Alternative materials, design and methods of construction and equipment.
 - 2. Section 2603 Foam Plastic Insulation.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Before commencing work, submit in accordance with local code.
 - 1. Submit technical data sheets and samples as required by local code officials.
 - 2. Submit the technical data sheet from the manufacturer showing the test results from the ASTM E84 (Surface Burning Characteristics).
- C. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Contractor performing work under this section shall be trained by DEMILEC USA® in the art of applying spray polyurethane foam insulation.
 - 2. Provide current DEMILEC USA® Authorized Contractor Certificate.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be delivered in manufacturer's original containers clearly labelled with manufacturer's name, product identification, safety information, net weight of contents and expiration date.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Material shall be stored in a safe manner and where the temperatures are in the limits specified by the material manufacturer.
- C. Empty containers shall be removed from site on a daily basis.
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Ventilate insulation application area in accordance with the Spray Foam Coalition's Guidance¹ on best practices for the installation of Spray Polyurethane Foam.
- C. Protect workers as recommended by the Spray Foam Coalition's Guidance² on best practices for the installation of Spray Polyurethane Foam.
- D. Protect adjacent surfaces, windows, equipment and site areas from damage of overspray.

1.7 WARRANTY

- A. Manufacturer's Warranty: DEMILEC USA[®] warrants spray-in-place urethane foam insulation, when installed by certified contractors using factory-trained applicators and applied in accordance with the Product Application Guide³, will perform as stated in the Product Technical Data Sheet.
 - 1. This warranty is in effect throughout the life of the building provided the original purchaser registers with the Warranty Department of the Manufacturer within thirty days of occupancy.
 - 2. Manufacturer's sole responsibility under this Limited Lifetime Warranty shall be to repair or replace any defective Product at the cost of the material only.
 - 3. Manufacturer shall not be responsible for labor cost or any other costs whatsoever related to, or in connection with the removal or installation of either the original or replacement product.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: DEMILEC USA
- B. Substitutions: Equivalent as judged by Architect

2.2 SPRAY FOAM INSULATION

- A. Spray Applied Semi Rigid Polyurethane Foam Insulation System: (Open Cell Foam)
 - 1. Product: DEMILEC APX Manufactured by DEMILEC USA[®], Arlington, TX.
 - 2. Product Approval:

¹ <http://www.spraypolyurethane.org/GoodPractices>

² <http://www.spraypolyurethane.org/WorkerProtection>

³ <http://www.demilecusa.com/wp-content/uploads/2013/02/Demilec-APX-Product-Application-Guide.pdf>

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- a. International Code Council Evaluation Services Report #3470.
 - b. Passed NFPA 286 in accordance with IBC 803.2. as an interior finish. Refer to section 3.b.1. of this specification for assembly details.
3. Installation:
- a. Application without a Thermal or Ignition Barrier (exposed foam)
 - 1) The prescriptive 15-minute thermal barrier or ignition barrier may be omitted when installation is in accordance with this section. DEMILEC APX Spray foam insulation and Blazelok TBX intumescent coating may be spray-applied to the interior facing of the walls and the underside of roof sheathing or roof rafters, and in crawl spaces, and may be left exposed as an interior finish without a prescribed 15-minute thermal barrier or ignition barrier. The foam plastic insulation thickness must not exceed 7 ½ inches (191 mm) in walls and 11 ½ inches (292 mm) in floors and ceilings. All foam surfaces must be covered with an 11-mil dry thickness (0.28 mm) [17 mils wet thickness (0.43 mm) of Blazelok TBX intumescent coating. The intumescent coating must be sprayed applied over the insulation in accordance with the coating manufacturer's instructions at a rate of 85 square feet per gallon (2.09m²/L).
 - b. Attics and Crawlspace: Passed AC 377 Appendix X compliant NFPA 286.
 - 1) The insulation may be spray-applied to the underside of the roof sheathing and/or rafters, to the underside of wood floors and to vertical surfaces as described in this section. The thickness of the foam plastic applied to the underside of the top of the space must not exceed 11 ¾" inches (298 mm), and the thickness when applied to vertical surfaces must not exceed 7 ¾" inches (197 mm). The insulation does not require an ignition barrier or coating.
4. Physical Properties:
- a. Density (ASTM D 1622): 0.45 – 0.5 lb/cf (0.007 to 0.008 gm/cu. cm).
 - b. Thermal Resistance (ASTM C 518):
 - 1) R-3.7 (sf.h degree F/BTU) @ 1 inch at 90 days at 76 degree F (24.4 degree C).
 - 2) See ESR 3470 for R-value table.
 - c. Air Leakage (ASTM E 283-04):
 - 1) 3.5 inches (89 mm) At 75 Pa (25 mph wind): 0.003 L/s•m².
 - d. Compressive Strength (ASTM D 1621): 1.1 psi.
 - e. Tensile Strength (ASTM D 1623): 3.7 lbf/sq. inch.
 - f. Water Vapor Transmission (ASTM E 96):
 - 1) 1.008 inches (25 mm): 16.0 perms
 - g. Off Gassing Tests (VOC Emissions) Berkeley Analytical Certificate 130104-01: Pass or Compliant (No toxic vapors).
 - h. Surface Burning Characteristics (ASTM E 84) 4" inches (117 mm): Class I. Flame Spread Index 15, Smoke Developed Index 350.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

5. Equipment used to apply the foam insulation shall have fixed ratio positive displacement pumps and approved by foam manufacturer.
6. Equipment used to apply the Water Based intumescent coating shall be an airless sprayer approved by the manufacturer.
 - A. Water Based intumescent coating:
 - 1) Product: BLAZELOK™ TBX, Distributed by DEMILEC USA®, Manufactured by TPR².
 - 2) Approval: Complies with 2006 IRC 314.6, 2009 IRC 316.6, IBC 2603.9 and IBC 803.2 over DEMILEC APX® for use as an interior finish without a prescriptive thermal barrier.
 - 3) Application: Follow manufacturer's application recommendations.
 - 4) Physical Properties:
 - 5) Surface Burning Characteristics (ASTM E 84): Class I. Flame Spread Index <25, Smoke Developed Index <50.
 - 6) Expands up to 2000 percent.
 - 7) Flash Point: None
 - 8) Volatility/VOC: < 50 g/L
 - 9) Non-toxic, drain safe, water based, non-fuming.
 - 10) Can be latex or oil base top coated.
 - 11) Dull Flat White / Grey.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Commencement of work outlined in this section shall be deemed as acceptance of existing work and conditions.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Apply only when surfaces and environmental conditions are within limits prescribed by the material manufacturer.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions. Apply as recommended by manufacturer to thickness as indicated on drawings.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION OF 07210

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 07551 – MODIFIED BITUMEN MEMBRANE ROOFING (RE-COVER)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following for roof re-cover over the existing built-up roof system at **The Hidalgo County Adult Detention Center and Law Enforcement Center:**
1. Perform a Thermocore® Infrared Scan of the entire roof system to determine if any wet areas exist within the existing roof system.
 2. Remove all trash, dirt and debris from the roof surface.
 3. Remove ALL existing gravel from the roof surface as required to provide smooth clean roof surface to receive the new Re-cover Roof System. Repair all damaged roof membrane as required to maintain a leak-free roof system prior to installing the new Re-Cover Roof System.
 4. Remove existing roofing and insulation in ALL wet areas as identified by the Thermocore® Infrared Scan and provide roof repairs consisting of the following:
 - a. One (1) layer of polyisocyanurate roof insulation (thickness as required to match existing) mechanically fastened to the metal roof deck.
 - b. One (1) layer of perlite roof insulation (thickness as required to match existing) adhered to the base layer of roof insulation with the specified cold process adhesive.
 - c. Two (2) plies of Coated Polyester/Glass/Polyester Trilaminate reinforced ply sheet adhered with cold process asphalt adhesive.
 - d. Allowance: In the Base Proposal, allow for Wet Roof System replacement as follows:
 - 1) 1,000 square feet.
 - e. Metal roof deck repairs, if required:
 - 1) Examine exposed metal deck and repair or replace if necessary using unit pricing.
 5. Install new treated wood nailers as required by the new roof system. See Section 06105 – Miscellaneous Carpentry.
 6. Replace deteriorated wood blocking and nailers as required.
 - a. Allowance: In the Base proposal, allow for replacement and/or repair of the deteriorated existing wood blocking and nailers as follows:
 - 1) 300 board feet
 7. Install a new Roof Re-cover System as follows:
 - a. One (1) layer of 1/2" glass mat faced gypsum with non-asphaltic, highly filled proprietary heat-cured coating on one side, mechanically attached through the existing roofing system to the existing metal deck in accordance with local wind resistance requirements.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- b. One (1) ply of ASTM D 6223, Type II, Grade S, polyester and fiberglass reinforced, smooth surfaced, APP-modified asphalt sheet, heat-welded to the properly prepared substrate.
 - c. One (1) ply of ASTM D 6223, Type II, Grade G, polyester and fiberglass reinforced, granule surfaced, APP-modified asphalt sheet, heat-welded to the base ply.
 8. Install new base flashings at all equipment curbs and roof transitions as follows:
 - a. One (1) ply of ASTM D 6223, Type II, Grade S, polyester and fiberglass reinforced, smooth surfaced, APP-modified asphalt sheet, heat-welded to the properly prepared substrate.
 - b. One (1) ply of ASTM D 6223, Type II, Grade G, polyester and fiberglass reinforced, granule surfaced, APP-modified asphalt sheet, heat-welded to the base ply.
 9. Install new sheet metal flashings and trim as required, including but not limited to coping, fascia, counterflashing, pitch pans, scuppers, conductors, gutters and downspouts.
 - a. Provide 24 gauge Galvalume coated with Kynar 500 / Hylar 5000 for all flashings visible to the general public.
 - b. Provide 24 gauge Galvalume coated steel for all flashing not readily visible to the general public.
 10. Remove existing conductors and downspouts as required to facilitate replacement of the existing primary drainage scupper sleeves with new stainless steel scupper sleeves. Re-use the existing conductors and downspouts. If re-installation is not possible, replace existing conductors and downspouts with new pre-finished sheet metal to match existing as required.
 11. Install new over-flow scuppers as indicated on the roof plan. One over-flow scupper will be required for each existing primary scupper. Over-flow scuppers must be at least the same size as the existing primary scupper. The bottom of each new over-flow scupper must be placed at least two inches (2") but no more than four inches (4") above the bottom of the existing adjacent primary scuppers.
 12. Replace all existing roof hatches with new roof hatches of similar design and construction.
 13. Install parapet wall waterproofing above the new sheet metal counterflashing at the base of the wall wrapped over the top of the parapet wall under the new sheet metal coping consisting of two (2) layers of one-part, asbestos-free, non-fibred, cold-applied, rubberized asphalt emulsion reinforced with one (1) ply of stitch-bonded polyester reinforcing fabric and coated with intumescent, fire-retardant, white reflective, elastomeric, acrylic latex roof coating.
 14. Parapet and other walls above the roof system currently coated with tinted elastomeric coating will be re-coated with exterior grade fibred elastomeric coating tinted to match the existing wall color.
 15. Mechanical and Electrical work as required to facilitate re-cover roofing. Including disconnecting and re-connecting, raising or relocating mechanical equipment, vents, piping, conduit, curbs, or other roof top items. Some mechanical units on this roof will be replaced with new units and new curbs. Some units will remain. Co-ordinate all mechanical unit work so that ALL units and curbs are installed at the proper eight inch (8") height above the new roof system.
 16. All existing and new piping including but not limited to gas lines, conduit, etc. must be disconnected and raised (if required) and placed on proper pipe supports. Reconnection and testing shall be included as required.
 17. Provide a ten (10) year manufacturer's warranty.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Related Sections include the following:
 - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Division 07 Section "Flashing and Sheet Metal".
- C. Allowances: Refer to Division 1 Section "Allowances" for description of Work in this Section affected by allowances.
 - 1. Wet Roof System Replacement: 1,000 square feet.
 - 2. Wood Blocking and Nailer Replacement: 300 board feet.
- D. Unit Prices: Refer to Division 1 Section "Unit Prices" for description of Work in this Section affected by unit prices.
 - 1. Wet Roof System Replacement: \$/square foot.
 - 2. Metal Roof Deck Repair/Replacement: \$/square foot.
 - 3. Wood Blocking and Nailer Repair/Replacement: \$/board foot.
- E. Alternates: N/A

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Roofing System Design: The Contractor will provide field verification of roof wind uplift resistance in accordance with FM Global Property Loss Prevention Data Sheet 1-52 as follows:
 - 1. Once a representative section of the new Roofing Re-cover System (approximately 1,000 square feet) has been installed, at least three (3) bonded uplift tests will be performed. One each in the field, perimeter and corner of the completed roof section.
 - 2. Test results will be provided to the Owner's representative for evaluation and recommendation before the roofing re-cover operation may be resumed.
 - 3. Preparation for testing and all roof repairs will be provided by the contractor.
- D. Roofing Membrane System Load-Strain Properties: Provide a roofing membrane identical to component systems that have been successfully tested by a qualified independent testing and inspecting agency to meet the following minimum load-strain properties at membrane failure when tested according to ASTM D 2523:
 - 1. Tensile strain at failure, at 0 deg. F: 203.46 lbf/in machine direction, minimum; 5.87 percent elongation, maximum.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Tensile strain at failure, at 0 deg. F: 185.57lbf/in cross-machine direction, minimum; 5.73 percent elongation, maximum.

- E. Flashings: Comply with requirements of Division 7 Section "Sheet Metal Flashing and Trim." Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:
 1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.
 2. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.
 3. ANSI/SPRI ES-1, "Wind Design Standard for Edge Metal Systems Used with Low Slope Roof Systems".

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing systems. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 1. Submit evidence of meeting performance requirements.
- D. Maintenance Data: For roofing system to include in maintenance manuals.
- E. Warranties: Special warranties specified in this Section.

1.6 SUBSTITUTIONS

- A. General:
 1. Refer to Division 1, Section 01430 – Quality Assurance.
 2. ONLY Substitutions approved in writing by the architect/owner prior to the scheduled bid date will be considered.
 3. Notification of approvals will be issued at least five (5) days before the scheduled bid date.
 4. Architect/Owner reserves the right to be final authority on acceptance or rejection of any substitution request.
- B. When a particular make or trade name is specified, it shall be indicative of standard required. Bidders proposing substitutes shall submit the following ten (10) days prior to bid date to the Architect; requests received after that time will not be considered.
 1. Written application with explanation of why it should be considered.
 2. Independent laboratory certification providing written confirmation that the physical and performance characteristics of the substitute material/system will meet the physical and performance characteristics of the specified materials and or system.
- C. Submit five copies of request for substitution. Items to be included in the request:
 1. Complete data substantiating compliance of proposed substitution.
 2. Product identification, including manufacturer's literature and manufacturer's name.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3. Current certificate from an accredited testing laboratory comparing the physical and performance attributes of the proposed material with those of the specified materials. Test results must be dated, notarized, and on testing laboratory stationary.
4. A five gallon sample of any adhesive, coating, or mastic and a 3' x 5', sample of sheeting goods specified. Original labels must be on the containers; smaller containers may be submitted if original labels are attached. This sample should be wet applied in its final configuration. The Architect will review the installed sample.
5. Material Safety Data Sheets providing all pertinent data as to flammability, combustibility.
6. List of at least (5) five jobs as described under the requirements where the proposed alternate material was used under similar conditions. These jobs must be available for inspection by the Architect. Names and phone numbers are required for verification. Submit a minimum of 200,000 square feet for review. Submitted projects must be a minimum of (5) years old.
7. Notarized statement from the Roof System Manufacturer, signed by a corporate officer of the corporation stating that:
 - a. All Documents have been reviewed and are approved.
 - b. The Project site has been inspected.
 - c. The Roofing System Manufacturer will provide two (2) field inspections weekly; during, and until all construction work is complete and accepted by the owner. A full time employee of the manufacturer must perform inspections.
 - d. Provide documentation of the proposed alternate system passing the specified regulatory requirements. Documentation must be on the specified regulatory requirements letterhead or approval guide. No third party testing will be accepted.

D. In making substitution request, Bidder/Contractor represents:

1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified. Additionally, he will have a technical service representative of the proposed manufacturer attend the pre-bid meeting.
2. He will provide the same guarantee for substitution as for those specified.
3. He will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
4. Advise the owner of any credit savings or additional costs as opposed to the system type specified.

E. Substitutions will not be considered if:

1. Product or method to be considered does not have a minimum of (5) five years of successful performance in roofing and re-roofing of similar applications.
2. Any discrepancies in the test data, or if the tests or submittals are incomplete.
3. They are indicated or implied on Shop Drawings or Project Data Submittals without formal request submitted in accordance with the specification document.
4. Acceptance requires significant revision of documents.
5. Only substitutes approved in writing by prior to scheduled cut off date will be considered.
6. Notification of approvals will be mailed at least 3 days before bid opening.
7. The owner will not incur any additional costs for design or construction costs.

1.7 QUALITY ASSURANCE

- A. General: Refer to Division 1, Section "Quality Assurance".

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Manufacturer Qualifications:
 - 1. A qualified manufacturer that can meet the basis of design as established in Part 2 – Products.
 - 2. Manufacturer shall provide inspections (2) times each week to verify accuracy of installation and provide a written report to the Contractor for submittal to the architect.
- C. Installer Qualifications:
 - 1. Have experience in processed built-up roofing for a minimum of five (5) years.
 - 2. Contractors must be Certified/Approved by the specified Primary Material Manufacturer.
- D. Approval of Roofing Contractors:
 - 1. Roofing Contractors included in the following list are the only pre-approved installers that can install and provide the warranty for the specified roof system.
 - a. American Contracting USA, Inc., Rio Hondo, Texas (956) 748-4030.
 - b. Rio Roofing Inc., Harlingen, Texas (956) 423-3359.
 - c. Sechrist-Hall Company, Inc., Harlingen, Texas (956) 423-7086.
 - d. Haeber Roofing Company, Corpus Christi, Texas (361) 851-8142.
 - e. Port Enterprises, Inc. Corpus Christi, Texas (361) 289-2944.
 - f. Sechrist-Hall Company, Inc., Corpus Christi, Texas (361) 884-5264.
 - g. Easley Construction, Inc., Victoria, Texas (361) 575-0294.
 - h. Rain King, Victoria, Texas (361) 576-0606.
 - i. Rain Seal Master Roofing and Sheet Metal, Inc., Victoria, Texas (361) 576-0926.
 - 2. Roofing Contractors not on the list, that would like to bid on the proposed project, must complete the required qualification statement and must meet all requirements in the contract documents. Contractors, who are not approved by the Architect, will not be allowed to bid the project. Qualification statements may be requested from the technical roofing consultant and the local chapter of the American Institute of Architects.
 - 3. Installer must provide (2) manufacturer inspections each week.
 - a. Noncompliance may result in an \$850 per day fee for missing inspections.
- E. Source Limitations: Obtain components for roofing system from or approved by roofing system manufacturer.
- F. Pre-installation Conference: Conduct conference at Project site. Comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 5. Review structural loading limitations of roof deck during and after roofing.
 - 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

G. Random Sampling

1. During course of work, the Architect may secure samples according to ASTM D140-93 of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
2. Should test results prove that material is not equal to specified material:
 - a. Contractor shall pay for all testing.
 - b. Roofing installed and found not to comply with the specifications shall be removed and replaced with no change in the contract price.

