CAPSTONE HOUSE
ELEVATOR CONTROLS UPGRADE
UNIVERSITY OF SOUTH CAROLINA
STATE PROJECT NO: H27-Z396/50003361-2

Addendum Two
March 17, 2021

This addendum modifies the Contract Documents only in the manner and to the extent stated herein and shown on any accompanying drawings and will become a part of the Contract Documents. Except as specified or otherwise indicated by this addendum, all work shall be in accordance with the basic requirements of the Contract Documents.

GENERAL:

1. Per the Pre-Bid meeting conference call on March 2, the **Last Day for Addenda** will be **Thursday, March 25,2021.** All questions regarding this project are to be submitted in writing to the architect via email no later than the end of the business on Friday, March 19, 2021.
   The architect's email address: Keith Myhand: *kmyhand@jcsarchitects.com*

PROJECT MANUAL:

1. SE-310-Invitation for Design Bid-Build Construction Services: *See attached revised SE-310.*
2. SE-330-Lump Sum Bid Form: *See attached revised Bid Form.*
3. Section 01 1030 "Alternates": Alternate No. 1 has been revised. Alternate No.2 has been deleted. *See attached revised section.*
4. Section 14 2200 "Electric Traction Modernization": *See attached revised section with Addendum #1 and Addendum #2 revisions in* **BLUE**.

END OF ADDENDUM

SE-310
INVITATION FOR DESIGN-BID-BUILD CONSTRUCTION SERVICES

AGENCY: University of South Carolina

PROJECT NAME: Capstone House Elevator Controls Upgrade

PROJECT NUMBER: H27-Z396/50003361-2 **CONSTRUCTION COST RANGE:** **$** 750,000 to **$** 825,000 **N/A** ☐

PROJECT LOCATION: 902 Barnwell Street; Columbia, SC 29208

DESCRIPTION OF PROJECT/SERVICES: Modernizing Three (3) existing geared traction elevators along with other related improvements as indicated within the contract documents. Replace existing geared traction machine at Car #1 with new geared machine. One Alternate is requested. Small and Minority Business Participation is highly encouraged.

BID/SUBMITTAL DUE DATE: 4/1/2021 **TIME:** 2:00PM **NUMBER OF COPIES:** 1

PROJECT DELIVERY METHOD: Design-Bid-Build

AGENCY PROJECT COORDINATOR: Aimee B. Rish, Procurement Manager

EMAIL: arish@fmc.sc.edu **TELEPHONE:** 803.777.2261

DOCUMENTS MAY BE OBTAINED FROM: Purchasing.sc.edu "Solicitations and Awards/Facilities Procurements"

BID SECURITY IS REQUIRED IN AN AMOUNT NOT LESS THAN 5% OF THE BASE BID.

PERFORMANCE AND LABOR & MATERIAL PAYMENT BONDS: The successful Contactor will be required to provide Performance and Labor and Material Payment Bonds, each in the amount of 100% of the Contract Price.

DOCUMENT DEPOSIT AMOUNT: $ N/A **IS DEPOSIT REFUNDABLE** **Yes** ☐ **No** ☐ **N/A** ☒

Bidders must obtain Bidding Documents/Plans from the above listed source(s) to be listed as an official plan holder. Bidders that rely on copies obtained from any other source do so at their own risk. All written communications with official plan holders & bidders will be via email or website posting.

Agency **WILL NOT** accept Bids sent via email.

All questions & correspondence concerning this Invitation shall be addressed to the A/E.

A/E NAME: Jumper Carter Sease Architects, P.A.

A/E CONTACT: M. Keith Myhand, NCARB, AIA

EMAIL: kmyhand@jcsarchitects.com **TELEPHONE:** 803.791.1020

PRE-BID CONFERENCE: **Yes** ☒ **No** ☐ **MANDATORY ATTENDANCE:** **Yes** ☐ **No** ☒

PRE-BID DATE: 3/2/2021 **TIME:** 2:00PM

PRE-BID PLACE: Conference Call 800.753.1965/Access Code 7777162 Site Visit: 03/02/2021@3:00PM (immediately following the Pre-Bid Conference Call) and 03/15/21@1:30 . If attending the site visits, please contact Keith Myhand, Email: kmyhand@jcsarchitects.com and email no later than 02/26/2021 end of busines day. Use of attendee provided face masks and plastic gloves is mandatory.Social distancing rules apply. This will be the only allowed site visit.

BID OPENING PLACE: Conference Call 800.753.1965/Access Code 7777162

BID DELIVERY ADDRESSES:

HAND-DELIVERY:
Attn: Aimee B. Rish "Bid Enclosed H27-Z396/50003361-2"
1600 Hampton Street Suite 606
Columbia, SC 29208

MAIL SERVICE:
Attn: Aimee B. Rish "Bid Enclosed: H27-Z936/50003361-2"
1600 Hampton Street Suite 606
Columbia, SC 29208

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? ***(Agency MUST check one)*** **Yes** ☒ **No** ☐

APPROVED BY:_____ **DATE:** _____
(OSE Project Manager)

SE-330
LUMP SUM BID FORM

Bidders shall submit bids on only Bid Form SE-330.

BID SUBMITTED BY: _____

(Bidder's Name)

BID SUBMITTED TO: University of South Carolina

(Agency's Name)

FOR: PROJECT NAME: Capstone House Elevator Controls Upgrade

PROJECT NUMBER: H29-Z396/50003361-2

OFFER

§ 1. In response to the Invitation for Construction Services and in compliance with the Instructions to Bidders for the above-named Project, the undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with the Agency on the terms included in the Bidding Documents, and to perform all Work as specified or indicated in the Bidding Documents, for the prices and within the time frames indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

§ 2. Pursuant to SC Code § 11-35-3030(1), Bidder has submitted Bid Security as follows in the amount and form required by the Bidding Documents:

☐ **Bid Bond with Power of Attorney** ☐ **Electronic Bid Bond** ☐ **Cashier's Check**

(Bidder check one)

§ 3. Bidder acknowledges the receipt of the following Addenda to the Bidding Documents and has incorporated the effects of said Addenda into this Bid:

(Bidder, check all that apply. Note, there may be more boxes than actual addenda. Do not check boxes that do not apply)

ADDENDA: ☐ **#1** ☐ **#2** ☐ **#3** ☐ **#4** ☐ **#5**

§ 4. Bidder accepts all terms and conditions of the Invitation for Bids, including, without limitation, those dealing with the disposition of Bid Security. Bidder agrees that this Bid, including all Bid Alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of **60** Days following the Bid Date, or for such longer period of time that Bidder may agree to in writing upon request of the Agency.

