PROJECT MANUAL

for the

BID AND CONSTRUCTION

of the Project Entitled:

ORANGE COUNTY –CORRECTIONS PHOENIX BUILDING ROOF REPLACEMNT/ ROOF RE-COATING AND ELEVATOR MODERNIZATION

ORANGE COUNTY, FLORIDA

PERMIT / BID CONSTRUCTION DOCUMENTS
Date: JULY 13, 2011

MRI Job No. 1111

The Construction Documents consist of the following Contract Documents,

Project Manual:	Refer to "Table of Contents" for a complete listing of Specification Sections.
Drawings:	Refer to "Index of Drawings" for a complete listing of Drawings.

SECTION 000001 – LIST OF COMMISSIONERS

ORANGE COUNTY COMMISSIONERS

MAYOR
TERESA JACOBS

DISTRICT 1 COMMISSIONER
S. SCOTT BOYD

DISTRICT 2 COMMISSIONER
FRED BRUMMER

DISTRICT 3 COMMISSIONER
LUI DAMIANI

DISTRICT 4 COMMISSIONER
JENNIFER THOMPSON

DISTRICT 5 COMMISSIONER
TED EDWARDS

DISTRICT 6 COMMISSIONER
TIFFANY MOORE RUSSELL

SECTION 00005 – TEAM MEMBERS

Client: Orange County
Capital Projects Division
Internal Operations Centre II
400 East South Street, Suite 500
Orlando, Florida 32801

Contact: **Sam Shine, Project Manager**
Phone: **(407) 836 – 0037**
Fax: (407) 836 – 0051
E-mail: sam.shine@ocfl.net

Architect: MRI Architectural Group, Inc.
320 East South Street, Suite 150
Orlando, Florida 32801

Contact: **Peter M. Ikegami – Architect, AIA**
Phone: **(407) 245 – 3660**
Fax: (407) 245-3662
E-mail: pikegami@mriarchitects.com

Elevator Consultant: Lerch Bates, Inc.
2300 Glades Road, Suite 230W, Glades Twin Plaza West
Boca Raton, Florida 33431

Contact: **Timothy Murk**
Phone: **(561) 544 - 2192**
Fax: (561) 544 - 2195
E-Mail: tim.murk@lerchbates.com

Mechanical Electrical Fire Protection Engineering: SGM Engineering, Inc.
935 Lake Baldwin Lane
Orlando, Florida 32814

Contact: **Jose Lizasoain, P.E.**
Phone: **(407) 767 - 5188**
Fax: (407) 767 - 5772
E-Mail: jose@sgmengineering.com

END OF SECTION 00005

SECTION 00010 – TABLE OF CONTENTS

COVER SHEET

00001	List of Commissioners
00005	Team Members
00010	Table of Contents
00015	Index of Drawings

DIVISION 01 GENERAL REQUIREMENTS

01010	Summary of Work
01027	Applications for Payment
01030	Alternates
01035	Modification Procedures
01040	Project Procedures
01045	Cutting and Patching
01095	Reference Standards and Definitions
01200	Project Meetings
01300	Submittals
01322	Photographic Documentation
01400	Quality Control
01500	Construction Facilities and Temporary Controls
01524	Construction Waste Management
01600	Material and Handling
01631	Substitutions
01700	Final Contract Compliance Review
01740	Warranties
01900	Related Work

DIVISION 02 SITE WORK

02030	Alteration Procedures
02220	Demolition

DIVISION 03 CONCRETE

Not Used

DIVISION 04 MASONRY

Not Used

DIVISION 05 METALS

Not Used

DIVISION 06 WOOD AND PLASTICS

Not Used

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07270 Firestopping
07550 Modified Bitumen Membrane
07610 Metal Roof Restoration System
07710 Roof Specialties
07720 Roof Accessories
07920 Joint Sealants

DIVISION 08 DOORS AND WINDOWS

Not Used

DIVISION 09 FINISHES

Not Used

DIVISION 10 SPECIALTIES

Not Used

DIVISION 11 EQUIPMENT

Not Used

DIVISION 12 FURNISHINGS

Not Used

DIVISION 13 SPECIAL CONSTRUCTION

Not Used

DIVISION 14 CONVEYING SYSTEMS

14250 Hydraulic Elevator Modernization

DIVISION 15 MECHANICAL

Specifications located on drawings

DIVISION 16 ELECTRICAL

Specifications located on drawings

APPENDIX A Elevator Modernization Report – Lerch Bates

END OF SECTION 00010

SECTION 00015 – INDEX OF DRAWINGS

GENERAL

C.O	Cover Sheet
G1.1	General Information, Symbols and Legends, and Abbreviations

ARCHITECTURAL

CPB-D1.1	Corrections Phoenix Building – Composite Existing/Demo Roof Plan
CPB-D1.2	Corrections Phoenix Building – Enlarged Partial Demo Roof Plan
CPB-D1.3	Corrections Phoenix Building – Existing Conditions Photos
CPB-D1.4	Corrections Phoenix Building – Existing Conditions Photos
CPB-A1.1	Corrections Phoenix Building – Composite First and Second Floor Plans
CPB-A1.2	Corrections Phoenix Building – Composite Roof Plan
CPB-A2.1	Corrections Phoenix Building – Enlarged Floor Plans and Low Roof Plan
CPB-A2.2	Corrections Phoenix Building – Enlarged High Roof Plan
CPB-A2.3	Corrections Phoenix Building – Roof Details
CPB-A2.4	Corrections Phoenix Building – Roof Details
CPB-A2.5	Corrections Phoenix Building – Roof Details

MECHANICAL

M0.1	Symbol Legend, General Notes and Sheet Index-Mechanical
CPB-M1.1	Corrections Phoenix Building – Composite First and Second Floor Plans – Mechanical
CPB-M1.2	Corrections Phoenix Building – Composite Roof Plan – Mechanical
CPB-M2.1	Corrections Phoenix Building – Enlarged First Floor Plan – Mechanical
CPB-M2.2	Corrections Phoenix Building – Enlarged Partial Roof Plan – Mechanical

ELECTRICAL

E0.1	Symbol Legend, General Notes and Sheet Index - Electrical
E0.2	Specifications - Electrical
CPB-E1.1	Corrections Phoenix Building – Composite First and Second Floor Plans – Electrical
CPB-E2.1	Corrections Phoenix Building – Enlarged Plans – Electrical
E7.1	Schedules - Electrical

END OF SECTION 00015

SECTION 01010 – SUMMARY OF WORK

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 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of a general contract for the elevator modernization and reroof at Corrections Phoenix Building.

1. Project Locations:

Corrections Phoenix Building
3883 Vision Boulevard
Orlando, FL 32839

B. The Work includes, but not limited to Minor alterations to Corrections Phoenix Building to Modernize 2 hydraulic elevators.
   1. New Elevator Submersible Power Unit
   2. New Car Operating Panels w/Regional Fire Service Key Switches (site uniformity)
   3. New Hall Stations
   4. New Combination Position Indicators and Lanterns.
   5. New Door Operator.
   6. New Slide Guides.
   7. New Door Rollers, Interlock Contacts, Pickup Rollers, Spirators. (Retain Integral)
   8. New Inspection Car Top Station
   9. New Microprocessor Controller.

C. Work also includes, but not limited to demo/tear off of single ply membrane roof system and replacement with new roof system and clean/repair of existing standing seam roof surface as needed to recoat surface with elastomeric roofing system at Corrections Phoenix Building.

D. Field investigation and verification of recommendations as provided by Lerch Bates Report. See Appendix ‘A’.

E. Preparation of necessary drawings and specifications for bidding for repairs and supporting infrastructure improvements associated with elevator modernization.

F. The Work will be constructed under a single prime contract.

G. Provide all labor, engineering, tools, transportation, services, supervision, materials, and

equipment necessary for and incidental to satisfactory completion of required work as indicated in Contract Documents.

H. The contractor will provide all maintenance to the elevators during construction from notice to proceed until substantial completion and start of warranty period.

1.3 CONTRACTOR USE OF PREMISES

A. General: During the construction period, the contractor shall have limited use of the premises. All work will be confined to areas as it relates to the elevators modernization.

1.4 OWNER OCCUPANCY

A. The Owner reserves the right of access to any part of the Work, at any time, for the purpose of observation. Such access is not to be construed to mean partial occupancy by the Owner, and claims for additional compensation by the Contractor because of such access will not be considered.

B. Construct work in stages to accommodate owner's occupancy requirements. The owner will occupy the premises during the entire period of construction. Cooperate with owner to minimize conflict, and to facilitate owner's operations.

1.5 PREMIUM TIME WORK

A. Premium time and overtime work within the scope of the Project shall be deemed to be included in the Contract Price and the responsibility of the Contractor, with no claims for such time recognized as legitimate Contract Price change.

1.6 BUILDING / SITE SECURITY

A. The building shall be secure from unwarranted entry at the end of each workday.

B. Security Clearances: A full criminal history background check shall be performed on all Contractor personnel and subcontractors that will be working onsite during the construction period. No Contractor personnel or subcontractors will be allowed to work on Orange County Corrections property with an active warrant, or on active probation, home confinement, parole or have been arrested within the last five (5) years, or regardless of the date of arrest, been arrested for any crime involving violence, drugs or theft. The cost of the criminal history background check shall be the responsibility of the contractor.

1.7 GENERAL NOTES

A. The contractor shall minimize interference with the operations of the buildings and

maintain public safety and fire egress at all times.

B. The contractor will be allowed to perform work under this contract during normal working hours only if there are no interruptions of services to the building. All noise producing activities must be done before or after normal business hours or on weekends.

C. Orange County will provide two (2) parking spaces for the contractor's use. The contractor and his subcontractors will make other parking arrangements for workers. The cost associated with this staff parking will be the responsibility of the contractor.

D. The contractor will be allocated some space in the complex to set up mobilization, lay down and storage of materials. The contractor will be required to keep allocated areas clean, and maintain public safety and fire egress at all times.

E. The contractor shall be responsible for daily cleaning of all work including public areas. All public areas must be thoroughly cleaned before 7:00 a.m. on each morning when work is done at nighttime. Any areas not cleaned will be cleaned by the building's janitorial service and the contractor will be back-charged and will be issued an unsatisfactory performance evaluation. All material delivery and trash removal will be allowed in the building after normal working hours or on weekends. Whenever materials are delivered to the site, the contractor will have a representative present to receive the materials.

1.8 BUILDING INSPECTION

A. Prior to commencing work, the contractor will schedule a walk-thru with the owner's representative or engineer to inspect and document the condition of the building's interior where work is scheduled. Conditions of ceiling tiles, lights, walls, flooring be documented and video/pictures taken. Submit two copies, signed by contractor, owner's representative, or engineer.

B. Submit two video/DVD copies of the pre-construction walk through of buildings exterior.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01010

SECTION 01027 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
   1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.

B. Related Sections: The following Sections contain requirements that relate to this Section.
   1. Schedules: The Contractor's Construction Schedule and Submittal Schedule are specified in Division 1 Section 01300 Submittals.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
      a. Contractor's Construction Schedule.
      b. Application for Payment forms, including Continuation Sheets.
      c. List of subcontractors.
      d. Schedule of allowances.
      e. Schedule of alternates.
      f. List of products.
      g. List of principal suppliers and fabricators.
      h. Schedule of submittals.
   2. Submit the Schedule of Values to the County’s designated Representative and Consultant at the Pre-Construction meeting.

B. Format and Content: Use the County form
   1. Identification: Include the following Project identification on the Schedule of Values:
      a. Project name and location.
      b. Name of the Architect.
      c. Project number.
      d. Contractor's name and address.
      e. Date of submittal.
      f. Change Orders shall be added as they are approved.

2. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
4. 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. Materials shall be stored on-site only to be included in the Application for Payment.
5. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Margins of Cost: Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.
    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 the Contractor's option.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Consultant and paid for by the Owner.
    1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment-Application Times: Each progress-payment date is indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment-Application Forms: Use County form for Applications for Payment.

D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Consultant will return incomplete applications without action.
    1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule.
    2. Change Orders amounts may only be shown on the Application for Payment when they are fully executed and approved by the County.

E. A field review shall be made by the Owner, Consultant and the General Contractor one week before Final copies are transmitted to the Consultant for his recommendation to the Owner. The Application for Payment shall only include work completed and materials used or stored on site as of the time and date of the field review.

F. Transmittal: Submit 5 signed and notarized original copies of each Application for Payment.

G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
   1. Administrative actions and submittals that shall precede or coincide with this application include:
      a. Occupancy permits and similar approvals.
      b. Test/adjust/balance records.
      c. Equipment demonstrations.
      d. Final cleaning.
      e. Keys.

H. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
   1. Completion of Project closeout requirements.
   2. Completion of items specified for completion after Substantial Completion.
   3. Ensure that unsettled claims will be settled.
   4. Ensure that incomplete Work is not accepted and will be completed without undue delay.
   5. Transmittal of required Project construction records to the Owner.
   6. Removal of temporary facilities and services.
   7. Removal of surplus materials, rubbish, and similar elements.
   8. Warranties (guarantees) and maintenance agreements.
   9. Maintenance instructions.
   10. Meter readings.
   11. Contractor’s release of lien (on County form)
   12. Sub-Contractor’s and supplier’s release of lien
   13. Consent of Surety (dated and notarized)
   14. Power-of-Attorney (dated and notarized)
   15. Asbestos-Free statement on Contractor’s letterhead (dated and notarized)

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION - (Not Applicable)

END OF SECTION 01027

SECTION 01030 - ALTERNATES

PART 1 GENERAL

1.01 SCOPE

A. Provide material and labor required for complete execution of accepted alternates. Comply with all provisions of the Contract Documents.

B. Alternates:
1. Provide Provisions in equipment for future security, camera, card reader, fob capabilities in car. Security Systems, Cameras, Card Reader/Proximity systems supplied by purchaser.

2. Provide material and installation of LED down light ceilings in car.

END OF SECTION 01030

SECTION 01035 – MODIFICATON PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 01300 Submittals for requirements for the Contractor's Construction Schedule.
2. Section 01027 Applications for Payment for administrative procedures governing Applications for Payment.
3. Section 01631 Substitutions for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK

A. The Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on Architect's standard Supplemental Instructions form.

1.4 CHANGE ORDER PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: The Architect will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
2. Within 14 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.
    a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.
5. Contractor-initiated proposals shall be submitted within 15 days of the event causing the change.

C. Proposal Request Form: Use forms which will be provided by the County.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 CHANGE ORDER PROCEDURES

A. On the County’s standard form.

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION - (Not Applicable)

END OF SECTION 01035

SECTION 01040 - PROJECT PROCEDURES

PART 1 GENERAL

1.01 APPLICABLE CODES

A. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of following Codes, laws, and/or Authorities, including revisions and changes in effect;
   1. Safety Code for Elevators and Escalators, ASME A17.1
   2. Guide for Inspection of Elevators, Escalators, and Moving Walks, ASME A17.2
   3. Elevator and Escalator Electrical Equipment, ASME A17.5
   4. National Electrical Code, NFPA 70
   5. Americans with Disabilities Act, ADA
   6. Local Fire Authority
   7. Requirements of The Florida Building Code and all other Codes, Ordinances and Laws applicable within the governing jurisdiction
   8. Life Safety Code, NFPA 101.
   9. Uniform Federal Accessibility Standard, UFAS

1.02 STAGING AREA

An equipment staging area will be available for use by Provider. Provider shall restrict usage to area designated and shall notify Purchaser/Property Management prior to storing of any large equipment which will impose heavy concentrated loading on floor area. Do not store such equipment until approval is received.

END OF SECTION 01040

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes procedural requirements for cutting and patching of new work.

1.2 DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.3 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Equipment supports.
4. Piping, ductwork, vessels, and equipment.
5. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or

adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
2. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

3. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

END OF SECTION 01045

SECTION 01095 – REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic contract definitions are included in the Conditions of the Contract.

B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.

D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

I. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, who performs a particular construction activity including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
   1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project;

being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

2. Trades: Using terms 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 trades people of the corresponding generic name.
3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
    a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.

J. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-division format and "Master Format" numbering system.

B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
    a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with 2 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 the Architect for a decision before proceeding.

1. 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 the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Inc.'s "Encyclopedia of Associations," which is available in most libraries.

1.5 SUBMITTALS

A. Permits, Licenses, and Certificates: For the 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.

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION - (Not Applicable)

END OF SECTION 01095

SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Preconstruction conferences.
2. Preinstallation conferences.
3. Progress meetings.
4. Coordination meetings.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 01040 Project Procedures for procedures for coordinating project meetings with other construction activities.
2. Section 01300 Submittals for submitting the Contractor's Construction Schedule.
3. Review each Section of the Specifications for requirements for Pre-installation Conferences.

1.3 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference shall be held before start of construction, at a time convenient to the Owner and the Architect, but no later than 20 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including the following:

1. Attendance List.
2. Introductions.
3. Notice to Proceed issued.
4. Access to site.
5. Temporary Facilities.
6. Schedules.
7. Coordination with Owner\Occupants\Sub-Contractors.

8. Responsibility to protect existing Property.
9. Contractor responsible for security of tools and equipment.
10. Contractor responsible for safety on the job.
11. Job Superintendent on site at all times work in progress.
12. Scope of work, base bid and accepted alternates.
13. Use of standard forms.
14. No change in Contract scope, time, or amount without change order.
15. Application for Payment.
16. Salvage Materials.

1.4 PREINSTALLATION CONFERENCES

A. The General Contractor shall conduct a pre-installation conference at the Project Site before each construction activity is started to coordinate all trades without conflicts arising.

B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:
   a. Contract Documents.
   b. Options.
   c. Related Change Orders.
   d. Purchases.
   e. Deliveries.
   f. Shop Drawings, Product Data, and quality-control samples.
   g. Review of mockups.
   h. Possible conflicts.
   i. Compatibility problems.
   j. Time schedules.
   k. Weather limitations.
   l. Manufacturer's recommendations.
   m. Warranty requirements.
   n. Compatibility of materials.
   o. Acceptability of substrates.
   p. Temporary facilities.
   q. Space and access limitations.
   r. Governing regulations.
   s. Safety.
   t. Inspecting and testing requirements.
   u. Required performance results.
   v. Recording requirements.
   w. Protection.

2. Record significant discussions and agreements and disagreements of each conference, and the approved schedule. Distribute the record of the meeting to everyone concerned within 3 days of each meeting and include copies to the Owner and the Architect.
3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.5 PROGRESS MEETINGS

A. Progress meetings shall be conducted by the County's Designated Representative at regular intervals. The date and time for these meetings shall be determined at the Pre-Construction meeting. Generally, Progress meetings are held weekly during the first third of construction bi-weekly during the middle third of construction and weekly during the last third f construction.

B. Attendees: In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
2. Review the present and future needs of each entity present, including the following:
    a. Interface requirements.
    b. Time.
    c. Sequences.
    d. Status of submittals.
    e. Statue of "Request for Information"
    f. Deliveries.
    g. Off-site fabrication problems.
    h. Access.
    i. Site utilization.
    j. Temporary facilities and services.
    k. Hours of work.
    l. Hazards and risks.
    m. Housekeeping.
    n. Quality and work standards.
    o. Change Orders.
    p. Documentation of information for payment requests.

D. Reporting: The County's Designated Representative will issue a report within 2 days of the Progress Meeting.

1.6 COORDINATION MEETINGS

A. The General Contractor shall conduct project coordination meetings as may be required to avoid conflicts arising between trades. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.

B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.

C. Record meeting results and distribute copies within 3 days after each meeting to everyone in attendance, the Owner and the Architect and to any others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION - (Not Applicable)

END OF SECTION 01200

SECTION 01300 – SUBMITTALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUBMITTAL REQUIREMENTS

A. Within 30 calendar days after award of contract and before beginning equipment fabrication, submit technical data, calculations, shop drawings and required material finish samples for review. Allow 15 days for response to initial submittal.
B. Submittal data and shop drawings shall be presented in clear and thorough manner indicating by cross reference the contract drawing sheet number, note, and specification paragraph numbers, where and what item(s) are used for and where item(s) occur in the contract documents.. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete/cross-out non-pertinent data. Markings shall be made with arrows or circles (highlighting is not acceptable).
C. Submit technical data verifying that the item complies with the requirements of the specifications. Technical data shall include manufacturer's name and model number, dimensions, weights, electrical characteristics, and required clearances. Indicate all optional equipment and changes from the standard item as specified. Furnish drawings, or diagrams, dimensioned and scaled, showing arrangement of components and overall coordination. Layout to include: Plan of pit, hoistway and machine room indicating equipment arrangement, elevation section of hoistway, details of car enclosures, hoistway entrances, and car/hall signal fixtures.
D. Provide calculations verifying the following:

    a. Adequacy of existing electrical provisions.
    b. Machine room heat emissions in B.T.U.
    c. Adequacy of existing car platform structure for intended loading.
    d. Adequacy of plunger wall thickness for intended loading.

E. Shop Drawings
    a. Shop Drawing shall be prepared using AutoCAD, latest release, with drawing size and font type to match that of the contract documents.
    b. Shop Drawings for Fire Alarm, Voice and Data, and Premise Distribution Systems shall include as a minimum:
    c. Detailed floor plan layouts and riser diagrams showing system components and their location, interconnections, wiring/cabling, and interface and connection with other disciplines.
    d. Coordination Drawings in accordance with the requirements of specific specification section.
    e. Detailed data as requested by designer/OAR.

F. Finish Material: Submit 3" x 12" samples of actual finished material for review of color, pattern, and texture. Compliance with other requirements is the exclusive responsibility of the Provider. Include, if requested, signal fixtures, lights, graphics, Braille plates, and detail of mounting provisions.
G. See specific sections of the specifications for further requirements.

1.3 PROCESSING SUBMITTALS

A. Note that the approval of shop drawings or other information submitted in accordance with the requirements specified herein, does not assure that the Designer, or any other Owner's Authorized Representative's Representative, attests to the dimensional accuracy or dimensional suitability of the material or equipment involved, the ability of the material or equipment involved or the Mechanical/Electrical performance of equipment. Approval of shop drawings does not invalidate the plans and specifications if in conflict, unless a letter requesting such change is submitted and approved on the Designer's letterhead.

B. Submittal review shall not be construed as an indication that submittal is correct or suitable, or that the work represented by submittal complies with the Contract Documents. Compliance with Contract Documents, Code requirements, dimensions, fit, and interface with other work is Provider’s responsibility.
C. Acknowledge and/or respond to review comments within 7 calendar days of return. Promptly incorporate required changes due to inaccurate data or incomplete definition so that delivery and installations schedules are not affected. Identify and cloud drawings revisions, including Provider elective revisions on each re-submittal. Provider’s revision response time is not justification for equipment deliver or installations delay.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 01300

SECTION 01322 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Preconstruction videos.

B. Related Sections include the following:

1. Section 01300 Submittals for submitting photographic documentation.
2. Section 01700 Final Contract Compliance Review for submitting construction videos as Project Record Documents at Project closeout.
3. Section 01700 Final Contract Compliance Review for submitting videos of demonstration of equipment and training of Owner's personnel.
4. Section 02220 Demolition for photographic documentation before building demolition operations commence.

1.3 SUBMITTALS

A. Videos: Submit two copies of each video with protective sleeve or case within seven days of recording.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of photographer.
c. Name of Architect.
d. Name of Contractor.
e. Date video was recorded.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
g. Weather conditions at time of recording.

2. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as corresponding video. Include name of Project and date of video on each page.

1.4 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.5 COORDINATION

A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.6 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Video Format: Provide electronic file on cd or dvd.