1.8 DELIVERY, STORAGE, AND HANDLING

- A.** Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage.
- B.** Storage of Materials
1. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - a. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
 2. Store materials marked "keep from freezing" in areas where temperatures will remain above 40 deg F.
 3. For insulation, remove plastic packaging shrouds. For felt rolls, slit the top of the plastic shrink-wrap only. Cover top and sides of all stored materials with tarpaulin. Secure tarpaulin. Store in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
 4. Store rolls of felt and other sheet materials on end on pallets or other raised surfaces.
 5. Do not double-stack rolls.
 6. Rooftop storage: Disperse material to avoid concentrated loading.
 7. Materials may not be stored without a canvass tarpaulin, or on direct contact with the ground or roof surface. Do not leave unused felts and other sheet materials on the roof overnight or when roofing work is not in progress unless protected from weather and moisture and unless maintained at a temperature exceeding 50 deg F.
 8. Should Contractor be required to quickly cover material temporarily, such as during an unanticipated rain shower, all materials shall be stored on a raised platform covered with secured canvas tarpaulin, top to bottom.
 9. Contractor is responsible for the safekeeping of materials stored onsite.
- C.** Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.9 PROJECT CONDITIONS

A. Weather Limitations:

- 1. Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.
 - a. Do not work in rain, snow, or in presence of water.
 - b. Do not work in temperatures below 40 deg. F.
 - c. Do not install materials marked "keep from freezing" when daily temperatures are scheduled to fall below 40 deg. F.
 - d. Remove any work exposed to freezing.
 - e. Advise the owner when volatile materials are to be used near air ventilation intakes so that they can be shut down or blocked, as the owner requires.

1.10 WARRANTY

A. Special Roofing Manufacturer's Warranty:

- 1. The warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- 2. Upon project completion, Manufacturer acceptance, and once complete payment has been received; the contractor shall deliver to the Owner a Ten (10) year Quality Assurance Warranty and Owner's Manual. The Manufacturer must, during the second, fifth, and tenth year of the warranty, inspect and provide a written Executive Summary.
- 3. The Manufacturer's Warranty must include labor & material coverage against leakage on all components; including those manufactured by others. Included are the following:
 - a. Base sheet and fasteners.
 - b. Insulation materials and adhesives.
 - c. All roof membrane components and adhesives.
 - d. All wood blocking and fastening components.
 - e. All perimeter flashing metal components.
 - f. All tapered edge and cant strips.
 - g. All existing or new counter flashing.
 - h. All surface mastics, coatings, stripping ply, etc.
 - i. All drain assemblies, scuppers, expansion joints, pitch pans and other components, excluding interior plumbing.
 - j. Any leaks or other problems caused by substrate movement, excluding decks.
 - k. Cover against damages from wind speeds up to hurricane force winds as outlined within the Beaufort Scale.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.11 MANUFACTURERS

- A. In Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
 - 2. Available Manufacturers: Any manufacturer properly submitting **all** required information in accordance with Section 1.06 and complying with **all** requirements of these specifications. Inclusion in the list below does not constitute prior approval. All manufacturers must submit verification of compliance with all of the performance and physical characteristics of the specified materials. All manufacturers must submit verification that all services and technical support indicated in the specifications and under the terms of the warranty will be provided.
 - a. Basis of Design:
 - 1) Tremco Inc., Cleveland, OH (216) 292-5000.
- B. The products listed within are used to establish a basis of design.
 - 1. Refer to section 01600 – Product Requirements within the General Conditions.

1.12 ROOFING MEMBRANE PLIES

- A. Base Ply Sheet heat welded to new re-cover board: Provide one (1) ply of ASTM D 6223, Type II, Grade S, polyester and fiberglass reinforced, smooth surfaced, APP-modified asphalt sheet, heat-welded to the properly prepared substrate.
 - 1. Performance requirements:
 - a. Thickness, 160 mils, ASTM D 6222-98
 - b. Tensile Strength at 0 deg. F, 181 lbf/in (MD), 121 lbf/in (XMD), ASTM D 6222-98
 - c. Tear Strength at 77 deg. F, 179 lbf /MD, 149 lbf /XMD, ASTM D 6222-98
 - d. Elongation at 0 deg. F, 42% MD, 46% XMD, ASTM D 6222-98
 - e. Low Temperature Flexibility, 10 deg. F, ASTM D 6222-98
 - f. Dimensional Stability, 0.90% MD, 0.60% XMD, ASTM D 6222-98
 - 2. Basis of Design: Tremco POWERply APP Smooth.
- B. Cap Sheet heat-welded to base ply sheet: Provide one (1) ply of ASTM D 6223, Type II, Grade G, polyester and fiberglass reinforced, granule surfaced, APP-modified asphalt sheet, heat-welded to the base ply.
 - 1. Performance requirements:
 - a. Thickness, 180 mils, ASTM D 6222-98
 - b. Tensile Strength at 0 deg. F, 151 lbf/in (MD), 105 lbf/in (XMD), ASTM D 6222-98
 - c. Tear Strength at 77 deg. F, 175 lbf /MD, 143 lbf /XMD, ASTM D 6222-98
 - d. Elongation at 0 deg. F, 38% MD, 42% XMD, ASTM D 6222-98
 - e. Low Temperature Flexibility, 12 deg. F, ASTM D 6222-98
 - f. Dimensional Stability, 0.90% MD, 0.60% XMD, ASTM D 6222-98
 - 2. Basis of Design: Tremco POWERply APP FR.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.13 FLASHING MATERIALS

- A. Backing Sheet heat-welded to properly prepared substrate: Provide one (1) ply of ASTM D 6223, Type II, Grade S, polyester and fiberglass reinforced, smooth surfaced, APP-modified asphalt sheet, heat-welded to the properly prepared substrate.
 - 1. Performance requirements:
 - a. Thickness, 160 mils, ASTM D 6222-98
 - b. Tensile Strength at 0 deg. F, 181 lbf/in (MD), 121 lbf/in (XMD), ASTM D 6222-98
 - c. Tear Strength at 77 deg. F, 179 lbf /MD, 149 lbf /XMD, ASTM D 6222-98
 - d. Elongation at 0 deg. F, 42% MD, 46% XMD, ASTM D 6222-98
 - e. Low Temperature Flexibility, 10 deg. F, ASTM D 6222-98
 - f. Dimensional Stability, 0.90% MD, 0.60% XMD, ASTM D 6222-98
 - 2. Basis of Design: Tremco POWERply APP Smooth.
- B. Flashing Sheet heat-welded to backing sheet: Provide one (1) ply of ASTM D 6223, Type II, Grade G, polyester and fiberglass reinforced, granule surfaced, APP-modified asphalt sheet, heat-welded to the base ply.
 - 1. Performance requirements:
 - a. Thickness, 180 mils, ASTM D 6222-98
 - b. Tensile Strength at 0 deg. F, 151 lbf/in (MD), 105 lbf/in (XMD), ASTM D 6222-98
 - c. Tear Strength at 77 deg. F, 175 lbf /MD, 143 lbf /XMD, ASTM D 6222-98
 - d. Elongation at 0 deg. F, 38% MD, 42% XMD, ASTM D 6222-98
 - e. Low Temperature Flexibility, 12 deg. F, ASTM D 6222-98
 - f. Dimensional Stability, 0.90% MD, 0.60% XMD, ASTM D 6222-98
 - 2. Basis of Design: Tremco POWERply APP FR.
- C. Glass-Fiber Seam Reinforcing Fabric: Woven glass reinforcement treated with organic resin complying with ASTM D 1668, Type III.
 - 1. Basis of Design: Tremco Burmesh.
- D. Flashing Sheet Coating Material: VOC compliant, asbestos free, reflective aluminum coating for all flashing joint stripping.
 - 1. Performance Requirements:
 - a. VOC, 495 g/L, per ASTM D3960-93
 - b. Metallic Aluminum Content, 15% min, per ASTM D 2824-85
 - 2. Basis of Design: Tremco Double-Duty Aluminum LV.

1.14 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.
- B. Asphalt primer:
 - 1. An asbestos free, modified water-based asphalt primer
 - 2. Basis of Design: Tremco Tremprime WB.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- C. Elastomeric mastic for stripping joints at base flashing membrane and miscellaneous waterproofing:
 - 1. A single component, weather resistant, asbestos free durable roof elastomer, suitable for use over both asphalt and tar roof membranes.
 - 2. Basis of Design: Tremco POLYroof LV.
- D. Reinforcement membrane:
 - 1. A non-shrinking, non-rotting, vinyl coated, woven glass mesh.
 - 2. Basis of Design: Tremco Burmesh - 6".
- E. Flashing tape for top edge of base flashing:
 - 1. A flexible, non-drying, butyl-based, gasket-forming sealant tape.
 - 2. Basis of Design: Tremco TF-Tape.
- F. Asphalt mastic for miscellaneous sealing and waterproofing:
 - 1. An asphalt-based, heavily fibrated, asbestos free mastic.
 - 2. Basis of Design: Tremco ELS.
- G. Pitch pan cement:
 - 1. ASTM C 928-89, rapid hardening non-shrink grout.
- H. Pitch pan mastic:
 - 1. High performance single component roof elastomer.
 - 2. Basis of Design: Tremco POLYroof LV
- I. Metal Joint Sealant:
 - 1. An asbestos free, one-part, low modulus moisture curing, silicone sealant.
 - 2. Basis of Design: Tremco TremSEAL S.
- J. Reglet Joint Sealant.
 - 1. One-part, bituminous polyurethane sealant.
 - 2. Basis of Design: Tremco Reglet Joint Sealant.
- K. Vents and/or stacks:
 - 1. Galvanized Steel: ASTM A 526-85, sheet steel with 1.25 oz./sq. galvanized coating.
 - a. Gage: Twenty-four (24).
 - b. Solder: ASTM B32-89, alloy grade 60A. Neutralize flux after soldering.
- L. Termination Bar for top edge of all base flashings:
 - 1. Extruded aluminum, pre-punched 8" o.c.
- M. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- N. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, and other accessories.
- O. Metal Flashings:

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Provide Metal Flashings as specified in Division 7 Section "Sheet Metal Flashing and Trim".
2. Metal flashings, counter flashings, pitch pans, scuppers, and like applications shall be fabricated and installed in accordance with:
 - a. National Roofing Contractors Association Manual (NRCA).
3. Fascia and other edge flashing details shall be fabricated and installed in accordance with:
 - a. National Roofing Contractors Association Manual (NRCA).
 - b. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.
 - c. ANSI/SPRI ES-1, "Wind Design Standard for Edge Metal Systems Used with Low Slope Roof Systems".
4. Copping, fascia, gutters, conductor heads, downspouts and other visible sheet metal flashing:
 - a. Galvanized, pre-painted: Twenty-four (24) gage minimum, galvanized steel; commercial quality, Fed. Spec. QQ-S-775, Type I, Class D or ASTM A 526 or lock forming quality ASTM A 527, G90 coating in accordance with ASTM A 525. All sheet metal to be pre-painted.
 - 1) Paint finish at exposed side: Factory applied baked-on two (2) coat system comprised of one (1) coat of full 70% resin fluorocarbon by Kynar 500 or accepted substitute over a smooth coat of corrosion-resistant epoxy-based primer. Color as selected by owner.
 - 2) Finish at underside shall be a wash coat over a coat of corrosion-resistant epoxy-based primer.
5. Counter flashing, slip flashing, pitch pans with hoods and other sheet metal flashings not visible to the general public:
 - a. Galvanized Steel: ASTM A 526-85, sheet steel with 1.25 oz./sq. galvanized coating.
 - 1) Gage: Twenty-four (24).
 - 2) Solder: ASTM B32-89, alloy grade 50A. Neutralize flux after soldering.
6. Primary Scuppers and Over-flow Scuppers:
 - a. Stainless Steel, Type 304: Twenty-four (24) gauge minimum, stainless steel; commercial quality, Fed. Spec. QQ-S-775, Type I, Class D or ASTM A 526 or lock forming quality ASTM A 527, G90 coating in accordance with ASTM A 525.
7. Lead Flashings:
 - a. ASTM B 29-79 (1984), 4 lb. (1.82 kg) sheet lead.
 - b. Use prefabricated plumbing vent flashings with factory welded and sealed joints at all plumbing vents.
 - 1) Flange: 4" minimum.

1.15 ROOF COVER BOARD

- A. General: Provide preformed roof cover boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, Type X, minimum 1/2 inch thick, factory primed.
 1. Basis of Design: Provide Tremco / GP Gypsum Dens-Deck Prime Roof Board by Tremco Inc.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening cover board panel to roof deck.
 - a. Fastener density requirements:
 - 1) Field: 1 each per 2 square feet / 16 each per 4' x 8' board.
 - 2) Perimeters: 1 each per 1.33 square feet / 24 each per 4' x 8' board.
 - 3) Corners: 1 each per 1 square feet / 32 each per 4' x 8' board.
- C. Tapered Perlite Insulation: ASTM C 728; composed of expanded perlite, cellulosic fibers, binders, and waterproofing agents with top surface seal-coated. Minimum board thickness: 1/2".
 1. Provide factory-tapered insulation boards fabricated to slope as follows: Tapered roof insulation, crickets and saddles: 1/2 inch per foot; and drain or scupper sumps: 1/2 inch per foot.

1.16 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Wood Cant and Nailer Strips:
 1. Refer to Division 6, Section 06100 "Wood Blocking and Curbing".
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain or scupper. Fabricate to slopes indicated.
 1. ASTM C 728, perlite insulation board.
- E. Tapered Edge Strips: ASTM C 728, perlite insulation board.

1.17 WALL TREATMENT AND COATING MATERIALS

- A. Primer for membrane waterproofing at parapet walls:
 1. An asbestos free, modified water-based asphalt primer
 2. Basis of Design: Tremco Tremprime WB.
- B. Elastomeric membrane waterproofing at parapet walls:
 1. One-part, asbestos-free, non-fibrated, cold-applied, rubberized asphalt emulsion.
 2. Basis of Design: Tremco TremLastic S.
- C. Reinforcement for membrane waterproofing at parapet walls:
 1. One (1) ply of stitch-bonded polyester reinforcing fabric.
 2. Basis of Design: Tremco Polyester Mat CP.
- D. Coating for membrane waterproofing at parapet walls:

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Intumescent, fire-retardant, white reflective, elastomeric, styrenated acrylic latex roof coating.
 2. Basis of Design: Tremco Polarcote FR.
- E. Primer for previously coated walls above roof membrane:
1. Acrylic polymer emulsion, stain resistant, fast drying, flexible base primer for elastomeric latex coatings.
 2. Basis of Design: Tremco Wall-Tite Primer.
- F. Coating for previously coated walls above roof membrane:
1. Acrylic polymer emulsion wall coating with fiber reinforcement.
 2. Tinted to match existing.
 3. Basis of Design: Tremco Wall-Tite F.

1.18 MECHANICAL FASTENERS

- A. Insulation/Cover Board to Steel Deck:
1. Length: Use the shortest fastener which will penetrate the top flange of the steel deck 3/4".
 - a. ITW Buildex: Accutrak or Hextra with Recessed or Accutrace Plates OR #12, 1/4", #14-10 or #15 Roofgrip with Recessed or Flat Bottom Plates.
 - b. Olympic Fasteners: Olympic #10, Olympic Standard, Olympic Heavy Duty, Stainless #12, Hex Head #12, #14, Iron-Lok or Strap Toggle with Standard or G-2 Plates OR Olympic Standard or Olympic Heavy Duty with LGP.
 - c. SFS Stadler Inc: #12 or #14 Insul-Fixx with IF-3-S.
- B. Wood to Steel Deck:
1. Length: Use the shortest fastener which will penetrate the top flange of the steel deck 3/4".
 - a. Tremco/Olympic No. 12-11 Standard Roofing Fastener, with CR-10 fluorocarbon coating by Tremco.
 - b. Deckfast #12 screw by Construction Fasteners Inc., Wyomissing PA
 - c. Olympic Fastener #12-10 by Olympic Manufacturing Group, Agawam MA
 - d. Rawl Deck #12 Deck screw by The Rawlplug Company Inc., New Rochelle NY
- C. Wood to wood:
1. Type 316 Stainless Steel, flat head, ring shank, diamond point roofing nails as manufactured by Stainless Fasteners, or equal. (Galvanized nails are not permitted to fasten into treated lumber.)
 2. Length: Sufficient to penetrate wood blocking or nailers 1-1/4 inches.
- D. Sheet steel to wood blocking:
1. Type 316 Stainless Steel, flat head, ring shank, diamond point roofing nails as manufactured by Stainless Fasteners, or equal. (Galvanized nails are not permitted to fasten into treated lumber.)
 2. Length: Sufficient to penetrate wood blocking or nailers 1-1/4 inches.
- E. Termination bar to masonry or concrete:
1. Lead masonry anchors.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Length: Sufficient to provide 1 ¼" embedment minimum.

F. Drawband:

1. Gold Seal stainless worm gear clamp by Murray Corporation, Cockeysville MD.

G. Power-Seal stainless steel worm drive clamps by Breeze Clamp Co, Saltsburg PA.

1.19 WOOD BLOCKING, NAILERS & CURBS

A. Lumber:

1. See Division 6 Section "Miscellaneous Carpentry" for wood blocking, curbs, cants, and nailers.

1.20 WET ROOF REPLACEMENT MATERIALS

A. Metal Roof Deck:

1. See Division 5 Section "Steel Deck Repair/Replacement" for metal roof deck.

B. Base Insulation Layer: Polyisocyanurate Board Insulation; ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces. Minimum board thickness: 2.0" or as required to match existing.

C. Cover Board Insulation: Perlite Board Insulation; ASTM C 728; composed of expanded perlite, cellulosic fibers, binders, and waterproofing agents with top surface seal-coated. Minimum board thickness: 1/2" or as required to match existing.

D. Optional Cover Board: Wood Fiber Board Insulation; ASTM C 208, Type II, Grade 2, Cellulosic-fiber and water-resistant binders, asphalt coated on ALL six (6) sides and chemically treated for deterioration. Minimum board thickness to be 1/2".

E. Roof Membrane Plies: Provide two (2) plies of asphalt coated polyester/glass/polyester trilaminate reinforced ply sheet. Exceeding ASTM D 4601-86, Type II.

1. Performance requirements:

- a. Weight, 31.0 lb/100 sq. ft. , ASTM D 228-90a
- b. Tensile Strength, 161 lbf/in (MD), 137 lbf/in (XMD), ASTM D 5147
- c. Elongation, 5.4% MD, 6.56%XMD, ASTM D 5147
- d. Tear Strength, 265 lbf MD, 212 lbf XMD, ASTM D 5147
- e. Asphalt, 10.0 lb/100 sq. ft. , ASTM D 228-90a

2. Basis of Design: Tremco BURmastic Composite Ply HT.

F. Roof Membrane Adhesive: Cold-Applied Membrane Adhesive; One-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with specified roofing membranes and flashings, with the following physical properties:

1. Performance requirements:

- a. Asbestos Content, EPA 600 R-93/116: None.
- b. Volatile Organic Compounds (VOC), maximum, ASTM D 6511: 340 g/L.
- c. Nonvolatile Content, minimum, ASTM D 6511: 67 percent.
- d. Flash Point, minimum, ASTM D 93: 100 deg F.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- e. Density at 77 deg F ASTM D 6511: 8.4 lb/gal.
- f. Uniformity and Consistency, ASTM D 6511: Pass.
- g. Asphalt Content, minimum, ASTM D 6511: 42 percent.
- 2. Basis of Design: Tremco, BURmastic Adhesive.

1.21 MISCELLANEOUS

- A. Roof hatches: New roof hatches shall be Type S-50, 3'-0" x 2'-6", aluminum as manufactured by The Bilco Company, PO Box 1203, New Haven, CT 06505. Telephone (203) 934-6363 (or approved substitution). Verify size to match existing opening. Provide ladder safety post and type 316 stainless steel hardware.