§ 5. Bidder herewith offers to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fees, permits, licenses and applicable taxes necessary to complete the following items of construction work:

§ 6.1 BASE BID WORK ***(as indicated in the Bidding Documents and generally described as follows)*****:** Modernizing Three(3) existing geared traction elevators along with other related improvements as indicated within the contract documents. Replace existing geared traction machine at Car #1 with new geared machine.

$ _____, which sum is hereafter called the Base Bid.

(Bidder to insert Base Bid Amount on line above)

SE-330
LUMP SUM BID FORM

Bidders shall submit bids on only Bid Form SE-330.

§ 6.2 BID ALTERNATES as indicated in the Bidding Documents and generally described as follows:

ALTERNATE # 1 *(Brief Description)*: Replacement of existing geared traction machines at Car #2 and Car #3 with new geared traction machines. Reference Section 01 1030 in Specifications for full description

☐ **ADD TO** or ☐ **DEDUCT FROM BASE BID: $**

(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)

ALTERNATE # 2 *(Brief Description)*: N/A

☐ **ADD TO** or ☐ **DEDUCT FROM BASE BID: $**

(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)

ALTERNATE # 3 *(Brief Description)*: N/A

☐ **ADD TO** or ☐ **DEDUCT FROM BASE BID: $**

(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)

§ 6.3 UNIT PRICES:

BIDDER offers for the Agency's consideration and use, the following UNIT PRICES. The UNIT PRICES offered by BIDDER indicate the amount to be added to or deducted from the CONTRACT SUM for each item-unit combination. UNIT PRICES include all costs to the Agency, including those for materials, labor, equipment, tools of trades and labor, fees, taxes, insurance, bonding, overhead, profit, etc. The Agency reserves the right to include or not to include any of the following UNIT PRICES in the Contract and to negotiate the UNIT PRICES with BIDDER prior to including in the Contract.

No.	ITEM	UNIT OF MEASURE	ADD	DEDUCT
1.	Interim Maintenance	Month/Unit	$	$
2.	12-Month Warranty Preventive Maintenance	Month	$	$
3.			$	$
4.			$	$
5.			$	$
6.			$	$

SE-330
LUMP SUM BID FORM

§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED

(See Instructions on the following page BF-2A)

Bidder shall use the below-listed Subcontractors in the performance of the Subcontractor Classification work listed:

(A) **SUBCONTRACTOR LICENSE CLASSIFICATION or SUBCLASSIFICATION NAME** *(Completed by Agency)*	**(B)** **LICENSE CLASSIFICATION or SUBCLASSIFICATION ABBREVIATION** *(Completed by Agency)*	**(C)** **SUBCONTRACTOR and/or PRIME CONTRACTOR** *(Required - must be completed by Bidder)*	**(D)** **SUBCONTRACTOR'S and/or PRIME CONTRACTOR'S SC LICENSE NUMBER** *(Requested, but not Required)*
BASE BID			
Mechanical	AC		
Electrical	EL		
ALTERNATE #1			
Electrical	EL		
ALTERNATE #2			
ALTERNATE #3			

If a Bid Alternate is accepted, Subcontractors listed for the Bid Alternate shall be used for the work of both the Alternate and the Base Bid work.

SE-330
LUMP SUM BID FORM

INSTRUCTIONS FOR SUBCONTRACTOR LISTING

1. Section 7 of the Bid Form sets forth an Agency-developed list of subcontractor license classifications or subclassifications for which Bidder is required to identify the entity (subcontractor(s) and/or himself) Bidder will use to perform this work.

a. Columns A & B: The Agency fills out these columns to identify the subcontractor license classification/subclassification and related license abbreviation for which the Bidder must list either a subcontractor or himself as the entity that will perform this work. In Column A, the subcontractor license classification/subclassification is identified by name and in Column B, the related contractor license abbreviation (per Title 40 of the SC Code of Laws) is listed. Abbreviations of licenses can be found at: https://llr.sc.gov/clb/PDFFiles/CLBClassificationAbbreviations.pdf. If the Agnecy has not identified a subcontractor license classification/subclassification, the Bidder does not list a subcontractor.

b. Columns C and D: In these columns, the Bidder identifies the subcontractors it will use for the work of each license listed by the Agency in Columns A & B. Bidder must identify only the subcontractor(s) who will perform the work and no others. Bidders must make sure that their identification of each subcontractor is clear and unambiguous. A listing that could be any number of different entities may be cause for rejection of the bid as non-responsive. For example, a listing of M&M without additional information may be problematic if there are multiple different licensed contractors in South Carolina whose names start with M&M.

2. Subcontractor Defined: For purposes of subcontractor listing, a subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site pursuant to a contract with the prime contractor. Bidder should not identify sub-subcontractors in the spaces provided on the bid form but only those entities with which Bidder will contract directly. Likewise, do not identify material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the Bidder or proposed subcontractor(s).

3. Subcontractor Qualifications: Bidder must only list subcontractors who possess a South Carolina contractor's license that includes the license classification and/or subclassification identified by the Agency in Columns A & B. The subcontractor license must also be within the appropriate license group for the work. If Bidder lists a subcontractor who is not qualified to perform the work, the Bidder will be rejected as non-responsible.

4. Use of Own forces: If, under the terms of the Bidding Documents and SC Contractor Licensing laws, Bidder is qualified to perform the work of a listed subcontractor classification or subclassification and Bidder does not intend to subcontract such work but to use Bidder's own employees to perform such work, the Bidder must insert itself in the space provided.