1. Electronic file quality shall be adequate to create photographic prints to be made from individual frames.

PART 3 - EXECUTION

3.1 CONSTRUCTION VIDEOS

A. Video Photographer: Engage a qualified commercial videographer to record construction videos.

B. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

C. Narration: Describe scenes on video by audio narration by microphone while video is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

1. Confirm date and time at beginning and end of recording.

2. Begin each video with name of Project, Contractor's name, videographer's name, and Project location.

D. Preconstruction Video: Before starting demolition, record video of Project site, roof and surrounding properties from different vantage points, as directed by Architect.

1. Flag construction limits before recording construction videos.
2. Show existing conditions adjacent to Project site before starting the Work.
3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of demolition.
4. Show protection efforts by Contractor.

END OF SECTION 01322

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality-control services.

B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality-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 inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
3. Requirements for Contractor to provide quality-control services required by Owner, or authorities having jurisdiction are not limited by provisions of this Section.

E. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 01045 Cutting and Patching specifies requirements for repair and restoration of construction disturbed by inspection and testing activities.
2. Section 01300 Submittals specifies requirements for development of a schedule of required tests and inspections.

1.3 RESPONSIBILITIES

A. Owner Responsibilities: Unless otherwise indicated, the Owner shall provide and pay for testing services required by authorities having jurisdiction.

B. Retesting: The Contractor shall be responsible for the cost of all failed tests and the cost of retesting until satisfactory results are achieved.

C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
   1. Provide access to the Work.
   2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
   3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
   4. Provide facilities for storage and curing of test samples.
   5. Deliver samples to testing laboratories.
   6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
   7. Provide security and protection of samples and test equipment at the Project Site.

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
   1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
   3. The agency shall not perform any duties of the Contractor.

E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
   1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.4 SUBMITTALS

A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
   a. Date of issue.
   b. Project title and number.
   c. Name, address, and telephone number of testing agency.
   d. Dates and locations of samples and tests or inspections.
   e. Names of individuals making the inspection or test.
   f. Designation of the Work and test method.
   g. Identification of product and Specification Section.
   h. Complete inspection or test data.
   i. Test results and an interpretation of test results.

j. Ambient conditions at the time of sample taking and testing.
k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on retesting.

1.5 QUALITY ASSURANCE

A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.
1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section 01045 Cutting and Patching.

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 01400

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. The following Utilities shall be provided by the Owner:

1. Water service.
2. Temporary electric power and light.
3. Temporary heat.
4. Sanitary facilities.
5. Drinking water.
6. Storm and sanitary sewer.

C. Temporary Utilities to be provided by the Contractor include, but are not limited to the following:

1. Water distribution.
2. Ventilation.
3. Telephone service.

D. Support facilities to be provided by the Contractor include, but are not limited to the following:

1. Field offices.
2. Temporary enclosures.
3. Temporary project identification signs and bulletin boards, all as approved by the Owner.
7. Waste disposal services.
8. Rodent and pest control.
9. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities in construction areas are to be include by the Contractor, but are not limited to, the following:

1. Temporary fire protection.
2. Barricades, warning signs, and lights.
3. Sidewalk bridge or enclosure fence for areas of the site.
4. Environmental protection, if required by the Building Department.

1.3 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.

B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

2. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Utilities: Prepare a schedule, within 14 days of the date established for commencement of the work, indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Lumber and Plywood:

1. For job-built temporary offices, shops, and sheds within the construction area, provide UL-labeled, fire-treated lumber and plywood for framing, sheathing, and siding.
2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.
3. For fences and vision barriers, provide minimum 3/8-inch thick exterior plywood.
4. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch thick exterior plywood.

C. Paint:

1. For sign panels and applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer.

D. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

E. Water: Provide potable water approved by local health authorities.

F. Open-Mesh Fencing: Provide 0.120-inch- thick, galvanized 2-inch chainlink fabric fencing 6 feet high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches I.D. for line posts and 2-1/2 inches I.D. for corner posts.

2.2 EQUIPMENT

A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

C. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

D. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.

E. Temporary Offices: A office area will be available for use by Provider. Provider shall restrict usage to area designated by Owner.

G. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. Temporary Lighting: When floor, overhead or roof deck requires temporary lighting, provide with local switching.

B. Temporary Telephones: Provide temporary telephone service throughout the construction period for all personnel engaged in construction activities.

1. At each telephone, post a list of important telephone numbers.

3.3 SUPPORT FACILITIES INSTALLATION

A. Locate field offices, and other temporary construction and support facilities for easy access and in areas acceptable to the Owner.

1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Provide incombustible construction for offices, shops, and sheds located within the construction area or within 30 feet of building lines. Comply with requirements of NFPA 241.

C. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Temporary Fire Protection: Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

B. Permanent Fire Protection: Existing system shall be protected and remain in service. When required to alter and change existing drops or runs, advise the Fire Department of a shout-down of an area and complete the work so that all systems are operating over nights and weekends. Instruct key personnel on use of facilities.

C. Enclosure Fence areas if required and acceptable to the Owner: Before construction begins, install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.

1. Provide open-mesh, chain link fencing with posts set in a compacted mixture of gravel and earth.

D. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

E. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce

harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by the elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Protection: Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.
2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.
3. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
    a. Replace air filters and clean inside of ductwork and housings.
    b. Replace significantly worn parts and parts subject to unusual operating conditions.
    c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 01500

SECTION 01524 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous construction waste.
2. Recycling nonhazardous construction waste.
3. Disposing of nonhazardous construction waste.

B. Related Sections include the following:

1. Section 01500 Construction Facilities and Temporary Controls for environmental-protection measures during construction and location of waste containers at Project site.
2. Section 02220 Demolition.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE GOALS

A. Salvage/Recycle Goals: Owner's goal is to salvage and recycle as much nonhazardous demolition and construction waste as possible including, but not limited to, the following materials:

1. Masonry and CMU.
2. Lumber.
3. Wood sheet materials.
4. Wood trim.
5. Metals.
6. Insulation.
7. Carpet and pad.
8. Gypsum board.
9. Piping.
10. Electrical conduit.
11. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
    a. Paper.
    b. Cardboard.
    c. Boxes.
    d. Plastic sheet and film.
    e. Polystyrene packaging.
    f. Wood crates.
    g. Plastic pails.

1.5 SUBMITTALS

A. Waste Management Plan: Submit six copies of plan within seven days of date established for commencement of the Work.

B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.

C. Waste Reduction Calculations: Before request for Substantial Completion, submit six copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

H. Qualification Data: For Waste Management Coordinator.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 01040 Project Procedures. Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of

each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
6. Savings in hauling and tipping fees by donating materials.
7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan as approved by Owner. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with Division 1 Section 01500 Construction Facilities and Temporary Controls for operation, termination, and removal requirements.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to everyone concerned within six days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 1 Section 01500 Construction Facilities and Temporary Controls for controlling dust and dirt, environmental protection, and noise control.

3.2 RECYCLING CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.

5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.3 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.4 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 01524

SECTION 01600 - MATERIAL AND HANDLING

PART 1 GENERAL

1.01 SITE CONDITION INSPECTION

A. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.

B. Do not proceed with installation until work in place conforms to project requirements.

1.02 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material in Contractor's original, unopened protective packaging.

B. Store material in original protective packaging. Prevent soiling, physical damage, or moisture damage.

C. Protect equipment and exposed finishes from damage and stains during transportation, erection, and construction.

D. Allocate available site storage areas and coordinate their use with Purchaser and other Contractors.

E. Provide suitable temporary weather-tight storage facilities as may be required for materials which will be stored in the open.

1.03 INSTALLATION REQUIREMENTS

A. Install all equipment in accordance with Contractor's instructions, referenced codes, specification, and approved submittals.

B. Install machine room equipment with clearances in accordance with referenced codes and specification.

C. Install all equipment so it may be easily removed for maintenance and repair.

D. Install all equipment for ease of maintenance.

E. Install all equipment to afford maximum accessibility, safety, and continuity of operation.

F. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel.
   1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
   2. Machine room equipment, and pit equipment.
   3. Hoistway equipment including guide rails, guide rail brackets, and pit equipment.
   4. Neatly touch up damaged factory-painted surfaces with original paint color. Protect machine-finish surfaces against corrosion.

1.04 MANUFACTURER'S NAMEPLATES

A. Manufacturer's name plates and other identifying markings shall not be affixed on surfaces exposed to public view. This requirement does not apply to Underwriter's Laboratories and code required labels.

B. Each major component of mechanical and electrical equipment shall have identification plate with the Manufacturer's name, address, model number, rating, and any other information required by governing codes.

1.05 COLORS OF FACTORY-FINISHED EQUIPMENT

A. All colors will be selected from the Manufacturer's standard range unless custom colors are specified herein.

B. Submit samples of all standard colors available and/or specified custom colors for review and approval. See Section 01300, Submittals

C. Submit samples of all specified architectural metals specified for review and approval. See Section 01300, Submittals.

1.06 MATERIALS AND FINISHES

A. Steel:
1. Sheet Steel (Furniture Steel for Exposed Work): Stretcher-leveled, cold-rolled, commercial quality carbon steel, complying with ASTM A366, matte finish.
2. Sheet Steel (for Unexposed Work): Hot-rolled, commercial quality carbon steel, pickled and oiled, complying with ASTM A568/A568M-03.
3. Structural Steel Shapes and Plates: ASTM A36.

B. Stainless Steel: Type 316 complying with ASTM A240, with standard tempers and hardness required for fabrication, strength and durability. Apply mechanical finish on fabricated work in the locations shown or specified, Federal Standard and NAAMM nomenclature, with texture and reflectivity required to match Architect's sample. Protect with adhesive paper covering.
1. No. 4 Satin: Directional polish finish. Graining directions in longest dimension.

C. Aluminum: Extrusions per ASTM B221; sheet and plate per ASTM B209.

D. Fire-Retardant Treated Particle Board Panels: Minimum ¾" thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame-spread rating of 25 or less, registered with local authorities for elevator finish materials.

E. Paint: Clean exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, provide one finish coat of industrial enamel paint. Galvanized metal need not be painted.

F. Prime Finish: Clean all metal surfaces receiving a baked enamel paint finish of oil, grease, and scale. Apply one coat of rust-resistant primer followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of primer.

END OF SECTION 01600

SECTION 01631 - SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for handling requests for substitutions.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 01095 Reference Standards and Definitions specifies the applicability of industry standards to products specified.
2. Section 01300 Submittals specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.
3. Section 01600 Material and Handling specifies requirements governing the Contractor's selection of products and product options.

C. Substitutions:

1. Prior to Bid Date:
   a. A written request for the substitution of a Product must be received by the Purchasing and Contracts Division a minimum of 14 days prior to the receipt of Bids, for the Purchasing and Contracts Division to review. It will be added to an Addendum if acceptable.
2. After the Award of Contract:
   a. The Purchasing and Contracts Division will consider a request by the contractor for substitution where the specified product cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
   b. The Purchasing and Contracts Division will consider a request by the Contractor for a substitution after the award of the Contract where substantial advantage is offered to the Owner in terms of:
      1) A credit is offered for substitution of a Product accepted as an approved equal to a specified item by the Architect.
      2) A Product has been accepted by the Architect as being of greater quality at no additional cost to the Owner.
      3) The Products specified, for no fault of the Contractor, can not be obtained.

4) The Architect will consider a request for substitution when the specified Product cannot be provided in a manner which is compatible with other materials of the work.
5) The Architect will consider a request for substitution when the specified Product cannot be properly coordinated with other materials in the work
6) The Architect will consider a request for substitution when the specified Product can not receive a warranty as required by the Contract Documents.

3. The Contractor, Subcontractor or Supplier who is recommending the Substitution shall compensate the Architect/Engineer for expenditures necessary in reviewing the proposed substitution. Prevailing hourly billing rates shall be used plus 20%.

1.3 DEFINITIONS

A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.

1. Products, are items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the project or taken from the Contractor's previously purchased stock. The term Product as used herein includes the terms "material," "equipment," "system" and other terms of similar intent.
2. Named Products, are products identified by use of the manufacturer's name for a product, including such items as a make or model designation, as recorded in published product literature, of the latest issue as of the date of the contract documents.
3. Materials, are products that must be substantially cut, shaped, worked, mixed, motorized or manually operated, and in particular, a product that requires service connections such as wiring or piping.
4. Equipment, is defined as a product with operational parts, regardless of whether motorized or manually operated, and in particular, a product that requires service connections such as wiring or piping.

B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents. The following are not considered to be requests for substitutions:

1. Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
2. Revisions to the Contract Documents requested by the Owner, Architect or Engineers are considered as changes and not substitutions.
3. Specified options of products and construction methods included in the Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Substitution Request Submittal:

1. Submit 6 copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for change-order proposals.
2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
    a. Coordination information, including a list of changes or modifications needed to other parts of the Work and or to construction necessary to accommodate the proposed substitution. The Contractor shall certify that the Substitution, if accepted, would be complete and no additional cost to the Owner would be required.
    b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
    c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
    d. Samples, where applicable or requested.
    e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
    f. Cost information, including a proposal of the net change, if any to the Contract Sum.
    g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
    h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
4. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Architect will notify the Contractor of acceptance or rejection of the substitution within 2 weeks of receipt of the request, or one week of receipt of additional information or documentation. Acceptance will be in the form of a change order.
    a. Use the product specified if the Architect cannot make a decision on the use of a proposed substitute within the time allocated.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record noncompliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of the Contract Documents.
3. The request is timely, fully documented, and properly submitted.
4. The Architect will not consider the request if the specified product or method cannot be provided as a result of the Contractor failure to pursue the Work promptly or coordinate activities properly
5. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
8. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
9. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

PART 3 - EXECUTION - (Not Applicable)

END OF SECTION 01631

SECTION 01700 - FINAL CONTRACT COMPLIANCE REVIEW

PART 1 GENERAL

1.01 FINAL CLEANING

A. As a minimum:
   1. Elevator hoistways and all equipment therein shall be cleaned and left free of rust, filings, welding slag, rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt, and dust. Include walls, building beams, sill ledges, and hoistway divider beams.
   2. Care shall be taken by workpersons not to mark, soil, or otherwise deface existing or new surfaces. Clean and restore such surfaces to their original condition.
   3. Clean down surfaces and areas which require final painting and finishing work. Cleaning includes removal of rubbish, broom cleaning of floors, removal of any loose plaster or mortar, dust, and other extraneous materials from finish surfaces, and surfaces that will remain visible after the work is complete.

1.02 CONSULTANT'S FINAL OBSERVATION AND REVIEW REQUIREMENTS

A. Review procedure shall apply for individual elevators, portions of groups of elevators and completed groups of elevators accepted on an interim basis, or elevators and groups of elevators completed, accepted, and placed in operation.

B. Contractor shall perform review and evaluation of all aspects of its work prior to requesting Consultant's final review. Work shall be considered ready for Consultant's final contract compliance review when all Contractor's tests are complete and all elements of work or a designated portion thereof are in place and elevator or group of elevators are deemed ready for service as intended.

C. Furnish labor, materials, and equipment necessary for Consultant's review. Notify Consultant five (5) working days in advance when ready for final review of elevator or group of elevators.

D. Consultant's written list of observed deficiencies of materials, equipment, and operating systems will be submitted to Contractor for corrective action. Consultant's review shall include as a minimum:
   1. Workmanship and equipment compliance with Contract Documents.
   2. Contract speed, capacity, floor-to-floor, and door performance comply with Contract Documents.
   3. Performance of following is satisfactory:
      a. Starting, accelerating, running
      b. Decelerating and stopping accuracy
      c. Door operation and closing force
      d. Equipment noise levels
      e. Signal fixture utility
      f. Overall ride quality
      g. Performance of door control devices
      h. Operations of emergency two-way communication device

i. Operations of firefighters' service

4. Test Results:
   a. In all test conditions, obtain specified contract speed, performance times, stopping accuracy without re-leveling, and ride quality to satisfaction of Purchaser and Consultant. Tests shall be conducted under both no load and full load condition.
   b. Temperature rise in motor windings limited to 50° Celsius above ambient. A full-capacity one (1) hour running test, stopping at each floor for ten (10) seconds in up and down directions, may be required.

E. Performance Guarantee: Should Consultant's review identify defects, poor workmanship, variance or noncompliance with requirements of specified codes and/or ordinances, or variance or noncompliance with the requirements of Contract Documents, Contractor shall complete corrective work in an expedient manner to satisfaction of Purchaser and Consultant at no cost as follows:
   1. Replace equipment that does not meet code or Contract Document requirements.
   2. Perform work and furnish labor, materials, and equipment necessary to meet specified operation and performance.
   3. Perform retesting required by Governing Code Authority, Purchaser, and Consultant.

F. A follow-up final contract compliance review shall be performed by Consultant after notification by Contractor that all deficiencies have been corrected. Provide Consultant with copies of the initial deficiency report marked to indicate items which Contractor considers complete.

1.03 PURCHASER'S INFORMATION

A. Provide three sets of neatly bound written information necessary for proper maintenance and adjustment of equipment within 30 days following final acceptance. Final retention will be withheld until data is received by Purchaser and reviewed by Consultant. Include the following as minimums:
   1. Straight-line wiring diagrams of "as-installed" elevator circuits with index of location and function of components. Provide one set reproducible master. Mount one set wiring diagrams on panels, racked, or similarly protected, in elevator machine room. Provide remaining set rolled and in a protective drawing tube. Maintain all drawing sets with addition of all subsequent changes. These diagrams are Purchaser's property.
   2. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract. Include any unique or product specific procedures or methods required to inspect or test the equipment. In addition, identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
   3. Provide any necessary interface cards required for equipment maintenance, code mandated testing, and troubleshooting.
   4. Lubrication instructions including recommended grade of lubricants.
   5. Parts catalogs for all replaceable parts including ordering forms and instructions.
   6. Four sets of keys for all switches and control features properly tagged and marked.
   7. Neatly bound instructions explaining all operating features including all apparatus in the car and lobby control panels.

8. Neatly bound maintenance and adjustment instructions explaining areas to be addressed, methods and procedures to be used, and specified tolerances to be maintained for all equipment.
9. Diagnostic equipment complete with access codes, adjusters manuals and set-up manuals for adjustment, diagnosis and troubleshooting of elevator system, and performance of routine safety tests.

B. Non-Proprietary Equipment Design: Provide three sets of neatly bound written information necessary for proper maintenance and adjustment of equipment within 30 days following final acceptance. Final retention will be withheld until data is received by Purchaser and reviewed by Consultant. Include the following as minimums:
1. Straight-line wiring diagrams of "as-installed" elevator circuits with index of location and function of components. Mount one set wiring diagrams on panels, racked, or similarly protected, in elevator machine room. Provide remaining set rolled and in a protective drawing tube. Maintain all drawing sets with addition of all subsequent changes. These diagrams are Purchaser's property. A legend sheet shall be furnished with each set of drawings to provide the following information:
   a. Name and symbol of each relay, switch, or other apparatus.
   b. Location on drawings, drawing sheet number and area, and location of all contacts.
   c. Location of apparatus, whether on controller or on car.
2. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract. Include any unique or product specific procedures or methods required to inspect or test the equipment. In addition, identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
3. Printed instructions explaining all operating features.
4. Complete software documentation for all installed equipment.
5. Lubrication instructions, including recommended grade of lubricants.
6. Parts catalogs listing all replaceable parts including Contractor's identifying numbers and ordering instructions.
7. Four sets of keys for all switches and control features properly tagged and marked.
8. Diagnostic test devices together with all supporting information necessary for interpretation of test data, troubleshooting of elevator system, and performance of routine safety tests.
9. The elevator installation shall be a design which can be maintained by any licensed elevator maintenance company employing journeymen mechanics, without the need to purchase or lease additional diagnostic devices, special tools, or instructions from the original equipment Contractor.
   a. Provide on site capability to diagnose faults to the level of individual circuit boards and individual discrete components for the solid state elevator controller.
   b. Provide a separate, detachable device, as required, to the Purchaser as part of this installation if the equipment for fault diagnosis is not completely self-contained within the controller. Such device shall be in possession of and become property of the Purchaser.
   c. Installed equipment not meeting this requirement shall be removed and replaced with conforming equipment at no cost to the Purchaser.

10. Provide upgrades and/or revisions of software during the progress of the work, warranty period and the term of the ongoing maintenance agreement between the Purchaser and Contractor.

C. Acceptance of such records by Purchaser/Consultant shall not be a waiver of any Contractor deviation from Contract Documents or shop drawings or in any way relieve Contractor from his responsibility to perform work in accordance with Contract Documents.

END OF SECTION 01700

SECTION 01740 - WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 01300 Submittals specifies procedures for submitting warranties.
2. Section 01700 Final Contract Compliance Review specifies contract closeout procedures.
3. Division 16 Sections for specific requirements for warranties on products and installations specified to be warranted.
4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Architect as part of the close-out documents. The Architect's Certificate of Substantial Completion designates the commencement date for warranties.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.

B. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.

1. Refer to Division 16 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

D. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION

3.1 LIST OF WARRANTIES

A. Schedule: Provide a Warranties Schedule on products and installations of items which will require the Contractor to provide warranties with the close-out documents. This schedule shall he submitted with the Submittal Schedule.

END OF SECTION 01740

SECTION 01900 - RELATED WORK

PART 1 GENERAL

1.01 RELATED WORK

By ASME A17.1 CODE, the initiation of an elevator modernization requires upgrade to related building components. Such items can include the electrical supply, structure fire ratings, and life safety components. The below list should be provided to a reputable: fire alarm company, an electrical company, your emergency generator service provider, an HVAC company and a general contractor (you may have one firm that can handle all of the below work). MANY OF THESE NON-ELEVATOR RELATED ITEMS MAY ALREADY BE IN PLACE AT YOUR LOCATION, BUT THE ENTIRE LIST SHOULD BE REVIEWED BY THE BUILDING AND ELEVATOR CONTRACTOR TO ENSURE COMPLIANCE PRIOR TO FINAL INSPECTION OF AN ELEVATOR.

MACHINE ROOM

- Provide self-closing, self-locking 1 1/2 hour “B” rated access door
- Ensure all stairs that may lead to machine room are secured to solid floor and lit.
- Provide ABC rated fire extinguisher mounted to machine room wall next do access door
- Install guarding on machine room lights (tubes).
- New and/or increased lighting (19 foot candles at the floor level throughout entire room)
- Provide battery powered emergency lighting.
- The entire room must be fire rated with no penetrations
- Cover or remove existing non-elevator duct, pipe and equipment from machine room.
- Provide AC/Heating to machine room, but do not install in location in which will hinder the proper placement of elevator equipment. (60-95 degrees; non-condensing)
- Cover existing venting to hoistway (often in machine room floor on traction cars)
- Provide fire rated duct from hoistway vents to outside.
- Relocate existing disconnects to “line of sight of machines”
- Provide additional disconnects if previous condition cannot be met
- Replace existing disconnects: RK5 fused, lockable, cannot be opened in ON position.
- Provide 110VAC fuse, lockable disconnects (one per car) for cab lights and fan.
- Provide wiring from disconnects (main and 110vac) to elevator controller.
- Provide 110VAC GFCI outlets in machine room
- Run telephone line in metal conduit to elevator controller
- Provide smoke detector(s); quantity based on size of room and coverage
- Provide heat detector for sprinklers, mounted within 24″ of each sprinkler head
- Monitor heat detector power at fire alarm control panel (failure to cause signal)
- Provide shunt trip on Mainline disconnects(s), tie into heat detectors (if machine room and or hoistway is sprinkled. If not sprinkled, disregard.

- All disconnects are to be labled: fed from information and disconnects purpose. (ie. Fed from main panel G3 – Elevator #3 Controller Disconnect – State Serial # 555555)
- All floor and wall holes are to be patched and sealed.
- Dedicated earth ground (home-run)
- Foreign equipment that of which does not pertain to the specific operation or safety and or safety devices of the elevator such as water/drainage pipes, communication terminals, J boxes etc. will have to be removed or separated from designated elevator machine room space.