PART 2 - EXECUTION

2.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and, that nailers match thicknesses of insulation.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

2.2 ROOF TESTING

- A. Moisture detection:
 - 1. Thermocore[®] non-destructive moisture detection and analysis survey as provided Tremco Incorporated / Weatherproofing Technologies, Inc.
 - a. Visually survey all roof area to be investigated and note all abnormalities.
 - b. Perform an infrared thermographic scan of the designated roof areas.
 - c. Identify and verify all areas where moisture retention is suspected.
- B. Wind Uplift Resistance testing:
 - 1. The Contractor will provide field verification of roof wind uplift resistance in accordance with FM Global Property Loss Prevention Data Sheet 1-52 as follows:
 - a. Once a representative section of the new Roofing Re-cover System (approximately 1,000 square feet) has been installed, at least three (3) bonded uplift tests will be performed. One each in the field, perimeter and corner of the completed roof section.
 - b. Test results will be provided to the Owner's representative for evaluation and recommendation before the roofing re-cover operation may be resumed.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2.3 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains or gutters and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Surface preparation:
 - 1. Clean roof of loose and embedded gravel, dirt, and dust by spudding and power brooming. Note: Several broomings may be necessary to properly clean the roof surface.
 - 2. Optional method: Clean roof of loose and embedded gravel, dirt, and dust by spudding and vacuuming.
 - 3. Repair damaged roof membrane as required to maintain the existing roof membrane in a water-tight condition until the new roof re-cover system can be installed.
 - 4. Remove existing roofing and insulation in ALL wet areas as identified by the Thermocore® Infrared Scan and provide roof repairs consisting of the following:
 - a. One (1) layer of polyisocyanurate roof insulation (thickness as required to match existing) mechanically fastened to the metal roof deck.
 - b. One (1) layer of perlite roof insulation (thickness as required to match existing) adhered to the base layer of roof insulation with the specified cold process adhesive.
 - c. Two (2) plies of Coated Polyester/Glass/Polyester Trilaminate reinforced ply sheet adhered with cold process asphalt adhesive.
 - d. Allowance: In the Base Proposal, allow for Wet Roof System replacement as follows:
 - 1) 1,000 square feet.
 - 5. Metal roof deck repairs, if required:
 - a. Examine exposed metal decking and repair or replace if necessary using unit pricing.
 - 6. Remove flashings to substrate.
 - 7. Remove as directed by Owner:
 - a. Unused equipment, vents, and piping.

2.4 ROOF COVER BOARD INSTALLATION

- A. Coordinate installing membrane roofing system components so roof cover board is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof cover board.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- D. Install roof cover board over the properly prepared roof membrane with long joints in continuous straight lines with end joints staggered between rows. Loosely butt cover boards together and fasten through the existing roof system to the existing metal roof deck.
 - 1. Fasten according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
 - 2. Fasten to resist uplift pressure at corners, perimeter, and field of roof.

2.5 ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."
- B. Start installation of built-up roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Cooperate with testing and inspecting agencies engaged or required to perform services for installing built-up roofing system.
- D. Coordinate installing roofing system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.
 - 1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement with joints and edges sealed.
 - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
 - 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- E. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- F. Substrate: Free of foreign particles prior to laying roof membrane.
- G. Phased application: Not permitted. All plies shall be completed each day.
- H. Traffic and equipment: Kept off completed plies until adhesive has set.
- I. Wrapper and packaging materials: Not to be included in roofing system.
- J. Ply shall never touch ply, even at roof edges, laps, tapered edge strips, and cants.
- K. Extend roofing membrane to top edge of cant at wall and projection bases.
- L. Cut out fish mouths/side laps, which are not completely sealed; patch. Replace all sheets, which are not fully and continuously bonded.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2.6 ROOFING MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane base sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
 - 1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
 - 2. Heat-weld to substrate.
- B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.
 - 2. Apply roofing granules to cover exuded bead at laps while bead is hot.
- C. Install roofing membrane sheets so side and end laps shed water.
- D. Avoid walking on plies until adhesive has set.

2.7 DAILY WATER-STOP/TIE-INS

- A. Remove dust, dirt or debris from the top of the existing membrane.
- B. Width: 18 inches.
- C. Adhere 12 and 18-inch wide ply sheets from exposed deck to existing roofing with a continuous 1/16-inch thick application of tie-off mastic. Glaze cut-off with surfacing mastic. Extend 18 inch wide felt 3 inches either side 12-inch felt.
- D. Install "dead-man" insulation filler at insulation staggers.
- E. Extend roofing system at least 12 inches onto prepared area of adjacent roofing. Seal edge with 6 inch wide reinforcing membrane embedded between alternate courses of tie-off mastic.
 - 1. At beginning of next day's work remove temporary connection by cutting felts evenly along edge of existing roof system. Remove "dead-man" insulation fillers.

2.8 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:
 - 1. Prime substrates with asphalt primer as required by roofing system manufacturer.
 - 2. Backer Sheet Application: Heat-weld backer sheet to substrate.
 - 3. Flashing Sheet Application:
 - a. Cut flashing membrane in lengths not to exceed (10) feet.
 - b. Heat-weld flashing sheet to substrate per manufacturer's instructions.
 - c. Lap flashing membrane ends 4 inches, extend membrane 6 inches beyond toe of cant; press sheet firmly in place. Ensure complete bond and continuity without wrinkles or voids.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- d. Heat-weld all laps.
 - e. Seal vertical laps of flashing membrane with reinforcing membrane embedded between alternate continuous courses of elastomeric flashing bitumen.
 - f. Coat reinforced stripping membrane with specified coating. Apply additional coats as required to completely cover stripping membrane.
- B. Base flashing height:
 - a. Not less than 8 inches, not higher than 12 inches above finished roofing surface.
- C. Extend flashing up walls or parapets a minimum of 8 inches above roofing membrane and 4 inches onto field of roofing membrane.
- D. Mechanically fasten top of flashing securely at terminations and perimeter of roofing.
 - 1. Seal top termination of base flashing.
- E. Install stripping, according to roofing system manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.
 - 1. Two-Ply Stripping:
 - a. Prime and set the base of the flange in asphaltic mastic. Prime the top of the flange and seal the flange with two (2) plies embedded in alternate applications of stripping adhesive. Extend first ply 4 inches beyond flange; second ply 2 inches beyond first ply.
- F. Metal Parapet Cap (Coping) and Base Flashing: Refer to NRCA Construction Detail MB-1 and MB-1S.
- G. Surface Mounted counterflashing for Concrete Walls: Refer to NRCA Construction Detail MB-4 and MB-4S.
- H. Base Flashing for Wall-supported Deck: Refer to NRCA Construction Detail MB-5 and MB-5S.
- I. Base Flashing for Non-wall-supported Deck: Refer to NRCA Construction Detail MB-6 and MB-6S.
- J. Expansion Joint with Metal Cover: Refer to NRCA Construction Detail MB-7 and MB-7S.
- K. Expansion Joint with Pre-manufactured Cover: Refer to NRCA Construction Detail MB-7A and MB-7AS.
- L. Equipment Support Curb: Refer to NRCA Construction Detail MB-9 and MB-9S.
- M. Raised Curb Detail for Rooftop Air Handling Units and Ducts (Prefabricated Metal Curb): Refer to NRCA Construction Detail MB-12 and MB-12S.
- N. Raised Curb Detail for Rooftop Air Handling Units and Ducts (Job Site Constructed Wood Curb): Refer to NRCA Construction Detail MB-13 and MB-13S.
- O. Sheet Metal Enclosure for Piping Through Roof Deck: Refer to NRCA Construction Detail MB-16 and MB-16S.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- P. Isolated Stack Flashing (Hot or Cold): Refer to NRCA Construction Detail MB-17 and MB-17S.
- Q. Isolated Stack Flashing – Sheet Metal (Hot or Cold): Refer to NRCA Construction Detail MB-17A and MB-17AS.
- R. Plumbing Vent: Refer to NRCA Construction Detail MB-18 and MB-18S.
- S. Penetration Pocket: Refer to NRCA Construction Detail MB-19 and MB-19S.
- T. Gutter: Refer to NRCA Construction Detail MB-22 and MB-22S.

2.9 COATING INSTALLATION

- A. Apply reflective coating material to stripping membrane at base flashings according to manufacturer's written instructions, by spray, roller, or other suitable application method. Apply additional coats as required to completely cover stripping membrane and reinforcing mesh.

2.10 WALL TREATMENT AND COATING INSTALLATION

- A. Membrane waterproofing at parapet walls:
 - 1. Clean parapet wall sections above new surface mounted counterflashing and prime with specified primer.
 - 2. Pre-cast wall panel joint treatment:
 - a. Remove existing sealant.
 - b. Install new backer rod and new sealant.
 - c. Fill void with rigid insulation to provide a level surface and heat-weld a strip of smooth surface APP modified bitumen membrane over the joint.
 - 3. Apply two coats of specified elastomeric membrane waterproofing reinforced with one ply of specified reinforcing mat. Allow to cure.
 - 4. Apply one coat of specified white reflective coating.
- B. Wall coating at previously coated walls above the roof membrane:
 - 1. Clean previously coated wall sections above new surface mounted counterflashing and prime with specified primer.
 - 2. Apply two coats of the specified elastomeric wall coating as recommended by the manufacturer.

2.11 MISCELLANEOUS INSTALLATION

- A. New Over-flow Scupper Installation:
 - 1. Locate one new over-flow scuppers adjacent to each existing primary scupper
 - 2. Saw-cut scupper opening so that the bottom of the new opening is no more than four inches (4") nor less than two inches (2") above the bottom of the existing primary scupper.
 - 3. Install new sheet metal scupper sleeve and base flashing as required.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

4. Provide pre-finished metal escutcheon plates around the new over-flow scuppers on the exterior side of the pre-cast wall panels. Finish to match existing conductor heads and down spouts.

B. Roof Hatches:

1. Coordinate roof hatch installation with installation of substrates, vapor retarders, roof insulation, roofing, and flashing as required to ensure that each element of the Work performs properly and that combined elements are waterproof and weather-tight.
2. Unless otherwise indicated, install roof hatches according to construction details of NRCA's "The NRCA Roofing and Waterproofing Manual."
3. Where metal surfaces of units will contact incompatible metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation recommended in writing by unit skylight manufacturer.
4. Anchor roof hatches securely to supporting substrates.
5. Set roof hatch flanges in thick bed of roofing cement to form a seal, unless otherwise indicated.
6. Where cap flashing is indicated, install to produce waterproof overlap with roofing or roof flashing. Seal with thick bead of mastic sealant except where overlap is indicated to be left open for ventilation.
7. Clean exposed surfaces according to manufacturer's written instructions. Touch up damaged metal coatings.

2.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 1. Notify Architect or Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

2.13 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07551

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 07592 - MEMBRANE RE-COVER ROOFING PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Roof surface preparation.
 - 2. Removal of base flashings.
- B. Allowances: Refer to Division 1 Section "Allowances" for description of Work in this Section affected by allowances.
- C. Unit Prices: Refer to Division 1 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.3 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site and disposed of legally.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Substrate Board: Rigid board or panel products placed over the roof deck that serve as thermal barriers, provide a smooth substrate, or serve as a component of a fire-resistance-rated roofing system.
- C. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- D. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- C. Qualification Data: For Installer including certificate indicating Installer is approved by warrantor of existing roofing system.

1.6 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Re-roofing Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
 - 1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to reroofing preparation, including membrane roofing system manufacturer's written instructions.
 - 3. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
 - 4. Review roof drainage during each stage of reroofing and review roof drain plugging and plug removal procedures.
 - 5. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 6. Review existing deck removal procedures and Owner notifications.
 - 7. Review procedures to determine condition and acceptance of existing deck for reuse.
 - 8. Review structural loading limitations of deck during reroofing.
 - 9. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
 - 10. Review HVAC shutdown and sealing of air intakes.
 - 11. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
 - 12. Review procedures for asbestos removal or unexpected discovery of asbestos-containing materials.
 - 13. Review governing regulations and requirements for insurance and certificates if applicable.
 - 14. Review existing conditions that may require notification of Architect and Owner before proceeding.

1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area if desired.
 2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated prior to proceeding with work over the impaired deck area.
- B. Protect building to be re-roofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not block required exits or path from required exit to public right-of-way. Coordinate with requirements of authorities having jurisdiction.
- D. Owner assumes no responsibility for condition of areas to be re-roofed.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.
- F. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

PART 2 - PRODUCTS

2.1 AUXILIARY REROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.
- B. Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FMG's "Approval Guide."
- C. Metal Flashing Sheet: Metal flashing sheet is specified in Division 7 Section "Sheet Metal Flashing and Trim."

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX
PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate with Owner to shut down air intake equipment in the vicinity of the Work. Cover air intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- B. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- C. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
 - 1. If roof drains will be temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
- D. Verify that rooftop utilities and service piping have been shut off before commencing Work.

3.2 ROOF MEMBRANE SURFACE PREPARATION

- A. General: Notify Owner each day of extent of roof preparation proposed.
- B. Surface preparation:
 - 1. Clean roof of loose and embedded gravel, dirt, and dust by spudding and power brooming. Note: Several broomings may be necessary to properly clean the roof surface.
 - 2. Optional method: Clean roof of loose and embedded gravel, dirt, and dust by spudding and vacuuming.
 - 3. Repair damaged roof membrane as required to maintain the existing roof membrane in a water-tight condition until the new roof re-cover system can be installed.
 - 4. Remove existing roofing and insulation in ALL wet areas as identified by the Thermocore® Infrared Scan and provide roof repairs consisting of the following:
 - a. Metal roof deck repairs, if required.
 - b. One (1) layer of polyisocyanurate roof insulation (thickness as required to match existing) mechanically fastened to the metal roof deck.
 - c. One (1) layer of perlite roof insulation (thickness as required to match existing) adhered to the base layer of roof insulation with the specified cold process adhesive.
 - d. Two (2) plies of Coated Polyester/Glass/Polyester Trilaminate reinforced ply sheet adhered with cold process asphalt adhesive.
 - e. Allowance: In the Base Proposal, allow for Wet Roof System replacement as follows:
 - 1) 1,000 square feet.
 - 5. Remove as directed by Owner:
 - a. Unused equipment, vents, and piping.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3.3 EXISTING BASE FLASHINGS

- A. Remove existing base flashings around parapets, curbs, walls, and penetrations.
 - 1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish.

3.4 MISCELLANEOUS DEMOLITION

- A. Remove as directed by Owner:
 - 1. a. Unused equipment, vents, and piping.

3.5 DISPOSAL

- A. Coordinate disposal with requirements of Division 1 Section "Construction Waste Disposal."
- B. Collect and place demolished materials in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 - 1. Storage or sale of demolished items or materials on-site will not be permitted.
- C. Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 07592

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 07620 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following sheet metal flashing and trim:
 - 1. Formed roof drainage system.
 - 2. Formed low-slope roof flashing and trim.
 - 3. Formed wall flashing and trim.
 - 4. Formed equipment support and curb flashing.
- B. Related Sections include the following:
 - 1. Division 6 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Division 7 Section "Membrane Roofing" for installing sheet metal flashing and trim integral with roofing membrane.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg. F, ambient; 180 deg. F, material surfaces.
- C. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.4 SUBMITTALS

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

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:
 - 1. Identify material, thickness, weight, and finish for each item and location in Project.
 - 2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
 - 3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.
 - 4. Details of expansion-joint covers, including direction of expansion and contraction.
- C. Samples for Initial Selection: For each type of sheet metal flashing and trim indicated with factory-applied color finishes.
 - 1. Include similar Samples of trim and accessories involving color selection.

1.5 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with the following. Conform to dimensions and profiles shown unless more stringent requirements are indicated.
 - 1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.
 - 2. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.
 - 3. ANSI/SPRI ES-1, "Wind Design Standard for Edge Metal Systems Used with Low Slope Roof Systems".
- B. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
 - 2. Review methods and procedures related to sheet metal flashing and trim.
 - 3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
 - 4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with suitable weather-tight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

1.7 COORDINATION

- A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leak-proof, secure, and non-corrosive installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 SHEET METALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
- B. Pre-painted, Metallic-Coated Steel Sheet: Steel sheet metallic coated by the hot-dip process and pre-painted by the coil-coating process to comply with ASTM A 755/A 755M.
 - 1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
 - 2. Exposed Finishes: Apply the following coil coating:
 - a. Factory Prime Coating: Where painting after installation is indicated, provide pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat; with a minimum dry film thickness of 0.2 mil.
 - b. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 1) Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with physical properties and coating performance requirements of AAMA 2604, except as modified below:
 - a) Humidity Resistance: 1000 hours.
 - b) Salt-Spray Resistance: 1000 hours.
 - 2) Color: As selected by Architect from manufacturer's full range.
- C. Lead Sheet: ASTM B 749, Type L51121, copper-bearing lead sheet.
 - 1. Use prefabricated plumbing vent flashings with factory welded and sealed joints at all plumbing vents.
 - a. Flange: 4" minimum
 - b. Four (4) pounds per square foot minimum.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2.3 UNDERLAYMENT MATERIALS

- A. Underlayment Material: Cold applied, self-adhering membrane composed of a high strength polyethylene film coated on one side with a layer of rubberized asphalt adhesive and interwound with a disposable release sheet.
 - 1. Performance Requirements:
 - a. Thickness membrane, Method A, ASTM D3767, 40 mil.
 - b. Tensile strength, membrane ASTM D412, (Die C Modified), 250 psi.
 - c. Elongation, membrane ASTM D412, (Die C Modified), 250%.
 - d. Low temperature flexibility, ASTM D1970, Unaffected at -20°F.
 - e. Adhesion to plywood, ASTM D903, 3 lb/in width.
 - f. Permeance (max), ASTM E96, 0.05 perms max.
 - 2. Basis of Design: Grace Ice & Water Shield.
 - 3. Pre-approved substitution, subject to compliance with all requirements indicated in Section 2.1 above.
- B. Slip Sheet: Rosin-sized paper, minimum 3 lb/100 sq. ft.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
 - 1. Exposed Fasteners: Heads matching color of sheet metal by means of plastic caps or factory-applied coating.
 - 2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
 - 3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
- C. Solder for Lead: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
- D. Solder for Zinc: ASTM B 32, 60 percent lead and 40 percent tin with low antimony, as recommended by manufacturer.
- E. Burning Rod for Lead: Same composition as lead sheet.
- F. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- G. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type non-corrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with the following recommendations that apply to design, dimensions, metal, and other characteristics of item indicated. Shop-fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.
 - 1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.
 - 2. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.
 - 3. ANSI/SPRI ES-1, "Wind Design Standard for Edge Metal Systems Used with Low Slope Roof Systems".
- B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
- C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
 - 1. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- D. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant to comply with NRCA and/or SMACNA recommendations.
- E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints.
- F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.
- G. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, non-corrosive metal.
 - 1. Thickness: As recommended by the following for application but not less than thickness of metal being secured.
 - a. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.
 - b. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.
 - c. ANSI/SPRI ES-1, "Wind Design Standard for Edge Metal Systems Used with Low Slope Roof Systems".

2.6 ROOF DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section indicated, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch- long sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters, of size recommended by NRCA and/or SMACNA but not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters.
 - 1. Gutter Style: "A" or as shown on plans.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Expansion Joints: Lap type.
 3. Fabricate from the following material:
 - a. Pre-painted, Metallic-Coated Steel: 24 gauge.
- B. Downspouts: Fabricate rectangular downspouts complete with mitered elbows. Furnish with metal hangers, from same material as downspouts, and anchors.
1. Fabricate downspouts from the following material:
 - a. Pre-painted, Metallic-Coated Steel: 24 gauge.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Copings: Fabricate in minimum 96-inch- long, but not exceeding 10-foot- long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight.
1. Joint Style: Butt, with 6-inch- wide exposed cover plates.
 2. Fabricate copings from the following material:
 - a. Pre-painted, Metallic-Coated Steel: 24 gauge.
- B. Roof to Roof and Roof to Wall Transition Expansion-Joint Cover: Fabricate from the following material:
1. Galvanized Steel: 24 gauge.
- C. Counterflashing: Fabricate from the following material:
1. Galvanized Steel: 24 gauge.
- D. Flashing Receivers: Fabricate from the following material:
1. Galvanized Steel: 24 gauge.
- E. Roof-Penetration Flashing: Fabricate from the following material:
1. Galvanized Steel: 24 gauge.