5. Use of Multiple Subcontractors:

a. If Bidder intends to use multiple subcontractors to perform the work of a single license classification/subclassification, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word **"and"**. If Bidder intends to use both his own employees to perform a part of the work of a single license classification/subclassification and to use one or more subcontractors to perform the remaining work, Bidder must insert itself and each subcontractor, preferably separating them with the word **"and"**. Bidder must use each entity listed for the work of a single license classification/subclassification in the performance of that work.

b. Optional Listing Prohibited: Bidder may not list multiple subcontractors for a license classification/subclassification in a form that provides the Bidder the option, after bid opening or award, to choose one or more but not all the listed subcontractors to perform the work for which they are listed. A listing, which on its face requires subsequent explanation to determine whether it is an optional listing, is non-responsive. If Bidder intends to use multiple entities to perform the work for a single listing, Bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word "**and**" between the names of each entity listed. Agency will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "or", a virgule (that is a /), or any separator that the Agency may reasonably interpret as an optional listing.

6. If Bidder is awarded the contract, Bidder must, except with the approval of the Agency for good cause shown, use the listed entities to perform the work for which they are listed.

7. If Bidder is awarded the contract, Bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.

8. Bidder's failure to identify an entity (subcontractor or himself) to perform the work of a subcontractor listed in Columns A & B will render the Bid non-responsive.

SE-330
LUMP SUM BID FORM

§ 8. LIST OF MANUFACTURERS, MATERIAL SUPPLIERS, AND SUBCONTRACTORS OTHER THAN SUBCONTRACTORS LISTED IN SECTION 7 ABOVE *(FOR INFORMATION ONLY):*

Pursuant to instructions in the Invitation for Construction Services, if any, Bidder will provide to Agency upon the Agency's request and within 24 hours of such request, a listing of manufacturers, material suppliers, and subcontractors, other than those listed in Section 7 above, that Bidder intends to use on the project. Bidder acknowledges and agrees that this list is provided for purposes of determining responsibility and not pursuant to the subcontractor listing requirements of SC Code § 11-35-3020(b)(i).

§ 9. TIME OF CONTRACT PERFORMANCE AND LIQUIDATED DAMAGES

a) CONTRACT TIME

Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Agency. Bidder agrees to substantially complete the Work within **266** Calendar Days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

b) LIQUIDATED DAMAGES

Bidder further agrees that from the compensation to be paid, the Agency shall retain as Liquidated Damages the amount of $**500.00** for each Calendar Day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This amount is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

§ 10. AGREEMENTS

a) Bidder agrees that this bid is subject to the requirements of the laws of the State of South Carolina.

b) Bidder agrees that at any time prior to the issuance of the Notice to Proceed for this Project, this Project may be canceled for the convenience of, and without cost to, the State.

c) Bidder agrees that neither the State of South Carolina nor any of its agencies, employees or agents shall be responsible for any bid preparation costs, or any costs or charges of any type, should all bids be rejected or the Project canceled for any reason prior to the issuance of the Notice to Proceed.

§ 11. ELECTRONIC BID BOND

By signing below, the Principal is affirming that the identified electronic bid bond has been executed and that the Principal and Surety are firmly bound unto the State of South Carolina under the terms and conditions of the AIA Document A310, Bid Bond, included in the Bidding Documents.

ELECTRONIC BID BOND NUMBER: _____

SIGNATURE AND TITLE:_____

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LUMP SUM BID FORM

CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATION

SC Contractor's License Number(s):_____

Classification(s) & Limits:_____

Subclassification(s) & Limits:_____

By signing this Bid, the person signing reaffirms all representation and certification made by both the person signing and the Bidder, including without limitation, those appearing in Article 2 of the SCOSE Version of the AIA Document A701, Instructions to Bidders, is expressly incorporated by reference.

BIDDER'S LEGAL NAME:_____

ADDRESS:_____

_____

TELEPHONE:_____

EMAIL:_____

SIGNATURE:_____ **DATE:**_____

PRINT NAME:_____

TITLE:_____

SECTION 01 1030

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SECTION 01 1030
ALTERNATES

PART 1 - GENERAL

1.1 SCOPE

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

B. Alternates:

1. New Geared Traction Machine

   Provide for Car #2 and Car #3: Single worm geared traction type with AC induction or P.M.S.M. ACV3F motor, brake, gear, drive shaft, deflector sheave, and gear case mounted in proper alignment on an isolated bedplate. Provide bedplate blocking to elevate deflector sheave above machine room floor.
   Provide hoist machine mounted direct drive, digital, closed-loop velocity encoder.
   Provide hoist machine drip pans to collect lubricant seepage.

END OF SECTION

SECTION 142200

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SECTION 142200
ELECTRIC TRACTION ELEVATOR MODERNIZATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Three traction elevators as follows:
   1. Geared Passenger Elevators, Cars 1-3

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. Applicable conditions of Purchasers General, Special, and Supplemental Conditions.

E. Preventive maintenance as described in Section 01 1800.

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 barriers between cars in normal operation and adjacent cars in the modernization process. Full depth and height of hoistway.

I. Hoistway, pit, and machine room barricades as required.

1.2 RELATED WORK

A. See Section 01900, Related Work.

1.3 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.

1.4 QUALITY ASSURANCE

~~A. Approved Contractors:~~
   ~~1. Geared Elevators: KONE, Otis, Schindler, ThyssenKrupp.~~

B. Approved Cab Vendors
   1. Car Enclosure: Eklund’s Inc., Gunderlin, Ltd., Globe Architectural and Metal, KONE, Otis, Schindler, ThyssenKrupp, Tyler, Snap Cab.

C. Approved Components

1. Fixtures: vandal-resistant
2. Non-OEM control systems: GAL Galaxy IV, EC Pixel.
3. Hoist Machines: Hollister Whitney, Torin, Imperial
4. Rope brakes: Hollister Whitney, Bode, Draka
5. Elevator Motor control:
   a. ACVVVF Yaskawa, KEB

D. Compliance with Regulatory Agencies: See Section 01040, Project Procedures.

E. Warranty:
1. Material and workmanship of installation shall comply in every respect with Contract Documents. Correct defective material or workmanship which develops within one year from date of final acceptance of all work to satisfaction of Purchaser and Consultant at no additional cost, unless due to ordinary wear and tear or improper use or care by Purchaser. Perform maintenance in accordance with terms and conditions indicated in the Preventive Maintenance Agreement.
2. Defective is defined to include, but not be limited to: Operation or control system failures, car performance below required minimum, excessive wear, unusual deterioration, or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise, or vibration, and similar unsatisfactory conditions.
3. Retained Equipment: All retained components, parts, and materials shall be cleaned, checked, modified, repaired, or replaced in strict accordance with the specification requirements defined herein. Retained equipment must be compatible for integration with new systems.
4. All retained equipment shall be covered under the warranty provisions, of Article 1.04, D., 1. & 2. above. No prorations of equipment or parts shall be allowed on preventive maintenance contract between the Contractor and Purchaser.
5. Make modifications, requirements, adjustments, and improvements to meet performance requirements specified herein.