HOISTWAY/PIT/LANDINGS/CAR

- Provide smoke vents at the top of shafts to the outside (3ft X 3ft per Elevator). If adding motorized damper, tie into fire system accordingly and program dampers to normally be in the closed position unless an emergency fire service signal is engaged, then open.
- Provide smoke detectors at each landing: non-resetting, tied to general alarm – 3 zones (Elevator Contractor to determine configuration).
- Provide smoke detector(s) at the top of shaft(s) where applicable. (Detector must be accessible from outside the hoistway)
- Provide heat detector for sprinkler(s) at the top of shaft(s), within 24″ of each head. (Detector must be accessible from outside the hoistway)
- Provide audible/visual smoke annunciator panel, location per Fire Authority.
- Patch holes in hoistway to provide fire rated enclosure
- Cut walls for installation of new fixtures (if required by elevator contractor, though minimal cutting is usually required)
- Patch/redecorate walls after installation of new fixtures.
- Provide NEMA 4 guarded light and switch in each pit (10 foot candles).
- Provide 110VAC GFCI protected outlet in pit
- Provide metal ladder extending 42″ above floor level at each entrance to pit
- Provide 110VAC outlet to pit sump pump (if present) (non-GFI)
- Provide metal cover on sump hole – securely attached
- Replace sump pump (if present).
- Drains and sump pumps, where provided shall comply with the applicable plumbing code and they shall be provided with a positive means to prevent water, gases and odors from entering the hoistway. Adding a sump pump is not required unless the elevator was installed with a State Serial # 97463 and up.
- All protruding surfaces into hoistway shall not exceed 4 inches, not be beveled less than 75deg. and provide no interference with the elevator equipment.
- All stop switches and pit lights should be located 18 inches above the landing floor and adjacent to the pit ladder.
- Conduit runs (3”) from machine room(s) to location of remote emergency status panels with pull stations located at every 100 feet and 90 deg. bend. (if existing non retainable).

- Security/TV/Camera provisions MAY be selected by owner and thus result in installation of such equipment by a contractor other than the elevator company. Elevator company involvement will be on a time and material basis.

EMERGENCY POWER (conform to below requirement)

1) If elevator(s) are supplied with Emergency Power, today's microprocessor equipment requires a dual 30 second notification signal. This "pre" and "post" signal of emergency power transfer will allow the elevator to travel to the nearest floor and open the doors and avoid equipment damage. Most older ATS's will require full replacement.

2) CODE's of other building devices may be affected by this upgrade and should be addressed to ensure 100% compliance in all building systems. (ie fire pump may require code upgrades once upgrades to ATS are done)

3) ASME A17.1 2004a requirements:

2.27.2 Emergency or Standby Power System Where an emergency or standby power system is provided to operate an elevator in the event of normal power supply failure, the requirements of 2.27.2.1 through 2.27.2.5 shall be complied with.

2.27.2.1 The emergency or standby power system shall be capable of operating the elevator(s) with rated load (see 2.16.8), at least one at a time, unless otherwise required by the building code.

2.27.2.2 The transfer between the normal and the emergency or standby power system shall be automatic.

2.27.2.3 An illuminated signal marked "ELEVATOR EMERGENCY POWER" shall be provided in the elevator lobby at the designated level to indicate that the normal power supply has failed and the emergency or standby power is in effect.

2.27.2.4 Where the emergency or standby power system is not capable of operating all elevators simultaneously, requirements of 2.27.2.4.1 through 2.27.2.4.5 shall be conformed to. The selector switch(es) should normally be placed in the "AUTO" position.

2.27.2.4.1 A selector switch(es) marked "ELEVATOR EMERGENCY POWER" in red lettering a minimum of 5 mm (0.25 in.) in height, which is key-operated or under a locked cover (see 2.27.8), shall be provided to permit the selection of the elevator(s) to operate on the emergency or standby power system. The key shall be Group 3 Security (see 8.1).

2.27.2.4.2 The selector switch(es) positions shall be marked to correspond with the elevator identification number (see 2.29) and a position marked "AUTO."

2.27.2.4.3 The selector switch(es) shall be located at the designated level in view of all elevator entrances, or if located elsewhere means shall be provided adjacent to the selector switch(es) to indicate that the elevator is at the designated level with the doors in the normally open position.

2.27.2.4.4 When the selector switch is in the "AUTO" position, automatic power selection shall be provided, which will return each elevator that is not on designated attendant operation, inspection operation or Phase II In-Car Emergency Operation, one or more at a time, to the recall level. Failure of the selected car to move shall cause power to be transferred to another car.

2.27.2.4.5 The selector switch(es) positions corresponding to the elevator identification numbers (see2.29.1) shall override the automatic power selection. Operation of the selector switch(es) shall not cause power to be removed from any elevator until the elevator is stopped.

2.27.2.5 When the emergency or standby power system is designed to operate only one elevator at a time, the energy absorption means (if required) shall be permitted to be located on the supply side of the elevator power disconnecting means, provided all other requirements of 2.26.10 are conformed to when operating any of the elevators the power might serve. Other building loads, such as power and lights that can be supplied by the emergency or standby power system, shall not be considered as a means of absorbing the regenerated energy for the purposes of conforming to 2.26.10, unless such loads are normally powered by the emergency or standby power system.

END OF SECTION 01900

SECTION 02030 - ALTERATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Demolition and removal of other items designated to be removed, moved, or replaced.
2. Patching and repairs.
3. Interior and exterior construction barriers.

1.2 DESCRIPTION OF REQUIREMENTS

A. Coordinate the Work of trades and schedule elements of alterations and renovation work by procedures and methods to expedite completion of the work.

B. In addition to demolition specifically shown on Drawings, cut, move, relocate, or remove items as necessary to provide access to or allow alterations and new work to proceed. These items may include, but are not limited to the following:

1. Removal of existing finishes, casework, brick, framing and electrical systems required for complete work.
2. Repair or removal of hazardous or unsanitary conditions.
3. Removal of abandoned items and items serving no useful purpose, such as abandoned fixtures, conduit, wiring, and electrical and mechanical devices.
4. Cleaning of surfaces and removal of surface finishes as needed to install new work and finishes.

D. Patch, repair and refinish existing items to remain, to the specified condition for each material, with a neat and workmanlike transition to adjacent new items of construction.

E. Definitions:

1. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
2. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's Representative's designated storage area.
3. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
4. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.3 SEQUENCE AND SCHEDULES

A. Schedule Work in the sequences (phases) and within times specified as established by Owner's Representative.

B. Submit separate detailed sub-schedule for alterations work, coordinated with the Construction Schedule. Show:

1. Each stage of work, and date of completion.
2. Date of substantial completion.
3. Trades and subcontractors employed in each stage.

C. Submit schedules as indicated under Part 1.06 of this Section.

1.4 ALTERATIONS, CUTTING, AND PROTECTION

A. Assign the work of moving, removal, cutting, and patching to trades qualified to perform the work in a manner to cause least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum necessary and in a manner to avoid damage of adjacent work.

C. Perform cutting and patching as specified in Division 1.

D. Protect from damage existing finishes, equipment and adjacent work which is scheduled to remain.

E. Provide temporary enclosures as required to separate work areas from existing areas occupied by Owner's Representative or Property Tenants.

1.5 SALVAGED MATERIALS AND MATERIALS OWNERSHIP

A. Salvage sufficient quantities of cut or removed material to replace damaged work of existing construction, when material is not readily obtainable on current market.

1. Store salvage items in a dry, secure place on site.
2. Do not incorporate salvaged or used material in new construction except where indicated on Drawings or when permitted by Architect and Owner's Representative.

B. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be immediately removed from the site with further disposition at the Contractor's option.

1.6 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections, for information only, unless otherwise indicated.

B. Proposed dust-control measures.

C. Proposed noise-control measures.

D. Schedule of selective demolition activities indicating the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
2. Interruption of utility services.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Detailed sequence of selective demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed areas within the construction limits.
6. Locations of temporary partitions and means of egress.

E. Inventory of items to be removed and salvaged.

F. Inventory of items to be removed by Owner's Representative.

G. Proposed methods, locations, and phasing of Exterior and Interior construction barriers.

1.7 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Pre-demolition Conference: Conduct conference at Project site to comply with preinstallation conference requirements of Division I Section "Project Meetings."

1.8 PROJECT CONDITIONS

A. Owner and Property Tenants will occupy portions of the building immediately adjacent to selective demolition area. Conduct selective demolition so that operations will not be disrupted. Provide not less than 72 hours' notice to Owner's Representative of activities that will affect Owner or Property operations.

B. Owner and Owner's Representative assumes no responsibility for actual condition of buildings to be selectively demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner's Representative, as far as practical.

C. Protection: Use all means necessary to protect existing objects designated to remain, including structures, utilities, flora, and trees. In the event of damage of existing objects designated to remain, repair or replace objects to satisfaction of Owner.

D. Asbestos: It is expected that asbestos will not be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the Architect and the Owner's Representative.

E. Existing electrical conduit and piping: Prior to demolition identify all conduit (circuits) and piping. Reroute conduit required to remain functional during demolition. Reroute conduit for systems operating beyond limits of work. Notify and advise Owner's Representative of any interruption of electrical, mechanical, and fire sprinkler resulting from the rerouting of systems.

1.9 WARRANTY

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

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING, EXTENDING, AND MATCHING

A. Provide same products or types of construction as that in existing structure, as needed to patch, extend, or match existing work.

1. Generally, Contract Documents will not define products or standards of workmanship present in existing construction. Determine products by inspection and any necessary testing. Determine workmanship by use of the existing as a sample of comparison.

B. The presence of a product, finish, or type of construction requires that patching, extending, or matching shall be performed to extent necessary to make Work complete and consistent to identical or better standards of quality.

2.2 CONSTRUCTION BARRIERS

A. Provide PAINTED PLYWOOD AND WOOD FRAME construction barriers as required to separate construction activities from Property Tenants. PROVIDE LOCAKBLE, SECURE ACCESS DOORS.

B. Provide necessary materials for protective barriers, partitions, and other safety items.

C. Except for those items and materials to be salvaged and turned over to Owner's Representative or to be reused, immediately remove demolition items from site.

2.3 NOT PERMITTED

A. Burning on-site

B. Explosives

PART 3 - EXECUTION

3.1 GENERAL

A. Job site inspection/examination.

1. Prior to commencing of any work, inspect the entire job site and all portions of the work designated to be removed and protected, and the limits of demolition.
2. Locate all existing active utilities and provide for their protection. Verify that utilities have been disconnected and capped.

B. Clarification:
1. The Drawings do not indicate all objects existing on the job site.
2. Before commencing work, verify with Owner which objects are to be removed and which objects are to be preserved.

C. Scheduling: Avoid interference with the use of, and passage to and from, adjacent buildings and facilities. Perform demolition work to cause as little inconvenience to adjacent occupied guest areas as possible.

D. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

E. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect and Owner's Representative.

F. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.

G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

H. Refer to 1.02 "Description of Requirements" of this Section for additional items.

3.2 PREPARATION AND PROTECTION

A. Work to remain in place: protect from damage.

B. Items to be salvaged: Remove carefully, by trades normally installing same, to avoid all damage. Deliver such items to Owner's Representative.

C. Conduct demolition operations to prevent injury to people and damage to adjacent buildings, landscaping, and facilities to remain. Ensure safe passage of people around selective demolition area.

D. Provide, erect and maintain temporary partitions, barriers, guardrails, and other safety items as required by regulatory agencies and as necessary to protect workers and guests, or as necessary to protect materials, surfaces, finishes and other items to remain. Barriers are to conform to Owner Representative's standards.

1. Completely remove all temporary barriers and safety items as scheduled immediately after completion of work. When directed by Owner's Representative.

E. During removal of existing materials and systems, provide adequate and proper protection from falling objects and debris over entrances and around areas established to be kept open during designated hours.

F. During removal of all structural and related elements, provide necessary temporary supports and equipment required to maintain material and building stability without settlement or deflection.

3.3 PERFORMANCE

A. Workmanship: Demolition and removal of materials shall be by skilled and properly equipped workers. Materials and equipment to be salvaged shall be removed under the direction of or by the craftsperson who would normally install these items.

B. Existing conditions: Remove existing conditions and installations obstructing new Work, even though not shown or described completely.

C. Remove existing construction only to the extent necessary for the proper installation of new construction and junction with existing Work.

D. Reroute and extend utility lines and electrical systems as indicated on Drawings, or, if not shown, as required and directed by Owner's Representative and Architect.

E. Patch and extend existing work using skilled mechanics who are capable of matching existing quality of workmanship. Quality of patched or extended work shall be not less than specified for new work.

3.4 DAMAGED SURFACES

A. Patch or replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections with matching materials.

1. Provide adequate support of substrate prior to patching the finish.
2. Refinish patched portions of coated surfaces in a manner to produce a uniform texture over entire surface.
3. Where existing finish surface can not be matched, refinish entire surface to nearest intersection.

3.5 TRANSITION FROM EXISTING TO NEW WORK

A. When new work abuts or finishes flush with existing work, make a smooth and workmanlike transition. Patched work shall match existing adjacent work in texture and appearance so that the patch or transition is invisible at a distance of five feet.
1. When finished surfaces are cut in such a way that a smooth transition with new work is

not possible, terminate existing surface in a neat manner along a straight line at a natural line of division and provide trim appropriate to finished surface.

3.6 UTILITY SERVICES

A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner's Representative and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner's Representative and to governing authorities.

a. Provide not less than 72 hours' notice to Owner's representative if shutdown of service is required during changeover.

3.7 PREPARATION

A. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities I without permission from Property Owner or Owner's Representative and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

B. Conduct demolition operations to prevent injury to people and damage to adjacent surfaces and finishes. Ensure safe passage of people around selective demolition area.

C. Dust control: Use all means necessary to prevent spread of dust during performance of work of this Section. Thoroughly moisten all surfaces at such frequency as will allay the dust at all times. If grinding or pressure hydro or sand blasting is utilized, special precautions must be taken to control dust or over-spray and splash.

D. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building or building components to be selectively demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.8 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and area.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

D. Check, clean or replace as required all air conditioning filters within limits of demolition daily. Check, clean or replace as required all air conditioning filters beyond limits of demolition weekly.

END OF SECTION 02030

SECTION 02220 - DEMOLITION

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. Demolition and removal.
2. Salvaging items for reuse by Owner.

B. Related Sections include the following:

1. Section 01010 "Summary of Work" for use of the premises and phasing requirements.
2. Section 01500 "Construction Facilities and Temporary Controls" for temporary construction, protection facilities, and environmental-protection measures for building demolition operations.
3. Section 01524 "Construction Waste Management" for recycling and disposal of nonhazardous demolition wastes.
4. Division 16 Sections for demolishing or relocating site electrical items.

1.3 DEFINITIONS

A. Demolish: Completely remove and legally dispose of off-site.

B. Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.

C. Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. Include fasteners or brackets needed for reattachment elsewhere.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 SUBMITTALS

A. Proposed Protection Measures: Submit informational report that indicates the measures proposed for protecting individuals and property. Indicate proposed locations and construction of barriers.

1. Areas adjacent to Areas of Work: Detail special measures proposed to protect items to remain.

B. Schedule of Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity and in each area.
2. Temporary interruption of utility services.
3. Shutoff and capping or re-routing of utility services.

C. Demolition Plans: Drawings indicating the following:

1. Locations of temporary protection and means of egress for adjacent occupied areas.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces of roof and site that might be misconstrued as damage caused by demolition operations. Comply with Division 1 Section "Photographic Documentation." Submit before the Work begins.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI A10.6 and NFPA 241.

C. Predemolition Conference: Conduct conference at Project site to comply with requirements in Section 01040 "Project Procedures" Review methods and procedures related to demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.
6. Review procedures for protection of adjacent items.
7. Review items to be salvaged and returned to Owner.

1.7 PROJECT CONDITIONS

A. Areas immediately adjacent to demolition work areas will be occupied. Conduct demolition so operations of occupied building will not be disrupted.

1. Provide not less than one week notice of activities that will affect operations of occupied areas.
2. Maintain access to existing walkways, exits, and other facilities used by occupants of the building.

a. Do not close or obstruct walkways, exits, or other facilities used by occupants of the building without written permission from authorities having jurisdiction.

B. Owner assumes no responsibility for building and structure to be demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Hazardous Materials: It is not expected that hazardous 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.

D. On-site storage or sale of removed items or materials is not permitted.

1.8 COORDINATION

A. Arrange demolition schedule so as not to interfere with adjacent occupied areas of the building.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Review Project Conditions.

B. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations. Comply with Division 1 Section "Photographic Documentation."

3.2 PREPARATION

A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving each area to be demolished.

1. If removal, relocation, or abandonment of utility services will affect adjacent occupied areas, then provide temporary utilities that bypass the items to be demolished and maintain continuity of service to other areas of the building.

B. Existing Utilities: Refer to Division 16 Section for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

C. Salvaged Items: Comply with the following:

1. Clean salvaged items of dirt and demolition debris.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area provided by the Owner.

3.3 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from the existing buildings.

B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.

1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.

a. Provide at least one week notice to occupants of affected area if shutdown of service is required during changeover.

C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 01500 "Construction Facilities and Temporary Controls."

1. Protect adjacent areas from damage due to demolition activities.
2. Protect existing site improvements, appurtenances, and landscaping to remain.
3. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent areas and facilities to remain.
4. Provide protection to ensure safe passage of people around demolition area and to and from occupied portions of adjacent areas.
5. Protect, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.

6. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.4 DEMOLITION, GENERAL

A. General: Demolish indicated existing buildings completely. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
2. Maintain fire watch during and for at least one (1) hour after flame cutting operations.
3. Maintain adequate ventilation when using cutting torches.
4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

C. Explosives: Use of explosives is not permitted.

3.5 DEMOLITION BY MECHANICAL MEANS

A. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Salvage: Items to be salvaged are indicated on Drawings.

C. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

1. Piping: Disconnect piping at unions, flanges, valves, or fittings.
2. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

3.6 REPAIRS

A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn demolished materials.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

END OF SECTION 02220

SECTION 07270 - FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes firestopping for the following:

1. Penetrations in fire-resistance-rated walls and partitions.
2. Penetrations in fire-resistance-rated horizontal assemblies.
3. Penetrations in smoke barriers.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. For the following constructions, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original and new fire-resistance rating of assembly penetrated.
1. Fire resistance rated walls, including partitions, with fire-protection-rated openings.
2. Fire-resistance-rated horizontal assemblies.

B. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as determined per ASTM E 119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.

C. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.

1. For floor penetrations with annular spaces exceeding 4 inches or more in width and exposed to possible loading and traffic, provide firestop systems capable of supporting the floor loads involved either by installing floor plates or by other means.

D. For firestopping exposed to view, provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

1. Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and are nontoxic to building occupants.

C. Shop drawings detailing materials, installation methods, and relationships to adjoining construction for each through-penetration firestop system, and each kind of construction condition penetrated and kind of penetrating item. Include firestop design designation of qualified testing and inspecting agency evidencing compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop configuration for construction and penetrating items.
2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration approved by firestopping manufacturer's fire protection engineer with modifications marked.

D. Product certificates signed by manufacturers of firestopping products certifying that their products comply with specified requirements.

E. Product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products.

F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per ASTM E 814 under conditions where positive furnace pressure differential of at least 0.01 inch of water (2.5 Pa) is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:

a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL in their "Fire Resistance Directory," by Warnock Hersey, or by another qualified testing and inspecting agency.

3. Fire-resistive joint sealant systems are identical to those tested for fire-response characteristics per ASTM E 119 under conditions where the positive furnace pressure differential is at least 0.01 inch of water (2.5 Pa), as measured 0.78 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
   a. Fire-Resistance Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
   b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspection agency.

B. Information on drawings referring to specific design designations of through-penetration firestop systems is intended to establish requirements for performance based on conditions that are expected to exist during installation. Any changes in conditions and designated systems require the Architect's prior approval. Submit documentation showing that the performance of proposed substitutions equals or exceeds that of the systems they would replace and are acceptable to authorities having jurisdiction.

C. Installer Qualifications: Engage an experienced Installer who has completed firestopping that is similar in material, design, and extent to that indicated for Project and that has performed successfully.

D. Installer Qualifications: Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.

E. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.

F. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

G. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

H. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section 01200 Project Meetings.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.

B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilation: Ventilate firestopping per firestopping manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include or approved equal :

1. Specified Technologies Inc..
2. Hilti, Inc.
3. 3M Fire Protection Products.
4. A/D Fire Protection Systems Inc.

2.2 FIRESTOPPING, GENERAL

A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.

B. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" article in Part 1. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:

1. Permanent forming/damming/backing materials including the following:
   a. Semirefractory fiber (mineral wool) insulation.
   b. Ceramic fiber.
   c. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
   d. Fire-rated formboard.
   e. Joint fillers for joint sealants.
2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

C. Applications: Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

2.3 FILL MATERIALS FOR THROUGH-PENETRATION FIRESTOP SYSTEMS

A. Ceramic-Fiber and Mastic Coating: Ceramic fibers in bulk form formulated for use with mastic coating, and ceramic fiber manufacturer's mastic coating.

B. Ceramic-Fiber Sealant: Single-component formulation of ceramic fibers and inorganic binders.

C. Endothermic, Latex Compound Sealant: Single-component, endothermic, latex formulation.

D. Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce a paintable compound, passing ASTM E 136, with flame-spread and smoke-developed ratings of zero per ASTM E 84.

E. Mortar: Prepackaged dry mix composed of a blend of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogenous mortar.

F. Silicone Foam: Two-component, silicone-based liquid elastomer that, when mixed, expands and cures in place to produce a flexible, nonshrinking foam.

G. Silicone Sealant: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant of grade indicated below:

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping/ gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
2. Grade for Horizontal Surfaces: Pourable (self-leveling) grade for openings in floors and other horizontal surfaces.
3. Grade for Vertical Surfaces: Nonsag grade for openings in vertical and other surfaces.

4. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping/ gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
5. Grade for Horizontal Surfaces: Pourable (self-leveling) grade for openings in floors and other horizontal surfaces.
6. Grade for Vertical Surfaces: Nonsag grade for openings in vertical and other surfaces.

H. Available Products: Subject to compliance with requirements, products that may be incorporated M. Products: Subject to compliance with requirements, provide one of the following:

1. Products bearing certification for use in assembly noted.

2.4 FIRE-RESISTIVE ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that complies with ASTM C 920 requirements, including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants.

B. Sealant Colors: Provide color of exposed joint sealants to comply with the following:

1. Provide selections made by Owner from manufacturer's full range of standard colors for products of type indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:

1. Remove all foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.

2. Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form release agents from concrete.

B. Priming: Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.

3.3 INSTALLING THROUGH-PENETRATION FIRESTOPS

A. General: Comply with the "System Performance Requirements" article in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.

B. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:

1. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 INSTALLING FIRE-RESISTIVE JOINT SEALANTS

A. General: Comply with the sealant manufacturer's installation instructions and drawings pertaining to products and applications indicated.

B. Install joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.

C. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint width that optimum sealant movement capability. Install sealants at the same time joint fillers are installed.

D. Tool nonsag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration indicated or required to produce fire-resistance rating, as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

3.5 CLEANING

A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.

B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with specified requirements.

SCHEDULE FOLLOWS

3.6 FIRESTOP SCHEDULE

A. Where UL-classified systems are indicated, they refer to the alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHEZ.