2.8 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX
PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.
 - 1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 1. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.
 - 1. Coat underside of sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.
 - 3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.
- C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
- D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.
- E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 - 1. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
- F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints.
- G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
 - 1. Galvanized or Pre-painted, Metallic-Coated Steel: Use stainless-steel fasteners.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Stainless Steel: Use stainless-steel fasteners.
- H. Seal joints with elastomeric sealant as required for watertight construction.
1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."
- I. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches except where pre-tinned surface would show in finished Work.
1. Do not solder pre-painted, metallic-coated steel sheet.
 2. Stainless-Steel Soldering: Pre-tin edges of uncoated sheets to be soldered using solder recommended for stainless steel and phosphoric acid flux. Promptly wash off acid flux residue from metal after soldering.
 3. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

3.3 ROOF DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to the following and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.
1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.
 2. ANSI/SPRI ES-1, "Wind Design Standard for Edge Metal Systems Used with Low Slope Roof Systems".
 3. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.
- B. Hanging Gutters: Join sections with riveted and soldered joints or with lapped joints sealed with elastomeric sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter brackets and straps spaced not more than 36 inches apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
1. Fasten gutter spacers to front and back of gutter.
 2. Loosely lock straps to front gutter bead and anchor to roof deck.
 3. Anchor and loosely lock back edge of gutter to continuous cleat.
 4. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches apart.
 5. Install gutter with expansion joints at locations indicated but not exceeding 50 feet apart. Install expansion joint caps.
- C. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
1. Provide elbows at base of downspout to direct water away from building.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

2. Connect downspouts to underground drainage system indicated.

- D. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints a minimum of 4 inches in direction of water flow.

3.4 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal roof flashing and trim to comply with performance requirements and the following. Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.
1. NRCA Roofing and Waterproofing Manual (Fifth Edition) for construction details and recommendations.
 2. ANSI/SPRI ES-1, "Wind Design Standard for Edge Metal Systems Used with Low Slope Roof Systems".
 3. SMACNA Architectural Sheet Metal Manual (Fifth Edition) for construction details.
- B. Copings: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.
1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at 16-inch centers.
 2. Anchor interior leg of coping with screw fasteners and washers at 18-inch centers.
- C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.
- D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglet or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with elastomeric sealant.
1. Secure in a waterproof manner by means of interlocking folded seam or blind rivets and sealant.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:
1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
 2. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

3.5 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3.6 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07620

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

SECTION 09300 - TILE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Tile and Accessories:
 - 1. Quarry Tile.
 - 2. Trim and Accessories.
 - 3. Setting Materials.

1.2 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A108.1C - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar -or- Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar.
 - 2. ANSI A118.7 - Polymer Modified Cement Grouts
 - 3. ANSI A137.1 - Specifications for Ceramic Tile.
- B. Tile Council of North America (TCNA): TCA Handbook for Ceramic Tile Installation, 2007.

1.3 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: Tile on walkway surfaces shall be provided with the following values as determined by testing in conformance with ASTM C 1028.
 - 1. Level Surfaces: Minimum of 0.6 (Wet).
 - 2. Step Treads: Minimum of 0.6 (Wet).
 - 3. Ramp Surfaces: Minimum of 0.8 (Wet).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. [Product Data]: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Selection Samples: Samples of actual tiles for selection.
- D. Manufacturer's Certificate:
 - 1. Certify that products meet or exceed specified requirements.
 - 2. For each shipment, type and composition of tile provide a Master Grade Certificate signed by the manufacturer and the installer certifying that products meet or exceed the specified requirements of ANSI A137.1.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- E. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum two years experience.
- B. Single Source Responsibility: Obtain each type and color of tile from a single source. Obtain each type and color of mortar, adhesive and grout from the same source.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging until ready for installation.
- B. Protect adhesives and liquid additives from freezing or overheating in accordance with manufacturer's instructions.
- C. Store tile and setting materials on elevated platforms, under cover and in a dry location and protect from contamination, dampness, freezing or overheating.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install adhesives in an unventilated environment.
- B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during tiling and for a minimum of 7 days after completion.

1.8 EXTRA MATERIALS

- A. Provide for Owner's use a minimum of 2 percent of the primary sizes and colors of tile specified, boxed and clearly labeled.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 - 1. DalTile Corporation
 - 2. American Olean
 - 3. Texas Quarries
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 TILE

- A. General: Provide tile that complies with ANSI A137.1 for types, compositions and other characteristics indicated. Provide tile in the locations and of the types colors

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

and pattern indicated on the Drawings. Tile shall also be provided in accordance with the following:

1. Factory Blending: For tile exhibiting color variations within the ranges selected under Submittal of samples, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.
2. Mounting: For factory mounted tile, provide back or edge mounted tile assemblies as standard with the manufacturer, unless otherwise specified.
3. Factory Applied Temporary Protective Coatings: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with a continuous film of petroleum paraffin wax applied hot. Do not coat unexposed tile surfaces.

B. Quarry Tile:

1. Product: Quarry Tile.
2. Moisture Absorption: Less than .07 percent to less than 20 percent.
3. Size and Shape: 8 inches by 8 inches, nominal.
4. Surface Finish: Textured.
5. Colors: To be selected from manufacturer's standard range.
6. Trim Units: Matching bullnose, bullnose corner, cove/inside finger cove, radius cap, sink rail, sink rail incorner/outcorner, cove base, outside cove corner shapes in sizes coordinated with field tile shapes.

2.3 TRIM AND ACCESSORIES

A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, stainless steel, brass, etc, style and dimensions to suit application, for setting using tile mortar or adhesive; use in the following locations:

1. Open edges of floor tile.
2. Transition between floor finishes of different heights.
3. Thresholds at door openings.
4. Expansion and control joints, floor and wall.

2.4 SETTING MATERIALS

A. Epoxy Adhesive: ANSI A118.3, thinset bond type.

B. Mortar Bed Materials:

1. Portland cement: ASTM C150, type 1, gray or white.
2. Hydrated Lime: ASTM C207, Type S.
3. Sand: ASTM C144, fine.
4. Latex additive: As approved.
5. Water: Clean and potable.

C. Mortar Bond Coat Materials:

1. Dry-Set Portland Cement type: ANSI A118.1.
2. Latex-Portland Cement type: ANSI A118.4.
3. Epoxy: ANSI A118.3, 100 percent solids.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

- D. Polymer modified cement grout, sanded or unsanded, as specified in ANSI A118.7; color as selected.
- E. Epoxy Grout: ANSI A118.8, 100 percent solids epoxy grout; color as selected.
- F. Waterproofing Membrane at Floors: Membrane in accordance with ANSI A118.10 and as follows:
 - 1. Chlorinated Polyethylene Sheet with polyester fabric reinforcing.
 - 2. Fabric Reinforced, Fluid-Applied elastomeric membrane.
 - 3. Un-Reinforced, Fluid-Applied elastomeric membrane.
 - 4. Polyethylene Sheet Product.
 - 5. Fabric-Reinforced, Modified-Bituminous Sheet Product.
 - 6. Urethane Waterproofing and Tile-Setting Adhesive Product.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that wall surfaces are free of substances which would impair bonding of setting materials, smooth and flat within tolerances specified in ANSI A137.1, and are ready to receive tile.
- B. Verify that sub-floor surfaces are dust-free, and free of substances which would impair bonding of setting materials to sub-floor surfaces, and are smooth and flat within tolerances specified in ANSI A137.1.
- C. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Protect surrounding work from damage.
- B. Remove any curing compounds or other contaminants.
- C. Vacuum clean surfaces and damp clean.
- D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- E. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.
- F. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3.3 INSTALLATION – GENERAL

- A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.
- B. Lay tile to pattern indicated. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 1/2 width is used. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install non-ceramic trim in accordance with manufacturer's instructions.
- G. Sound tile after setting. Replace hollow sounding units.
- H. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- I. Allow tile to set for a minimum of 48 hours prior to grouting.
- J. Grout tile joints. Use standard grout unless otherwise indicated.
- K. Apply sealant to junction of tile & dissimilar materials & junction of dissimilar planes.

3.4 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over exterior concrete substrates, install in accordance with TCA Handbook Method F102, with standard grout.
- B. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dry-set or latex-portland cement bond coat, with standard grout, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, install in accordance with TCA Handbook Method F122, with latex-portland cement grout.
 - 2. Where epoxy bond coat and grout are indicated, install in accordance with TCA Handbook Method F131.
- C. Over wood substrates, install in accordance with TCA Handbook Method F142, with standard grout, unless otherwise indicated.
 - 1. Where epoxy bond coat and grout are indicated, install in accordance with TCA Handbook Method F143.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and / or Replacement
Edinburg, TX

3.5 INSTALLATION - FLOORS - MORTAR BED METHODS

- A. Over exterior concrete substrates, install in accordance with TCA F101, bonded, with standard grout.
- B. Over interior concrete substrates, install in accordance with TCA Handbook Method F111, with cleavage membrane, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with TCA Handbook Method F121.
 - 2. Where epoxy bond coat and grout are indicated, install in accordance with TCA Handbook Method F132, bonded.
 - 3. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCA Handbook Method F114, with cleavage membrane.
- C. Over wood substrates, install in accordance with TCA Handbook method F141, with standard grout, unless otherwise indicated.
- D. Cleavage Membrane: Lap edges and ends.
- E. Waterproofing Membrane: Install as specified in ANSI A108.13.
- F. Mortar Bed Thickness: 1-1/4 to 2 inch (32 to 51 mm) maximum, unless otherwise indicated.

3.6 PROTECTION OF FINISHED WORK

- A. Do not permit traffic over finished floor surface for 72 hours after installation.
- B. Cover floors with kraft paper and protect from dirt and residue from other trades.
- C. Where floor will be exposed for prolonged periods cover with plywood or other similar type walkways

END OF SECTION

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and/ or Replacement
Edinburg, TX

SECTION 09510 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Acoustical ceiling panels.
2. Exposed grid suspension system.
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.

B. Related Sections:

1. Division 15 Sections - Mechanical Work
2. Division 16 Sections - Electrical Work

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products, which have not been approved by Addenda, the specified products shall be provided without additional compensation.
2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.2 REFERENCES

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

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and/ or Replacement
Edinburg, TX

6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E 1264 Classification for Acoustical Ceiling Products.
9. ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
10. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
11. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

B. ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.
- B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.
- C. Shop Drawings: Layout and details of acoustical ceilings. Show locations of items, which are to be coordinated with, or supported by the ceilings.
- D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.
- E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
- B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
 1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
 - a. Flame Spread: 25 or less
 - b. Smoke Developed: 50 or less

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and/ or Replacement
Edinburg, TX

2. Fire Resistance Ratings: As indicated by reference to design designations in UL Fire Resistance Directory, for types of assemblies in which acoustical ceilings function as a fire protective membrane and tested per ASTM E 119.
 - a. Protect lighting fixtures and air ducts to comply with requirements indicated for rated assembly.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.6 PROJECT CONDITIONS

- A. Space Enclosure:

All ceiling products and suspension systems must be installed and maintained in accordance with Armstrong written installation instructions for that product in effect at the time of installation and best industry practice. Prior to installation, the ceiling product must be kept clean and dry, in an environment that is between 32°F (0°C) and 120°F (49°C) and not subject to Abnormal Conditions.

Abnormal conditions include exposure to chemical fumes, vibrations, and moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.

1.7 WARRANTY

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:
 1. Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.
 2. Grid System: Rusting and manufacturer's defects
 3. Acoustical Panels with BioBlock Plus or designated as inherently resistive to the growth of micro-organisms installed with Armstrong suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
- B. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and/ or Replacement
Edinburg, TX

with other warranties made by the Contractor under the requirements of the Contract Documents.

1.8 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
 2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

Part 2-PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:

1. Armstrong World Industries, Inc.

2.2 ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type ACT-1:

1. Surface Texture: Medium
2. Composition: Mineral Fiber
3. Color: White
4. Size: 48in X 24in X 5/8in
5. Edge Profile: Square Lay-In for interface with Prelude Plus XL Fire Guard 15/16" Exposed Tee.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, N/A.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 40
8. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
9. Flame Spread: ASTM E 1264; Fire Resistive
10. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.88.
11. Dimensional Stability: HumiGuard Max - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning.
12. Antimicrobial Protection: Inherent - Resists the growth of mold/mildew and bacterial growth.
13. Acceptable Product: Ceramaguard, 605 as manufactured by Armstrong World Industries.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and/ or Replacement
Edinburg, TX

2.3 SUSPENSION SYSTEMS

- A. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with 15/16 IN type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).
 - 1. Structural Classification: ASTM C 635 HD.
 - 2. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
 - 3. Acceptable Product: Prelude Plus XL Fire Guard 15/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.
- B. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least three times design load, but not less than 12 gauge.
- D. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.
- E. Accessories

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

3.3 INSTALLATION

- A. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.
- B. Suspend main beam from overhead construction with hanger wires spaced 4'-0" on center along the length of the main runner. Install hanger wires plumb and straight.

HIDALGO COUNTY SHERIFF'S OFFICE
Hidalgo County Adult Detention Center and
Law Enforcement Facility Repairs and/ or Replacement
Edinburg, TX

- C. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
- D. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.
- E. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

- A. Replace damaged and broken panels.
- B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.
 - 1. Ceiling Touch-Up Paint, (Item #5760, 8oz. bottles) (Item #5761, quart size cans), "global white" latex paint should be used to hide minor scratches and nicks in the surface and to cover field regularized edges that are exposed to view.
- C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 13852 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 GENERAL

1.1. DESCRIPTION:

- A. This section of the specification includes the furnishing, installation, and connection of an intelligent reporting, microprocessor controlled, addressable, fire detection. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, control panels, auxiliary control devices, annunciators, power supplies, and wiring as shown on the drawings and specified herein.
- B. The fire alarm system shall comply with requirements of NFPA Standard 72 for Protected Premises Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.
- C. The system shall be an active/interrogative type system where each addressable device is repetitively scanned, causing a signal to be transmitted to the main fire alarm control panel (FACP) indicating that the device and its associated circuit wiring is functional. Loss of this signal at the main FACP shall result in a trouble indication as specified hereinafter for the particular input.
- D. Each designated zone shall transmit separate and different alarm, supervisory and trouble signals to the Fire Command Center (FCC) and designated personnel in other buildings at the site via a multiplex communication network.
- E. The fire alarm system shall be manufactured by an ISO 9001 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994.
- F. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.
- G. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final check-out and to ensure the systems integrity.

1.2. SCOPE:

- A. A new intelligent reporting, microprocessor controlled fire detection system shall be installed in accordance with the specifications and drawings.
- B. The system shall be designed such that each signaling line circuit (SLC) is limited to only 80% of its total capacity at initial installation.
- C. Basic Performance:
 - 1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 4 (Class B) Signaling Line Circuits (SLC).
 - 2. Initiation Device Circuits (IDC) shall be wired Class B (NFPA Style A) as part of an addressable device connected by the SLC Circuit.

3. Notification Appliance Circuits (NAC) shall be wired Class B (NFPA Style Y) as part of an addressable device connected by the SLC Circuit.
4. On Style 6 or 7 (Class A) configurations a single ground fault or open circuit on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.
5. Alarm signals arriving at the FACP shall not be lost following a primary power failure (or outage) until the alarm signal is processed and recorded.

D. Basic System Functional Operation

1. When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:
 - a. The System Alarm LED shall flash.
 - b. A local piezo electric signal in the control panel shall sound.
 - c. The 640-character LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
 - d. Printing and history storage equipment shall log the information associated each new fire alarm control panel condition, along with time and date of occurrence.
 - e. All system output programs assigned via control-by-event interlock programming to be activated by the particular point in alarm shall be executed, and the associated system outputs (notification appliances and/or relays) shall be activated.

1.3. SUBMITTALS

A. General:

1. Two copies of all submittals shall be submitted to the Architect/Engineer for review.
2. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality. Equivalent compatible UL-listed equipment from other manufacturers may be substituted for the specified equipment as long as the minimum standards are met.
3. All substitute equipment proposed as equal to the equipment specified herein, shall meet or exceed the following standards. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

B. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
3. Show annunciator layout, configurations, and terminations.

C. Manuals:

1. Submit simultaneously with the shop drawings, complete operating and maintenance ma-

- nuals listing the manufacturer's name(s), including technical data sheets.
- 2. Wiring diagrams shall indicate internal wiring for each device and the interconnections between the items of equipment.
- 3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.
- 4. Approvals will be based on complete submissions of manuals together with shop drawings.

D. Software Modifications

- 1. Provide the services of a factory trained and authorized technician to perform all system software modifications, upgrades or changes. Response time of the technician to the site shall not exceed 4 hours.
- 2. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made.

E. Certifications:

Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of the installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer. Include names and addresses in the certification.

1.4. GUARANTY:

- A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid.

1.5. POST CONTRACT MAINTENANCE:

- A. Complete maintenance and repair service for the fire alarm system shall be available from a factory trained authorized representative of the manufacturer of the major equipment for a period of five (5) years after expiration of the guaranty.
- B. As part of the bid/proposal, include a quote for a maintenance contract to provide all maintenance, tests, and repairs described below. Include also a quote for unscheduled maintenance/repairs, including hourly rates for technicians trained on this equipment, and response travel costs for each year of the maintenance period. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.
- C. Maintenance and testing shall be on a semiannual basis or as required by the AHJ. A preventive maintenance schedule shall be provided by the contractor describing the protocol for preventive maintenance. The schedule shall include:
 - 1. Systematic examination, adjustment and cleaning of all detectors, manual fire alarm sta-

tions, control panels, power supplies, relays, waterflow switches and all accessories of the fire alarm system.

2. Each circuit in the fire alarm system shall be tested semiannually.
3. Each smoke detector shall be tested in accordance with the requirements of NFPA 72 Chapter 7.

1.6. POST CONTRACT EXPANSIONS:

- A. The contractor shall have the ability to provide parts and labor to expand the system specified, if so requested, for a period of five (5) years from the date of acceptance.
- B. As part of the submittal, include a quotation for all parts and material, and all installation and test labor as needed to increase the number of intelligent or addressable devices by ten percent (10%). This quotation shall include intelligent smoke detectors, intelligent heat detectors, addressable manual stations, addressable monitor modules and addressable modules equal in number to one tenth of the number required to meet this specification (list actual quantity of each type).
- C. The quotation shall include installation, test labor, and labor to reprogram the system for this 10% expansion. If additional FACP hardware is required, include the material and labor necessary to install this hardware.
- D. Do not include cost of conduit or wire or the cost to install conduit or wire.
- E. Submittals that do not include this estimate of post contract expansion cost will not be accepted.

1.7. APPLICABLE PUBLICATIONS:

The publications listed below form a part of this specification. The publications are referenced in text by the basic designation only.

A. National Fire Protection Association (NFPA) - USA:

- No. 12A Halon 1301 Extinguishing Systems
- No. 13 Sprinkler Systems
- No. 15 Water Spray Systems
- No. 16 Foam/Water Deluge and Foam/Water Spray Systems
- No. 17 Dry Chemical Extinguishing Systems
- No. 17A Wet Chemical Extinguishing Systems
- No. 70 National Electric Code (NEC)
- No. 72-1996 National Fire Alarm Code
- No. 90A Air Conditioning Systems
- No. 92A Smoke Control Systems
- No. 92B Smoke Management Systems in Malls, Atria, Large Areas
- No. 101 Life Safety Code

B. Underwriters Laboratories Inc. (UL) - USA:

- No. 50 Cabinets and Boxes
- No. 268 Smoke Detectors for Fire Protective Signaling Systems
- No. 864 Control Units for Fire Protective Signaling Systems
- No. 268A Smoke Detectors for Duct Applications.