F. Seismic Performance Requirements: Elevator system shall withstand the effects of earthquake motions determined according to SEI/ASCE 7 and shall comply with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1/CSA B44.
1. The term “withstand” means the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event.
2. Provide earthquake equipment required by ASME A17.1/CSA B44.
3. Provide seismic switch required by SEI/ASCE 7.
4. Occupancy Category: I.
5. Project Seismic Design Category: 2 B.
6. Elevator Component Importance Factor (Ip): 1.0.

1.5 DOCUMENT AND SITE VERIFICATION

A. 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, 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.

1.6 SUBMITTALS

A. See Section 01 1300, Submittals, and Section 01 1700, Final Contract Compliance Review, Article 1.03.

1.7 PERMIT, TEST AND INSPECTION

A. Obtain and pay for permit, license, and inspection fee necessary to complete installation.

B. Perform full pre-test during normal working hours in advance of acceptance test.

C. 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. Where the Local Jurisdiction required tests to be performed after normal working hours it shall be done at no additional cost to the Purchaser.

D. Supply personnel and equipment for test and final review by Consultant as required in Section 01 1700.

1.8 MAINTENANCE

A. Interim: See Section 01 1800, Maintenance, Article 1.01, A.

B. Warranty Maintenance: See Section 01 1800, Maintenance, Article 1.02, A.

C. Preventive Maintenance: None associated with this project.

PART 2 - PRODUCTS

2.1 SUMMARY

A. Three Passenger Elevators.

B. Unless specifically identified as “retain existing,” provide new equipment.

	Existing Equipment	Disposition
Number:	Cars 1-3	Retain Existing
Capacity:	3000 #	Retain Existing
Class Loading:	Passenger/Service Class A	Retain Existing
Contract Speed:	350 F.P.M.	Retain Existing
Roping:	1:1	Retain Existing
Machine:	Geared	**Provide New Geared Traction Machine for Car #1, Retain Existing for Car #2-3**
Machine Location:	Overhead	Retain Existing
Supervisory Control:	Group Automatic System	Group Automatic Microprocessor-Based System

	Existing Equipment	Disposition
Motor Control:	DC Variable Voltage	AC Variable Voltage Variable Frequency Microprocessor Based with Digital Closed-Loop Feedback
Power Characteristics:	208 Volts, 3 Phase, 60 Hertz Field Verify	Retain Existing
Stops:	18 Front	Retain Existing
Openings:	18 Front	Retain Existing
Floors Served:	1-18 Front	Retain Existing
Travel:	186'-0" ± Field Verify	Retain Existing
Clear Inside Car:	6'-8" Wide X 4'-9" Deep Field Verify	Retain Existing
Entrance Size:	3'-6" Wide X 7'-0" High	Retain Existing
Entrance Type:	Single Speed, Center Opening	Retain Existing
Door Operation:	Open Loop, Harmonic Drive.	High Speed, Heavy-Duty, Linear Drive Door Operator, Minimum Opening Speed 2-1/2 F.P.S.

Alternates, ~~Cars 1-3~~: See Section 00 1030

Provide New Geared Traction Machine for Cars 2-3

~~**Provide New Gearless Traction Machine**~~

2.2 MATERIALS

A. See Section 00 1600, Materials.

2.3 CAR AND GROUP 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: ±1/8" under any loading condition.

D. Door Opening Time: Seconds from start of opening to fully open:
1. Cars 1-3: 1.8 seconds

E. Door Closing Time: Seconds from start of closing to fully closed:
   1. Cars 1-3: 2.5 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 (10'-6" typical floor height):
   1. Cars 1-3: 10.0 seconds

G. Car Ride Quality:
   1. Ride Quality shall be measured and analyzed according to the methods specified in ISO18738.
   2. Device to be utilized in procuring field measurements shall be the EVA-625 Elevator Vibration Analysis System as manufactured by Physical Measurement Technologies (PMT).
   3. Specified levels apply to horizontal and vertical acceleration measured from within car, from the point at which the car has moved ½ meter from start position to ½ meter from final position, as defined by ISO18738.
   4. Maximum peak to peak vibration for the horizontal and vertical axes shall be no greater than 25 mg peak to peak**.**
   5. The A95 peak to peak vibration for the horizontal and vertical axes shall be no greater than 17.5 mg peak to peak.
   6. Acceleration and Deceleration: Smooth constant and not less than 3.0 feet/second^2 with an initial ramp between 0.5 and 0.75 second. Sustained Jerk: Not more than 6 feet/second^3.

H. Noise and Vibration Control
   1. Airborne Noise: Measured noise level of elevator equipment and its operation shall not exceed 60 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, 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.

I. System-Response Time, Cars 1-3: Meet the following criteria during any 60-minute peak period as measured by duration of all hall call registration times:
   1. System-Response Time: Not more than 30 seconds
   2. Hall Calls Answered within 30 Seconds: Not less than 75%
   3. Hall Calls Answered within 60 Seconds: Not less than 95%
   4. Hall Calls Answered within 90 Seconds: Not less than 99%
   5. Base above performance on not more than 250 hall calls being registered within 60-minute period, all cars in group operation during test period.