PENETRATION DESCRIPTION	UL CLASSIFIED SYSTEM	UL NUMBER	FILL MATERIAL
Firestop Systems with No Penetrating Items	C-AJ- C-BJ- F-A- W-J- W-L-	0001-0999	Latex sealant Silicone sealant Mortar
Firestop Systems for Metallic Pipes, Conduit, or Tubing	C-AJ- C-BJ- C-BK F-A- F-B- F-C- W-J- W-K- W-L-	1001-1999	Latex sealant Silicone sealant Mortar
Firestop Systems for Nonmetallic Pipe, Conduit, or Tubing	C-AJ- C-BJ- F-A- F-B- F-C- W-J- W-L-	2001-2999	Latex sealant Silicone sealant Firestop device
Firestop Systems for Electrical Cables	C-AJ- C-BJ- F-A- F-B- F-C- W-J- W-L-	3001-3999	Latex sealant Silicone sealant Silicone foam
Firestop Systems for Miscellaneous Electrical Penetrants	C-AJ- F-A- W-L-	6001-6999	Latex sealant Mortar
Firestop Systems for Groupings of Penetrations	C-AJ- C-BJ- F-A F-C- W-J- W-L-	8001-8999	Latex sealant Mortar Firestop device .

END OF SECTION 07270

SECTION 07550 - MODIFIED BITUMEN MEMBRANE

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Preparation of Substrate to Receive Roofing Materials

B. Roof Insulation Application to Prepared Substrate

C. Roof Membrane Application

D. Roof Flashing Application

E. Incorporation of Sheet Metal Flashing Components and Roofing Accessories into the Roof System

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Sheet Metal Flashing and Trim

B. Sheet Metal Roofing Specialties

1.04 REFERENCE STANDARDS

References in these specifications to standards, test methods and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout this specification section.

ASTM	American Society for Testing and Materials Philadelphia, PA
FM	Factory Mutual Engineering and Research Norwood, MA
NRCA	National Roofing Contractors Association Rosemont, IL
OSHA	Occupational Safety and Health Administration Washington, DC
SMACNA	Sheet Metal and Air Conditioning Contractors National Association Chantilly, VA
UL	Underwriters Laboratories Northbrook, IL

1.05 DESCRIPTION OF WORK
The basic work descriptions required in this specification are referenced below.

MAIN ROOF

Project Type: Tear-off Specification #: 2030 CBT

Deck: Existing Lightweight insulating concrete Slope: Existing 1/4 inch

Base Sheet: Parabase FS , mechanically attached

Roof System: Paradiene 20 TG, torch applied;

Paradiene 30 FR TG, torch applied.

Flashing System: Veral Aluminum, torch applied.

EQUIPMENT AREA

Project Type: Tear-off Specification #: 2030 IT

Deck: Existing Lightweight insulating concrete Slope: Existing 1/4 inch

Base Sheet: Parabase FS , mechanically attached

Roof System: Paradiene 20 TG P, torch applied;

Parapro Roof Membrane System.

Flashing System: Parapro 123 Flashing System.

1.06 SUBMITTALS
All submittals which do not conform to the following requirements will be rejected.

A. Submittals Prior to Contract Award:

1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.

2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee.

B. Submittals Prior to Project Close-out:

1. Certificate Of Analysis from the testing laboratory of the primary roofing materials manufacturer, confirming the physical and mechanical properties of the roofing membrane components. Testing shall be in accordance with the parameters published in ASTM D 5147

and ASTM D 7051 and indicate Quality Assurance/Quality Control data as required to meet the specified properties. A separate Certificate Of Analysis for each production run of material shall indicate the following information:

a) Material type
b) Lot number
c) Production date
d) Dimensions and Mass (indicate the lowest values recorded during the production run);
   - Roll length
   - Roll width
   - Selvage width
   - Total thickness
   - Thickness at selvage (coating thickness)
   - Weight
e) Physical and Mechanical Properties;
   - Low temperature flexibility
   - Peak load
   - Ultimate Elongation
   - Dimensional stability
   - Compound Stability
   - Granule embedment
   - Resistance to thermal shock (foil faced products)

2. Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

1.07 QUALITY ASSURANCE

A. Acceptable Products: Primary roofing products, including each type of sheet, all manufactured in the United States, shall be supplied by a single manufacturer which has been successfully producing the specified types of primary products for not less than 10 years.

B. Product Quality Assurance Program: Primary roofing materials shall be manufactured under a quality management system that is monitored regularly by a third party auditor under the ISO 9001 audit process. A certificate of analysis for reporting/confirming the tested values of the actual material being supplied for the project will be required prior to project close-out.

C. Agency Approvals: The proposed roof system shall conform to the following requirements. No other testing agency approvals will be accepted.

   1. Underwriters Laboratories Class A acceptance of the proposed roofing system (including mopping asphalt or cold adhesive) without additional requirements for gravel or coatings.

D. Acceptable Contractor: Contractor shall have a minimum of 2 years experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products.

E. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractor's Association, amended to include the acceptance of a phased roof system installation.

F. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

G. Manufacturer Requirements: Ensure that the primary roofing materials manufacturer provides direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conducts a final inspection upon successful completion of the project.

1.08 PRODUCT DELIVERY STORAGE AND HANDLING

A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage: Store materials out of direct exposure to the elements on pallets placed over clean, flat and dry surfaces. Storage of pallets over dirt, grass-covered ground or newly placed concrete may result in upward moisture transpiration and contamination of product. Store rolls of roofing on end. For roof-top storage, avoid overloading of deck and building structure. Factory packaging is not intended for job site protection. Slit factory packaging immediately upon arrival at the job site to prevent build-up of condensation and cover materials using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings shall not be used. Store flammable or temperature sensitive materials away from open flame, ignition sources or excessive heat.

C. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Handle rolled goods to prevent damage to edges or ends.

D. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, removed and replaced at the Contractor's expense.

1.09 PROJECT/SITE CONDITIONS

A. Requirements Prior to Job Start

1. Notification: Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

2. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

3. Safety: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

B. Environmental Requirements

1. Precipitation: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.

2. Temperature Restrictions – self-adhesive sheets: The minimum required substrate temperature at point of application is 60°F (15°C). Maintain a minimum roof membrane material temperature above 60°F (15°C). In low temperature conditions, materials should be kept warm prior to application. Suspend application in situations where the self-adhered base ply cannot be kept at temperatures allowing for proper adhesion.

3. Temperature Restrictions – PMMA-based Materials: Do not apply catalyzed resin materials if there is a threat of inclement weather. Follow the resin manufacturer's specifications for minimum and maximum ambient, material and substrate temperatures. Do not apply catalyzed resin materials unless temperatures fall within the resin manufacturer's published range.

C. Protection Requirements

1. Membrane Protection: Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.

2. Torch Safety: Crew members handling torches shall be trained by an Authorized Certified Roofing Torch Applicator (CERTA) Trainer, be certified according to CERTA torch safety guidelines as published by the National Roofing Contractor's Association (NRCA), and follow torch safety practices as required by the contractor's insurance carrier. Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas during roof construction activity, and for the minimum period required by CERTA guidelines after roofing material application has been suspended for the day.

3. Limited Access: Prevent access by the public to materials, tools and equipment during the course of the project.

4. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.

5. Site Condition: Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.

1.10 GUARANTEE/WARRANTY

A. Roof Membrane Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the Manufacturer's 20 year labor and materials membrane guarantee. The guarantee shall be a term type, without deductibles or limitations on coverage amount.

> Siplast 20 Year Roof Membrane Guarantee

B. Roof Membrane Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's 20 year labor and materials membrane guarantee. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and shall be issued at no additional cost to the Owner. This guarantee shall not exclude random areas of ponding from coverage.

> Siplast 20 year Parapro Roof Membrane Guarantee

PART 2 PRODUCTS

2.01 DESCRIPTION OF SYSTEMS

A. Roofing Membrane Assembly (Main Roof): A roof membrane assembly consisting of two plies of a prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane, applied over a prepared substrate. Reinforcement mats shall be impregnated/saturated and coated each side with SBS modified bitumen blend and coated one side with a torch grade SBS bitumen blend adhesive layer. The adhesive layer shall be manufactured using a process that embosses the surface with a grooved pattern to provide optimum burn-off of the plastic film and to maximize application rates. The cross sectional area of the sheet material shall contain no oxidized or non-SBS modified bitumen. The roof system shall pass 500 cycles of ASTM D 5849 Resistance to Cyclic Joint Displacement (fatigue) at 14°F (-10°C). Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles. The roof system shall pass 200 cycles of ASTM D 5849 after heat conditioning performed in accordance with ASTM D 5147. The assembly shall possess waterproofing capability, such that a phased roof application, with only the modified bitumen base ply in place, can be achieved for prolonged periods of time without detriment to the watertight integrity of the entire roof system.

> Siplast Paradiene 20 TG/30 FR TG torchable roof system or approved equal.

1. Modified Bitumen Base and Stripping Ply

   a) Thickness (avg): 114 mils (2.9 mm) (ASTM D 5147)
   b) Thickness (min): 110 mils (2.8 mm) (ASTM D 5147)
   c) Weight (min per 100 ft² of coverage): 76 lb (3.7 kg/m²)
   d) Maximum filler content in elastomeric blend: 35% by weight
   e) Low temperature flexibility @ -15ºF (-26ºC): PASS (ASTM D 5147)
   f) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
   g) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
   h) Ultimate Elongation (avg.) @ 73ºF (23ºC): 50% (ASTM D 5147)
   i) Dimensional Stability (max): 0.1% (ASTM D 5147)
   j) Compound Stability (min): 250ºF (121ºC) (ASTM D 5147)
   k) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
   l) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria

> Siplast Paradiene 20 - torchable grade or approved equal.

2. Modified Bitumen Finish Ply

   a) Thickness (avg): 138 mils (3.5 mm) (ASTM D 5147)
   b) Thickness at selvage (coating thickness) (avg): 118 mils (3.0 mm) (ASTM D 5147)
   c) Thickness at selvage (coating thickness) (min): 114 mils (2.9 mm) (ASTM D 5147)
   d) Weight (min per 100 ft² of coverage): 112 lb (5.4 kg/m²)
   e) Maximum filler content in elastomeric blend: 35% by weight
   f) Low temperature flexibility @ -15ºF (-26ºC): PASS (ASTM D 5147)
   g) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
   h) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
   i) Ultimate Elongation (avg.) @ 73ºF (23ºC): 55% (ASTM D 5147)
   j) Dimensional Stability (max): 0.1% (ASTM D 5147)
   k) Compound Stability (min): 250ºF (121º C) (ASTM D 5147)
   l) Granule Embedment (max loss): 2.0 grams per sample (ASTM D 5147)
   m) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
   n) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
   o) Surfacing: ceramic granules

> Siplast Paradiene 30 FR - torchable grade or approved equal.

B. Roofing Membrane Assembly (Equipment Area): A roof membrane assembly consisting of one ply of a prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane applied over a prepared substrate, covered with a liquid applied, flexible, polymethylmethacrylate (PMMA) based monolithic membrane formed by the combination of liquid PMMA resin and fleece fabric. The reinforcement mats in the SBS ply shall be impregnated/saturated and coated each side with an SBS modified bitumen blend. The cross sectional area of the SBS sheet material shall contain no oxidized or non-SBS modified bitumen. The adhesive layer of torch-grade membranes shall be manufactured using a process

that embosses the surface with a grooved pattern to provide optimum burn-off of the plastic film and to maximize application rates. The top surface of the modified bitumen ply sheet shall be coated with a white acrylic coating to enhance resin bond and to minimize surface temperatures. The composite roof system, including SBS modified bitumen ply sheet and reinforced PMMA, shall pass 500 cycles of ASTM D 5849 Resistance to Cyclic Joint Displacement (fatigue) at 14F (-10C). Passing results shall show no signs of membrane cracking or interply delamination after 500 cycles. The roof system shall pass 200 cycles of ASTM D 5849 after heat conditioning performed in accordance with ASTM D 5147.

> Siplast Parapro roof system with Paradiene 20 TG P base ply or approved equal.

1. Modified Bitumen Ply Sheet

   a) Thickness (avg): 114 mils (2.9 mm) (ASTM D 5147)
   b) Thickness (min): 110 mils (2.8 mm) (ASTM D 5147)
   c) Weight (min per 100 ft² of coverage): 73 lb (3.6 kg/m²)
   d) Maximum filler content in elastomeric blend: 35% by weight
   e) Low temperature flexibility @ -15º F (-26º C) - PASS (ASTM D 5147)
   f) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
   g) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
   h) Ultimate Elongation (avg.) @ 73ºF (23ºC): 50% (ASTM D 5147)
   i) Dimensional Stability (max): 0.1% (ASTM D 5147)
   j) Compound Stability (min): 250ºF (121ºC) (ASTM D 5147)
   k) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
   l) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
   m) Top Surfacing: factory applied acrylic coating

> Paradiene 20 TG P, by Siplast; Irving, TX or approved equal.

2. Self-Adhesive Modified Bitumen Flashing Reinforcing Sheet

   a) Thickness (avg): 102 mils (2.6 mm) (ASTM D 5147)
   b) Thickness (min): 98 mils (2.5 mm) (ASTM D 5147)
   c) Weight (min per 100 ft² of coverage): 69 lb (3.4 kg/m²)
   d) Maximum filler content in elastomeric blend: 35% by weight
   e) Low temperature flexibility @ -15º F (-26º C) - PASS (ASTM D 5147)
   f) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
   g) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
   h) Ultimate Elongation (avg.) @ 73ºF (23ºC): 50% (ASTM D 5147)
   i) Dimensional Stability (max): 0.1% (ASTM D 5147)
   j) Compound Stability (min - sheet): 250ºF (121ºC) (ASTM D 5147)
   k) Compound Stability (min – adhesive coating): 212ºF (100ºC) (ASTM D 5147)
   l) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
   m) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
   n) Back Surfacing: polyolefin release film
   o) Top Surfacing: factory applied acrylic coating

> Paradiene 20 SA P by Siplast; Irving, TX or approved equal.

3. Resin for Field Membrane Construction: A flexible, polymethylmethacrylate (PMMA) based resin for use in combination with fleece fabric to form a monolithic, reinforced roofing membrane. The values listed below are based upon a 90 mil (2.3 mm) resin thickness.

   a) Thickness (avg): 90 mils (2.3 mm) at 0.31 kg/ft² (3.3 kg/m²) coverage rate (ASTM D 5147, section 5).
   b) Weight (min per 100 ft² of coverage): 68.4 lb (3.3 kg/m²)
   c) Peak Load (avg) @ 73°F (23ºC): 70 lbf/in (12.3 kN/m) (ASTM D 5147 section 6)
   d) Peak Load (avg) @ 73°F (23ºC): 90 lbf/inch (15.8 kN/m) (ASTM D 412, dumbbell)
   e) Elongation at Peak Load (avg) @ 73°F: 35% (ASTM D 5147, section 6)
   f) Elongation at Peak Load (avg) @ 73°F: 35% (ASTM D 412, dumbbell)
   g) Shore A Hardness (avg): 81 (ASTM D 2240)
   h) Water Absorption, Method I (24h @ 73°F): 0.8% (ASTM D 570)
   i) Water Absorption, Method II (48h @ 122°F): 1.2% (ASTM D 570)
   j) Low temperature flexibility @ 23 F (-5°C): PASS (ASTM D 5147, section 11)
   k) Dimensional Stability (max): 0.15% (ASTM D 5147, section 10)
   l) Tear Strength (avg): 90 lbf (0.4 kN) (ASTM D 5147, section 7)
   m) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)

> Parapro Roof Resin by Siplast; Irving, TX or approved equal.

4. Fleece for Membrane Reinforcement: A non-woven, 110 g/m², needle-punched polyester fabric reinforcement as supplied by the membrane system manufacturer.

> Pro Fleece by Siplast; Irving, TX or approved equal.

C. Flashing Membrane Assembly: A flashing membrane assembly consisting of a prefabricated, reinforced, Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane with a continuous, channel-embossed metal-foil surfacing. The finish ply shall conform to ASTM D 6298 and the following physical and mechanical property requirements.

> Siplast Veral flashing system, aluminum finish or approved equal.

1. Cant Backing Sheet and Flashing Reinforcing Ply

   a) Thickness (avg): 102 mils (2.6 mm) (ASTM D 5147)
   b) Thickness (min): 98 mils (2.5 mm) (ASTM D 5147)
   c) Weight (min per 100 ft² of coverage): 72 lb (3.5 kg/m²)
   d) Maximum filler content in elastomeric blend: 35% by weight
   e) Low temperature flexibility @ -15º F (-26º C) - PASS (ASTM D 5147)
   f) Peak Load (avg) @ 73ºF (23ºC): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
   g) Peak Load (avg) @ 0ºF (-18ºC): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
   h) Ultimate Elongation (avg.) @ 73ºF (23ºC): 50% (ASTM D 5147)
   i) Dimensional Stability (max): 0.1% (ASTM D 5147)
   j) Compound Stability (min - sheet): 250ºF (121ºC) (ASTM D 5147)
   k) Compound Stability (min – adhesive coating): 212ºF (100ºC) (ASTM D 5147)
   l) Approvals: UL Class listed, FM Approved (products shall bear seals of approval)

m) Reinforcement: fiberglass mat or other meeting the performance and dimensional stability criteria
n) Back Surfacing: polyolefin film

> Siplast Paradiene 20 SA or approved equal.

2. Metal-Clad Modified Bitumen Flashing Sheet

a) Thickness (avg): 142 mils (3.6 mm) (ASTM D 5147)
b) Thickness (min): 138 mils (3.5 mm) (ASTM D 5147)
c) Weight (min per 100 ft² of coverage): 92 lb (4.5 kg/m²)
d) Coating Thickness – back surface (min): 40 mils (1 mm) (ASTM D 5147)
e) Low temperature flexibility @ 0º F (-18º C): PASS (ASTM D 5147)
f) Peak Load (avg) @ 73ºF (23ºC): 85 lbf/inch (15 kN/m) (ASTM D 5147)
g) Peak Load (avg) @ 0ºF (-18ºC): 180 lbf/inch (31.7 kN/m) (ASTM D 5147)
h) Ultimate Elongation (avg) @ 73ºF (23ºC): 45% (ASTM D 5147)
i) Tear-Strength (avg): 120 lbf (0.54 kN) (ASTM D 5147)
j) Dimensional Stability (max): 0.2% (ASTM D 5147)
k) Compound Stability (min): 225ºF (107ºC) (ASTM D 5147)
l) Cyclic Thermal Shock Stability (maximum): 0.2% (ASTM D 7051)
m) Approvals: UL Approved, FM Approved (products shall bear seals of approval)
n) Reinforcement: fiberglass scrim mat or other meeting the performance and dimensional stability criteria
o) Surfacing: aluminum metal foil

> Siplast Veral Aluminum or approved equal.

D. Catalyzed Acrylic Resin Flashing System: A specialty flashing system consisting of a liquid-applied, fully reinforced, multi-component acrylic membrane installed over a prepared or primed substrate. The flashing system consists of a catalyzed acrylic resin primer, basecoat and topcoat, combined with a non-woven polyester fleece. The resin and catalyst are pre-mixed immediately prior to installation. The use of the specialty flashing system shall be specifically approved in advance by the membrane manufacturer for each application.

> Parapro 123 Flashing System by Siplast; Irving, TX or approved equal.

E. Substitute Roof Systems: The following substitute roof systems are approved for use in lieu of the specified roof system.

MANUFACTURER
Tremco
Cleveland, OH

Base Ply – HD Base
Finish Ply - Powerply FR
Flashing Sheet - Powerply FR
Stripping Ply and Flashing Reinforcing Sheet - HD Base
Adhesive – Powerply Standard Cold Adhesive

MANUFACTURER
The Garland Company
Cleveland, OH

Base Ply – HPR Torchbase
Finish Ply - Stressply Torch FR
Flashing Sheet - Stressply Torch FR
Stripping Ply and Flashing Reinforcing Sheet – HPR Torchbase

2.02 ROOFING ACCESSORIES

A. Bituminous Cutback Materials

1. Primer: An asphalt, solvent blend conforming to ASTM D 41 requirements.

> Siplast PA-1125 Asphalt Primer by Siplast; Irving, TX or approved equal.

2. Primer for Self-Adhesive Sheets: A quick drying, low-VOC, water-based, high-tack primer specifically designed to promote adhesion of roofing and waterproofing sheets to approved substrates. Primer shall meet South Coast Air Quality District and Ozone Transport Commission requirements.

> Siplast TA-119 Primer by Siplast; Irving, TX or approved equal.

3. Mastics: An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D 4586 Type II requirements.

> Siplast PA-1021 Plastic Cement by Siplast; Irving, TX or approved equal.

B. Sealant: A moisture-curing, non-slump elastomeric sealant designed for roofing applications. The sealant shall be approved by the roof membrane manufacturer for use in conjunction with the roof membrane materials. Acceptable types are as follows:

> Siplast PS-304 Elastomeric Sealant by Siplast; Irving, TX or approved equal.

C. Ceramic Granules (Base Bid): No. 11 grade specification ceramic granules of color scheme matching the granule surfacing of the finish ply.

D. Perlite Cant Strips: A cant strip composed of expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt based coating. The face of the cant shall have a nominal 4 inch dimension.

E. Fasteners

1. Base Sheet Fasteners: Base sheet fasteners shall be approved by the manufacturer of the primary roofing products. Acceptable base sheet fasteners for specific substrate types are listed below.

a) Existing Lightweight Concrete Substrates

- A single unit, precision formed, electro zinc coated steel fastener having a 2.7 inch diameter rib reinforced cap and 1.7 inch long rectangular legs, designed to expand when fully driven into the lightweight concrete. Fasteners for lightweight concrete shall meet FM Standard 4470 requirements for corrosion resistance.

> Zono-tite Fasteners by Siplast; Irving, TX or approved equal.

- A single unit, precision formed, electro zinc coated steel fastener having a 2.7 inch diameter rib reinforced cap and 1 inch long rectangular legs, designed to expand when fully driven into the lightweight concrete. Fasteners for lightweight concrete shall meet FM Standard 4470 requirements for corrosion resistance.

> NVS Fasteners by Siplast; Irving, TX or approved equal.

2. Flashing Reinforcing Sheet Fasteners for Wood/Plywood Substrates to Receive Flashing Coverage: Fasteners shall be approved by the manufacturer of the primary roofing products. Acceptable fasteners for specific substrate types are listed below.

a) Wood/Plywood Substrates

- A 12 gauge, spiral or annular threaded shank, zinc coated steel roofing fastener having a minimum 1 inch head.

> Square Cap by W.H. Maze Co.; Peru, IL
> 12 Gauge Simplex Nail by the Simplex Nail and Manufacturing Co., Americus, GA

F. Walktread: A prefabricated, puncture resistant polyester core reinforced, polymer modified bitumen sheet material topped with a ceramic-coated granule wearing surface.

1. Thickness: 0.217 in (5.5 mm)
2. Weight: 1.8 lb/ft² (8.8 kg/m²)
3. Width: 30 in (76.2 cm)

> Paratread Roof Protection Material by Siplast; Irving, TX or approved equal.

G. Resin Accessories

1. Cleaning Solution/Solvent: A clear solvent used to clean and prepare transition areas of in-place catalyzed resin to receive subsequent coats of resin and to clean substrate materials to receive resin.

> Pro Prep by Siplast; Irving, TX or approved equal.

2. Preparation Paste: A PMMA based paste used for remediation of depressions in substrate surfaces or other irregularities.

> Pro Paste Resin by Siplast; Irving, TX or approved equal.

3. Repair Mortar: A two-component, PMMA based, aggregate filled mortar used for remediation of depressions or patching concrete substrates.

> Pro Repair Mortar by Siplast; Irving, TX or approved equal.

4. Thixotropic Agent: A liquid additive used to increase the viscosity of the PMMA-based resin products, allowing the resins to be applied over sloped substrates.

> Pro Thixo by Siplast; Irving, TX or approved equal.

5. Color Finish Resin: A pigmented, polymethylmethacrylate (PMMA) based resin for use as a wearing coat over the field of the finished roof membrane and to provide a desired color finish.

> Pro Color Finish by Siplast; Irving, TX or approved equal.

6. Clear Finish Resin: A clear, flexible, polymethylmethacrylate (PMMA) based resin for use as a wearing coat over colored quartz.