- No. 521 Heat Detectors for Fire Protective
- No. 228 Door Closers-Holders for Fire Protective Signaling Systems.
- No. 464 Audible Signaling Appliances.
- No. 38 Manually Actuated Signaling Boxes.
- No. 346 Waterflow Indicators for Fire Protective Signaling Systems.
- No. 1481 Power supplies for Fire Protective Signaling Systems.
- No. 1076 Control Units for Burglar Alarm Proprietary Protective Signaling Systems.
- No. 1971 Visual Notification Appliances.

- C. Local and State Building Codes.
- D. All requirements of the Authority Having Jurisdiction (AHJ).

1.8. APPROVALS:

- A. The system shall have proper listing and/or approval from the following nationally recognized agencies:
 UL Underwriters Laboratories Inc
 ULC Underwriters Laboratories Canada
 FM Factory Mutual
 FM6320 Approved for Gas Detection
- B. The Fire Alarm Control Panel and all transponders shall meet the modular listing requirements of the ninth edition UL Standard 864 (Control Units). Each subassembly, including all printed circuits, shall include the appropriate UL modular label. This includes all printed circuit board assemblies, power supplies, and enclosure parts. Systems that do not include modular labels may require return to the factory for system upgrades, and are not acceptable.
- C. The system shall be listed by the national agencies as suitable for extinguishing release applications. The system shall support release of high and low pressure CO₂.

PART 2.0 PRODUCTS

2.1. EQUIPMENT AND MATERIAL, GENERAL:

- A. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a protected premises protective signaling (fire alarm) system. The authorized representative of the manufacturer of the major equipment, such as control panels, shall be responsible for the satisfactory installation of the complete system.
- B. All equipment and components shall be installed in strict compliance with each manufacturer's recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc. before beginning system installation. Refer to the riser/connection diagram for all specific system installation/termination/wiring data.
- C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

2.2. CONDUIT AND WIRE:

20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be 12 AWG. The control panel cabinet shall be grounded securely to either a cold water pipe or grounding rod.

2.3. MAIN FIRE ALARM CONTROL PANEL OR NETWORK NODE:

- A. The main FACP Central Console shall be a NOTIFIER Model NFS2-3030 and shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, control circuits, and notification appliance circuits, local and remote operator terminals, printers, annunciators, and other system controlled devices. Subject to compliance with requirements, provide products by Notifier, Edwards, Siemens.
- B. In conjunction with intelligent Loop Control Modules and Loop Expander Modules, the main FACP shall perform the following functions:
 1. Supervise and monitor all intelligent addressable detectors and monitor modules connected to the system for normal, trouble and alarm conditions.
 2. Supervise all initiating signaling and notification circuits throughout the facility by way of connection to addressable monitor and control modules.
 3. Detect the activation of any initiating device and the location of the alarm condition. Operate all notification appliances and auxiliary devices as programmed. In the event of CPU failure, all SLC loop modules shall fallback to degrade mode. Such degrade mode shall treat the corresponding SLC loop control modules and associated detection devices as conventional two-wire operation. Any activation of a detector in this mode shall automatically activate associated Notification Appliance Circuits.
 4. Visually and audibly annunciate any trouble, supervisory, security or alarm condition on operator's terminals, panel display, and annunciators.
 5. When a fire alarm condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:
 - a. The system alarm LED shall flash.
 - b. A local piezo-electric audible device in the control panel shall sound a distinctive signal.
 - c. The 640-character backlit LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
 - d. Printing and history storage equipment shall log and print the event information along with a time and date stamp.
 - e. All system outputs assigned via preprogrammed equations for a particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.
 - f. When a trouble condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:
 - g. The system trouble LED shall flash.
 - h. A local piezo-electric audible device in the control panel shall sound a distinctive signal.
 - i. The 640-character backlit LCD display shall indicate all information associated with the trouble condition, including the type of trouble point and its location within the protected premises.
 - j. Printing and history storage equipment shall log and print the event information

- along with a time and date stamp.
 - k. All system outputs assigned via preprogrammed equations for a particular point in trouble shall be executed, and the associated system outputs (trouble notification appliances and/or relays) shall be activated.
6. When a supervisory condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:
- a. The system trouble LED shall flash.
 - b. A local piezo-electric audible device in the control panel shall sound a distinctive signal.
 - c. The 640-character backlit LCD display shall indicate all information associated with the supervisory condition, including the type of trouble point and its location within the protected premises.
 - d. Printing and history storage equipment shall log and print the event information along with a time and date stamp.
 - e. All system outputs assigned via preprogrammed equations for a particular point in trouble shall be executed, and the associated system outputs (notification appliances and/or relays) shall be activated.
7. When a security alarm condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:
- a. The system security LED shall flash.
 - b. A local piezo-electric audible device in the control panel shall sound a distinctive signal.
 - c. The 640-character backlit LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
 - d. Printing and history storage equipment shall log and print the event information along with a time and date stamp.
 - e. All system outputs assigned via preprogrammed equations for a particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.
8. When a pre-alarm condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:
- a. The system pre-alarm LED shall flash.
 - b. A local piezo-electric audible device in the control panel shall sound a distinctive signal.
 - c. The 640-character backlit LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
 - d. Printing and history storage equipment shall log and print the event information along with a time and date stamp.
 - e. All system outputs assigned via preprogrammed equations for a particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.

C. Operator Control

played on the 640-character display to the printer.

D. System Capacity and General Operation

1. The control panel shall be capable of expansion via up to 10 SLC modules. Each module shall support a maximum of 318 analog/addressable devices for a maximum system capacity of 3180 points. The system shall be capable of 3072 annunciation points per system regardless of the number of addressable devices.
2. The Fire Alarm Control Panel shall include a full featured operator interface control and annunciation panel that shall include a backlit 640-character liquid crystal display, individual, color coded system status LEDs, and a QWERTY style alphanumeric keypad for the field programming and control of the fire alarm system. Said LCD shall also support graphic bit maps capable of displaying the company name and logo of either the owner or installing company.
3. All programming or editing of the existing program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the fire alarm control panel.
4. The FACP shall be able to provide the following software and hardware features:
 - a. Pre-signal and Positive Alarm Sequence: The system shall provide means to cause alarm signals to only sound in specific areas with a delay of the alarm from 60 to up to 180 seconds after start of alarm processing. In addition, a Positive Alarm Sequence selection shall be available that allows a 15-second time period for acknowledging an alarm signal from a fire detection/initiating device. If the alarm is not acknowledged within 15 seconds, all local and remote outputs shall automatically activate immediately.
 - b. Smoke Detector Pre-alarm Indication at Control Panel: To obtain early warning of incipient or potential fire conditions, the system shall support a programmable option to determine system response to real-time detector sensing values above the programmed setting. Two levels of Pre-alarm indication shall be available at the control panel: alert and action.
 - c. Alert: It shall be possible to set individual smoke detectors for pre-programmed pre-alarm thresholds. If the individual threshold is reached, the pre-alarm condition shall be activated.
 - d. Action: If programmed for Action and the detector reaches a level exceeding the pre-programmed level, the control panel shall indicate an action condition. Sounder bases installed with either heat or smoke detectors shall automatically activate on action Pre-Alarm level, with general evacuation on Alarm level.
 - e. The system shall support a detector response time to meet world annunciation requirements of less than 3 seconds.
 - f. Device Blink Control: Means shall be provided to turn off detector/module LED strobes for special areas.
 - g. NFPA 72 Smoke Detector Sensitivity Test: The system shall provide an automatic smoke detector test function that meet the requirements of NFPA 72.
 - h. Programmable Trouble Reminder: The system shall provide means to automatically initiate a reminder that troubles exist in the system. The reminder will appear on the system display and (if enabled) will sound a piezo alarm.
 - i. On-line or Off-line programming: The system shall provide means to allow panel programming either through an off-line software utility program away from the panel or while connected and on-line. The system shall also support upload and download of programmed database and panel executive system program to a Personal Comput-

- er/laptop.
- j. History Events: The panel shall maintain a history file of the last 4000 events, each with a time and date stamp. History events shall include all alarms, troubles, operator actions, and programming entries. The control panels shall also maintain a 1000 event Alarm History buffer, which consists of the 1000 most recent alarm events from the 4000 event history file.
 - k. Smoke Control Modes: The system shall provide means to perform FSCS mode Smoke Control to meet NFPA-92A and 90B and HVAC mode to meet NFPA 90A.
 - l. The system shall provide means for all SLC devices on any SLC loop to be auto programmed into the system by specific address. The system shall recognize specific device type ID's and associate that ID with the corresponding address of the device.
 - m. Drill: The system shall support means to activate all silenceable fire output circuits in the event of a practice evacuation or "drill". If enabled for local control, the front panel switch shall be held for a minimum of 2 seconds prior to activating the drill function.
 - n. Passwords and Users: The system shall support two password levels, master and user. Up to 9 user passwords shall be available, each of which may be assigned access to the programming change menus, the alter status menus, or both. Only the master password shall allow access to password change screens.
 - o. Two Wire Detection: The system shall support standard two wire detection devices specifically all models of System Sensor devices, Fenwal PDS-7125/7126 and CPD-7021, Hochiki model SLK-24F/24FH, Edwards 6250B/6270B and 6264B and Simplex models 2098-9201/9202 and 9576.
 - p. Block Acknowledge: The system shall support a block Acknowledge for Trouble Conditions
 - q. Sensitivity Adjust: The system shall provide Automatic Detector Sensitivity Adjust based on Occupancy schedules including a Holiday list of up to 15 days.
 - r. Environmental Drift Control: The system shall provide means for setting Environmental Drift Compensation by device. When a detector accumulates dust in the chamber and reaches an unacceptable level but yet still below the allowed limit, the control panel shall indicate a maintenance alert warning. When the detector accumulates dust in the chamber above the allowed limit, the control panel shall indicate a maintenance urgent warning.
 - s. Custom Action Messages: The system shall provide means to enter up to 100 custom action messages of up to 160 characters each. It shall be possible to assign any of the 100 messages to any point.
 - t. Print Functions: The system shall provide means to obtain a variety of reports listing all event, alarm, trouble, supervisory, or security history. Additional reports shall be available for point activation for the last Walk Test performed, detector maintenance report containing the detector maintenance status of each installed addressable detector, all network parameters, all panel settings including broad cast time, event ordering, and block acknowledge, panel timer values for Auto Silence, Silence Inhibit, AC Fail Delay time and if enabled, Proprietary Reminder, and Remote Reminder timers, supervision settings for power supply and printers, all programmed logic equations, all custom action messages, all non-fire and output activations (if pre-programmed for logging) all active points filtered by alarms only, troubles only, supervisory alarms, prealarms, disabled points and activated points, all installed points filtered by SLC points, logic zones, annunciators, releasing zones, special zones, and trouble zones.
 - u. Local Mode: If communication is lost to the central processor the system shall provide added survivability through the intelligent loop control modules. Inputs from

- devices connected to the SLC and loop control modules shall activate outputs on the same loop when the inputs and outputs have been set with point programming to participate in local mode or when the type codes are of the same type: that is, an input with a fire alarm type code shall activate an output with a fire alarm type code.
- v. Resound based on type for security or supervisory: The system shall indicate a Security alarm when a monitor module point programmed with a security Type Code activates. If silenced alarms exist, a Security alarm will Resound the panel sounder. The system shall indicate a Supervisory alarm when a monitor module point programmed with a supervisory Type Code activates. If there are silenced alarms, a Supervisory alarm will Resound the panel sounder.
 - w. Read status preview - enabled and disabled points: Prior to re-enabling points, the system shall inform the user that a disabled device is in the alarm state. This shall provide notice that the device must be reset before the device is enabled thereby avoiding activation of the notification circuits.
 - x. Custom Graphics: When fitted with an LCD display, the panel shall permit uploading of a custom bit-mapped graphic to the display screen.
 - y. Multi-Detector and Cooperating Detectors: The system shall provide means to link one detector to up to two detectors at other addresses on the same loop in cooperative multi-detector sensing. There shall be no requirement for sequential addresses on the detectors and the alarm event shall be a result or product of all cooperating detectors chamber readings.
 - z. Tracking/Latching Duct (ion and photo): The system shall support both tracking and latching duct detectors either ion or photo types.
 - aa. ACTIVE EVENT: The system shall provide a Type ID called FIRE CONTROL for purposes of air-handling shutdown, which shall be intended to override normal operating automatic functions. Activation of a FIRE CONTROL point shall cause the control panel to (1) initiate the monitor module Control-by-Event, (2) send a message to the panel display, history buffer, installed printer and annunciators, (3) shall not light an indicator at the control panel, (4) Shall display ACTIVE on the LCD as well as display a FIRE CONTROL Type Code and other information specific to the device.
 - bb. NON-FIRE Alarm Module Reporting: A point with a type ID of NON-FIRE shall be available for use for energy management or other non-fire situations. NON-FIRE point operation shall not affect control panel operation nor shall it display a message at the panel LDC. Activation of a NON-FIRE point shall activate control by event logic but shall not cause any indication on the control panel.
 - cc. Security Monitor Points: The system shall provide means to monitor any point as a type security.
 - dd. One-Man Walk Test: The system shall provide both a basic and advanced walk test for testing the entire fire alarm system. The basic walk test shall allow a single operator to run audible tests on the panel. All logic equation automation shall be suspended during the test and while annunciators can be enabled for the test, all shall default to the disabled state. During an advanced walk test, field-supplied output point programming will react to input stimuli such as CBE and logic equations. When points are activated in advanced test mode, each initiating event shall latch the input. The advanced test shall be audible and shall be used for pull station verification, magnet activated tests on input devices, input and output device and wiring operation/verification.
 - ee. Control By Event Functions: CBE software functions shall provide means to program a variety of output responses based on various initiating events. The control panel shall operate CBE through lists of zones. A zone shall become listed when it is added to a point's zone map through point programming. Each input point such as detec-

tor, monitor module or panel circuit module shall support listing of up to 10 zones into its programmed zone map.

- ff. Permitted zone types shall be general zone, releasing zone and special zone. Each output point (control module, panel circuit module) can support a list of up to 10 zones including general zone, logic zone, releasing zone and trouble zone. It shall be possible for output points to be assigned to list general alarm. Non-Alarm or Supervisory points shall not activate the general alarm zone.
- gg. 1000 General Zones: The system shall support up to 1000 general purpose software zones for linking inputs to outputs. When an input device activates, any general zone programmed into that device's zone map will be active and any output device that has an active general zone in its map will be active. It shall also be possible to use general zone as arguments in logic equations.
- hh. 1000 Logic Equations: The system shall support up to 1000 logic equations for AND, OR, NOT, ONLY1, ANYX, XZONE or RANGE operators that allow conditional I/O linking. When any logic equation becomes true, all output points mapped to the logic zone shall activate.
- ii. 10 trouble equations per device: The system shall provide support for up to 10 trouble equations for each device, which shall permit programming parameters to be altered, based on specific fault conditions. If the trouble equation becomes true, all output points mapped to the trouble zone shall activate.
- jj. Control-By-Time: A time based logic function shall be available to delay an action for a specific period of time based upon a logic input with tracking feature. A latched version shall also be available. Another version of this shall permit activation on specific days of the week or year with ability to set and restore based on a 24 hour time schedule on any day of the week or year.
- kk. Multiple agent releasing zones: The system shall support up to 10 releasing zones to protect against 10 independent hazards. Releasing zones shall provide up to three cross-zone and four abort options to satisfy any local jurisdiction requirements.
- ll. Alarm Verification, by device, with timer and tally: The system shall provide a user-defined global software timer function that can be set for a specific detector. The timer function shall delay an alarm signal for a user-specified time period and the control panel shall ignore the alarm verification timer if another alarm is detected during the verification period. It shall also be possible to set a maximum verification count between 0 and 20 with the "0" setting producing no alarm verification. When the counter exceeds the threshold value entered, a trouble shall be generated to the panel.

E. Central Processing Unit

1. The Central Processing Unit shall communicate with, monitor, and control all other modules within the control panel. Removal, disconnection or failure of any control panel module shall be detected and reported to the system display by the Central Processing Unit.
2. The Central Processing Unit shall contain and execute all control-by-event (including Boolean functions including but not limited to AND, OR, NOT, ANYx, and CROSSZONE) programs for specific action to be taken if an alarm condition is detected by the system. Such control-by-event programs shall be held in non-volatile programmable memory, and shall not be lost with system primary and secondary power failure.
3. The Central Processing Unit shall also provide a real-time clock for time annotation, to the second, of all system events. The time-of-day and date shall not be lost if system primary and secondary power supplies fail.
4. The CPU shall be capable of being programmed on site without requiring the use of any external programming equipment. Systems that require the use of external programmers or

change of EPROMs are not acceptable.

5. Consistent with UL864 standards, the CPU and associated equipment are to be protected so that voltage surges or line transients will not affect them.
6. Each peripheral device connected to the CPU shall be continuously scanned for proper operation. Data transmissions between the CPU and peripheral devices shall be reliable and error free. The transmission scheme used shall employ dual transmission or other equivalent error checking techniques.
7. The CPU shall provide an EIA-232 interface between the fire alarm control panel and the UL Listed Electronic Data Processing (EDP) peripherals.
8. The CPU shall provide two EIA-485 ports for the serial connection to annunciation and control subsystem components.
9. The EIA-232 serial output circuit shall be optically isolated to assure protection from earth ground.
10. The CPU shall provide one high-speed serial connection for support of network communication modules.
11. The CPU shall provide double pole relays for FIRE ALARM, SYSTEM TROUBLE, SUPERVISORY, and SECURITY. The SUPERVISORY and SECURITY relays shall provide selection for additional FIRE ALARM contacts.
12. The EIA-485 interface may be used for network connection to a proprietary-receiving unit.

F. System Display

1. The system display shall provide all the controls and indicators used by the system operator and may also be used to program all system operational parameters.
2. The display assembly shall contain, and display as required, custom alphanumeric labels for all intelligent detectors, addressable modules, and software zones.
3. The system display shall provide a 640-character backlit alphanumeric Liquid Crystal Display (LCD). It shall also provide ten Light-Emitting-Diodes (LEDs), that indicate the status of the following system parameters: AC POWER, FIRE ALARM, PREALARM, SECURITY, SUPERVISORY, SYSTEM TROUBLE, OTHER EVENT, SIGNALS SILENCED, POINT DISABLED, and CPU FAILURE.
4. The system display shall provide a QWERTY style keypad with control capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels with up to ten (one Master and nine User) passwords shall be accessible through the display interface assembly to prevent unauthorized system control or programming.
5. The system display shall include the following operator control switches: ACKNOWLEDGE, SIGNAL SILENCE, RESET, DRILL, and LAMP TEST. Additionally, the display interface shall allow scrolling of events by event type including, FIRE ALARM, SECURITY, SUPERVISORY, TROUBLE, and OTHER EVENTS. A PRINT SCREEN button shall be provided for printing the event currently displayed on the 640-character LCD.

G. Loop (Signaling Line Circuit) Control Module:

1. The Loop Control Module shall monitor and control a minimum of 318 intelligent addressable devices. This includes 159 intelligent detectors (Ionization, Photoelectric, or Thermal) and 159 monitor or control modules.
2. The Loop Control Module shall contain its own microprocessor and shall be capable of operating in a local/degrade mode (any addressable device input shall be capable of activating

- any or all addressable device outputs) in the unlikely event of a failure in the main CPU.
3. The Loop Control Module shall provide power and communicate with all intelligent addressable detectors and modules on a single pair of wires. This SLC Loop shall be capable of operating as a NFPA Style 6 (Class B) circuit.
4. The SLC interface board shall be able to drive an NFPA Style 6 twisted unshielded circuit up to 12,500 feet in length. The SLC Interface shall also be capable of driving an NFPA Style 6, no twist, no shield circuit for limited distances determined by the manufacturer. In addition, SLC wiring shall meet the listing requirements for it to exit the building or structure. "T"-tapping shall be allowed in either case.
5. The SLC interface board shall receive analog or digital information from all intelligent detectors and shall process this information to determine whether normal, alarm, or trouble conditions exist for that particular device. Each SLC Loop shall be isolated and equipped to annunciate an Earth Fault condition. The SLC interface board software shall include software to automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information may also be used for automatic detector testing and the automatic determination of detector maintenance requirements.