2.4 OPERATION

A. Group Automatic, Cars 1-3:
   1. Approved microprocessor-based, group dispatch with artificial intelligence car and motion control systems as follows:
      a. KONE: Resolve
      b. Otis RSRPlus
      c. Schindler: Miconic TX-R5

d. ThyssenKrupp: TAC 32T
e. GAL: Galaxy IV
f. EC: Pixel

2. Include, as a minimum, the following features:
   a. Operate cars as a group capable of balancing service and providing continuity of group operation with one or more cars removed from the system.
   b. Register service calls from pushbuttons located at each floor and in each car. Slow cars and stop automatically at floors corresponding to registered calls. Make stops at successive floors for each direction of travel irrespective of order in which calls are registered except when bypassing hall calls to balance and improve overall service; stop only one car in response to a particular hall call. Assign hall calls to specific cars and continually review and modify those assignments to improve service. Simultaneous to initiation of slow down of a car for a hall call, cancel that call. Render hall pushbutton ineffective until car doors begin to close after passenger transfer. Cancel car calls in the same manner. Give priority to coincidental car and hall calls in car assignment.
   c. Operate system to meet changing traffic conditions on a service demand basis. Include provisions for handling traffic which may be heavier in either direction, intermittent or very light. As traffic demands change, automatically and continually modify group and individual car assignment to provide the most-effective means to handle current traffic conditions. Hall calls shall receive immediate assignment to individual cars and hall lantern shall sound and illuminate. Hall lantern shall sound again and illumination shall pulse just prior to car arrival. Give priority to coincidental car and hall calls in hall call assignment. Accomplish car direction reversal without closing and reopening doors.
   d. Use easily reprogrammable system software. Design basic algorithm to optimize service based on equalizing system response to registered hall calls and equalizing passenger trip time at shortest possible time.
   e. Serve floors below main floor in a manner which logically minimizes delay in passing or stopping at main floor in both directions of travel. Provide manual means to force a stop at the main floor when passing to or from lower levels.
   f. Required Features:
      1) Dispatch Protection: Backup dispatching shall function in the same manner as the primary dispatching.
      2) Delayed Car Removal: Automatically remove delayed car from group operation.
      3) Position Sensing: Update car position when passing or stopping at each landing.
      4) Hall Pushbutton Failure: Provide multiple power sources and separate fusing for pushbutton risers.
      5) Communication Link: Provide serial or duplicate communication link for all group and individual car computers.

B. Other Items:
   1. Load Weighing: Provide means for weighing car passenger load. Control system to provide dispatching at main floor in advance of normal intervals when car fills to capacity. Provide hall call by-pass when the car is filled to preset percentage of rated capacity and traveling in down direction. Field adjustment range: 10% to 100%.
   2. Anti-Nuisance Feature: If car loading relative to weight in car is not commensurate with number of registered car calls, or activation of door protection device is not commensurate with the number of registered car calls, cancel car calls. Systems employing either load weighing or door protective device for activation of this feature are acceptable.

3. 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.
4. Car-to-Lobby Feature: Provide the means for automatic return to the 1st 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. Locate recall switch at 1st floor level.
5. Artificial Intelligence Systems: Provide for Cars. Control system shall include one or more of the following “artificial” intelligence approaches to maximize the interfloor traffic performance and reduce the number of “long wait calls” for a given group of elevators:
   a. A long term learning function with a histogram or genetic algorithms that records traffic patterns in the building on a hard disk over at least a week of operation. It shall make use of this information by positioning cars at floors at certain times of the day when heavy traffic is anticipated, by minimizing stops by inferring likely traffic patterns and arrival/departure rates at different floors during different times of the day. The system shall reduce the probability of long wait calls during heavy periods of traffic, etc.
   b. Incorporates neural network, fuzzy logic type rule sets in an expert system rule base. Provide a short term learning function and a knowledge base of predicted traffic patterns and car movements.
   c. A destination hall call registration system that anticipates traffic demands before they occur.
   d. Contractor shall supply full details of his preferred approach to these requirements with his bid response.

C. Firefighters’ Service: Provide equipment and operation in accordance with Code requirements.

D. Firefighters’ Emergency Operation: Provide equipment and operation in accordance with code requirements. Replace all fire key switches in non-modernized elevators in this building to match modernized elevators.

E. Automatic Car Stopping Zone: Stop car within 1/8" above or below the landing sill. Maintain stopping zone regardless of load in car, direction of travel, distance between landings, hoist rope slippage, or stretch.

F. Remote Monitoring and Diagnostics: Equip each controller and the group dispatch logic 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 monitors that continually scan and display the status of each car and call. Do not provide full monitoring system, provide output capability only.

G. Motion Control: Microprocessor based AC, variable-voltage, variable frequency IGBT with digitally encoded closed-loop velocity feedback suitable for operation specified and capable of providing smooth, comfortable car acceleration, retardation, and dynamic braking. Limit the difference in car speed between full load and no load to not more than ±3% of the contract speed.

H. Attendant Operation: Include provision for attendant control of door closing, car direction, and calls answered.

I. Dual-Mode Operation, Cars 1-3
   1. Mode I: Operate within group, responding to group supervisory control assignments.

2. Mode II: Provide automatic digital means to select periods during 24-hour day and 7-day week to operate car as a single, selective collective car from a separate riser of hall pushbuttons. Mount in entrance side jambs at floors served.
3. Provide means to select operating mode (single car or group automatic positions).

J. Door Operation: Automatically open doors when car arrives at main floor. At expiration of normal dwell time, close doors.

K. 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. Provide constant pressure test button in service compartment of car operating panel. Provide lighting integral with portion of normal car lighting system.

L. Standby Power Operation: 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.
1. Automatically return one car at a time in each group and single cars 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.
2. 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.
3. Provide separate group selection switches in firefighters' control panel.
   a. Switches shall be labeled "ELEVATOR EMERGENCY POWER" with positions marked "AUTO" and appropriate car numbers controlled by each respective switch. Key shall be keyed same as from key utilized for firefighters' Phase I and II key switch. Key shall be removable in "AUTO" position only.
   b. Switch shall override automatic return and automatic selection functions, and cause the manually selected car to operate. Manual selection shall cause car to start and proceed to designated floor and open and close its doors before standby power is manually transferred to next selected car.
   c. Provide "ELEVATOR EMERGENCY POWER" indicator lights, one per car, in firefighters' control panel. Indicator light illuminates when corresponding car is selected, automatically or manually, to operate on standby power.
   d. Provide indication of "Car at Lobby with Doors Open" where panel is not in sight of elevators.
   e. Provide "EMERGENCY POWER" jewel in hall station at the designated landing.
4. Successive Starting: When normal power is restored or there has been a power interruption, individual cars in each bank shall restart at five second intervals.

M. Security System with Conventional Group Dispatching: Provide means to limit access to each building floor for Cars 1-3 as follows:
1. Individual floor lockout means in main car operating panel to prevent registration of car calls to any selected secure floors 17 and 18.
2. Provide one building standard key switch per floor, except the designated landing.
3. Arrange system so that independent service and/or attendant operation overrides security system.
4. Arrange system so that firefighters' service overrides security system.
5. Provide manual override switch on the outside of the elevator controller to enable all car calls.