> Pro Clear Finish by Siplast; Irving, TX or approved equal.

H. PMMA Primers

1. Primer for Vertical Concrete and Masonry Substrates: A fast-curing PMMA-based primer for use in vertical applications over concrete, concrete repair materials and masonry substrates.

> Pro Primer W by Siplast; Irving, TX or approved equal.

2. Primer for Wood, Plywood and Rigid Insulation Substrates: A fast-curing PMMA-based primer for use in over wood, plywood and rigid insulation substrates.

> Pro Primer W by Siplast; Irving, TX or approved equal.

3. Primer for Horizontal Concrete Substrates: A fast-curing PMMA-based primer for use over horizontal concrete substrates.

> Pro Primer T by Siplast; Irving, TX or approved equal.

I. Accessories

1. Natural Quartz Anti-Skid Surfacing: A natural-colored, kiln-dried, quartz aggregate suitable for broadcast into the PMMA-based wearing layer.

> Pro Natural Quartz by Siplast; Irving, TX or approved equal.

2. Colored Quartz Anti-Skid Surfacing: A pigment-coated, kiln-dried, quartz aggregate suitable for broadcast into the PMMA-based wearing layer.

> Pro Colored Quartz by Siplast; Irving, TX or approved equal.

3. Ceramic Granule Anti-Skid Surfacing: No. 11 grade specification ceramic granules suitable for broadcast into the PMMA based wearing layer.

> No. 11 Granules by Siplast; Irving, TX or approved equal.

4. Joint Tape: A thermoplastic/rubber based sheet having a woven polyester backing used to treat joints between rigid insulation or flashing substrate panels. The sheet shall have a minimum width of 4 inches.

> Eternabond Webseal by Eternabond, Inc., Mundelein, IL or approved equal.

5. Patching Compound: Unique mixture of cementitious binders, low density fine aggregates, and proprietary additives specifically designed for the repair of lightweight insulating concrete roof deck surfaces of all types. Patching compound is ideally suited for filling base ply fastener holes, repairing incidental surface damage, and thin latch repair of bird baths, rough cold joints etc in both new and existing lightweight insulating concrete surfaces.

> Zono-Patch by Siplast; Irving, TX or approved equal.

PART 3 EXECUTION

3.01 PREPARATION

A. General: Sweep or vacuum all surfaces, removing all loose aggregate and foreign substances prior to commencement of roofing.

B. Remove All Existing:

- Roof membrane
- Base flashings
- Edge metal
- Flanged metal flashings
- Cants
- Walkways
- Non functional penetrations/curbs
- Drain assemblies
- Metal trim, counterflashing

3.02 SUBSTRATE PREPARATION

A. Provide Zono-Patch Patching Compound at existing light weight concrete deficiencies to create a smooth surface to receive roof system.

B. Base Sheet Securement to Prepared Substrate: Lay the base sheet over the entire area to be roofed, lapping sides 3 inches and ends 6 inches. Using the specified fasteners, fasten each sheet every 7 1/2 inches through laps and stagger fasten the remainder of the sheet in 2 rows on nominal 12 inch centers with fasteners in each row on 10 inch centers. Increase the fastening pattern by 70% at the perimeter of the roof and 160% at the corners.

C. Preparation of Steel/Aluminum Substrates: Grind to generate a "white-metal" surface and remove loose particles. Extend preparation area a minimum of 1/2-inch (13 mm) beyond the termination of the roofing/flashing system. Notch steel surfaces to provide a rust-stop where detailed.

* NOTE:	Consider the use of primer and paint to treat the prepared area not covered with resin to prevent corrosion of steel surfaces.

D. Rigid Plastic Flashing Substrates: Evaluate the plastic for compatibility with the resin materials. Lightly abrade the surface to receive the flashing system, clean plastic substrates using the specified the cleaner/solvent and allow to dry. Extend the preparation area a minimum of 1/2 inch (13 mm) beyond the termination of the flashing system.

E. Preparation of Wood/Plywood Flashing Substrates to receive Resin: Tape the joints between plywood or wood panels using the specified tape and prime wood/plywood surfaces to receive the specified flashing system with the specified PMMA-based primer and allow primer to set prior to application of the flashing system.

3.03 ROOF MEMBRANE INSTALLATION

A. Membrane Application: Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements. Application of roofing membrane components shall immediately follow application of base sheet and/or insulation as a continuous operation.

B. Aesthetic Considerations: Construction of an aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials including granules, and exercise care in ensuring that the finished application is acceptable to the Owner.

C. Priming: Prime metal and concrete and masonry surfaces with a uniform coating of the specified asphalt primer.

D. Bitumen Consistency: Cutting or alterations of bitumen, primer, and sealants will not be permitted.

E. Roofing Application (Main Roof): Apply all layers of roofing free of wrinkles, creases or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets.

1. Apply all layers of roofing perpendicular to the slope of the deck.

2. Fully bond the base ply to the prepared substrate, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the torch applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.

3. Fully bond the finish ply to the base ply, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the torch applicator. Stagger end laps of the finish ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the finish ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply.

4. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds 1/2 inch per foot. The manufacturer shall provide acceptable sheet lengths and the required fastening schedule for all roofing sheet applications to applicable roof slopes.

F. Granule Embedment (Main Roof): Broadcast mineral granules over all bitumen overruns on the finish ply surface, while the bitumen is still hot or the adhesive is soft, to ensure a monolithic surface color.

G. Flashing Application: Cut the cant backing sheet into 12 inch widths and peel the release film from the back of the sheet. Set the sheet into place over the primed substrate extending 6 inches onto the field of the roof area and 6 inches up the vertical surface utilizing minimum 3 inch laps. Set the non-combustible cant into place dry prior to installation of the roof membrane base ply. Flash walls and curbs using the reinforcing sheet and the metal foil flashing membrane. After the base ply has been applied to the top of the cant, prime the base ply surfaces to receive the reinforcing sheet. Fully adhere the reinforcing sheet, utilizing minimum 3 inch side laps onto the primed base ply surface and up the primed wall or curb to the desired flashing height. After the final roofing ply has been applied to the top of the cant, prepare the surface area that is to receive flashing coverage by torch heating granular surfaces or by application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the metal foil flashing layer from lap seams in the reinforcing layer. Extend the flashing sheet a minimum of 4 inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall or curb to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the vertical/horizontal surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers. (See manufacturer's schematic for visual interpretation).

H. Ply Sheet Application (Alternate #2): Bond the modified bitumen ply sheet to the prepared substrate, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the asphalt/torch applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet. Follow manufacturer’s specifications regarding maximum exposure periods prior to application of the liquid-applied finish membrane.

I. Catalyzed Acrylic Resin Flashing System: Install the liquid-applied primer and flashing system in accordance with the membrane system manufacturer's printed installer's guidelines and other applicable written recommendations as provided by the manufacturer.

J. Water Cut-Off: At end of day's work, or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.

J. Loose Chip Removal (Alternate #1): Broom the surface of the finish ply in both machine and cross-machine direction using a stiff nylon bristle broom. Remove excess chips from the roof area.

3.04 MIXING OF RESIN PRODUCTS

A. Preparation/Mixing/Catalyzing Resin Products: Pour the desired quantity of resin into a clean container and using a spiral mixer or mixing paddle, stir the liquid for the time period specified by the resin manufacturer. Calculate the amount of catalyst powder needed using the manufacturer's guidelines and add the pre-measured catalyst to the resin component. Mix again for the time period specified by the resin manufacturer, ensuring that the product is free from swirls and bubbles. Ensure that air is not entrained into the product during the mixing process. To avoid aeration, do not use a spiral mixer unless the spiral section of the mixer can be fully contained in the liquid during the mixing process. Mix only enough product to ensure that it can be applied before expiration of resin pot life.

3.05 FLASHING AND FIELD MEMBRANE APPLICATION

A. Base Flashing Application

1. Using masking tape, mask the perimeter of the area to receive the flashing system. Apply resin primer to substrates requiring additional preparation and allow primer to set.

2. Pre-cut fleece to ensure a proper fit at transitions and corners prior to membrane application.

3. Apply an even, generous base coat of flashing resin using a roller at the minimum rate specified by the resin manufacturer to prepared surfaces requiring flashing coverage. Work the fleece into the wet, catalyzed resin using a brush or roller to fully embed the fleece in the resin and remove trapped air. Lap fleece layers a minimum of 2 inch (5 cm) and apply an additional coat of catalyzed resin between layers of overlapping fleece. Again using a roller, apply an even top coat of catalyzed resin at the minimum rate specified by the resin manufacturer immediately following embedment of the fleece, ensuring full saturation of the fleece. Ensure that the flashing resin is applied to extend beyond the fleece (maximum 0.25 inch (6 mm)). Remove the tape before the catalyzed resin sets. Make allowances for saturation of roller covers and application equipment.

4. Should work be interrupted for more than 12 hours or the surface of the catalyzed resin becomes dirty or contaminated by the elements, wipe the surface to be lapped with new flashing resin using the specified cleaner/solvent. Allow the surface to dry for a minimum 20 minutes and a maximum 60 minutes before continuing work.

B. Field Membrane Application

1. Using the specified cleaner/solvent, wipe flashing membrane surfaces to be lapped with field membrane. Allow the surface to dry for a minimum 20 minutes before continuing work.

2. Apply an even, generous base coat of field membrane resin using a roller at the minimum rate specified by the resin manufacturer to prepared surfaces. Work the fleece into the wet, catalyzed resin using a roller to fully embed the fleece in the resin and remove trapped air. Lap fleece layers a minimum of 2 inch (5 cm) and apply an additional coat of catalyzed resin between layers of overlapping fleece. Again using a roller, apply an even top coat of catalyzed resin at the minimum rate specified by the resin manufacturer immediately following embedment of the fleece, ensuring full saturation of the fleece. Make allowances for saturation of roller covers and application equipment. Allow 2 hours cure time prior to exposing the membrane to foot traffic.

3.06 WALKTREAD/SKID RESISTANT SURFACING

A. Quartz/Granule Anti-Skid Application (Equipment Roof): Utilize masking tape to outline the areas to receive the anti-skid system. Apply an additional top coat of the catalyzed roof resin at the minimum rate specified by the resin manufacturer; and broadcast quartz/granules before the resin sets. Remove tape before the resin sets. Apply a clear or color coat of resin over the quartz surface if required by the roofing system manufacturer.

3.07 ROOF SYSTEM INTERFACE WITH RELATED COMPONENTS

A. Walktread (Main Roof): Cut the walktread into maximum 5 foot lengths and allow to relax until flat. Adhere the sheet using the specified plastic cement. Apply the specified cement in a 3/8 inch thickness to the back of the product in 5 inch by 5 inch spots in accordance with the pattern as supplied by the walktread manufacturer. Walk-in each sheet after application to ensure proper adhesion. Use a minimum spacing of 2 inches between sheets to allow for proper drainage.

B. Sealant: Apply a smooth continuous bead of the specified sealant at the exposed finish ply edge transition to metal flashings incorporated into the roof system.

3.08 FIELD QUALITY CONTROL AND INSPECTIONS

A. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.

B. Notification Of Completion: Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.

C. Final Inspection

1. Post-Installation Meeting: Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.

D. Issuance Of The Guarantee: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

END OF SECTION 07550

SECTION 07610 - METAL ROOF RESTORATION SYSTEM -ACRYLIC/URETHANE COMBINATION SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. This guideline includes the installation of fluid applied acrylic roof coating to rustproof, restore, and waterproof metal roofs. The three-step process effectively protects the metal, seals seams & fasteners and renews the metal surface to extend the useful life of the roof. The system shall include waterproofing all metal roof panels, flashings, valleys, ridges, joints and junctions integrally related to the roof.

B. Work included is labor, materials, equipment and accessories and related services to complete the application in accordance with guidelines and details as approved by manufacturer. Basis of design: ERSystems.

C. Work excluded is replacement of roof accessories such as gutters, drains, vents and other penetrations including structural roof repair.

1.02 QUALITY ASSURANCE

A. Manufacture Qualifications: furnish upon request, certification the material meets the physical properties stated in this guideline.

B. Contractor Qualifications: All work to be completed must be done by a manufacturer preferred applicator.

1.03 SUBMITTALS

A. A warranty pre-notification form is required prior to the installation of the warranted systems.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material in original, unopened packages and containers.

B. Containers are to be labeled with manufacturer’s name, product name, description, and identification.

C. Store materials in a dry area above 40° F. and protect from water and direct sunlight.

D. Any materials damaged in handling or storage must not be used.

E. Deliver MSDS for each product. Consult MSDS and Product Data Guideline for each product used before beginning work.

1.05 JOB CONDITIONS (CAUTIONS AND WARNINGS)

A. All mechanical equipment, vents, skylights, etc., should be in place before the roofing system is installed.

B. Mechanical units (blowers, HVAC) should be prevented from distributing fumes into the building.

C. Coatings should be protected from traffic and other abuse until completely cured and installation is complete.

D. Application of coatings with spray equipment may require some masking and possible erection of wind screens to prevent over-spray and drift damage. Protect surfaces of unrelated areas from coatings and over-spray possibility.

E. Application shall proceed to dry, clean surfaces only. In planning work consider environment and weather related conditions such as frost, mist, dew, condensation, humidity, and temperature. Temperature should be above 45° F., rising, and stay above 40° F. long enough for initial cure to occur. Moisture should not be imminent.

F. Sufficient safety belts and lines should be provided. A wet surface or a surface that is not thoroughly cured can be very slippery. All work environments should comply with current OSHA regulations.

1.06 WARRANTY

A. ERSystems warrants that materials provided are free from defects in manufacturing. ERSystems will replace any material found to be defective.

B. ERSystems/Contractor Coating System Warranty is available through preferred contractors and at a cost. Consult ERSystems for further details of the Coating System Warranty Program.

PART 2 - PRODUCTS

2.01 GENERAL

A. The components of the coating system are to be products of ERSystems, 6900 Bleck Dr., Rockford, MN 55373 or products approved by ERSystems as compatible; or coating system approved equal.

B. PRIMER: ERAGUARD 2000 - MODIFIED ACRYLIC PRIMER RUSTPROOFING

1. See Data Sheet

C. SEALER: HER - POLYURETHANE SEALER FOR SEAMS, FASTENERS, PENETRATIONS

1. See Data Sheet

D. FINISH COAT - ERAGUARD 1000

1. See Data Sheet

E. FINISH COAT - ERAGUARD GC

1. See Data Sheet

F. RELATED MATERIALS FROM ERASYSTEMS

1. Gap/Joint Sealant: Permathane SM7108

2. Gap/Joint Fabric: Polyester Knit Fabric

3. Fasteners: Self Drilling & Self Tapping Metal

4. Butyl Seam Tape: Fabric Faced Butyl Tape

5. Colored Finish Coat: Eraguard 1000

6. Alternate to Eraguard 1000 as Finish Coat: Eraguard GC

PART 3 - APPLICATION

3.01 SUBSTRATE INSPECTION

A. A proper substrate shall be provided to receive ERSystems coating. Metal surfaces must be clean, dry, and free of loose debris. Adhesion test of coating to the metal roof substrate is required where the bond to the metal may be questionable; such as with Kynar 500 based finishes.

3.02 SURFACE PREPARATION

A. Walk the roof deck and tighten all loose fasteners. Replace missing fasteners and all fasteners that are stripped with oversized fasteners.

B. Metal panels which no longer have integrity due to excessive rust and deterioration must be replaced.

C. Panels with seam gaps of 1/8” or more must be stitched as tight as possible with additional screws. Any horizontal seams where the perlin screws are more than 2” from the overlap must be stitched tight at the seam with a minimum of 6 per 3’ panel. Light gauge metal panels may flex open at the horizontal lap seam when walked on. Additional stitch screws and/or fabric faced butyl tape reinforcement may be required in the pan of the panel to

reduce deflection. Eraguard 1000 FG – Acrylic Sealant may be used to seal gaps prior to stitching metal with appropriate fasteners. Permathane SM7108 may be used to seal gaps prior to stitching metal with appropriate fasteners.

Note: Metal fasteners are available from ERSystems or approved equal.

3.03 CLEANING

A. Prepare the roof surface by high pressure washing, rinse well and let dry. Use a tri-sodium phosphate (TSP) solution if the metal surface is especially dirty, oily, etc. Water pressure of 2000 psi to 3000 psi will be required to remove loose rust, dirt, paint and miscellaneous soils.

B. Galvanized metal surfaces may require an acid etch to remove debris, which may interfere with proper bonding. The dilute acid solution must be thoroughly rinsed from the roof.

C. If rust is a hard scale, it may require power brushing to remove and get down to a sound substrate.

D. If silicone product have been used in attempts at waterproofing, they must be removed prior to coating applications.

E. If asphalt based roof coatings have been previously used to repair roof seams and fastener heads, do not apply solvents to clean these areas. Remove asphalt coating with power washing, scraping or brushing.

F. After pressure washing and cleaning, remove all loose coating, scale and other foreign matter with a putty knife or other appropriate tool. Brush clean and apply coating directly over the tightly bound coating which remains. Let dry completely before proceeding.

3.04 PRIMING

A. Coat all rusty surfaces with ERSystems Eraguard 2000 or approved equal. Apply Eraguard 2000 at 0.5 gallon per square in two passes for modest rust. (total dry mils 3, minimum 2.5)

B. Under normal drying conditions, Eraguard 2000 may be re-coated within 1 to 2 hours.

3.05 SEAMS, FASTENERS & PENETRATIONS

A. Waterproof seams: Apply HER by pumping a bead 1” to 1.5” wide into place along the vertical seam. Fill the underside of the seam with HER by brushing perpendicular to the seam with a 3” wide brush and then feather the HER to a 3” width along the seam. HER shall be approximately 60 wet mils (1/16”) thick directly over the area of the seam. Horizontal seams are sealed in the same manner as vertical seams. Two coats may be required in some areas to achieve DMT specified. Horizontal seams may be reinforced with polyester fabric embedded into the HER at areas where excessive movement of the panels is known to exist or where gaps between the panels exist even after additional fasteners are added.

B. Fasteners: HER shall be applied at 60 wet mils over all fastener heads, extending 1.5" in all directions around the fastener head.

C. Penetrations & Flashings: Seal with HER by applying a 60 wet mils thickness for 3" to 4" around the base of the penetration. Polyester fabric may be embedded in the HER to bridge gaps and reinforce the membrane.

D. Gutters & valleys: Seal with HER by applying a 60 wet mils thickness over the area to be sealed and for 3"- 4" up and beyond the area to be sealed. If necessary embed polyester fabric of the appropriate width, and brush or roll additional HER over the fabric, making certain all wrinkles are rolled out of the fabric. Let HER cure for 24 hours prior to applying Finish Coat.

E. Skylights: Edges shall be sealed with HER as described above.

F. Typical roofs will require .4 to .5 gallons per SQ of HER to complete the waterproofing of seams and fasteners. Waterproofing penetrations, valleys and repair areas will require additional HER. Application of 60 wet mils requires approximately 4 gallons per 100 sf.

G. Inspection of all HER application should be done to assure that work is satisfactory and complete, and that the sealing of gaps and bolt heads have been accomplished.

- HER over seams, fasteners and penetrations and repair areas shall be 50 dry mils minimum.
- The roof is watertight at the point.

3.06 FINISH COAT: (Note: Total dry mil minimums not acceptable uniformly over entire field)

A. Option A – Eraguard 1000 White or approved equal

Apply Eraguard 1000 at the rate of 1.5 gallons per square in two passes for a 5 year warranty (total dry mils 13, minimum 11) to 2.0 gallons per square in two passes for a 10 year warranty (total dry mils 17, minimum 15).

B. Option B – Eraguard GC White or approved equal

Apply Eraguard GC at the rate of 2.0 gallons per square in two passes for a 5 year warranty (total dry mils 16, minimum 14) to 2.5 gallons per square in two passes for a 10 year warranty (total dry mils 20, minimum 17).

C. Initial Cure of Finish Coat will typically be 2 to 6 hours.

PROTECTION AND CLEAN-UP PROTECTION

A. The roof system and all components must be protected from all other trades at the jobs site.

B. All damage to the system must be repaired to comply with ERSystems guidelines prior to final inspection for warranty approval. The cost of all related repairs will be borne by the trades and/or subcontractors responsible for the damages.

CLEAN-UP

A. Site clean-up is the responsibility of the contractor.

B. All debris, containers, materials, equipment, and protection materials must be removed form the premises and properly disposed of. All work and storage areas must be in an undamaged and acceptable condition upon completion of clean-up.

END OF SECTION 07610

Eraguard 1000 Metal Roof Restoration for a 10 yr. Leak Proof Warranty

Surface Preparation, Prime, Seam Detail, and Protective Coating System:

- Power wash entire roof surface**.**
- Remove all loose coating, Silicone, scale and other foreign matter with appropriate tool. Brush clean and apply coating directly over the tightly bound coating which remains.
- Remove lightning system protective cable from brackets (leaving brackets in place) reinstall cable when coating is fully cured. Recommend lightning system is checked after work is complete to make sure system is still functioning.
- Prime all rust with the **Eraguard 2000** at a rate of ½ gal per sq. (Heavy scale may have to be wire brushed prior to prime).
- Install additional fasteners and or stitch screws to close any gaps caused by excessive movement. Caulk all voids remaining over 1/8 of an inch.
- Apply the **HER** "High Performance Urethane Moisture Cured Sealant" at a rate of 100 lineal foot per gal to all horizontal seams, rake flashings, penetrations, ridge cap, ridge vents, and fasteners. HER should be applied in a 3 inch bead to achieve 60 dry mils.
- Apply the ERSystems **Eraguard 1000** in two passes at a rate of 1 gal per sq. for the base coat and 1 gal per sq. for the finish coat. The **Eraguard 1000** is a single component high performance acrylic coating that is designed to perform over the entire life cycle of the roof.

Additional materials that maybe needed for metal restoration:

Fat boy fasteners box of 1000 $116.00
Stitch Screw box of 1000 $132.00
Polyurethane Sealant $5.00 per tube
Warranty @ 3 cents per sq. ft. minimum $300.00

ERAGUARD 2000 TYPICAL PHYSICAL PROPERTIES

Solids (Volume) 34-36%
Solids (Weight) 40-42%
Viscosity 500 cps 65-70 KU
Weight/Gallon 9.10 lbs.
Shelf Stability 8 months
Gloss Flat
Voc. 1.2 lbs/gal
Dry Time: Set to Touch20 minutes

HER TYPICAL PHYSICAL PROPERTIES

Solids (Volume) 80%
Viscosity Approx. 36,000 cps
Ultimate Elongation ASTM D412 500%
Ultimate Tensile Strength ASTM D412 450 psi
Shore A Hardness ASTM D2240 40
Low Temperature Flexibility ASTM D412 Pass at -600 F
Permeability ASTM E96 1.2 perms at 30 dry mil
Flash Point (Tag Close-Cup) 1450 F
Resistance to Weathering ASTM D822 Excellent
Chemical Resistance Excellent
Shelf Stability (750 F/50% RH) 6 months

ERAGUARD 1000 TYPICAL PHYSICAL PROPERTIES

ASTM D 6083
Solids (Volume) 55%
Viscosity 14000 cps
Elongation 300% at 73o F
Tensile Strength 270 psi
Moisture Vapor Permeance @ 30 dry mils. 6.0 perms
Weight/Gallon 12.1 Lbs.
Fungi Resistance Zero Rating
Cure Time 2-6 hours to recoat
Initial Reflectance 85% / Emittance 0.94
Miami Dade Approval # 02-0617.08

SECTION 07710 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Copings.
2. Counter flashings.

B. Related Sections:
1. Division 07 Section "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
2. Division 07 Section "Joint Sealants" for field-applied sealants between roof specialties and adjacent materials.

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

B. FM Approvals' Listing: Manufacture and install copings that are listed in FM Approvals' with FM Approvals' markings and Miami Dade Compliant Notice of Acceptance Engineered coping systems..