H. Enclosures:

1. The control panel shall be housed in a UL-listed cabinet suitable for surface or semi-flush mounting. The cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
2. The back box and door shall be constructed of 0.060 steel with provisions for electrical conduit connections into the sides and top.
3. The door shall provide a key lock and include a transparent opening for viewing all indicators. For convenience, the door shall have the ability to be hinged on either the right or left-hand side.
4. The control unit shall be modular in structure for ease of installation, maintenance, and future expansion.

I. Power Supply:

1. The Addressable Main Power Supply shall operate on 120/240 VAC, 50/60 Hz, and shall provide all necessary power for the FACP.
2. The Addressable Main Power Supply shall provide the required power to the CPU using a switching 24 VDC regulator and shall incorporate a battery charger for 24 hours of standby power using dual-rate charging techniques for fast battery recharge.
3. The Addressable Main Power Supply shall provide a battery charger for 24 hours of standby using dual-rate charging techniques for fast battery recharge. The supply shall be capable of charging batteries ranging in capacity from 7-200 amp-hours within a 48-hour period.
4. The Addressable Main Power Supply shall provide a very low frequency sweep earth detect circuit, capable of detecting earth faults.
5. The Addressable Main Power Supply shall be power-limited per UL864 requirements.

J. Auxiliary Field Power Supply - Addressable

1. The auxiliary addressable power supply is a remote 24 VDC power supply used to power Notification Devices and field devices that require regulated 24VDC power. The power supply shall also include and charge backup batteries.

2. The addressable power supply for the fire alarm system shall provide up a minimum of 6.0 amps of 24 volt DC regulated power for Notification Appliance Circuit (NAC) power or 5 amps of 24 volt DC general power. The power supply shall have an additional .5 amp of 24 VDC auxiliary power for use within the same cabinet as the power supply. It shall include an integral charger designed to charge 7.0 - 25.0 amp hour batteries.
3. The addressable power supply shall provide four individually addressable Notification Appliance Circuits that may be configured as two Class "A" and two Class "B" or four Class "B" only circuits. All circuits shall be power-limited per UL 864 requirements.
4. The addressable power supply shall provide built-in synchronization for certain Notification Appliances on each circuit without the need for additional synchronization modules. The power supply's output circuits shall be individually selected for synchronization. A single addressable power supply shall be capable of supporting both synchronized and non-synchronized Notification Devices at the same time.
5. The addressable power supply shall operate on 120 or 240 VAC, 50/60 Hz.
6. The interface to the power supply from the Fire Alarm Control Panel (FACP) shall be via the Signaling Line Circuit (SLC) or other multiplexed means. Power supplies that do not use an intelligent interface are not suitable substitutes. The required wiring from the FACP to the addressable power supply shall be a single unshielded twisted pair wire. Data on the SLC shall be transmitted between 24 VDC, 5 VDC and 0 VDC at approximately 3.33k baud.
7. The addressable power supply shall supervise for battery charging failure, AC power loss, power brownout, battery failure, NAC loss, and optional ground fault detection. In the event of a trouble condition, the addressable power supply shall report the incident and the applicable address to the FACP via the SLC.
8. The addressable power supply shall have an AC Power Loss Delay option. If this option is utilized and the addressable power supply experiences an AC power loss, reporting of the incident to the FACP will be delayed. A delay time of eight or sixteen hours shall be Dip-switch selected.
9. The addressable power supply shall have an option for Canadian Trouble Reporting and this option shall be Dip-switch selectable.
10. The addressable power supply mounts in either the FACP backbox or its own dedicated surface mounted backbox with cover.
11. Each of the power supply's four output circuits shall be DIP-switch selected for Notification Appliance Circuit or General Purpose 24 VDC power. Any output circuit shall be able to provide up to 2.5 amps of 24 VDC power.
12. The addressable power supply's output circuits shall be individually supervised when they are selected to be either a Notification Appliance Circuit when wired Class "A" or by the use of an end-of-line resistor. When the power supply's output circuit is selected as General 24VDC power, the circuit shall be individually supervised when an end-of-line relay is used.
13. When selected for Notification Appliance Circuits, the output circuits shall be individually DIP-switch selectable for Steady, March Time, Dual Stage or Temporal.
14. When selected as a Notification Appliance Circuit, the output circuits of the addressable power supply shall have the option to be coded by the use of a universal zone coder.
15. The addressable power supply shall interface and synchronize with other power supplies of the same type. The required wiring to interface multiple addressable power supplies shall be a single unshielded, twisted pair wire.
16. An individual or multiple interfaced addressable power supplies shall have the option to use an external charger for battery charging. Interfaced power supplies shall have the option to share backup battery power.

K. Field Charging Power Supply (FCPS)

The FCPS is a device designed for use as either a remote 24 volt power supply or used to power Notification Appliances.

1. The FCPS shall offer up to 6.0 amps (4.0 amps continuous) of regulated 24 volt power. It shall include an integral charger designed to charge 7.0 amp hour batteries and to support 60 hour standby.
2. The Field Charging Power Supply shall have two input triggers. The input trigger shall be a Notification Appliance Circuit (from the fire alarm control panel) or a relay. Four outputs (two Style Y or Z and two style Y) shall be available for connection to the Notification devices.
3. The FCPS shall include an attractive surface mount backbox.
4. The Field Charging Power Supply shall include the ability to delay the AC fail delay per NFPA requirements.
5. The FCPS include power limited circuitry, per 1995 UL standards.

L. System Circuit Supervision

1. The FACP shall supervise all circuits to intelligent devices, transponders, annunciators and peripheral equipment and annunciate loss of communication with these devices. The CPU shall continuously scan above devices for proper system operation and upon loss of response from a device shall sound an audible trouble, indicate which device or devices are not responding and print the information in the history buffer and on the printer.
2. Transponders that lose communication with the CPU shall sound an audible trouble and light an LED indicating loss of communications.
3. Sprinkler system valves, standpipe control valves, PIV, and main gate valves shall be supervised for off-normal position.
4. All speaker and emergency phone circuits shall be supervised for opens and shorts. Each transponder speaker and emergency phone circuit shall have an individual ON/OFF indication (green LED).

M. Field Wiring Terminal Blocks

1. All wiring terminal blocks shall be the plug-in/removable type and shall be capable of terminating up to 12 AWG wire. Terminal blocks that are permanently fixed to the PC board are not acceptable.

N. Controls with associated LED Indicators:

1. Speaker Switches/Indicators
 - a. The speaker circuit control switches/indicators shall include visual indication of active and trouble status for each speaker circuit in the system.
 - b. The speaker circuit control panel shall include switches to manually activate or deactivate each speaker circuit in the system.
2. Emergency Two-Way Telephone Control Switches/Indicators
 - a. The emergency telephone circuit control panel shall include visual indication of active and trouble status for each telephone circuit in the system.

- b. The telephone circuit control panel shall include switches to manually activate or deactivate each telephone circuit in the system.

O. Remote Transmissions:

- 1. Provide local energy or polarity reversal or trip circuits as required.
- 2. The system shall be capable of operating a polarity reversal or local energy or fire alarm transmitter for automatically transmitting fire information to the fire department.
- 3. Provide capability and equipment for transmission of zone alarm and trouble signals to remote operator's terminals, system printers and annunciators.
- 4. Transmitters shall be compatible with the systems and equipment they are connected to such as timing, operation and other required features.

P. System Expansion:

Design the main FACP and required components so that the system can be expanded in the future (to include the addition of twenty percent more circuits or zones) without disruption or replacement of the existing control panel. This shall include hardware capacity, software capacity and cabinet space.

Q. Field Programming

- 1. The system shall be programmable, configurable and expandable in the field without the need for special tools, laptop computers, or other electronic interface equipment. There shall be no firmware changes required to field modify the system time, point information, equations, or annunciator programming/information.
- 2. It shall be possible to program through the standard FACP keyboard all system functions.
- 3. All field defined programs shall be stored in non-volatile memory.
- 4. Two levels of password protection shall be provided in addition to a key-lock cabinet. One level shall be used for status level changes such as point/zone disable or manual on/off commands (Building Manager). A second (higher-level) shall be used for actual change of the life safety program (installer). These passwords shall be five (5) digits at a minimum. Upon entry of an invalid password for the third time within a one minute time period an encrypted number shall be displayed. This number can be used as a reference for determining a forgotten password.
- 5. The system programming shall be "backed" up via an upload/download program, and stored on compatible removable media. A system back-up disk shall be completed and given in duplicate to the building owner and/or operator upon completion of the final inspection. The program that performs this function shall be "non-proprietary", in that, it shall be possible to forward it to the building owner/operator upon his or her request.
- 6. The installer's field programming and hardware shall be functionally tested on a computer against known parameters/norms which are established by the FACP manufacturer. A software program shall test Input-to-Output correlations, device Type ID associations, point associations, time equations, etc. This test shall be performed on an IBM-compatible PC with a verification software package. A report shall be generated of the test results and two copies turned in to the engineer(s) on record.

R. Specific System Operations

- 1. Smoke Detector Sensitivity Adjust: Means shall be provided for adjusting the sensitivity of any or all analog intelligent smoke detectors in the system from the system keypad or from

the keyboard of the video terminal. Sensitivity range shall be within the allowed UL window.

2. Alarm Verification: Each of the Intelligent Addressable Smoke Detectors in the system may be independently selected and enabled to be an alarm verified detector. The alarm verification function shall be programmable from 0 to 60 seconds and each detector shall be able to be selected for verification during the field programming of the system or anytime after system turn-on. Alarm verification shall not require any additional hardware to be added to the control panel. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.

S. System Point Operations:

1. Any addressable device in the system shall have the capability to be enabled or disabled through the system keypad or video terminal.
2. System output points shall be capable of being turned on or off from the system keypad or the video terminal.
3. Point Read: The system shall be able to display the following point status diagnostic functions without the need for peripheral equipment. Each point shall be annunciated for the parameters listed:
 - a. Device Status.
 - b. Device Type.
 - c. Custom Device Label.
 - d. Software Zone Label.
 - e. Device Zone Assignments.
 - f. Analog Detector Sensitivity.
 - g. All Program Parameters.
4. System Status Reports: Upon command from an operator of the system, a status report will be generated and printed, listing all system statuses:
5. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that will be capable of storing up to 4000 system events. Each of these events will be stored, with time and date stamp, until an operator requests that the contents be either displayed or printed. The contents of the history buffer may be manually reviewed; one event at a time, and the actual number of activations may also be displayed and or printed. History events shall include all alarms, troubles, operator actions, and programming entries.
6. The history buffer shall use non-volatile memory. Systems which use volatile memory for history storage are not acceptable.
7. Automatic Detector Maintenance Alert: The fire alarm control panel shall automatically interrogate each intelligent system detector and shall analyze the detector responses over a period of time.
8. If any intelligent detector in the system responds with a reading that is below or above normal limits, then the system will enter the trouble mode, and the particular Intelligent Detector will be annunciated on the system display, and printed on the optional system printer. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools or computer expertise to perform.
9. The system shall include the ability (programmable) to indicate a "pre-alarm" condition. This will be used to alert maintenance personnel when a detector is at 80% of its alarm threshold in a 60 second period.

2.4. SYSTEM COMPONENTS:

A. Speakers:

1. All speakers shall operate on 25 VRMS or with field selectable output taps from 0.5 to 2.0 Watts.
2. Speakers in corridors and public spaces shall produce a nominal sound output of 84 dBA at 10 feet (3m).
3. Frequency response shall be a minimum of 400 HZ to 4000 HZ.
4. The back of each speaker shall be sealed to protect the speaker cone from damage and dust.

B. Audible/Visual Combination Devices:

1. Shall meet the applicable requirements of Section A listed above for audibility.
2. Shall meet the requirements of Section B listed above for visibility.

C. Programmable Electronic Sounders:

1. Electronic sounders shall operate on 24 VDC nominal.
2. Electronic sounders shall be field programmable without the use of special tools, at a sound level of at least 90 dBA measured at 10 feet from the device.
3. Shall be flush or surface mounted as shown on plans.

D. Strobe lights shall meet the requirements of the ADA, UL Standard 1971, be fully synchronized, and shall meet the following criteria:

1. The maximum pulse duration shall be 2/10 of one second
2. Strobe intensity shall meet the requirements of UL 1971.
3. The flash rate shall meet the requirements of UL 1971.

E. Horn/Strobes:

1. Operate on 24 VDC
2. Have two selectable tone options of temporal 3 and non-temporal continuous pattern.
3. Have at least 2 audibility options
4. Maximum Pulse Duration: 0.2 second.
5. Strobe Intensity: UL 1971.
6. Flash Rate: UL 1971.
7. Strobe Candela Rating: Determine by positioning selector switch on back of device.

F. Manual Fire Alarm Stations

1. Manual fire alarm stations shall be non-code, non-breakglass type, equipped with key lock so that they may be tested without operating the handle.
2. Stations must be designed such that after an actual activation, they cannot be restored to normal except by key reset.
3. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of 100 feet (30.5 m) front or side.
4. Manual stations shall be constructed of high impact Lexan, with operating instructions provided on the cover. The word FIRE shall appear on the manual station in letters one half inch (12.7 mm) in size or larger.

G. Conventional Photoelectric Area Smoke Detectors

1. Photoelectric smoke detectors shall be a 24 VDC, two wire, ceiling-mounted, light scattering type using an LED light source.
2. Each detector shall contain a remote LED output and a built-in test switch.
3. Detector shall be provided on a twist-lock base.
4. It shall be possible to perform a calibrated sensitivity and performance test on the detector without the need for the generation of smoke. The test method shall test all detector circuits.
5. A visual indication of an alarm shall be provided by dual latching Light Emitting Diodes (LEDs), on the detector, which may be seen from ground level over 360 degrees. These LEDs shall flash at least every 10 seconds, indicating that power is applied to the detector.
6. The detector shall not go into alarm when exposed to air velocities of up to 3000 feet (914.4 m) per minute.
7. The detector screen and cover assembly shall be easily removable for field cleaning of the detector chamber.
8. All field wire connections shall be made to the base through the use of a clamping plate and screw.

H. Conventional Ionization Type Area Smoke Detectors

1. Ionization type smoke detectors shall be a two wire, 24 VDC type using a dual unipolar chamber.
2. Each detector shall contain a remote LED output and a built-in test switch.
3. Detector shall be provided on a twist-lock base.
4. It shall be possible to perform a calibration sensitivity and performance test on the detector without the need for the generation of smoke.
5. A visual indication of an alarm shall be provided by dual latching Light Emitting Diodes (LEDs) over 360 degrees, on the detector, which may be seen from ground level. This LED shall flash every 10 seconds, indicating that power is applied to the detector.
6. The detector shall not alarm when exposed to air velocities of up to 1,200 feet (365.76 m) per minute. The detector screen and cover assembly shall be easily removable for field cleaning of the detector chamber.
7. All field wire connections shall be made to the base through the use of a clamping plate and screw.

I. Duct Smoke Detectors

Duct smoke detectors shall be a 24 VDC type with visual alarm and power indicators, and a reset switch. Each detector shall be installed upon the composite supply/return air ducts(s), with properly sized air sampling tubes.

J. Projected Beam Detectors

1. The projected beam type shall be a 4-wire 24 VDC device.
2. The detector shall be listed to UL 268 and shall consist of a separate transmitter and receiver capable of being powered separately or together.
3. The detector shall operate in either a short range (30' - 100') or long range (100' - 330') mode.
4. The temperature range of the device shall be -22 degrees F to 131 degrees F.
5. The detector shall feature a bank of four alignment LEDs on both the receiver and the

- transmitter that are used to ensure proper alignment of unit without special tools.
- 6. Beam detectors shall feature automatic gain control which will compensate for gradual signal deterioration from dirt accumulation on lenses.
- 7. The unit shall be both ceiling and wall mountable.
- 8. The detector shall have the ability to be tested using calibrated test filters or magnet activated remote test station.

K. Automatic Conventional Heat Detectors

- 1. Automatic heat detectors shall have a combination rate of rise and fixed temperature rated at 135 degrees Fahrenheit (57.2 Celsius) for areas where ambient temperatures do not exceed 100 degrees (37.7 Celsius), and 200 degrees (93.33 Celsius) for areas where the temperature does not exceed 150 degrees (65.5 Celsius).
- 2. Automatic heat detectors shall be a low profile, ceiling mount type with positive indication of activation.
- 3. The rate of rise element shall consist of an air chamber, a flexible metal diaphragm, and a factory calibrated, moisture-proof, trouble free vent, and shall operate when the rate of temperature rise exceeds 15 degrees F (9.4 degrees C) per minute.
- 4. The fixed temperature element shall consist of a fusible alloy retainer and actuator shaft.
- 5. Automatic heat detectors shall have a smooth ceiling rating of 2500 square feet (762 square meters).

L. Waterflow Indicator:

- 1. Waterflow Switches shall be an integral, mechanical, non-coded, non-accumulative retard type.
- 2. Waterflow Switches shall have an alarm transmission delay time which is conveniently adjustable from 0 to 60 seconds. Initial settings shall be 30-45 seconds.
- 3. All waterflow switches shall come from a single manufacturer and series.
- 4. Waterflow switches shall be provided and connected under this section but installed by the mechanical contractor.
- 5. Where possible, locate waterflow switches a minimum of one (1) foot from a fitting which changes the direction of the flow and a minimum of three (3) feet from a valve.

M. Sprinkler and Standpipe Valve Supervisory Switches:

- 1. Each sprinkler system water supply control valve riser, zone control valve, and standpipe system riser control valve shall be equipped with a supervisory switch. Standpipe hose valves, and test and drain valves shall not be equipped with supervisory switches.
- 2. PIV (post indicator valve) or main gate valves shall be equipped with a supervisory switch.
- 3. The switch shall be mounted so as not to interfere with the normal operation of the valve and adjusted to operate within two revolutions toward the closed position of the valve control, or when the stem has moved no more than one-fifth of the distance from its normal position.
- 4. The supervisory switch shall be contained in a weatherproof aluminum housing, which shall provide a 3/4 inch (19 mm) conduit entrance and incorporate the necessary facilities for attachment to the valves.
- 5. The switch housing shall be finished in red baked enamel.
- 6. The entire installed assembly shall be tamper proof and arranged to cause a switch operation if the housing cover is removed, or if the unit is removed from its mounting.
- 7. Valve supervisory switches shall be provided and connected under this section and installed

by mechanical contractor.

- a. This unit shall provide for each zone: alarm indications, using a red alarm and yellow trouble long-life LEDs and control switches for the control of fire alarm control panel functions. The annunciator will also have an ON-LINE LED, local piezo electric signal, local acknowledge/lamp test switch, and custom slide-in zone/function identification labels.
- b. Switches shall be available for remote annunciation and control of output points in the system, system acknowledge, telephone zone select, speaker select, global signal silence, and global system reset within the confines of all applicable standards.

N. Alphanumeric LCD Type Annunciator:

1. The alphanumeric display annunciator shall be a supervised, remotely located back-lit LCD display containing a minimum of eighty (80) characters for alarm annunciation in clear English text.
2. The LCD annunciator shall display all alarm and trouble conditions in the system.
3. An audible indication of alarm shall be integral to the alphanumeric display.
4. The display shall be UL listed for fire alarm application.
5. It shall be possible to connect up to 32 LCD displays and be capable of wiring distances up to 6,000 feet from the control panel.
6. The annunciator shall connect to a separate, dedicated "terminal mode" EIA-485 interface. This is a two-wire loop connection and shall be capable of distances to 6,000 feet. Each terminal mode LCD display shall mimic the main control panel.
7. The system shall allow a minimum of 32 terminal mode LCD annunciators. Up to 10 LCD annunciators shall be capable of the following system functions: Acknowledge, Signal Silence and Reset, which shall be protected from unauthorized use by a key switch or password.
8. The LED annunciator shall offer an interface to a graphic style annunciator and provide each of the features listed above.