N. Provide Key Switch access on each car operating panel to activate the 18th car call. Ensure fire service phase 1 and 2 and independent service override the key switch.

O. Card/Proximity Reader Security System with Conventional Group Dispatching:
1. Provide provisions inside Cars 1-3 for reader unit. Mount reader unit as directed by Architect and cross connect from car pushbuttons to control module in machine room. Reader control unit, mounting brackets, wiring materials, logic circuits, etc., by Security Subcontractor. Elevator control systems shall facilitate system tracking of persons accessing secure floors via printout by passenger I.D. number, floor accessed, and time of entry.
2. Arrange system so that independent service and/or attendant operation overrides security system.
3. Arrange system so that firefighters' service overrides security system.
4. Provide manual override switch on the outside of the elevator controller to enable all car calls.

P. Pushbutton Crossover Network: Provide an interim crossover network to interface new and old group supervisory systems for purposes of cross cancellation of registered car and hall calls until modernization of individual group is complete. System shall immediately assign hall calls to both existing and modernized elevators and cancel call from both systems when either system cancels the call. Cross cancellation systems which assign calls to existing and modernized cars sequentially are not acceptable.

Q. Car Light and Fan Timer: Provide necessary logic and power relay to allow car lights and fan to turn off.

2.5 MACHINE ROOM EQUIPMENT

A. Arrange equipment in existing machine room spaces.

B. **Geared Traction Hoist Machine: Cars #2-3: Retain existing**.
1. Restore, clean and paint to appear in like new condition.
2. Drain, flush and provide new gear lubricant.
3. Replace worn gears and bearings.
4. Drive sheave- Regroove or replace.
5. Provide supplemental rope retainers and sheave guards.
6. Retrofit new direct drive, digital, closed-loop velocity encoder on hoist machine.
7. Provide drip pans to collect lubricant seepage.
8. Provide new thrust bearing.
9. Provide new worm shaft packing.
10. Provide new sheave shaft seals.
11. Replace all gearcase and inspection port seals with factory seals.
12. Retrofit new AC V3F induction drive motor to existing gear case.
13. Completely disassemble, clean, and inspect all brake components. Replace all worn or damaged parts. Reassemble and test for proper operation.

C. Provide New Geared Traction Hoist Machine: Car #1
1. Single worm geared traction type with AC induction or P.M.S.M. ACV^{3}F motor, brake, gear, drive shaft, deflector sheave, and gear case mounted in proper alignment on an isolated bedplate. Provide bedplate blocking to elevate deflector sheave above machine room floor.
2. Provide hoist machine mounted direct drive, digital, closed-loop velocity encoder.
3. Provide hoist machine drip pans to collect lubricant seepage.

D. *Alternate 1: Provide New Geared Traction Hoist Machine for car #2-3:*
   1. *Single worm geared traction type with AC induction or P.M.S.M. ACV^{3}F motor, brake, gear, drive shaft, deflector sheave, and gear case mounted in proper alignment on an isolated bedplate. Provide bedplate blocking to elevate deflector sheave above machine room floor.*
   2. *Provide hoist machine mounted direct drive, digital, closed-loop velocity encoder.*
   3. *Provide hoist machine drip pans to collect lubricant seepage.*

~~E. Alternate 2: Gearless Traction Hoist Machine:~~
   ~~1. AC induction or P.M.S.M. ACV^{3}F gearless traction type motor with brake, drive sheave, and deflector sheave mounted in proper alignment on a common, isolated bedplate. Provide new secondary or deflector in lower deck or hoistway overhead where necessary due to machine room conditions.~~
   ~~2. Provide hoist machine mounted direct drive, digital, closed-loop velocity encoder.~~
   ~~3. Provide means to prevent ascending car over-speed and unintended car movement per Code. Provide Redundant brake, rope gripper not acceptable.~~
   ~~4. Hoist machine installations which require blockouts through machine room floor for other than hoist ropes shall be provided with a 14 gauge galvanized sheet metal enclosure over entire blockout on underside of floor slab.~~

F. Solid State Power Conversion and Regulation Unit:
   1. Provide solid state, alternating current, variable voltage, variable frequency (ACV^{3}F), I.G.B.T. converter/inverter drives.
   2. Design unit to limit current, suppress noise, and prevent transient voltage feedback into building power supply. Provide internal heat sink cooling fans for the power drive portion of the converter panels. Conform to IEEE standards 519-2014 for line harmonics and switching noise.
   3. Isolate unit to minimize noise and vibration transmission. Provide isolation transformers, filter networks, and choke inductors.
   4. Suppress solid-state converter noises, radio frequency interference, and eliminate regenerative transients induced into the mainline feeders or the building standby power generator.
   5. Supplemental direct-current power for the operation of hoist machine brake, door operator, dispatch processor, signal fixtures, etc., from separate static power supply.

G. Encoder: Direct drive, solid-state, digital type. Update car position at each floor and automatically restore after power loss.

H. 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.
6. Monitoring System Interface: Provide controller with serial data link through RJ45 Ethernet connection and install all devices necessary to monitor items outlined herein. Elevator contractor responsible to connect monitoring system interface to machine room monitoring compartment and LAN. Wiring from the LAN to the machine room monitoring compartment by others. Provide interface only.
7. Provide controller or machine mounted auxiliary, lockable “open,” disconnect if mainline disconnect is not in sight of controller and/or machine.

I. Sleeves and Guards: Provide 2" steel angle guards around cable or duct slots through floor slabs or grating. Provide rope and smoke guards for sheaves, cables, and cable slots in machine room.

J. Machine and Equipment Support Beams: Retain existing in place. Provide all required supplemental supports and attachments. Provide Structural Engineering certification validating size and location of all new support structure provided.

K. Governor: Centrifugal-type, car driven machine room mounted with pull-through jaws and bi-directional shutdown switches. Provide required bracketing and supports for attachment to building structure.