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

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.

B. Shop Drawings: For roof specialties. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work. Include the following:

1. Details for expansion and contraction; locations of expansion joints, including direction of expansion and contraction.
2. Pattern of seams and layout of fasteners, cleats, clips, and other attachments.
3. Details of termination points and assemblies, including fixed points.
4. Details of special conditions.

C. Samples for Initial Selection: For each type of roof specialty provide stainless steel sample and type for verification and approval.

D. Samples for Verification: For copings and counterflashings made from 12-inch lengths of full-size components including fasteners, cover joints, accessories, and attachments.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for copings.

F. Maintenance Data: For roofing specialties to include in maintenance manuals.

G. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects roof specialties including installers of roofing materials and accessories.
2. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
3. Review special roof details, roof drainage, and condition of other construction that will affect roof specialties.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.

B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof specialties installation.

1.7 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.

PART 2 - PRODUCTS

2.1 EXPOSED METALS

A. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304.

2.2 CONCEALED METALS

A. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304.

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F.
2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.
3. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle Coatings & Waterproofing; CCW WIP 300HT.
b. Grace Construction Products, a unit of W. R. Grace & Co.; Ultra.
c. Henry Company; Blueskin PE200 HT.
d. Metal-Fab Manufacturing, LLC; MetShield.
e. Owens Corning; WeatherLock Metal High Temperature Underlayment.

B. Slip Sheet: Building paper, 3-lb/100 sq. ft. minimum, rosin sized.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Exposed Penetrating Fasteners: Stainless steel gasketed screws with hex washer heads matching color of sheet metal.

2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.

C. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 COPINGS

A. Copings: Manufactured coping system consisting of formed-metal coping cap in section lengths not exceeding 12 feet, concealed anchorage; corner units, end cap units, and concealed splice plates with same stainless steel as coping caps.

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

a. Architectural Products Company.
b. ATAS International, Inc.
c. Castle Metal Products.
d. Cheney Flashing Company.
e. Hickman Company, W. P.
f. Johns Manville.
g. Merchant & Evans, Inc.
h. Metal-Era, Inc.
i. Metal-Fab Manufacturing, LLC.
j. MM Systems Corporation.
k. National Sheet Metal Systems, Inc.
l. Perimeter Systems; a division of Southern Aluminum Finishing Company, Inc.
m. Petersen Aluminum Corporation.

2. Coping-Cap Material: extruded Stainless Steel, 18 gage minimum or greater thickness as recommended by Coping Manufacturer to meet FM and Miami Dade County NOA Engineered Products (NOA).

a. Finish: Finish, Satin stainless steel

3. Corners: Factory mitered and continuously welded and ground and finished.
4. Coping-Cap Attachment Method: Snap-on (NOA compliant), fabricated from coping-cap material.
5. Snap-on-Coping Anchor Plates: Concealed, stainless-steel sheet, 12 inches wide, with integral cleats.
6. Face Leg Cleats: Concealed, continuous stainless steel.

2.6 ROOF-EDGE SCUPPERS

A. Manufacturers: Subject to compliance with requirements:

1. Andreas Renner KG.
2. Architectural Products Company.
3. ATAS International, Inc.
4. Berger Building Products, Inc.
5. Castle Metal Products.
6. Cheney Flashing Company.
7. CopperCraft by FABRAL; a Euramax company.
8. Hickman Company, W. P.
9. Klauer Manufacturing Company.
10. Merchant & Evans, Inc.
11. Metal-Era, Inc.
12. Metal-Fab Manufacturing, LLC.
13. MM Systems Corporation.
14. National Sheet Metal Systems, Inc.
15. Perimeter Systems; a division of Southern Aluminum Finishing Company, Inc.

B. Parapet Scuppers: Remove existing and replace with new. Coordinate sizes and dimensions with existing openings and with new roof system

1. Fabricate from the following exposed metal:
   a. Stainless Steel: 18 gage minimum.

2.7 COUNTERFLASHINGS

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

1. Castle Metal Products.
2. Cheney Flashing Company.
3. Fry Reglet Corporation.
4. Heckmann Building Products Inc.
5. Hickman Company, W. P.
6. Keystone Flashing Company, Inc.
7. Metal-Era, Inc.
8. Metal-Fab Manufacturing, LLC.
9. MM Systems Corporation.
10. National Sheet Metal Systems, Inc.

B. Reglets: Remove existing and replace with new:
   1. Stainless Steel: 0.025 inch.
   2. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
   3. Stucco Type, Embedded: Provide reglets with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
   4. Concrete Type, Embedded: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
   5. Masonry Type, Embedded: Provide reglets with offset top flange for embedment in masonry mortar joint.

C. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in lengths not exceeding 12 feet designed to snap into reglets or surface wall-flashing and compress against base flashings with joints lapped, from the following exposed metal:
   1. Stainless Steel: 0.025 inch thick.

D. Accessories:
   1. as required for complete installation

E. Stainless-Steel Finish: No. 4 (bright, polished directional satin).

2.8 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

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

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

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 the Work.

B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.

C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Install wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water. Overlap edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

B. Slip Sheet: Install with tape or adhesive for temporary anchorage to minimize use of mechanical fasteners under roof specialties. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

3.3 INSTALLATION, GENERAL

A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete roof-specialty systems.

1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
2. Provide uniform, neat seams with minimum exposure of solder and sealant.
3. Install roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
4. Torch cutting of roof specialties is not permitted.
5. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of stainless-steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of 12 feet with no joints within 18 inches of corners or intersections unless otherwise shown on Drawings.
2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Seal joints with sealant as required by roofing-specialty manufacturer.

E. Seal joints as required for watertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.

3.4 COPING INSTALLATION

A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners and as recommended by manufacturer and as required by NOA and FM.

B. Anchor copings to meet performance requirements.

3.5 SCUPPER

A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.

B. Parapet Scuppers: Install scuppers through parapet where indicated. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

1. Anchor scupper closure trim flange to exterior wall and seal or solder to scupper.
2. Loosely lock front edge of scupper with conductor head.
3. Seal or solder exterior wall scupper flanges into back of conductor head.

3.6 COUNTERFLASHING INSTALLATION

A. General: Coordinate installation of reglets and counterflashings with installation of base flashings.

B. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches over top edge of base flashings.

C. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Fit counterflashings tightly to base flashings.

3.7 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 roof specialties are installed. On completion of installation, clean finished surfaces including removing unused fasteners,

metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.

D. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07710

SECTION 07720 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Roof curbs.
2. Equipment supports.

B. Related Sections:
1. Division 07 Section "Roof Specialties" for manufactured fasciae, copings, gravel stops, gutters and downspouts, and counterflashing.

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

1.4 SUBMITTALS

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

B. Shop Drawings: For roof accessories. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

C. Samples: For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

D. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.

3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

E. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

F. Warranty: Sample of special warranty.

1.5 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing system and equipment interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.6 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within specified warranty period.

PART 2 - PRODUCTS

2.1 METAL MATERIALS

A. Stainless-Steel Sheet and Shapes: ASTM A 240/A 240M or ASTM A 666, Type 304.

2.2 MISCELLANEOUS MATERIALS

A. General: Provide stainless steel materials and stainless steel fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

C. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Provide stainless steel fasteners.

D. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

E. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

2.3 ROOF CURBS

A. Roof Curbs: Remove existing coatings and install new flashing and roof system.

B. Size: field verify.

C. Material: Stainless-steel sheet, thickness as recommended by manufacture but not less than 18 gage.

2.4 EQUIPMENT SUPPORTS

A. Equipment Supports: Remove existing flashings and replace with new stainless steel flashings and roof system.

B. Size: field verify.

C. Material: Stainless-steel sheet, thickness as recommended by manufacture but not less than 18 gage.

2.5 PIPE SUPPORTS

A. Pipe Supports: Remove existing coatings and install new flashing and roof system.

B. Size: field verify.

C. Material: Stainless-steel sheet, thickness as recommended by manufacture but not less than 18 gage.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

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 the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install roof accessories according to manufacturer's written instructions.
   1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
   2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
   3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
   4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
   1. Coat concealed side of stainless-steel roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
   2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene sheet.
   3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

3.3 REPAIR AND CLEANING

A. Clean exposed surfaces according to manufacturer's written instructions.

B. Clean off excess sealants.

C. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07720

SECTION 07920 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes joint sealants for the following locations:

1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below:
   a. Joints between different materials.
   c. Perimeter joints between materials and frames of doors and windows.
   d. Other joints as indicated.
2. Exterior joints in horizontal traffic surfaces as indicated below:
   a. As indicated on drawings.
3. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
   a. Control and expansion joints on exposed interior surfaces of exterior walls.
   b. Perimeter joints of exterior openings where indicated.
   c. Tile control and expansion joints.
   d. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
   e. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
   f. Perimeter joints of toilet fixtures.
   g. Other joints as indicated.
4. Interior joints in horizontal traffic surfaces as indicated below:
   a. Control and expansion joints in tile flooring.
   b. Other joints as indicated.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 8, “Steel Doors and Frames” for sealing frames in openings.
2. Division 9, "Gypsum Board Assemblies" for sealing concealed perimeter joints of gypsum board partitions for fire ratings and to reduce sound transmission.
3. Division 9, "Tile" for sealing tile joints.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

B. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data from manufacturers for each joint sealant product required.

C. Samples for initial selection purposes in form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.

D. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

B. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

C. Product Testing: Provide comprehensive test data for each type of joint sealant based on tests conducted by a qualified independent testing laboratory on current product formulations within a 24-month period preceding date of Contractor's submittal of test results to Architect.

1. Test elastomeric sealants for compliance with requirements specified by reference to ASTM C 920. Include test results for hardness, stain resistance, adhesion and cohesion under cyclic movement (per ASTM C 719), low-temperature flexibility, modulus of elasticity at 100 percent strain, effects of heat aging, and effects of accelerated weathering.

1.6 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
2. When joint substrates are wet.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors: Provide color of exposed joint sealants to comply with the following:

1. Provide manufacturer's full range of standard colors for products of type indicated. For the selections to be made by the Architect.

2.2 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with ASTM C 920 and other requirements indicated on each Elastomeric Joint Sealant Data Sheet at end of this Section, including those requirements referencing ASTM C 920 classifications for Type, Grade, Class, and Uses.

1. Additional Movement Capability: Where additional movement capability is specified in Elastomeric Joint Sealant Data Sheet, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements of ASTM C 920 for Uses indicated.

B. Products: Subject to compliance with requirements, provide one of the products specified in each Elastomeric Joint Sealant Data Sheet.

2.3 SOLVENT-RELEASE-CURING JOINT SEALANTS

A. Butyl Sealant: Manufacturer's standard one-part, nonsag, solvent-release-curing, polymerized butyl sealant complying with ASTM C 1085 and formulated with minimum of 75 percent solids to be nonstaining, paintable, and have a tack-free time of 24 hours or less.

B. Products: Subject to compliance with requirements, provide one of the following:

1. Butyl Sealant:
   a. "BC-158," Pecora Corp.
   b. "Sonneborn Multi-Purpose Sealant," Sonneborn Building Products Div., ChemRex, Inc.
   c. "Tremco Butyl Sealant," Tremco, Inc.

2.4 LATEX JOINT SEALANTS

A. General: Provide manufacturer's standard one-part, nonsag, mildew-resistant, paintable latex sealant of formulation indicated that is recommended for exposed applications on interior and protected exterior locations and that accommodates indicated percentage change in joint width existing at time of installation without failing either adhesively or cohesively.

B. Acrylic-Emulsion Sealant: Provide product complying with ASTM C 834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.

C. Products: Subject to compliance with requirements, provide one of the following:

1. Acrylic-Emulsion Sealant:
   a. "AC-20," Pecora Corp.
   b. "Sonolac," Sonneborn Building Products Div., ChemRex, Inc.
   c. "Tremco Acrylic Latex 834," Tremco, Inc.

2.5 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:

1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
2. Product has flame spread and smoke developed ratings of less than 25 per ASTM E 84.

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

C. Products: Subject to compliance with requirements, provide one of the following:

1. Acoustical Sealant:
   a. "SHEETROCK Acoustical Sealant," United States Gypsum Co.
   b. "AC-20 FTR Acoustical and Insulation Sealant," Pecora Corp.
   c. Or approved equal.
2. Acoustical Sealant for Concealed Joints:
   a. "BA-98," Pecora Corp.
   b. "Tremco Acoustical Sealant," Tremco, Inc.
   c. Or approved equal.

2.6 JOINT SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

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

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.
4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   a. Do not leave gaps between ends of joint fillers.
   b. Do not stretch, twist, puncture, or tear joint fillers.

c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.

2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.

C. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

D. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
2. Provide flush joint configuration, per Figure 5B in ASTM C 1193, where indicated.
   a. Use masking tape to protect adjacent surfaces of recessed tooled joints.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 07920

SECTION 14250 - HYDRAULIC ELEVATOR MODERNIZATION

PART 1 GENERAL

1.01 WORK INCLUDED

A. 1 hydraulic elevator(s) as follows:
   1. Passenger Elevator 1

B. All engineering, equipment, labor, and permits required to satisfactorily complete elevator modernization required by Contract Documents.

C. Applicable conditions of General, Special, and Supplemental Conditions, Division 1, and all sections listed in Contract Documents "Table of Contents."

D. Preventive Maintenance: Based on Orange County terms and conditions.

E. Additional equipment or finishes furnished under other sections, installed under this section:

   1. CCTV system (Provisions Additive Bid Item #1)
   2. Card reader security system (Provisions Additive Bid Item #1)
   3. Car interior finishes (Only Down Light Ceiling) (Additive Bid Item #2)

F. Cartage and Hoisting: All required staging, hoisting and movement to, on, and from the site including new equipment, reused equipment, or dismantling and removal of existing equipment.

G. Unless specifically identified as "Reuse," "Retain," or "Refurbish," provide new equipment.

H. Protective barrier(s) between car(s) in normal operation and adjacent car(s) in the modernization process. Full depth and height of hoistway.

I. Hoistway, pit, and machine room barricades as required.

1.02 RELATED WORK PROVIDED UNDER OTHER SECTIONS

A. See Section 01900, Related Work Provided Under Other Sections.

1.03 DEFINITIONS

A. Terms used are defined in the latest edition of the Safety Code for Elevators and Escalators, ASME A17.1.

B. Reference to a device or a part of the equipment applies to the number of devices or parts required to complete the installation.

C. Provisions of this specification are applicable to all elevators unless identified otherwise.

1.04 QUALITY ASSURANCE

A. Compliance with Regulatory Agencies: See Section 01040, Project Procedures.

B. Warranty:
1. All warranties are based on Orange County Terms and Conditions.

1.05 DOCUMENT AND SITE VERIFICATION

In order to discover and resolve conflicts or lack of definition which might create problems, Contractor must review Contract Documents and site conditions for compatibility with its product prior to submittal of quotation. Review existing structural, electrical provisions, and mechanical provisions for compatibility with Contractor's products. Purchaser will not pay for change to structural, mechanical, electrical, or other systems required to accommodate Contractor's equipment.

1.06 SUBMITTALS

A. See Section 01300, Submittals, and Section 01700, Final Contract Compliance Review, Article 1.03.

1.07 PERMIT, TEST AND INSPECTION

A. Obtain and pay for permit, license, and inspection fee necessary to complete installation.

B. Perform test required by governing authority in accordance with procedure described in ASME A17.2 Guide for Inspection of Elevators, Escalators, and Moving Walks in the presence of Authorized Representative.

C. Supply personnel and equipment for test and final review by Consultant, as required in Section 01700.

1.08 MAINTENANCE

A. Interim: Based on Orange County's Terms and Conditions.

B. Warranty: Based on Orange County's Terms and Conditions.

PART 2 PRODUCTS

2.01 SUMMARY

A. 1 Passenger Hydraulic Elevators

B. Unless specifically identified as "retain existing," provide new equipment.

	Existing Equipment	Disposition
Number:	Car 1	Retain Existing
Capacity:	1500 #	Retain Existing
Class Loading:	Passenger Class A	Retain Existing
Contract Speed:	100 F.P.M.	Retain Existing
Machine:	Submersible Hydraulic Pump	NEW
Machine Location:	Adjacent	Retain Existing
Operational Control:	Selective Collective Relay Logic - Based System	Selective Collective Microprocessor-Based System
Motor Control:	Single Spd AC	Single Speed AC with SCR Soft Start with Closed Transition
Power Characteristics:	480 Volts, 3 Phase, 60 Hertz	Retain Existing

Stops:	2 Front; 0 Rear	Retain Existing
Openings:	2 Front; 0 Rear	Retain Existing
Floors Served:	2 Front;	Retain Existing
Travel:	Field Verify	Retain Existing
Platform Size:	Field Verify	Retain Existing
Entrance Size:	36 Wide X 84 High	Retain Existing
Entrance Type:	Single Side Opening	Retain Existing
Door Operation:	Medium Speed Door Operator	GAL MODL
Door Protection:	Infrared, Full Screen Device	New Infrared
	Infrared, Full Screen Device	New Infrared
Hydraulic Type:	Direct Plunger	Retain Existing (repack)
	Direct Plunger	Retain Existing (repack)
Guide Rails:	Planed Steel Tees	Retain Existing

Buffers:	Spring	Retain Existing
Car Enclosure:		Retain
		Battery Powered Emergency Car Lighting and Alarm. Provide Separate Constant Pressure Test Button in Car Service Compartment.
		Additive Bid Item #2–New Down-Light LED Ceilings.
Hall and Car Pushbutton Stations:	Standard	LED Illumination Contractor's Vandal Resistant Single Panel
Car Position Indicators:	Not Installed	Not Required
Car Lantern:	Jam (Arrows)	Provide New Fixture in entrance jam.
Communication System:		Self-Dialing, Handsfree, Vandal Resistant, Push To Call, Two-Way Communication System with Recall, Tracking and Voiceless Communication. Incorporated in COP faceplate.
Fixture Submittal:		Submit Brochure Depicting Contractor's Proposed Designs with Bid
Additional Features:		New slide guide inserts, if inserts unavailable, replace entire guides.
		Car Top Inspection Station
		Firefighters' Service, Phase I And II, Including Alternate Floor Return with Florida Regional #5 Keyswitch.
		Battery Pack Standby Power Provision
		Stationary Car Return Panel Arranged for Surface Applied Car Operating Panel
		Independent Service Feature
		Card Reader/Security Provisions, All Cars (Additive Bid Item #1)

CCTV Provisions,
All Cars (Additive Bid Item #1)

Hydraulic Pump Unit, and Controller Sound Isolation

Tamper Resistant Fasteners for All Fastenings Exposed to the Public

Warranty: per the terms and conditions of Orange County

Maintenance: per the terms and conditions of Orange County

Signage Engraving Filled with Black Paint or Approved Etching Process

No Visible Company Name or Logo

Wiring Diagrams, Operating Instructions, and Parts Ordering Information.

Non-Proprietary Control System and Diagnostics Provisions. If controller and or door equipment requires computers, specialized tools, special software and or electronic chips, for initial and or future testing, parameter setting/re-setting, full problem diagnosis, fault code retrieval and or regular maintenance these items must be provided to the owner as part of the bid package and remain the owners property.

Signage Engraving Filled with Black Paint or Approved Etching Process

No Visible Company Name or Logo

Wiring Diagrams, Operating Instructions, and Parts Ordering Information

Additive Bid Item, Car(s) See Section 01030

1) Provide provisions for security, card reader and CCTV for 1 car.

2) Provide pricing for new down-light LED ceilings for 1 car.

2.02 MATERIALS

A. See Section 01600, Materials.

2.03 CAR PERFORMANCE

A. Car Speed: ± 3% of contract speed under any loading condition.

B. Car Capacity: Safely lower, stop and hold 125% of rated load.

C. Car Stopping Zone: ±1/4" under any loading condition.

D. Door Opening Time: Seconds from start of opening to fully open:
1. Car 1: 2.8 seconds.

E. Door Closing Time: Seconds from start of closing to fully closed:
1. Cars 1: 3.4 seconds.

F. Car Floor-to-Floor Performance Time: Seconds from start of doors closing until doors are 3/4 open (1/2 open for side opening doors) and car level and stopped at next successive floor under any loading condition or travel direction (12' typical floor height):
1. Cars 1: 15.5 seconds.

G. Pressure: Fluid system components shall be designed and factory tested for 500 p.s.i. Maximum operating pressure shall be 400 p.s.i.

H. Car Ride Quality:
1. Horizontal and vertical acceleration within car during all riding and door operating conditions. Not more than 20 mg peak to peak (adjacent peaks) in the 1 - 10 Hz range.
2. Acceleration and Deceleration: Smooth constant and not less than 3 feet/second^2 with an initial ramp between 0.5 and 0.75 second.
3. Sustained Jerk: Not more than 6 feet/second^3.
4. Measurement Standards: Measure and evaluate ride quality consistent with ISO 18738, using low pass cutoff frequency of 10 Hz and A95 peak-to-peak average calculations.

I. Noise and Vibration Control
1. Airborne Noise: Measured noise level of elevator equipment and its operation shall not exceed 55 dBA inside car under any condition including door operation and car ventilation exhaust blower on its highest speed. Limit noise level in the machine room relating to elevator equipment and its operation to no more than 80 dBA. All dBA readings to be taken 3'-0" off the floor and 3'-0" from the equipment using the "A" weighted scale.
2. Vibration Control: All elevator equipment provided under this contract, including power unit, controller, oil supply lines, and their support shall be mechanically isolated from the building structure and electrically isolated from the building power supply and to each other to minimize the possibility of objectionable noise and vibrations being transmitted to occupied areas of the building.

2.04 OPERATION

A. Selective Collective Microprocessor-Based, Car 1
   1. Operate car without attendant from pushbuttons in car and located at each floor. When car is available, automatically start car and dispatch it to floor corresponding to registered car or hall call. Once car starts, respond to registered calls in direction of travel and in the order the floors are reached.
   2. Do not reverse car direction until all car calls have been answered, or until all hall calls ahead of car and corresponding to the direction of car travel have been answered.
   3. Slow car and stop automatically at floors corresponding to registered calls, in the order in which they are approached in either direction of travel. As slowdown is initiated for a hall call, automatically cancel hall call. Cancel car calls in the same manner. Hold car at arrival floor an adjustable time interval to allow passenger transfer.
   4. Answer calls corresponding to direction in which car is traveling unless call in the opposite direction is highest (or lowest) call registered.
   5. Illuminate appropriate pushbutton to indicate call registration. Extinguish light when call is answered.

   Approved microprocessor-based, group dispatch, car and motion control systems as follows:
      a. KONE: Resolve KCM 831
      b. Otis: Elevonic
      c. Schindler: 330A
      d. ThyssenKrupp: TAC 20m/32m
      e. MCE: HMC Group

B. Other Items:
   1. Low Oil Control: In the event oil level is insufficient for travel to the top floor, provide controls to return elevator to the main level and park until oil is added.
   2. Independent Service: Provide controls for operation of each car from its pushbuttons only. Close doors by constant pressure on desired destination floor button or door close button. Open doors automatically upon arrival at selected floor.
   3. Car-to-Lobby Feature: Provide the means for automatic return to the first floor. Return car nonstop after answering pre-registered car calls, and park with doors open for an adjustable time period of 60 - 90 seconds. Upon expiration of time period, car shall automatically revert to normal operation and close its doors until assigned as next car or until the car is placed on manual control via in-car attendant or out-of-service switch.

C. Firefighters' Service: Provide equipment and operation in accordance with code requirements.

D. Automatic Car Stopping Zone: Stop car within 1/4" above or below the landing sill. Maintain stopping zone regardless of load in car, direction of travel, distance between landings.