O. Interactive Display

1. The system shall be an ONYX FirstVision™.
2. The system shall operate on an UL listed Embedded platform operating at no less than 700 MHz on the Microsoft® Windows® XP Embedded platform.
3. The Embedded platform shall have: no less than 256 megabytes of RAM, a flash drive with no less than 1 Gigabytes of storage space, 100 Base-T Ethernet NIC card, and USB ports.
4. The Embedded platform shall have a minimum 17" touch screen display.
5. The Embedded platform shall come equipped with all necessary gateway modules to allow connection to the network it monitors as standard equipment.
 - a. A UL listed Ethernet Hub shall be provided for connection of multiple interactive displays and/or gateways.

P. Portable Emergency Telephone Handset Jack

1. Portable emergency telephone handset jacks shall be flush mounted on stainless steel plates as indicated on the plans. Jacks shall be approved for emergency telephone system application.
2. Insertion of a portable handset plug into a jack shall send a signal to the fire command cen-

ter, which shall audibly and visually indicate the on-line condition, and shall sound a "ring" indication in the handset.

3. The two-way emergency telephone system shall support a minimum of seven (7) handsets on line without degradation of the signal.

Q. Fixed Emergency Telephone Handset

1. The telephone cabinet shall be painted red and clearly labeled as "Emergency Telephone." The cabinets shall be located where shown on drawings.
2. The handset cradle shall have a switch connection so that lifting the handset off of the cradle shall send a signal to the fire command center, which shall audibly and visually indicate its on-line (off-hook) condition.
3. On activating the remote phone, the phone earpiece shall sound a telephone ring signal until the master handset is lifted.
4. The two-way emergency telephone system shall support a minimum of seven (7) handsets on line without degradation of the signal.

R. Universal Digital Alarm Communicator Transmitter (UDACT). The UDACT is an interface for communicating digital information between a fire alarm control panel and an UL-Listed central station.

1. The UDACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6,000 feet from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status. Systems that utilize relay contact closures are not acceptable.
2. The UDACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the ability for split reporting of panel events up to three different telephone numbers.
3. The UDACT shall be completely field programmable from a built-in keypad and 4 character red, seven segment display.
4. The UDACT shall be capable of transmitting events in at least 15 different formats. This ensures compatibility with existing and future transmission formats.
5. Communication shall include vital system status such as:
 - Independent Zone (Alarm, trouble, non-alarm, supervisory)
 - Independent Addressable Device Status
 - AC (Mains) Power Loss
 - Low Battery and Earth Fault
 - System Off Normal
 - 12 and 24 Hour Test Signal
 - Abnormal Test Signal (per UL requirements)
 - EIA-485 Communications Failure
 - Phone Line Failure
6. The UDACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 2,040 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.
7. AN IP Communicator option shall be available to interface to the UDACT and be capable of

transmitting signals over the internet/intranet to a compatible receiver.

2.5. SYSTEM COMPONENTS - ADDRESSABLE DEVICES

A. Addressable Devices - General

1. Addressable devices shall provide an address-setting means using rotary decimal switches. Addressable devices that require the address be programmed using a programming utility are not an allowable substitute.
2. Addressable devices shall use simple to install and maintain decade (numbered 0 to 15) type address switches. Devices which use a binary address or special tools for setting the device address, such as a dip switch are not an allowable substitute.
3. Detectors shall be Analog and Addressable, and shall connect to the fire alarm control panel's Signaling Line Circuits.
4. Addressable smoke and thermal detectors shall provide dual (2) status LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. If required, the flashing mode operation of the detector LEDs can be programmed off via the fire control panel program.
5. The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system. Sensitivity can be automatically adjusted by the panel on a time-of-day basis.
6. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7.
7. The detectors shall be ceiling-mount and shall include a separate twist-lock base which includes a tamper proof feature.
8. The following bases and auxiliary functions shall be available:
 - a. Sounder base rated at 85 DBA minimum.
 - b. Form-C Relay base rated 30VDC, 2.0A
 - c. isolator base
9. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.
10. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (example: ION, PHOTO, THERMAL).

B. Addressable Manual Fire Alarm Box (manual station)

1. Addressable manual fire alarm boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status. They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.
2. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.
3. Manual fire alarm boxes shall be constructed of Lexan with clearly visible operating in-

structions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.

C. Intelligent Photoelectric Smoke Detector

1. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

D. Intelligent Laser Photo Smoke Detector

1. The intelligent laser photo smoke detector shall be a spot type detector that incorporates an extremely bright laser diode and an integral lens that focuses the light beam to a very small volume near a receiving photo sensor. The scattering of smoke particles shall activate the photo sensor.
2. The laser detector shall have conductive plastic so that dust accumulation is reduced significantly.
3. The intelligent laser photo detector shall have nine sensitivity levels and be sensitive to a minimum obscuration of 0.03 percent per foot.
4. The laser detector shall not require expensive conduit, special fittings or PVC pipe.
5. The intelligent laser photo detector shall support standard, relay, isolator and sounder detector bases.
6. The laser photo detector shall not require other cleaning requirements than those listed in NFPA 72. Replacement, refurbishment or specialized cleaning of the detector head shall not be required.
7. The laser photo detector shall include two bicolor LEDs that flash green in normal operation and turn on steady red in alarm.

E. Intelligent Ionization Smoke Detector

1. The detectors shall use the dual-chamber ionization principal to measure products of combustion and shall, on command from the control panel, send data to the panel representing the analog level of products of combustion.

F. Intelligent Multi Criteria Acclimating Detector

1. The intelligent multi criteria Acclimate detector shall be an addressable device that is designed to monitor a minimum of photoelectric and thermal technologies in a single sensing device. The design shall include the ability to adapt to its environment by utilizing a built-in microprocessor to determine its environment and choose the appropriate sensing settings. The detector design shall allow a wide sensitivity window, no less than 1 to 4% per foot obscuration. This detector shall utilize advanced electronics that react to slow smoldering fires and thermal properties all within a single sensing device.
2. The microprocessor design shall be capable of selecting the appropriate sensitivity levels based on the environment type it is in (office, manufacturing, kitchen etc.) and then have the ability to automatically change the setting as the environment changes (as walls are moved or as the occupancy changes).
3. The intelligent multi criteria detection device shall include the ability to combine the signal of the thermal sensor with the signal of the photoelectric signal in an effort to react hastily in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a false alarm condition by examining the characteristics of the

thermal and smoke sensing chambers and comparing them to a database of actual fire and deceptive phenomena.

G. Intelligent Thermal Detectors

1. Thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. It shall connect via two wires to the fire alarm control panel signaling line circuit.

H. Intelligent Duct Smoke Detector

1. The smoke detector housing shall accommodate either an intelligent ionization detector or an intelligent photoelectric detector, of that provides continuous analog monitoring and alarm verification from the panel.
2. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served by the duct system.

I. Advanced Multi-Criteria Intelligent Detector

1. The intelligent multi criteria IntelliQuad detector shall be an addressable device combining four sensing elements in a single sensing device providing the ability to detect all four major elements of a fire. The detector design shall allow sensitivity setting between 1% to 4% per foot obscuration.
2. The detector shall include a photoelectric sensing element, thermal sensing element, IR (Infrared) sensing element and CO (carbon monoxide) sensor.

J. Addressable Dry Contact Monitor Module

1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs.
2. The IDC zone shall be suitable for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
3. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.
4. For multiple dry contact monitoring a module shall be available that provides 10 Style B or 5 Style D input circuits.

K. Two Wire Detector Monitor Module

1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (any N.O. dry contact device).
2. The IDC zone may be wired for Class A or B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
3. For multiple 2-wire smoke detector circuit monitoring a module shall be available that pro-

vides 6 Style B or 3 Style D input circuits.

L. Addressable Control Module

1. Addressable control modules shall be provided to supervise and control the operation of one conventional NACs of compatible, 24 VDC powered, polarized audio/visual notification appliances.
2. The control module NAC may be wired for Style Z or Style Y (Class A/B) with a current rating of 2 Amps for Style Z and 3 Amps for Style Y. For speaker applications the module is rated for 50 watts at 25 or 70.7.
3. Audio/visual power shall be provided by a separate supervised power circuit from the main fire alarm control panel or from a supervised UL listed remote power supply.
4. The control module shall be suitable for pilot duty applications and rated for a minimum of 0.6 amps at 30 VDC.
5. For multiple circuit control a module shall be available that provides 6 Style B or 3 Style D control circuits.

M. Addressable Relay Module

1. Addressable Relay Modules shall be available for HVAC control and other building functions. The module shall provide two form C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary devices energize at the same time on the same pair of wires.
2. For multiple relay control a module shall be available that provides 6 programmable Form-C relays.

N. Addressable Releasing Control Module

1. An addressable FlashScan releasing module shall be available to supervise and control compatible releasing agent solenoids.
2. The module shall operate on a redundant protocol for added protection.
3. The module shall be configurable for Style Z or Style Y (Class A/B) and support one 24 volt or two 12 volt solenoids.

O. Isolator Module

1. Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building.
2. If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.
3. The isolator module shall not require address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.
4. The isolator module shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

P. Smoke Control Annunciator

1. On/Auto/Off switches and status indicators (LEDS) shall be provided for monitoring and manual control of each fan, damper, HVAC control unit, stairwell pressurization fan, and smoke exhaust fan. To ensure compliance the units supplied shall meet the following UL categories: UUKL, PAZX, UDTZ, QVAX as well as the requirements of NFPA 90A, HVAC, and NFPA 92A & 92B, Smoke Control. The control System shall be field programmable for either 90A operation or 92A/B operation to allow for future use and system expansion.
2. The OFF LED shall be Yellow, the ON LED shall be green, the Trouble/Fault LED shall be Amber/Orange for each switch. The Trouble/Fault indicator shall indicate a trouble in the control and/or monitor points associated with that switch. In addition, each group of eight switches shall have two LEDS and one momentary switch which allow the following functions: An Amber LED to indicate an OFF-NORMAL switch position, in the ON or OFF position; A Green LED to indicate ALL AUTO switch position; A Local Acknowledge/Lamp Test momentary switch.
3. Each switch shall have the capability to monitor and control two addressable inputs and two addressable outputs. In all modes, the ON and OFF indicators shall continuously follow the device status not the switch position. Positive feedback shall be employed to verify correct operation of the device being controlled. Systems that indicate on/off/auto by physical switch position only are not acceptable.
4. All HVAC switches (i.e., limit switches, vane switches, etc.) shall be provided and installed by the HVAC contractor.
5. It shall be possible to meet the requirements mentioned above utilizing wall mounted custom graphic.

Q. Serially Connected Annunciator Requirements

1. The annunciator shall communicate to the fire alarm control panel via an EIA 485 (multi-drop) two-wire communications loop. The system shall support two 6,000 ft. EIA-485 wire runs. Up to 32 annunciators, each configured up to 96 points, may be connected to the connection, for a system capacity of 3,072 points of annunciation.
2. An EIA-485 repeater shall be available to extend the EIA-485 wire distance in 3,000 ft. increments. An optional version shall allow the EIA-485 circuit to be transmitted over Fiber optics. The repeater shall be UL864 approved.
3. Each annunciator shall provide up to 96 alarm and 97 trouble indications using a long-life programmable color LED's. Up to 96 control switches shall also be available for the control of Fire Alarm Control Panel functions. The annunciator will also have an "ON-LINE" LED, local piezo sounder, local acknowledge and lamp test switch, and custom zone/function identification labels.
4. The annunciator may be field configured to operate as a "Fan Control Annunciator". When configured as "Fan Control," the annunciator may be used to manually control fan or damper operation and can be set to override automatic commands to all fans/dampers programmed to the annunciator.
5. Annunciator switches may be programmed for System control such as, Global Acknowledge, Global Signal Silence, Global System Reset, and on/off control of any control point in the system.
6. An optional module shall be available to utilize annunciator points to drive EIA-485 driven relays. This shall extend the system point capacity by 3,072 remote contacts.
7. The LED annunciator shall offer an interface to a graphic style annunciator and provide

each of the features listed above.

2.6. BATTERIES AND EXTERNAL CHARGER:

A. Battery:

1. Shall be 12 volt, Gell-Cell type.
2. Battery shall have sufficient capacity to power the fire alarm system for not less than twenty-four hours plus 5 minutes of alarm upon a normal AC power failure.
3. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks refilling, spills and leakage shall not be required.

B. External Battery Charger:

1. Shall be completely automatic, with constant potential charger maintaining the battery fully charged under all service conditions. Charger shall operate from a 120/240-volt 50/60 hertz source.
2. Shall be rated for fully charging a completely discharged battery within 48 hours while simultaneously supplying any loads connected to the battery.
3. Shall have protection to prevent discharge through the charger.
4. Shall have protection for overloads and short circuits on both AC and DC sides.

PART 3.0 - EXECUTION

3.1. INSTALLATION:

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
- C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- D. Manual Pull Stations shall be suitable for surface mounting or semi-flush mounting as shown on the plans, and shall be installed not less than 42 inches, nor more than 48 inches above the finished floor.

3.2. TYPICAL OPERATION:

- A. Actuation of any manual station, smoke detector heat detector or water flow switch shall cause the following operations to occur unless otherwise specified:
 1. Activate all programmed speaker circuits.
 2. Actuate all strobe units until the panel is reset.
 3. Light the associated indicators corresponding to active speaker circuits.
 4. Release all magnetic door holders to doors to adjacent zones on the floor from that the

alarm was initiated.

5. Return all elevators to the primary or alternate floor of egress.
6. A smoke detector in any elevator lobby shall, in addition to the above functions, return all elevators to the primary or alternate floor of egress.
7. Smoke detectors in the elevator machine room or top of hoistway shall return all elevators in to the primary or alternate floor. Smoke detectors or heat detectors installed to shut down elevator power shall do so in accordance with ANSI A17.1 requirements and be coordinated with the electrical contractor.
8. Duct type smoke detectors shall, in addition to the above functions shut down the ventilation system or close associated control dampers as appropriate.
9. Activation of any sprinkler system low pressure switch or valve tamper switch shall cause a system supervisory alarm indication.

3.3. TEST:

- A. Provide the service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system.
- B. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
- C. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
- D. Verify activation of all flow switches.
- E. Open initiating device circuits and verify that the trouble signal actuates.
- F. Open signaling line circuits and verify that the trouble signal actuates.
- G. Open and short notification appliance circuits and verify that trouble signal actuates.
- H. Ground initiating device circuits and verify response of trouble signals.
- I. Ground signaling line circuits and verify response of trouble signals.
- J. Ground notification appliance circuits and verify response of trouble signals.
- K. Check presence and audibility of tone at all alarm notification devices.
- L. Check installation, supervision, and operation of all intelligent smoke detectors during a walk test.
- M. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
- N. When the system is equipped with optional features, the manufacturer's manual should be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

3.4. FINAL INSPECTION:

- A. At the final inspection a factory trained representative of the manufacturer of the major equipment shall demonstrate that the systems function properly in every respect.

3.5. INSTRUCTION:

- A. Provide instruction as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation."

PART 1 GENERAL

1.1. DESCRIPTION

- A. This specification includes the furnishing, installation, connection, and testing of a PC based graphical facilities monitoring system; including Underwriters Laboratories (UL) listed application software and hardware complete and ready for operation.
- B. The basic system shall be Underwriters Laboratories (UL) listed for the following:
 - 1. No. 294 Access Control System Units, Fifth edition
 - 2. No. 864 Control Units for Fire Protective Signaling Systems, Ninth edition
 - 3. No. 1076 Proprietary Burglar Alarm Units and Systems, Fifth edition
 - 4. No. 2017 General-Purpose Signaling Devices and Systems, first edition.
- C. The system shall comply with requirements of NFPA Standard No. 72 for Proprietary Signaling System Receiving Unit except as modified and supplemented by this specification.
- D. The system and associated equipment as specified herein shall be manufactured 100% by a single U.S. manufacturer (or division thereof).
 - 1. The manufacturer shall be of the highest caliber and quality.
 - 2. An ISO 9001 certified company shall manufacture the system.

1.2. SCOPE

- A. A PC based graphical facilities monitoring system shall be installed in accordance to the project specifications and drawings.
- B. The PC based graphical facilities monitoring system shall include, but not be limited to, optional touch screen or LCD wide screen monitor, one or more PC based graphical workstations, all input/output devices, network communications media, control equipment, auxiliary control devices, power supplies, and wire / fiber optic media as shown on the drawings and specified herein.
- C. A supervised interface to NOTIFIER fire alarm control panels and NOTI-FIRE-NET shall be

made available.

- D. The system shall employ an advanced technology network to monitor and control various fire, security, CCTV, and other facility information over an Echelon network.
 - E. The system shall include an interface to digital alarm communicator receivers for wide area network monitoring.
 - F. The system shall include an interface to card access systems for Access Control System monitoring.
 - G. The system shall include a device that allows remote viewing of the ONYXWorks system via the Internet or an intranet.
 - H. The system shall include a redundant interface for NOTI-FIRE-NET and Echelon networks for survivability.
 - I. The system shall allow a mixture of different technologies and manufacturers' equipment to operate on the same network and provide the operator with a consistent look and operation for all monitored equipment.
 - J. The system shall support a variety of topologies and media and shall provide an industry standard open architecture transport layer protocol.
 - K. Using standard RS-232 ports on existing and future monitoring and control systems used by the facility, the system shall connect to and interpret status change data transmitted from the ports and provide graphic annunciation, control, history logging and reporting as specified herein.
 - L. Proprietary network systems that cannot interface to existing addressable fire alarm systems at the facility or systems requiring the use of a "dry contact" or "voltage monitoring" interface shall be accepted.
 - M. The system shall be electrically supervised and monitor the integrity of all conductors.
 - N. The system shall include a Pager/Modem function that will provide the capability to send system information via a modem that is connected to a Workstations COMM port to a person's pager.
 - O. The system shall provide E-Mail functions capability to send system information via an email server to an email account.
 - P. The system shall utilize Boolean logic for automatic event response.
 - Q. The system shall have the facility to page directly from the workstation to any DVC installed on the network.
- 1.3. SUBMITTALS
- A. General
 - 1. Ten copies of all submittals shall be submitted to the architect, engineer, and owner for re-

view.

2. All references to manufacturer's model numbers and other pertinent information herein are intended to establish minimum standards of performance, function and quality.
3. Equivalent compatible equipment (UL listed) from other manufacturers may be considered as a substitution for the specified equipment as long as the minimum standards are met.
4. Substitute equipment proposed as equal to the equipment specified herein shall meet or exceed the minimum specified standard. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

B. Shop Drawings

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Wiring diagrams shall indicate all wiring for each item of equipment and the interconnections between the items of equipment.
3. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

C. Manuals

1. Submit simultaneously with the shop drawings & submittals; complete operating manuals and technical data sheets.
2. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.
3. Approvals shall be based on complete submissions of manuals together with shop drawings.
4. Provide a list of monitoring systems by model number including Fire Alarm, Security, CCTV, and Access Control systems currently UL listed to standard to operate with the proposed Facilities Monitoring System.

D. Certifications

1. Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer and factory trained on all equipment contained in the submittal. Include names and addresses in the certification.
2. Provide NICET Certification documentation for factory authorized field technicians performing field final connections and system programming.

E. Applicable Publications

The publications listed below form a part of this specification. The publications are referenced in text by the basic designation only.

1. NFPA No. 70 - National Electric Code (NEC).
2. NFPA No. 72-2002 - National Fire Alarm Code.
3. UL No. 50 - Cabinets and Boxes.
4. UL No. 294 - Access Control System Units.