L. Emergency Brake:
1. Provide means to prevent ascending car over-speed and unintended car movement per Code.
2. Acceptable emergency brake devices:
a. BODE Rope Brake
b. Hollister-Whitney Rope Gripper
c. Draka
3. Mount the auxiliary brake on suitable structural steel supports. Provide a drawing showing the supports, stamped by Professional Engineer verifying the adequacy of the support provided.
4. Provide control circuits to enable the device to function as required by Code.
5. Alternately provide redundant machine brake as allowed by code.

2.6 HOISTWAY EQUIPMENT

A. Guide Rails: Retain main and counterweight guide rails in place.
1. Clean rails and brackets. Remove rust.
2. Check all rail and bracket fastenings and tighten.

B. Buffers for Car, and Counterweight: Retain existing.
1. Drain, flush, refill, paint and test.
2. Retrofit switch to limit elevator speed if buffer is compressed.

C. Sheaves, Deflector, Secondary: Retain existing.
1. Regroove or replace.
2. Check all fastenings and tighten.
3. Replace worn bearings.

D. Counterweight: Retain existing. Retrofit spring dampening roller guide shoes.

E. Counterweight Guard: Metal guard in pit.

F. Governor Rope and Encoder Tape Tensioning Sheaves: Mount sheaves and support frame on pit floor or guide rail. Provide frame with guides or pivot point to enable free vertical movement and proper tension of rope and tape.

G. Hoist and Governor Ropes:
   1. Traction steel type as required by machine design. Fasten with staggered length, adjustable, spring isolated wedge type shackles.
   2. Governor rope as required by governor manufacturer.

H. Compensation: Encapsulated chain with pit guide assembly. Pit mounted guide assembly shall provide quiet, effective restraint without excessive wear of components. Inhibit rubbing or chafing against hoistway or equipment within hoistway or pit. Application must meet performance/noise level requirement of specification.

I. Terminal Stopping: Provide normal and final devices. Provide emergency terminal speed limiting devices.

J. 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 a minimum of 10% spare conductors throughout. A minimum of ten #18 AWG wires shall be provided. Run spare wires from car connection points to individual elevator controllers in the machine room. Provide eight pairs 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. 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. In addition to wires needed to connect specified items the following shall be provided:
      a. Four twisted shielded pair for card reader.
      b. Four pair of shielded wires to car top, plus 3'-0" excess loop at both ends for CCTV.
      c. One RG6 coax to car top, plus 3'-0" excess loop at both ends for CCTV.
      d. Three 14 gauge wires for CCTV power.
      e. One twisted shielded pair for to car top, plus 3'-0" excess loop at both ends for firefighters announcement speaker.
      f. One twisted shielded pair for firefighters phone jack.
   4. Auxiliary Wiring: Connect fire alarm initiating devices, emergency two-way communication system, firefighters' phone jack, paging speaker, CCTV, card reader, intercom, and announcement speaker and/or background music in each car controller in machine room.

K. Entrance Equipment:
   1. Door Hangers: Two-point hanger roller with neoprene roller surface and suspension with eccentric upthrust roller adjustment.
   2. Door Tracks: Bar or formed, cold-drawn removable steel tracks with smooth roller contact surface.
   3. Door Interlocks: Operable without retiring cam. Paint interlock box flat black.

4. Door Closers: Spring activated spirator type. Design and adjust to insure smooth, quiet mechanical close of doors.

L. Hoistway Door Unlocking Device: Provide unlocking device including new escutcheon in door panel at all floors, with finish to match adjacent surface.

M. Hoistway Access Switches: Mount in entrance frame side jamb at top and bottom floors. Provide switch with faceplate. Locate within easy reach to entrance so entrance can be guarded by one technician.

N. 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.

2.7 HOISTWAY ENTRANCES

A. Frames: Retain existing. Provide Arabic floor designation/Braille plates, centered at 60" above finished floor, on both side jambs of all entrances. Provide plates at main egress landing with “Star” designation. For designated emergency car, provide “Star of Life” designation plates at height of 78" – 84" above finished floor on both side jambs at all floors. Braille indications shall be below Arabic floor designation. Provide cast stainless floor designation/Braille plates. Provide 3" car identification plates at the designated landing.

B. Door Panels: Fully enclosed 16 gauge steel, sandwich construction without binder angles. Provide leading edges of center-opening doors with rubber astragals. Provide a minimum of two (2) gibs per panel, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel. Construct door panels with interlocking, stiffening ribs. Architectural metal cladding shall wrap around leading and trailing edge of panel and return a minimum of 1/2" on rear side of leading edge of panel at all floors. Properly dispose of all existing door panels.

C. Sight Guards: 14 gauge, same material and finish as hoistway entrance door panels. Construct without sharp edges.

D. Sills: Retain existing. Clean. Check and tighten all fastenings.

E. Sill Supports: Retain existing. Check and tighten all fastenings.

F. Fascia, Toe Guards, and Hanger Covers: Retain existing. Provide as required where damaged or missing. Check and tighten all fastenings. Paint/Stencil floor number on fascia or hoistway wall all floors visible where car doors are initially opened.

G. Struts and Headers: Retain existing. Check and tighten all fastenings.

H. Finish of Frames and Doors: Refer to Architectural Drawings.

2.8 CAR EQUIPMENT

A. Frame: Retain Existing. Check and tighten all fastenings.

B. Safety Device: Retain existing. Check and tighten all fastenings. Disassemble, clean, and inspect components. Replace all worn or damaged parts. Reassemble and test for proper operation. For wind up safeties inspect tail rope and verify proper type for the application, replace if needed. Perform soft set and full load test in advance of acceptance test.

C. Platform: Retain existing. Reinforce if required. Check and tighten all fastenings.

D. Platform Apron: Provide new extended platform apron to meet Code. Minimum 14 gauge steel, reinforced and braced to car platform with Contractor's standard finish.

E. Guide Shoes: Roller type, 6" with three or more spring dampened, sound-deadening rollers per shoe.

F. Finish Floor Covering:
   1. Cars1-3: Retain existing porcelain tile, protect from damage during modernization

G. Sills: One-piece extrusion with extruded extension between car entrance columns to face of car front return. Extruded extension to match finish of sill.
   1. Cars 1-3: aluminum

H. Doors: Fully enclosed 16 gauge steel, sandwich construction without binder angles. Provide leading edges of center-opening doors with rubber astragals. Provide a minimum of two (2) gibs per panel, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel. Construct door panels with interlocking, stiffening ribs. Architectural metal cladding shall wrap around leading and trailing edge of panel and return a minimum of 1/2" on rear side of leading edge of panel.