E. Remote Monitoring and Diagnostics: Equip each controller with standard ports, interface boards, and drivers to accept maintenance, data logging, fault finding diagnostic, and monitoring computers, keyboards, modems, and programming tools. The system shall be capable of driving remote color CRT monitor(s) that continually scan and display the status of each car and call.

F. Motion Control: AC type with unit valve suitable for operation specified and capable of providing smooth, comfortable car acceleration and retardation. Limit the difference in car speed between full load and no load to not more than ±3% of the contract speed in either direction of travel.

G. Door Operation: Automatically open doors when car arrives at main floor. At expiration of normal dwell time, close doors.

H. Standby Lighting and Alarm: Car mounted battery unit with solid-state charger to operate alarm bell and car emergency lighting. Battery to be rechargeable with minimum 5-year life expectancy. Include required transformer. Provide constant pressure test button in service compartment of car operating panel.

I. Standby Power Operation: If building requires and provides such means, contractor is to provide the below provisions.
   1. Upon loss of normal power, adequate standby power will be supplied via building electrical feeders to simultaneously start and run one car in each group and single cars at contract car speed and capacity.
   2. Automatically return one car at a time in each group and single car, nonstop to designated floor, open doors for approximately 3.0 seconds, close doors, and park car. During return operation, car and hall call pushbuttons shall be rendered inoperative. As each car parks, system shall immediately select the next car until all cars in a group have returned to the designated floor. If a car fails to start or return within 30 seconds, system shall automatically select the next car in the group to automatically return.
   3. When all cars in a group have returned to the designated floor, one car in each group shall be designated for automatic operation. When a service demand exists for 30 seconds and designated car fails to start, next available car in the group shall be automatically selected for operation.

J. Battery Standby Power Transfer:
   1. Upon loss of normal power, provide controls to automatically lower the car(s) to the nearest lower landing. Upon arrival at the nearest landing, the elevator doors shall open automatically and remain open until regular door time has expired. The elevator shall then become deactivated.
   2. Upon restoration of normal power, the elevator shall automatically resume normal operation.

2.05 MACHINE ROOM EQUIPMENT

A. Arrange equipment in existing machine room spaces

B. NEW Pump Unit: Assembled unit consisting of positive displacement pump, induction motor, master-type control valves combining safety features, holding, direction, bypass, stopping, manual lowering functions, shut off valve, oil reservoir with protected vent opening, oil level gauge, outlet strainer, drip pan, muffler, all mounted on isolating pads. Enclose entire unit with removable sheet steel panels lined with sound-absorbing material. Provide SCR soft start with closed transition.

C. Landing Systems: Solid-state, magnetic, or optical type.

D. Controller: UL/CSA labeled.
1. Compartment: Securely mount all assemblies, power supplies, chassis switches, relays, etc., on a substantial, self-supporting steel frame. Completely enclose equipment with covers. Provide means to prevent overheating.
2. Relay Design: Magnet operated with contacts of design and material to insure maximum conductivity, long life, and reliable operation without overheating or excessive wear. Provide wiping action and means to prevent sticking due to fusion. Contacts carrying high inductive currents shall be provided with arc deflectors or suppressors.
3. Microprocessor-Related Hardware
   a. Provide built-in noise suppression devices which provide a high level of noise immunity on all solid-state hardware and devices.
   b. Provide power supplies with noise suppression devices.
   c. Isolate inputs from external devices, such as pushbuttons, with opto-isolation modules.
   d. Design control circuits with one leg of power supply grounded.
   e. Safety circuits shall not be affected by accidental grounding of any part of the system.
   f. System shall automatically restart when power is restored.
   g. System memory shall be retained in the event of power failure or disturbance.
   h. Equipment shall be provided with Electro Magnetic Interference (EMI) shielding within FCC guidelines.
4. Wiring: CSA labeled copper for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
5. Permanently mark components, relays, fuses, PC boards, etc., with symbols shown on wiring diagrams.

E. NEW Muffler: Provide in discharge oil line near pump unit. Design shall dampen and absorb pulsation and noise in the flow of hydraulic fluid.

F. REUSE Piping: Retain existing piping and provide new oil for the system.

G. REUSE Shutoff Valve: Retain existing. Replace if detachable.

2.06 HOISTWAY EQUIPMENT

A. REUSE Guide Rails: Retain main guide rails in place.
   1. Clean rails and brackets. Remove rust.
   2. Check all rail and bracket fastenings and tighten.
   3. Realign rails as required to provide smooth car ride.
   4. Provide supplemental rail brackets and/or backing as required by code or to enhance car ride quality.

B. REUSE Buffers
   1. Rebuild as required and paint.

C. REUSE Hydraulic Jack Assembly: Retain existing.
   1. Cylinders: Retain existing. Provide new cylinder head designed to receive unit-type packing and provide means to collect oil at cylinder head and return automatically to oil reservoir.
   2. Plunger(s): Retain existing. Isolate plunger from car frames.

D. REUSE Jack Support and Fluid Shut-Off Valve(s): Retain existing steel pit channels to support jack assembly and transmit loads to building structure. If not already installed, provide manual on/off valves in oil lines adjacent to pump unit and jack units in pit adjacent to jack unit. Ensure Code Compliant.

E. Terminal Stopping: Provide normal and final devices.

F. Electrical Wiring and Wiring Connections:
   1. Conductors and Connections: Copper throughout with individual wires coded and connections on identified studs or terminal blocks. Use no splices or similar connections in wiring except at terminal blocks, control compartments, or junction boxes. Provide 10% spare conductors throughout. Run spare wires from car connection points to individual elevator controllers in the machine room. Provide four pair of spare shielded communication wires in addition to those required to connect specified items. Tag spares in machine room.
   2. Conduit: Painted or galvanized steel conduit, EMT, or duct. Conduit size, 1/2". Flexible heavy-duty service cord may be used between fixed car wiring and car door switches for door protective devices.
   3. Traveling Cables: Flame and moisture-resistant outer cover. Prevent traveling cable from rubbing or chafing against hoistway or equipment within hoistway.
   4. Auxiliary Wiring: Connect fire alarm initiating devices, emergency two-way communication system, firefighters' phone, paging speaker, intercom, and announcement speaker and/or background music.

G. Entrance Equipment: Retain or Replace New as noted.
   1. Door Hangers–Retain/Refurbish
   2. Door Rollers - New
   3. Door Track: Retain/Refurbish
   4. Door Interlocks: Retain, replace contacts.
   5. Door Closers: New

6. Pick Assembly: Retain, new rollers

H. NEW Hoistway Door Unlocking Devices.

I. Floor Numbers: Stencil paint 4" high floor designations in contrasting color on inside face of hoistway doors or hoistway fascia in location visible from within car.

2.07 HOISTWAY ENTRANCES

A. REUSE Frames: Retain existing.

B. REUSE Transom Panels: Retain existing

C. REUSE Door Panels: Retain existing. Provide new door gibs with fire tabs at all floors. Minimum two gibs per panel, one at leading edge, and one at trailing edge of each panel

D. REUSE Sight Guards: Retain existing, replace damaged ones as needed.

E. REUSE Sills: Retain existing. Clean and polish. Check and tighten all fastenings.

F. REUSE Sill Supports: Retain existing. Check and tighten all fastenings.

G. REUSE Fascia and Hanger Covers: Provide as required where damaged or missing.

H. NEW Toe Guards: Replace new with 48’guards.

I. REUSE Struts and Headers: Retain existing. Check and tighten all fastenings.

2.08 CAR EQUIPMENT

A. REUSE Frame: Retain Existing. Check and tighten all fastenings..

B. REUSE Platform: Retain existing. Reinforce if required. Check and tighten all fastenings.

C. REUSE Platform Apron: Retain existing. Check and tighten al fastenings. Replace damaged or missing sections.

D. REUSE Guide Shoes: Replace with New Inserts

E. REUSE Sills: Retain existing. Clean and polish. Check and tighten all fastenings.

F. REUSE Doors: Retain existing. Replace all Gibs

G. REUSE Door Hangers: Replace All Rollers.

H. REUSE Door Track: Clean and polish. Check and tighten all fastenings.

I. REUSE Door Header: Clean and polish. Check and tighten all fastenings.

J. NEW Electric Door Contact: Prohibit car operation unless car door is closed.

K. NEW Door Clutch: Heavy-duty clutch, linkage arms, drive blocks and pickup rollers or cams to provide positive, smooth, quiet door operation. Design clutch so car doors can be closed, while hoistway doors remain open.

L. NEW Restricted Opening Device: Provide car-door interlock per code to prevent opening of car door(s) outside unlocking zone. Plunger type restrictors not acceptable.

M. NEW Door Operator: Medium speed door operator capable of opening doors at no less than 2-1/2 f.p.s. Accomplish reversal in no more than 2-1/2" of door movement.
1. G.A.L. MODL or approved equal.

N. Door Control Device:
1. Infrared Reopening Device: Replace New: Black, fully enclosed device with full screen infrared matrix or multiple beams extending vertically along leading edge of each door panel to minimum height of 7'-0" above finished floor. Device shall prevent doors from closing and reverse doors at normal opening speed if beams are obstructed while doors are closing, except during nudging operation. In event of device failure, provide for automatic shutdown of car at floor level with doors open.
   a. Acceptable Infrared Reopening Device:
      1) Cegard/MAX-154 by CEDES
      2) Gatekeeper by Adams
      3) Lambda II by Otis
      4) Magic Edge by Tri-Tronics
      5) Microlite by ThyssenKrupp
      6) Pana40 Plus by Janus
2. Nudging Operation: After beams of door control device are obstructed for a predetermined time interval (minimum 20.0 - 25.0 seconds), warning signal shall sound and doors shall attempt to close with a maximum of 2.5 foot pounds kinetic energy. Activation of the door open button shall override nudging operation and reopen doors.
3. Interrupted Beam Time: When beams are interrupted during initial door opening, hold door open a minimum of 3.0 seconds. When beams are interrupted after the initial 3.0 second hold open time, reduce time doors remain open to an adjustable time of approximately 1.0 - 1.5 seconds after beams are reestablished.
4. Differential Door Time: Provide separately adjustable timers to vary time that doors remain open after stopping in response to calls.
   a. Car Call: Hold open time adjustable between 3.0 and 5.0 seconds.
   b. Hall Call: Hold open time adjustable between 5.0 and 8.0 seconds. Use hall call time when car responds to coincidental calls.

O. Car Operating Panel:
1. One car operating panel, consisting of a metal box containing vandal resistant operating fixtures, mounted behind the car stationary front return panel(s). Faceplate shall be hinged and constructed of stainless steel, satin finish.

2. Suitably identify floor buttons, alarm button, door open button, door close button, and emergency push-to-call button with SCS, Visionmark, or Entrada cast tactile symbols surface mounted. Configure plates per local building code accessibility standards including Braille. Locate operating controls no higher than 48" above the car floor; no lower than 35" for emergency push-to-call button and alarm button.
3. Provide minimum 3/4" diameter raised or flush floor pushbuttons which illuminate to indicate call registration.
4. Provide alarm button to ring bell located on car, Illuminate button when actuated.
5. Provide keyed stop switch at bottom of car operating panel faceplate in locked car service compartment. Mark device to indicate "run" and "stop" positions.
6. Provide "door open" button to stop and reopen doors or hold doors in open position.
7. Extended Door Hold Open Button: Provide button to extend normal door hold open period up to 30 seconds. Cancel extended time by registration of car call or actuation of door close button.
8. Provide "door close" button to activate door close cycle. Cycle shall not begin until normal door dwell time for a car or hall call has expired, except firefighters' operation.
9. Provide firefighters' Phase II key switch with engraved instructions filled red. Include light jewel, audible signal, and call cancel button.
10. Provide lockable service compartment with recessed flush door. Door material and finish shall match car return panel or car operating panel faceplate. Inside surface of door shall contain an integral flush window for displaying the elevator operating permit.
11. Include the following controls in lockable service cabinet with function and operating positions identified by permanent signage or engraved legend:
    a. Inspection switch.
    b. Light switch.
    c. Two-position exhaust blower switch.
    d. Independent service switch.
    e. Constant pressure test button for battery pack emergency lighting.
    f. 120-volt, AC, GFCI protected electrical convenience outlet.
    g. Card reader override switch.
    h. Stop switch.
    i. Switch to select either floor voice annunciation, floor passing tone, or chime.

12. Provide black paint filled (except as noted), engraved, or approved etched signage as follows with approved size and font:
    a. Phase II firefighters' operating instructions on main operating panel above corresponding keyswitch filled red.
    b. Car number on main car operating panel.
    c. Certificate Frame Incorporated within COP (lockable service cabinet door)
    d. "No Smoking" on main car operating panel.
    e. Car capacity in pounds on main car operating panel

P. NEW Car Top Control Station: Mount to provide safe access and utilization while standing in an upright position on car top.

Q. NEW Car top handrail: Provide Code Compliant Car top handrail (if hoistway dimensions require)

R. NEW Work Light and Duplex Plug Receptacle: GFCI protected outlet at top and bottom of car. Include on/off switch and lamp guard.

S. Communication System:
1. "Push to Call," two-way communication instrument in car with automatic dialing, tracking, and recall features with shielded wiring to car controller in machine room. Provide dialer with automatic rollover capability with minimum two numbers.

2.
a. "Push to Call" button or adjacent light jewel shall illuminate and flash when call is acknowledged. Button shall match car operating panel pushbutton design. Provide uppercase "PUSH TO CALL," "HELP ON THE WAY" engraved signage adjacent to button.
b. Provide "Push to Call" button tactile symbol, engraved signage, and Braille adjacent to button mounted integral with car front return panel.
2. Provide two-way communication between car and machine room if required.

2.09 CAR ENCLOSURE

A. REUSE Car Enclosure Passenger: Retain existing. Modify as required for application of new signal and pushbutton fixtures. Check and tighten all fasteners. Provide CODE required venting.

2.10 HALL CONTROL STATIONS

A. Elevator 1 Pushbuttons: Provide 1 riser(s) with surface mounted faceplates. Include pushbuttons for each direction of travel which illuminate to indicate call registration. Provide lock off key switch in first floor hall station, but to be overridden by fire service. Include approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency situation as part of faceplate. Pushbutton design shall match car operating panel pushbuttons. Provide vandal resistant pushbutton and light assemblies. Provide enlarged faceplate to cover existing wall blockout and facilitate handicapped access requirements. Include approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency situation as part of faceplate. Provide any cutting and patching required.

2.11 SIGNALS

A. NEW Car Direction Lantern: Provide flush-mounted car lantern in all car entrance columns. Illuminate up or down LED lights and sound electronic tone once for up and twice for down direction travel as doors open. Sound tone once for up direction and twice for down direction. Sound level shall be adjustable from 0 - 80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor. Provide adjustable car door dwell time to comply with ADA requirements relative to hall call notification time. Car direction lenses shall be arrow shaped with faceplates. Lenses shall be minimum 2-1/2" in their smallest dimension.

B. Faceplate Material and Finish: Stainless steel

C. Floor Passing Tone: Provide an audible tone of no less than 20 decibels and frequency of no higher than 1500 Hz, to sound as the car passes or stops at a floor served.

D. Firefighters' Key Box: Flush-mounted box with lockable hinged cover. Engrave instructions for use on cover per Local Fire Authority requirements.

PART 3 EXECUTION

3.01 SITE CONDITION INSPECTION

A. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.

B. Do not proceed with installation until work in place conforms to project requirements.

3.02 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material in Contractor's original, unopened protective packaging.

B. Store material in original protective packaging. Prevent soiling, physical damage, or moisture damage.

C. Protect equipment and exposed finishes from damage and stains during transportation, erection, and construction.

3.03 INSTALLATION

A. Install all equipment in accordance with Contractor's instructions, referenced codes, specification, and approved submittals.

B. Install machine room equipment with clearances in accordance with referenced codes and specification.

C. Install all equipment so it may be easily removed for maintenance and repair.

D. Install all equipment for ease of maintenance.

E. Install all equipment to afford maximum accessibility, safety, and continuity of operation.

F. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel.
   1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
   2. Neatly touch up damaged factory-painted surfaces with original paint color. Protect machine-finish surfaces against corrosion.

3.04 FIELD QUALITY CONTROL

A. Work at jobsite will be checked during course of installation. Full cooperation with reviewing personnel is mandatory. Accomplish corrective work required prior to performing further installation.

B. Have Code Authority acceptance inspection performed and complete corrective work.

3.05 ADJUSTMENTS

A. Install hydraulic jack assembly and guide rails plumb and align vertically with tolerance of 1/16" in 100'-0". Secure guide rail joints without gaps and file any irregularities to a smooth surface.

B. Static balance car to equalize pressure of guide shoes on guide rails.

C. Lubricate all equipment in accordance with Contractor's instructions.

D. Adjust motors, valves, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

3.06 CLEANUP

A. Keep work areas orderly and free from debris during progress of project. Remove packaging materials on a daily basis.

B. Remove all loose materials and filings resulting from work.

C. Clean machine room equipment and floor.

D. Clean hoistways, car, car enclosure, entrances, operating and signal fixtures.

E. Paint Machine room and pit floor gray; paint pit channels and buffers black.

3.07 ACCEPTANCE REVIEW AND TESTS

A. See Section 01700, Article 1.02, Consultant's Final Observation and Review Requirements.

3.08 PURCHASER'S INFORMATION

A. See Section 01700, Article 1.03, Final Contract Compliance Review.

END OF SECTION 014250 - CPB

APPENDIX A

NOTE: Refer only to information in Lerch Bates Elevator Modernization Report that concerns **Orange County – Corrections Phoenix Building**

INTERNAL OPERATIONS CENTER I
(IOC)
450 EAST SOUTH STREET
ORLANDO, FLORIDA 32801
(2 ELEVATORS)

CORRECTIONS PHOENIX BUILDING
(CPB)
3883 VISION BLVD
ORLANDO, FLORIDA 32839
(1 ELEVATOR)

ELEVATOR MODERNIZATION REPORT

Prepared For:

John L. Ribar, EVP/Principal
Project Manager
MRI Architectural Group
320 E. South Street, Suite 150
Orlando, FL 32801
Direct Line: 407-398-8006
Office: 407-245-3660
Fax: 407-245-3662
Cell: 321-720-9940
jribar@mriarchitects.com

Prepared By:

Michael Lagana
Project Manager
Cell 813 810 9339
Michael.Lagana@lerchbates.com
LB Project Number: 2011000946-01

All documents furnished by Lerch Bates Inc. (Lerch Bates) are instruments of service and shall remain the sole property of Lerch Bates. Lerch Bates shall retain all common law, statutory and other reserved rights, including the copyright thereto. They are to be used only for this project and are not to be modified, distributed or used for any other project, in whole or in part, except with the written authorization of Lerch Bates. Lerch Bates accepts no liability for any unauthorized use or modification of these documents.

LERCH BATES
Building Insight

TABLE OF CONTENTS

SECTION 1 EXECUTIVE SUMMARY AND RECOMMENDATIONS 1

SECTION 2 EXISTING EQUIPMENT REVIEW & WORK BY OTHERS 3

SECTION 3 MODERNIZATION PLANS ..... **ERROR! BOOKMARK NOT DEFINED.**

SECTION 4 PHOTOGRAPHS OF EXISTING EQUIPMENT 9

© 2010 Lerch Bates Inc.

LERCH BATES
Building Insight

SECTION 1
EXECUTIVE SUMMARY AND RECOMMENDATIONS

A. GENERAL

Lerch Bates Inc. was commissioned to review the elevator equipment in the Orange County Corrections Phoenix Building (CPB) and the Internal Operations Center 1 (IOC) in consideration of a potential modernization. The existing elevator equipment condition was evaluated to determine proper component replacement as well as reuse. Existing building conditions in the elevator machine room, hoistway, and pit were also reviewed for Code compliance, which becomes incumbent with a modernization project.

When applicable, this report will be split into two sections (Corrections Phoenix Building – CPB) and Internal Operations Center 1 (IOC).

B. MODERNIZATION OBJECTIVES

In our judgment, a comprehensive elevator modernization at both the CPB and IOC should consider the following objectives:

1. Improved system reliability.
2. Improved stopping accuracy and ride quality.
3. Improved door operation and performance.
4. Compliance with current Fire Recall Requirements (Regional Key Switch Uniformity)
5. Compliance to the Americans with Disabilities Act.
6. Compliance with existing elevator and building Code requirements.

C. CONCLUSION

The existing elevator equipment was engineered and installed in 1992 (CPB) and 1984 (IOC) and both locations have equipment at the end of its life cycle, to include some equipment parts becoming increasingly unavailable. Both locations have elevator control systems based off of relay logic and the technology is outdated, and increasingly causing shut downs.

The door operation is original equipment. Advances in door technology have resulted in improved passenger safety via closed loop operation.

Existing signal fixtures are dated and of poor condition. Planning for replacement should also include new hall and car fixtures as well as replacement of the multi-light hall position indicators in the hall lobbies.

The elevator cab interiors are original with the exception of re-cladding of some elevator doors. While interior and cosmetic items are not a priority of this project, their conditions were reviewed and are in average condition. The ceilings, should be considered for upgrade to a “maintenance friendly” and LED bulb down light type ceiling.

© 2010 Lerch Bates Inc.

Finally, a modernization of the elevator equipment will require upgrades to existing building for Code compliance within limitations of existing structure to ensure city acceptability of the new installations. A summary of additional work within the building is in

D. RECOMMENDATIONS

We recommend planning proceed for the replacement of the existing control systems with new microprocessor based controls, new closed loop door operators, and new LED car and hall fixtures. Various existing mechanical and structural components can be reconditioned and reused but will be noted more specifically later in this report.

We recommend that the specifications include alternates for the following items:

1) New LED down light ceilings. (3 cars)

2) Security (aftermarket) provisions within controller and car fixtures. (3 cars)

The modernization project duration will depend on several factors, including work by other trades to ensure the elevator is full code compliant after the modernization. Actual elevator equipment installation should take approximately 3 – 4 weeks per elevator. Contractor selection should be based upon a fair tendering process with final award based upon initial cost, five year cost of ownership, mutually acceptable contract terms and conditions, and contractor's track record in the Orlando Florida market.

© 2010 Lerch Bates Inc.

SECTION 2
EXISTING EQUIPMENT REVIEW & WORK BY OTHERS

A. GENERAL

During our survey, existing passenger elevator components were checked to determine overall condition and suitability for continued use. In addition, machine room, hoistway, and pit spaces were reviewed for compliance with current codes. This section reviews the results of our equipment survey.

B. DISCUSSION

IOC – The two elevators at this location were installed approximately 1984 and are showing signs of their age and near the end of their life cycle. The control system is a relay based technology, manufactured by General Elevator heavily in the 1980's throughout Florida. Unfortunately, as-built wiring diagrams were rarely supplied to the jobsites as many controllers underwent significant on the jobsite wiring and wiring schematics were not always adjusted accordingly. This creates troubleshooting more time consuming and as a result increased down time. To add, the IBM ice cube relays can have intermittent issues over time if moisture in the air builds on the pins resulting in corrosion. Currently the machine room is not air conditioned but will be required to be for the elevator modernization. The door equipment is a reliable brand (GAL) but is clearly at the end of its mechanical life cycle. It will be recommended to stay with this same manufacturer of door equipment as it will most easily match up to the existing hoistway hardware, which will save Orange County in material costs and installation labor costs.

CPB – The one elevator at this location was installed approximately 1992, but unfortunately was manufactured and installed by a company that is no longer in business. The controller system is a relay logic based system with ice cube relays. There are electrical prints in the machine room, but it is questionable as to their accuracy. While this machine room does have air conditioning, all the equipment within the machine room is no longer manufactured and obsolete in the industry. Obsolescence of some or all components within an elevator raises the financial risk of the ownership as all elevator companies will not cover such components in any service agreement. The door equipment is a reliable brand (GAL) but is clearly at the end of its mechanical life cycle. It will be recommended to stay with this same manufacturer of door equipment as it will most easily match up to the existing hardware, which will save Orange County in material costs and installation labor costs.