- 5. UL No. 864 - Control Units for Fire Protective Signaling Systems.
- 6. UL No. 1076 - Proprietary Burglar Alarm Units and Systems.
- 7. UL No. 1481 - Power Supplies for Fire Protective Signaling Systems.

- 8. Local and State Building Codes.
- 9. All requirements of the Authority Having Jurisdiction (AHJ).

F. Approvals. The system shall have the following listings:

- 1. UL No. 864 Control Units for Fire Protective Signaling Systems, Ninth edition
- 2. UL No. 1076 Proprietary Burglar Alarm Units and Systems, Fifth edition
- 3. UL No. 294 Access Control System Units, Fifth edition
- 4. ULC Control Units for Fire Alarm Systems
- 5. California State Fire Marshal (CSFM)

1.4. GUARANTY

- A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor, and materials required to correct any defect during this one-year period shall be included in the submittal bid.

1.5. WORKSTATION PERFORMANCE

- A. The network will interface and report the individually monitored system's status via a user-friendly Graphical User Interface (GUI) based software workstation.
- B. The software shall operate under Microsoft® Windows® XP Professional as manufactured by Microsoft Corporation.
- C. The GUI based software must be capable of graphically representing each facility being monitored with floor plans and icons depicting the actual locations of the various systems; and / or sensors' locations as well as view the system events in text mode.
- D. The software shall use a 1024 pixels X 768 pixels GUI display capable of showing a large primary floor plan display, a key map representative of a larger view of the primary display and its relationship to the facility being monitored, the current operator, number of fire, supervisory, pre-alarms, troubles, and security events within the network as well as outstanding events and acknowledged events.
- E. The software shall have the capacity of at least 1,000 screens / floor plans or as dictated by hard drive space and installed VIDEO and RAM memory for efficient operation.
- F. The workstation shall have the ability to support graphic printing of all data including graphical floor plans, system activity, history, and guidance text. A Windows® compatible printer shall be supported for the graphics and report printer options.
- G. The workstation software shall permit automatic navigation to the screen containing an icon that

represents the system or sensor in the event of an off-normal condition.

- H. The system/sensor icon shall indicate the type of off-normal condition, flash, and change to the color associated with the off-normal condition (e.g., RED for ALARM and YELLOW for TROUBLE).
- I. The software shall allow the attachment of text (TXT) files, sound (WAV) files, image (BMP) files, and video (AVI) files to each system or sensor icon allowing additional information to be provided to the system operator for responding to the off-normal condition. The software must have the ability for an attachment for each major event type per device.
- J. The software shall allow the importation of externally developed floor plans in Windows Metafile (WMF), JPEG (JPG), Graphics Interchange Format (GIF) and Bitmap (BMP) format.
- K. The software shall provide automatic navigation to the screen containing the icon of any system or sensor when an event is initially annunciated. In addition, operator navigation to screens containing outstanding events shall be accomplished by "clicking on" the event from either the acknowledged or unacknowledged event.
- L. History Manager. The software shall contain a History Manager, which shall record all system events with a time and date stamp as well as the current system operator's name.
 - 1. The system shall provide the ability to store all off-normal events experienced by the various sub-systems that are monitored by the system.
 - 2. All events shall be recorded with a time and date stamp and the system operator shall be provided with the ability to log a pre-defined response or a custom comment for each off-normal event and have that comment stored in the history file with the time, date and operator name.
 - 3. Provide for the ability to conduct searches and generate subsequent reports, based on all events for a single system / device address, a specific node, a specific type of off-normal condition and date range (mm/dd/yy to mm/dd/yy) or combinations of these search parameters. The number of entries in the history file that match the determined search criteria will be displayed.
 - 4. The History Manager shall signal a need to back-up the history file at 100,000 events and then remind the operator at intervals of 100 events thereafter.
 - 5. It shall be possible to pre-select data fields for reporting and then saving the report as a template. It shall also be possible to schedule the pre-defined report to print at a designated time.
 - 6. The History Manager shall provide the operator the ability to select the number of days to back-up history.
- M. Alarm Monitoring. The system shall provide for continuous monitoring of all off-normal conditions regardless of the current activity displayed on the screen.
 - 1. If an operator is viewing the history of a sub-system and an alarm condition should occur, the system shall automatically navigate to the graphic screen showing the area where the off-normal event is occurring.
 - 2. The system shall prioritize all off-normal events as defined by National Fire Alarm Code® 72 into the following categories: fire alarms, troubles, supervisory alarms, pre-alarms and security alarms.
 - 3. The system shall display a running count of all events by type in an alarm summary win-

dow. The alarm summary window shall include at least five counters, defaulted to Alarm, Pre-Alarm, Trouble, Security, and Supervisory events.

4. The system shall show a running list of all unacknowledged events and acknowledged events and allow the system operator to acknowledge an event by "double-clicking" on that event in the Unacknowledged Events box. The Unacknowledged and Acknowledged Events boxes shall contain an abbreviated description of the off-normal condition.
5. The details of the condition may be viewed by selecting event in the unacknowledged events box.
6. The system shall allow the attachment of user-definable text files, image files, video files, and sound files to each device / system monitored (for every event state) in order to facilitate the operators and response personnel's response to the off-normal condition.
7. The system shall record all events to the system's hard drive. A minimum of 100,000 events may be stored.

N. Reports & Logs:

1. The system shall provide for the ability to generate reports based on system history.
2. The system shall allow the system operator to enter custom comments up to 255 characters for each event and have those comments recorded in the system's history file.

O. Boolean Logic

1. An automated event response application shall be provided to automatically perform actions across the entire system based on network activity.
2. The event response application shall allow event responses (actions) based on predefined user conditions using simplified Boolean logic.
3. Actions shall be configured to be executed immediately or timed as required.

P. Control Aspects of System Software

1. The system shall have the ability to monitor and control the following NOTIFIER® Fire Alarm Panels using the Echelon Gateway, NFN Gateway, or Embedded Gateway interfaces: AFP-1010, AM2020, AFP-200, AFP-300/400, and ONYX® series control panels.
2. The Gateway interfaces shall have the ability to be constructed in a redundant configuration with either two Echelon Gateway computers monitoring the same nodes, two NFN Gateway computers monitoring the same nodes, or by having multiple Embedded Gateways on the same network, monitored by multiple workstation clients.
3. The system shall provide for the direct control of all outputs associated with Input / Output dry contact relay points on Network Input/Output Nodes (NIONs). In addition, the system shall have the ability to control and program a sub-system of Notifier AFP-1010, AM2020, or AFP-400 Fire Alarm Panel through a terminal mode window (ASCII terminal type connection) interface to microprocessor-based sub-systems via an RS 232 serial NION if available as an ancillary feature.
4. Discrete I/O NION interfaces allow the system operator to initiate a change of state for the associated dry contacts.
5. A scheduling utility shall be included with the workstation to configure the I/O points on these NIONs for automated activate/deactivate, and Arm/Disarm (depending on device type) status.
6. The system shall provide an NFN Gateway interface for direct connections to the Notifier Network containing the following panels: AFP-1010, AM2020, AFP-200, and the AFP-300/400 as well as ONYX® series control panels.

7. The system shall provide an Embedded Gateway interface for remote connections of the Notifier Network containing the following panels via Ethernet (TCP/IP infrastructure): AFP-1010, AM2020, AFP-200, and the AFP-300/400 as well as ONYX® series control panels.
 8. The NFN Gateway and the Embedded Gateway will:
 - a. Serves as a bridge between an ONYXWorks® Workstation and a NFN network, and it uses that Workstation as the primary reporting station for the NFN network.
 - b. Translates a NFN network's panel and device data into data that can be interpreted by the ONYXWorks® Workstation software application
 - c. Monitors NFN networks using ARCNET network architecture.
 9. The workstation shall provide configuration utilities for monitoring and control profiles. These profiles shall be user definable for distribution of monitoring and control allowances for operators per workstation.
 10. Under no condition shall any sub-system be required to rely on the network for any data processing required to perform its particular function. Each individual sub-system shall be in effect "stand-alone" as to insure its continued operation should a disruption in communication with the system be experienced.
- Q. The software shall be password protected and provide for the definition of security profiles for operator access control.
- R. The software shall contain provision for defining monitoring profiles of pre-selected NIONs for monitoring. This shall include provision for status types within the selected NODES.
- S. The software shall contain provision for defining control profiles of pre-selected NIONs for control.
1. The system administrator shall be provided means to select which signals can be controlled by selected Workstation.
- T. The software shall support sending real-time off-normal event notifications to designated alphanumeric pagers.
- U. The software shall support sending real-time off-normal event notifications to designated email addresses.
- V. The software shall support live voice paging for mass notification to NOTIFIER voice evacuation system over Internet Protocol (IP).
- W. The PC based graphical facilities monitoring system shall include a Configuration Tool that provides the following features:
1. Allows operators the ability to create and edit graphics
 2. Set up Gateway Connections and define their nodes
 3. Set system operating mode
 4. Add and edit objects on screens
 5. Configure colors and sounds for the status classes

PART 2 PRODUCTS

2.1. GENERAL

- A. The product(s) shall be manufactured by as provided by NOTIFIER®. Model numbers specified are those of NOTIFIER® and are to establish the minimum standard of operating characteristics and quality.
- B. Substitute equipment proposed as equal to the equipment specified herein shall meet or exceed the minimum specified standard. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.
- C. All equipment and components shall be new, and the manufacturer's current model. The materials, equipment and devices shall be tested and listed by a nationally recognized approval agency.

2.2. WORKSTATION

- A. The system shall be an ONYXWorks™ Facilities Monitoring System.
- B. The system shall operate on no less than an IBM compatible UL listed Intel Dual Core processor operating at 2.16 GHz on the Microsoft® Windows® XP Professional platform.
- C. The workstation shall have: no less than 3.2 Gigabytes of RAM, two hard drives with no less than 160 Gigabytes of storage space, a minimum of 64 megabytes of video RAM, a CD-R/W for system backup, internal supervisory CPU watchdog board with audible annunciator, 100 Base-T Ethernet NIC card, a 104 key keyboard, and a mouse type pointing device with a center wheel.
- D. The workstation shall come equipped with all necessary gateway modules to allow connection to the network(s) it monitors as standard equipment. All workstations shall support Ethernet communications when multiple workstations are required.
- E. The workstation shall support an SVGA monitor and be supplied with a 19" flat screen LCD monitor with integrated speakers or an optional touch screen monitor.
- F. The computer shall be capable of networking to additional computers and these computers shall be capable of operating as workstations and/or gateways for local area or wide area networks.
- G. Alarm annunciation shall appear on all workstations and may be silenced at each local workstation.
 - 1. Only one workstation and operator shall be in command of the system for global alarm acknowledgement at any time.

2.3. PRINTER

- A. Support one or more Windows® compatible printers to be located and connected each workstation for graphics and report printing.
- B. Support one model PRN-6, 80-column dot matrix tractor feed industrial grade printer for event

and date-stamped printouts of off-normal events and status changes per workstation.

2.4. NOTIFIER® MONITORING NETWORK

- A. The NOTIFIER® monitoring network shall consist of a network based on proven peer-to-peer technology and support standard NCM cards and High Speed NCM cards.
- B. The network consisting of the standard NCM cards shall have the ability to use multi-mode fiber optic cable, wire (twisted pair copper media in a style 4 or style 7 configuration), or combination wire/fiber communications with support of up to 103 nodes with a data communications rate of 312,500 BPS.
 - 1. Wire networks shall support 12 AWG, 1 Pair Shielded to 24 AWG, 4 Pair Unshielded following the manufacturer's guidelines.
 - 2. Fiber optic networks shall support 62.5/125µm cable (8dB limit) or 50/125µm cable (4.2dB limit).
 - 3. Wire to fiber conversions cards.
- C. The network consisting of the High Speed NCM cards shall have the ability to use fiber optic cable (both multi-mode and single-mode), wire (twisted pair copper media in a style 4 or style 7 configuration), or combination wire/fiber communications with support of up to 200 nodes with a data communications rate of 12MB (wire) or 100MB (fiber).
 - 1. Wire networks shall support 12 AWG, 1 Pair Shielded to 24 AWG, 4 Pair Unshielded following the manufacturer's guidelines.
 - 2. Fiber optic networks shall support 62.5/125µm cable (10dB limit), 50/125µm cable (6.5dB limit), or 9/125 µm cable (30dB limit).
 - 3. Wire to fiber conversions cards.

2.5. INTEGRATION NETWORK

- A. The integration network shall be capable of monitoring a minimum of 100 nodes (NIONs and routers) on an Echelon Gateway consisting of, but not limited to:
 - 1. Intelligent or conventional fire alarm control panels.
 - 2. Competitor's intelligent or conventional fire alarm control panels.
- B. Local area networks shall consist of a free topology network using twisted pair copper media in a bus, star, or T-tap at 78 Kilo baud. Transmit/receive twin fiber (multi-mode 62.5/125 µm) strand FT-10 point-to-point shall be available. Wide area networks shall be supported by the use of network expansion routers.
 - 1. Free topology (FT-10 style) wire network run allows multiple T-taps within a 1,500-foot (457.2 m) radius; 8,000 foot (2438.4 m) point-to-point using twisted pair; or 6,000-foot (1828.8 m) bus topology.
 - 2. Free topology (FT-10 style) fiber network can also use fiber-optic cabling that operates at 78.5 Kbaud.
- C. Provide routers, repeaters or bridges where required to increase distance, alter network configuration or change media or to extend to remote facilities over alternate communications media including UL listed dial-up PSTN telephone, leased line, multi-mode fiber or Ethernet connectivity.

1. Dial-up units shall dial a local number and stay connected. Upon loss of carrier, a supervisory alarm shall be indicated at the workstation and the units shall automatically dial the number to re-connect.
 2. Network expansion routers shall support public switched telephone circuits, two-wire or four-wire leased lines, and CAT5 Ethernet networks.
- D. Network interface software shall be by the same manufacturer as the hardware portion of this specification.
- E. The integration network shall utilize Network Input / Output Nodes (NIONs) to interface between the individual panels' systems to be monitored by the integration network. The NIONs shall act as a translator from the panel communications protocol to the integration network protocol as well as serve as a transceiver from the building system panel to the integration network.
1. NIONs shall be available in configurations that will allow transparent communications via RS-232 serial data ports with intelligent fire alarm control panels, security systems, and CCTV systems.
 2. NIONs shall be available in configurations that will allow monitoring of dry contacts, switched voltages, conventional security devices, access control panels, and conventional fire alarm control panels using scheduled, automated, and manual control.
 3. NIONs shall be UL listed to Standard 864 and 1076 and be provided with their own enclosure or be available in chassis mount configurations.
 4. NIONs shall operate at 24 VDC and obtain their power from the monitored control panel or a UL listed battery backed auxiliary power supply. All terminals shall be transient protected to 2400V and LEDs shall be provided for status, service and diagnostics.
- F. Digital Alarm Communicator Receiver Network
1. The system shall provide a digital alarm communicator receiver (DACR) gateway with a RS-232 interface to the following digital alarm communicator receivers for wide area event reporting: Ademco 685, Silent Knight 9500 and 9800, Radionics D6600, and Teldat Visor Alarm.
 2. Each gateway shall support up to 10 digital alarm communicator receivers for alarm and trouble information from reporting devices.
- G. Access Control System Network
1. The system shall provide a WIN-PAK PRO 2005 and WIN-PAK PRO SE/PE gateway with a TCP/IP interface to the WIN-PAK PRO 2005 and WIN-PAK PRO SE/PE Access Control System. The gateway shall permit monitoring and control of N-1000 and PRO-2200 panels over a WIN-PAK PRO 2005 and WIN-PAK PRO SE/PE Access Control System.
 2. The software shall display access control related events and general events as they appear in the system. Through the software, it shall be possible for any event to be selected for viewing extended information. If the event relates to a specific cardholder, that cardholder's information can be viewed as well.
 3. It shall be possible to provide control of any door or output point configured on N-1000 and PRO-2200, allowing locking and unlocking, activation of outputs, or pulse/momentary unlock operations.
- H. Remote Access System Network

1. The ONYXWorks Web Server shall be a web-based device that allows remote viewing of the ONYXWorks system via the Internet or intranet.
2. The interface will allow users to view the history of FACP, event status, device properties, and other information based on access permission defined by the system administrator.
3. The Web Server will utilize an IP-based wire Ethernet connection when interfacing to the Internet/intranet.
4. The ONYXWorks Web Server shall be compatible with the following types of networks:
 - a. NOTI-FIRE-NET
 - b. Echelon
 - c. DACR
 - d. Card Access
5. The ONYXWorks Web Server shall provide the following features:
 - a. Support 10 simultaneous users
 - b. Employee standard IP over an Ethernet connection
 - c. Support up to 128 user accounts
 - d. Provide built-in password security and user access records
 - e. Send up to 50 e-mails in response to any system event

I. Workstation Network:

1. Computers shall be networked using Ethernet supporting the use of TCP/IP protocol for local area systems.
2. The network shall be capable of supporting multiple clients (e.g., workstations, configuration applications, and automated response applications), Echelon Gateway, NFN Gateway, High Speed NFN Gateway, and ninety-nine (50) Embedded Gateways.
3. A UL listed Ethernet Hub must be supplied for connection of multiple workstations, gateways, clients, and/or network printers.
4. System shall be UL listed to communicate between clients and gateways over a business computer network (shared IP).

J. System Expansion. Additional software and hardware modules shall be currently available by the system manufacturer to provide for:

1. CCTV with on-screen Pan/Tilt/Zoom and live video on-screen.
2. Supported systems shall include the following CCTV switch manufacturers, Pelco, Burle/Phillips, and Vicon. The ability to support all listed CCTV switch units simultaneously on the same system shall be supported.

PART 3 EXECUTION

3.1. GENERAL

- A. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring & fiber optic diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the riser/connection diagram for all specific system installation / termination / wiring data.

3.2. CONDUIT AND WIRE

- A. Conduit shall be in accordance with the National Electrical Code (NEC), local and state requirements.
- B. Where possible, all wiring & fiber optics shall be installed in conduit or raceway.
- C. Cable must be separated from any open conductors of power, or class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-29.
- D. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
- E. Conduit shall not enter the control equipment, or any other remotely mounted control panel equipment or back-boxes, except where conduit entry is specified by the FACP manufacturer.
- F. All system wiring shall be new except as allowed herein and approved by the manufacturer for intended communications using NOTI-FIRE-NET or Echelon's LonWorks.
- G. Wiring & fiber optics shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors & fiber optics shall be as recommended by the fire alarm system manufacturer.
- H. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system except as specified herein.
- I. All communication wire to nodes or to computers shall consist of minimum manufacturer's recommendations and approved wire specification supporting speeds of 78Kps to 10mB/sec communications.

3.3. TERMINAL BOXES, JUNCTION BOXES, AND CABINETS

- A. All boxes and cabinets shall be UL listed for their use and purpose.
- B. The PC based workstations shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FACILITIES MONITORING SYSTEM. PC workstation power wiring shall be 12 AWG and grounded securely to either a cold water pipe or grounding rod. Where required, a UL 864 listed UPS system shall be provided.

3.4. SYSTEM SETUP & CONFIGURATION

- A. Provide the services of a factory trained and authorized technician to perform all system software modifications, upgrades or changes. Field technicians shall be NICET Level 1 (minimum) certified.
- B. The factory trained technician shall install initial data and artwork at each workstation including:
- C. Distribution of monitoring, control and security profiles as requested by owner.

D. Area diagrams, floor plans, key maps and screen titles.

E. Auto-navigation criteria.

F. Guidance text as provided by owner.

3.5. FINAL INSPECTION

A. At the final inspection a factory trained representative of the manufacturer of the major equipment shall demonstrate that the system function properly in every respect.

3.6. INSTRUCTION/TRAINING

A. Provide instruction as required for operating the system. Hands on demonstrations of the operation of all system components and the entire system including user-level program changes and functions shall be provided. A factory trained and certified representative shall provide instruction.

END OF SECTION 13852