Both IOC & CPB –

Both location's fixtures (both hall and in car) are dated and the buttons are no longer manufactured. Replacement of these fixtures with vandal resistant, LED style fixtures will be part of the specification. To reduce costs in cutting and patching of lobby walls, a surface mount hall fixture design will be part of the specification for both locations.

Finally, a modernization of the elevator equipment will require possible code upgrades to other areas besides elevators. It is the responsibility of the building to review **SECTION 2D** to ensure any required work noted in this section is completed prior to the end of the first elevator installation.

C. EQUIPMENT DISPOSITION

The following provides details on the existing component condition and recommendations for replacement or reuse:

© 2010 Lerch Bates Inc.

1. Controls

The existing controls for both buildings operate off of relay logic based technology. This technology is over 30 years old and significant changes in design have made substantial improvements in operation and reliability via microprocessor based systems and soft starters that reduce energy draw.

Knowledge within the local work force on this type of equipment is dwindling as technicians who were regularly trained to install and service this vintage of equipment are retiring. As a result of this, the quality level of service will be directly correlated with the amount of knowledgeable labor force available as time goes on.

2. Car Frame

The existing car frame is simply structural steel and should be reused.

3. Platform

The existing platform is suitable for reuse.

4. Car and Hoistway Door Equipment

For both locations, the original GAL door operator was and still is a standard, aftermarket product line in the industry. The equipment is very reliable and easy to maintain.

For the Internal Operations Center 1 Building, the usuage level is much higher, thus we propose going with a "open loop" door operator technology means that the door speed and door position is dictated by pre-set mechanical cams which cannot adjust to site conditions. The "closed loop" door control provides a variable speed drive that can adjust the door motor for potential stack affect. The "closed loop" control also improves passenger safety by its ability to adjust for door closing force. The existing door equipment manufacturer makes a reliable closed loop operator which will be specified in section 14250.

For the Corrections Phoenix Building, The entrance size and usage level is much less than that of the Internal Operations Center. As a result, the upgraded version of the existing door operator at this location will be specified and will more than meet the needs of the traffic flow while saving some money in the process.

The door protection device has been upgraded from a mechanical safety edge with photo-eyes to a full height door, non-contact, Microscan device. This device can be retained if compatible with bidders' equipment.

The existing hoistway door panels and entrance frames are in good condition and can be reused and re-skinned in the future if desired. The existing passenger elevator hoistway door sills are in good condition and will be cleaned and securely tightened and retained. The existing interlocks will be re-built, but all rollers and interlock contacts will be replaced new.

© 2010 Lerch Bates Inc.

5. Cab Enclosure

We recommend only immediate consideration to the ceiling to be replaced due to the difficulty of bulb replacement and type of lighting. This will be an alternate in the bid.

6. Car and Hall Station Fixtures

The main car control stations and the hall pushbutton stations should be replaced with new long lasting LED registration consoles. The hall buttons were mounted at 42" above finish floor; this will enable reuse of the existing fixture boxes and eliminate major hall cutting and patching.

7. Guide Rail Supports

Existing passenger elevator car guide rails are in generally good condition and are suitable for reuse under any modernization program where speed and capacity are not changed. They will be cleaned with all fastenings tightened.

8. Traveling Cables and Hoistway Wiring

Existing traveling cables and hoistway wiring will be replaced as a result of the new controls and fixtures. New traveling cables should be provided with minimum 10% spare conductors and should include a minimum of four (4) sets of twisted shielded pairs of communication wires to facilitate installation of new car controls and to provide sufficient spares to accommodate future devices if desired.

An alternate will be in place to add the proper wiring and controller provisions for security/card readers and cameras.

9. Buffers and Pit Equipment

Existing passenger elevator car buffers are in fair condition and will be reconditioned for reuse.

10. Hydraulic Cylinder

Will be retained.

11. Hydraulic Power Unit

The hydraulic power unit consists of the valve, motor, pump and silencer, all of which work in unison to regulate the oil from the tank to put the elevator in motion.

CPB – The one elevator is a submersible type design in which all the above mention parts are within the oil tank (submersible).

IOC – Has two dry mount type design power units due to the combination of the distance from the machine room to the hoistway, higher speed and heavier load carrying ability.

Both – The elevators at both locations will have new power units installed, keeping with the same design currently installed.

© 2010 Lerch Bates Inc.

D. WORK BY OTHERS

By ASME A17.1 CODE, the initiation of an elevator modernization requires upgrade to related building components. Such items can include the electrical supply, structure fire ratings, and life safety components. Unless otherwise noted in this specification, the below list is the responsibility of the Building. MANY OF THESE NON-ELEVATOR RELATED ITEMS MAY ALREADY BE IN PLACE AT THE LOCATION, BUT THE ENTIRE LIST SHOULD BE REVIEWED BY THE BUILDING TO ENSURE COMPLIANCE.

MACHINE ROOM

- Provide self-closing, self-locking 1 1/2 hour "B" rated access door
- Ensure all stairs that may lead to machine room are secured to solid floor and lit.
- Provide ABC rated fire extinguisher mounted to machine room wall next do access door
- Install guarding on machine room lights (tubes).
- New and/or increased lighting (19 foot candles at the floor level throughout entire room)
- Provide battery powered emergency lighting.
- The entire room must be fire rated with no penetrations
- Cover or remove existing non-elevator duct, pipe and equipment from machine room.
- Provide AC/Heating to machine room, but do not install in location in which will hinder the proper placement of elevator equipment. (60-95 degrees; non-condensing)
- Cover existing venting to hoistway (often in machine room floor on traction cars)
- Provide fire rated duct from hoistway vents to outside.
- Relocate existing disconnects to "line of sight of machines"
- Provide additional disconnects if previous condition cannot be met
- Replace existing disconnects: RK5 fused, lockable, cannot be opened in ON position.
- Provide 110VAC fuse, lockable disconnects (one per car) for cab lights and fan.
- Provide wiring from disconnects (main and 110vac) to elevator controller.
- Provide 110VAC GFCI outlets in machine room
- Run telephone line in metal conduit to elevator controller
- Provide smoke detector(s); quantity based on size of room and coverage
- Provide heat detector for sprinklers, mounted within 24″ of each sprinkler head
- Monitor heat detector power at fire alarm control panel (failure to cause signal)
- Provide shunt trip on Mainline disconnects(s), tie into heat detectors (if machine room and or hoistway is sprinkled. If not sprinkled, disregard.
- All disconnects are to be labled: fed from information and disconnects purpose. (ie. Fed from main panel G3 – Elevator #3 Controller Disconnect – State Serial # 555555)
- All floor and wall holes are to be patched and sealed.
- Dedicated earth ground (home-run)
- Foreign equipment that of which does not pertain to the specific operation or safety and or safety devices of the elevator such as water/drainage pipes, communication terminals, J boxes etc. will have to be removed or separated from designated elevator room space.

© 2010 Lerch Bates Inc.

HOISTWAY/PIT/LANDINGS/CAR

- Provide smoke vents at the top of shafts to the outside (3ft X 3ft per Elevator). If adding motorized damper, tie into fire system accordingly and program dampers to normally be in the closed position unless an emergency fire service signal is engaged, then open.
- Provide smoke detectors at each landing: non-resetting, tied to general alarm – 3 zones (Elevator Contractor to determine configuration).
- Provide smoke detector(s) at the top of shaft(s) where applicable. (Detector must be accessible from outside the hoistway)
- Provide heat detector for sprinkler(s) at the top of shaft(s), within 24″ of each head. (Detector must be accessible from outside the hoistway)
- Provide audible/visual smoke annunciator panel, location per Fire Authority.
- Patch holes in hoistway to provide fire rated enclosure
- Cut walls for installation of new fixtures (if required by elevator contractor, though minimal cutting is usually required)
- Patch/redecorate walls after installation of new fixtures.
- Provide NEMA 4 guarded light and switch in each pit (10 foot candles).
- Provide 110VAC GFCI protected outlet in pit
- Provide metal ladder extending 42″ above floor level at each entrance to pit
- Provide 110VAC outlet to pit sump pump (if present) (non-GFI)
- Provide metal cover on sump hole – securely attached
- Replace sump pump (if present).
- Drains and sump pumps, where provided shall comply with the applicable plumbing code and they shall be provided with a positive means to prevent water, gases and odors from entering the hoistway. Adding a sump pump is not required unless the elevator was installed with a State Serial # 97463 and up.
- All protruding surfaces into hoistway shall not exceed 4 inches, not be beveled less than 75deg. and provide no interference with the elevator equipment.
- All stop switches and pit lights should be located 18 inches above the landing floor and adjacent to the pit ladder.
- Conduit runs (3”) from machine room(s) to location of remote emergency status panels with pull stations located at every 100 feet and 90 deg. bend. (if existing non retainable).
- Security/TV/Camera provisions MAY be selected by owner and thus result in installation of such equipment by a contractor other than the elevator company. Elevator company involvement will be on a time and material basis.

EMERGENCY POWER (conform to below requirements)

1) If elevator(s) are supplied with Emergency Power, today’s microprocessor equipment requires a dual 30 second notification signal. This “pre” and “post” signal of emergency power transfer will allow the elevator to travel to the nearest floor and open the doors and avoid equipment damage. Many older ATS’s will require full replacement.

2) CODE’s of other building devices may be affected by this upgrade and should be addressed to ensure 100% compliance in all building systems. (ie fire pump may require code upgrades once upgrades to ATS are done)

© 2010 Lerch Bates Inc.

3) ASME A17.1 2004a requirements:

2.27.2 Emergency or Standby Power System Where an emergency or standby power system is provided to operate an elevator in the event of normal power supply failure, the requirements of 2.27.2.1 through 2.27.2.5 shall be complied with.

2.27.2.1 The emergency or standby power system shall be capable of operating the elevator(s) with rated load (see 2.16.8), at least one at a time, unless otherwise required by the building code.

2.27.2.2 The transfer between the normal and the emergency or standby power system shall be automatic.

2.27.2.3 An illuminated signal marked "ELEVATOR EMERGENCY POWER" shall be provided in the elevator lobby at the designated level to indicate that the normal power supply has failed and the emergency or standby power is in effect.

2.27.2.4 Where the emergency or standby power system is not capable of operating all elevators simultaneously, requirements of 2.27.2.4.1 through 2.27.2.4.5 shall be conformed to. The selector switch(es) should normally be placed in the "AUTO" position.

2.27.2.4.1 A selector switch(es) marked "ELEVATOR EMERGENCY POWER" in red lettering a minimum of 5 mm (0.25 in.) in height, which is key-operated or under a locked cover (see 2.27.8), shall be provided to permit the selection of the elevator(s) to operate on the emergency or standby power system. The key shall be Group 3 Security (see 8.1).

2.27.2.4.2 The selector switch(es) positions shall be marked to correspond with the elevator identification number (see 2.29) and a position marked "AUTO."

2.27.2.4.3 The selector switch(es) shall be located at the designated level in view of all elevator entrances, or if located elsewhere means shall be provided adjacent to the selector switch(es) to indicate that the elevator is at the designated level with the doors in the normally open position.

2.27.2.4.4 When the selector switch is in the "AUTO" position, automatic power selection shall be provided, which will return each elevator that is not on designated attendant operation, inspection operation or Phase II In-Car Emergency Operation, one or more at a time, to the recall level. Failure of the selected car to move shall cause power to be transferred to another car.

2.27.2.4.5 The selector switch(es) positions corresponding to the elevator identification numbers (see2.29.1) shall override the automatic power selection. Operation of the selector switch(es) shall not cause power to be removed from any elevator until the elevator is stopped.

2.27.2.5 When the emergency or standby power system is designed to operate only one elevator at a time, the energy absorption means (if required) shall be permitted to be located on the supply side of the elevator power disconnecting means, provided all other requirements of 2.26.10 are conformed to when operating any of the elevators the power might serve. Other building loads, such as power and lights that can be supplied by the emergency or standby power system, shall not be considered as a means of absorbing the regenerated energy for the purposes of conforming to 2.26.10, unless such loads are normally powered by the emergency or standby power system.

© 2010 Lerch Bates Inc.

SECTION 3
MODERNIZATION PLANS

A. GENERAL

The modernization project should be based on equipment changes to achieve the objectives set forth in Section 1 of this report. The scope of work should balance today's cost constraints with improvements that represent a comprehensive, long-term (minimum 20 years) solution. The current market climate and competitive bidding process may enable ownership to possibly realize more than could have been previously realized.

B. MODERNIZATION SCOPE

	R = RETAIN/REFURBISH N = NEW A = ALTER NA = NOT APPLICABLE
SPEED:	R
CAPACITY:	R
CONTROLS:	N
ENCODER:	NA
HOIST MACHINE:	NA
HOIST MOTOR:	NA
HOIST ROPES:	NA
PUMP MOTOR:	N
GOVERNOR:	NA
GOVERNOR ROPE:	NA
HOISTWAY EQUIPMENT (BUFFERS AND PIT EQUIPMENT):	R
CAR SLING:	R
ROLLER/SLIDE GUIDES:	R/N
PLATFORM:	R
SAFETY PLANK:	R
COUNTERWEIGHT:	NA
CAR DOOR OPERATOR:	N
CAR DOOR EQUIPMENT:	R/N
RAILS/SUPPORTS:	R
HOISTWAY DOOR EQUIPMENT:	R/N
HOISTWAY ENTRANCE FRAMES:	R
HOISTWAY DOOR PANELS:	R

© 2010 Lerch Bates Inc.

	R = RETAIN/REFURBISH N = NEW A = ALTER NA = NOT APPLICABLE
HOISTWAY DOOR SILLS:	R
HOISTWAY WIRING TRAVELING CABLES:	N
SIGNALS :	
CAR OPERATING PANELS:	N
HALL PUSHBUTTONS:	N
HALL LANTERNS:	N
CAR POSITION INDICATORS:	N
CAB INTERIOR FINISHES:	ALTERNATE FOR NEW CEILINGS
MACHINE ROOM:	R & A
MACHINE ROOM LIGHTING:	R & A
MACHINE ROOM OUTLETS:	R & A
MACHINE ROOM ACCESS:	R
MACHINE DISCONNECT SWITCH:	N
COOLING/HEATING MACHINE ROOM:	R & A
PIT LIGHTING:	A
PIT OUTLETS:	A
HOISTWAY VENTING:	N

C. RECOMMENDATIONS

We recommend implementation of modernization scope outlined above to provide comprehensive modernization of the existing elevators. Consideration of award should be based upon the initial modernization investment as well as the continued maintenance and service abilities of the equipment. **In addition, reviewing of your current maintenance contract is vital to understanding the implications that may be encountered if the existing service provider is NOT awarded the modernization.**

© 2010 Lerch Bates Inc.

SECTION 4

PHOTOGRAPHS OF EXISTING EQUIPMENT

CPB – Pages 12-17

IOC – Pages 18-24

© 2010 Lerch Bates Inc.

Above: Hall Fixtures will be replaced, fire emergency signage to be engraved in new fixture plate.

Below: Pit equipment to be retained, refurbished and painted. Elected General Contractor to ensure the existing Sump/Pump complies with local plumbing codes

© 2010 Lerch Bates Inc.

Above: Hoistway door rollers, contacts, pick up rollers and spirators to be replaced new. Interlocks and pickup assemblies retain.

Below: Car Operating Panel will be replaced with LED, Vandal Resistant buttons and a hands free phone.

© 2010 Lerch Bates Inc.

Above: Limit switches will be replaced during the modernization.

Below: Car top equipment and car side door equipment to be replaced; to include, door operator, clutch w/restrictor, inspection station, and code compliant escape hatch.

© 2010 Lerch Bates Inc.

Above: Slide guide inserts to be replaced new.

Below: Top of shaft is sprinkled, shunt trip currently installed and must remain. Shaft requires venting.

© 2010 Lerch Bates Inc.

Above: Submersible pumping unit consists of components that are no longer manufactured for direct replacement.

Below: While the mainline and 110 disconnects may be code compliant, when performing a modernization it is always the best time to replace the disconnects to ensure longevity of the entire system.

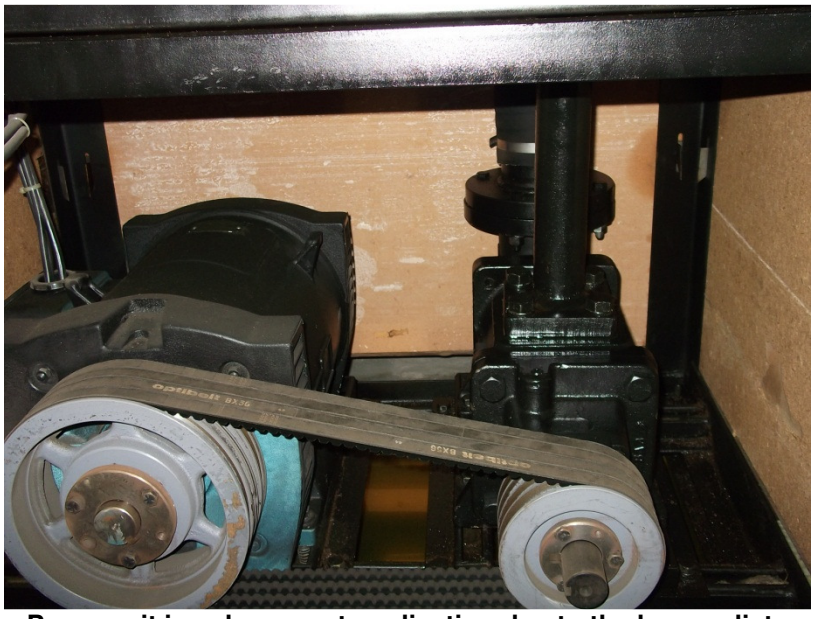
© 2010 Lerch Bates Inc.

Above: Machine room has smoke, heat and sprinkled.

Below: Existing relay logic control system was manufactured by a company that is no longer in business.

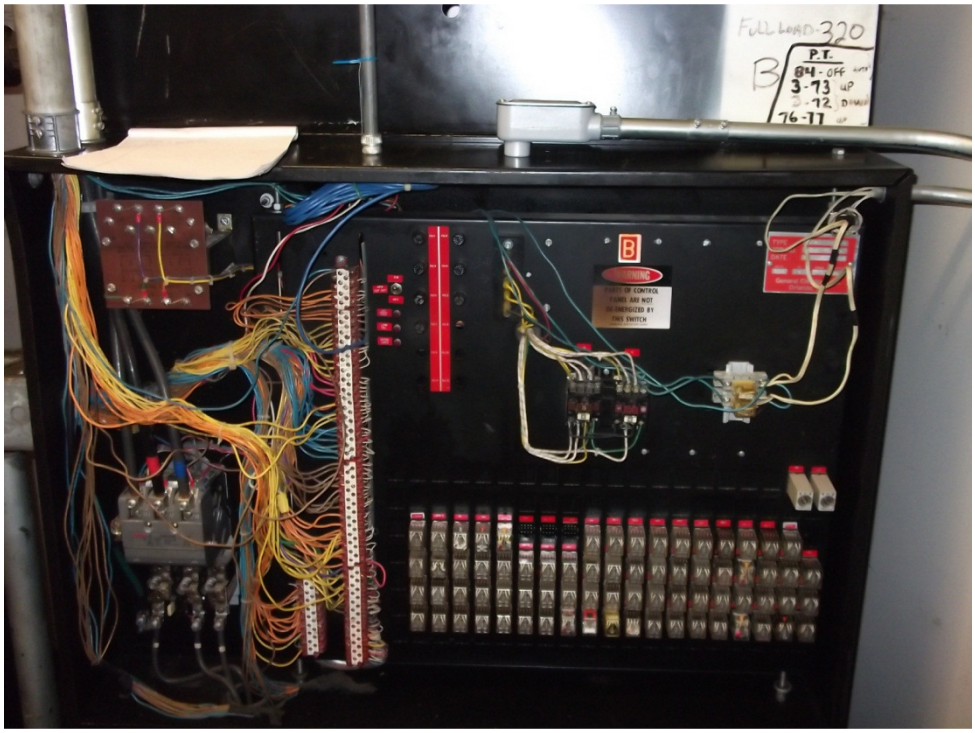
--- End of CPB Photos ---

© 2010 Lerch Bates Inc.



Above: Existing Pump unit is a dry mount application due to the longer distance between the machine room and the actual elevator shaft. A similar replacement system utilizing the same oil line will be specified.

Below: The existing relay logic controls show clear signs of re-occuring problems. As shown you can see a burn area on a sticker and many of the ice cube relays show signs of age.



© 2010 Lerch Bates Inc.

Above: While the disconnects may be code compliant, when performing a modernization it is always the best time to replace the disconnects to ensure longevity of the entire system.

Below: Old underground pipe should be cut off fully and patched, existing oil line to be retained

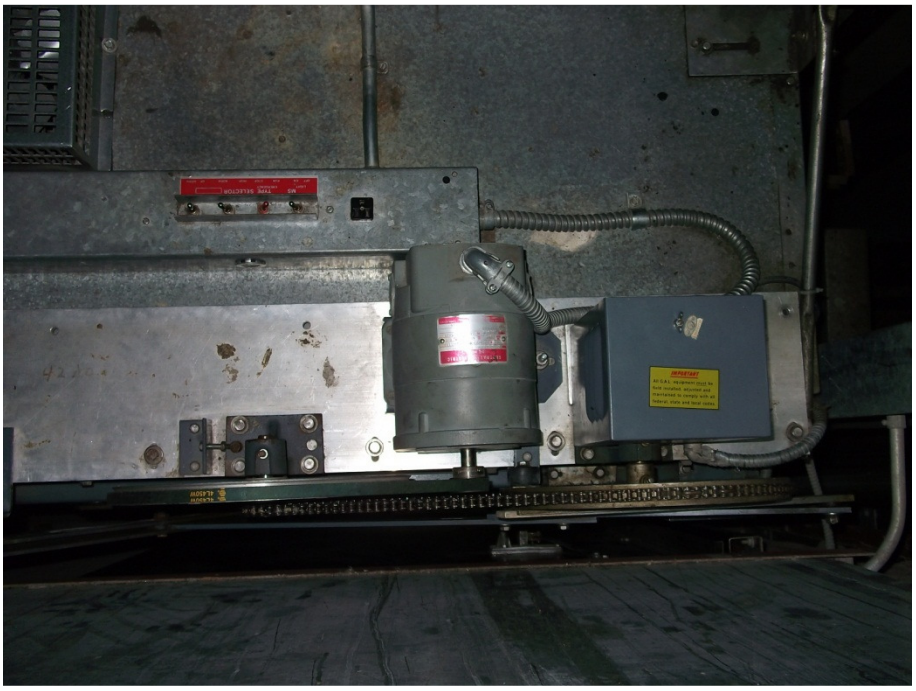
© 2010 Lerch Bates Inc.

Above: General Contractor responsible for ensuring sump pump in pit meets local plumbing code
Below: Jack packing requires replacement immediately, spring buggers to be retained, pit painted

© 2010 Lerch Bates Inc.

Above & Below: Car operating panel will be replaced in full, offering a hands free emergency phone, LED pushbuttons, vandal resistance materials and structure.

© 2010 Lerch Bates Inc.



Above: Car top equipment and car side door equipment to be replaced; to include, door operator, clutch w/restrictor, inspection station, and code compliant escape hatch.

Below: Slide guides to be replaced with newer inserts.

© 2010 Lerch Bates Inc.

Above: Shaft requires ventilation and smoke head that is accessible from top lobby floor
Below: Main lobby floor to have hall station with signage and fire service instructions engraved, dual position indicators and Regional Florida Fire Key Switch.

© 2010 Lerch Bates Inc.

Above: Main lobby floor has code compliant smoke head and sprinkler.

--- End of IOC Photos ---

--- END REPORT ---

© 2010 Lerch Bates Inc.