I. Door Hangers: Two-point hanger roller with neoprene roller surface and suspension with eccentric upthrust roller adjustment.

J. Door Track: Bar or formed, cold-drawn removable steel track with smooth roller contact surface.

K. Door Header: Construct of minimum 12 gauge steel, shape to provide stiffening flanges.

L. Car Gate Switch: Prohibit car operation unless car door is closed.

M. 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.

N. Restricted Opening Device: Restrict opening of car doors outside unlocking zone. Plunger type restrictors not acceptable.

O. Door Operator: High speed, linear drive, heavy-duty door operator capable of opening doors at no less than 2.5 f.p.s. Accomplish reversal in no more than 2-1/2" of door movement. Provide solid-state door control with closed loop circuitry to constantly monitor and automatically adjust door operation based upon velocity, position, and motor current. Maintain consistent, smooth, and quiet door operation at all floors, regardless of door weight or varying air pressure. Provide closed loop operation, monitoring door speed, torque and closing force, at all times.

P. Door Control Device:
   1. Infrared Reopening Device: 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.

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.

Q. Car Operating Panel:
1. One car operating panel with faceplates, consisting of a metal box containing vandal resistant operating fixtures, mounted behind the car stationary front return panels. Faceplates 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 cast stainless tactile symbols rear 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 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 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. 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.
8. Provide
9. Provide firefighters' locked box with code required devices and illuminated fire hat jewel in car operating panel.
10. Provide firefighters’ Phase II key switch with engraved instructions filled red. Include light jewel, buzzer, and call cancel button.
11. Provide lockable service compartment with recessed flush door. Door material and finish shall match car return panel or car operating panel faceplate.
12. 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. Three-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 key switch.
    i. Attendant operation switch.
13. 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. “No Smoking” on main car operating panel.

d. Car capacity in pounds on service compartment door.

R. Car Top Control Station: Mount to provide safe access and utilization while standing in an upright position on car top. Locate car top stop switch within easy reach of landing entrance.

S. Work Light and Duplex Plug Receptacle: GFCI protected outlet at top and bottom of car. Include on/off switch and lamp guard. Provide additional GFCI protected outlet on car top for installation of car CCTV.

T. 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.
   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 to indicate when call is placed and when call is received. Coordinate signage with communications provider.
   b. Provide “Push to Call” button tactile symbol, engraved signage, and Braille adjacent to button mounted integral with car front return panel.
2. Firefighters’ telephone and firefighters’ panel, with four shielded wires to machine room junction box. Jack bezel shall match adjacent controls.
3. Provide on site two-way communication between car and emergency personnel.

2.9 CAR ENCLOSURE

A. Car Enclosure Passenger Elevator: Retain existing car shell. Car weight to be verified prior to removal of interior cab finishes. Remove existing interior finishes, weigh, and document. Provide complete as specified herein. New cab weight including all new finishes to be verified following completion of modernization. Post modernization weight not to exceed code allowable limits. Provide the following features.
1. Shell: Retain.
2. Canopy: Retain.
3. Front Return Panels: Reinforced 14 gauge stainless steel satin finish with cutouts for car operating panels and other equipment.
4. Entrance Columns: Reinforced 14 gauge stainless steel satin finish.
5. Transom: Reinforced 14 gauge stainless steel satin finish full width of enclosure.
6. Car Door Panels: Reinforced minimum16 gauge stainless steel satin finish. Same construction as hoistway door panels. Architectural metal cladding shall wrap around leading and trailing edge of panel and return a minimum of 1/2" on rear side of leading edge of panel.
7. Base: Stainless steel with concealed ventilation cutouts.
8. Interior Wall Finish: See Architectural Sheet A-104 for details.
9. Ventilation: Two-speed type OE exhaust blower mounted to car canopy on isolated rubber grommets. Exhaust blower shall meet requirements of Item 2.03, H. Ventilation shall shut off after adjustable period (60 – 180 seconds) of no elevator demand.
10. Lighting: Coordinate with emergency lighting requirements. Lighting shall shut off after adjustable period (60 – 180 seconds) of no elevator demand. Provide emergency lighting integral with portion of normal car lighting system. Provide temporary lighting as required.
11. Drop Ceiling: Down Light assembly with six LED fixtures, Stainless steel satin finish
12. Handrails: Minimum 1-1/4" diameter stainless steel tubular grab bar across rear wall.
13. Pads and Buttons, Cars 1-3: Three-piece removable pads. Two pads covering side walls and adjacent front returns and one covering rear wall. Provide cutouts to access main car operating panel.

B. Top of Car Guardrail: Provide car top railings where fall hazard exceeds 12". Install guardrails, necessary hardware and toe board to meet code requirements.

2.10 HALL CONTROL STATIONS

A. Pushbuttons: Provide one riser with flush mounted faceplates. Include pushbuttons for each direction of travel which illuminate to indicate call registration. Provide LED illumination. 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. Dual station at main lobby, 17th and 18th floor, single riser at typical floors. Provide vandal resistant pushbutton and light assemblies. Provide enlarged faceplate to cover existing wall blockout and facilitate handicapped access requirements. Provide any cutting and patching required.

2.11 SIGNALS

A. Hall Lantern, Cars 1-3 at Lobby Level Only: Provide to indicate travel direction of arriving car. Illuminate up or down LED lights and sound tone once for up and twice for down direction prior to car arrival at floor. Sound level shall be adjustable from 20-80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor. Illuminate light until the car doors start to close. Provide advanced hall lantern notification to comply with ADA 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. Car Direction Lantern, Cars 1-3: 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. Provide vandal resistant lantern and light assemblies consisting of series of dots or lines for maximum visibility.

C. Car Position Indicator: digital indicator containing floor designations and direction arrows a minimum of 2" high to indicate floor served and direction of car travel. Locate fixture in car operating panel. When a car leaves or passes a floor, illuminate indication representing position of car in hoistway. Illuminate proper direction arrow to indicate direction of travel.

D. Hall Position Indicator, Cars 1-3: Alpha-numeric digital indicator containing floor designations and direction arrows a minimum of 2" high to indicate floor served and direction of car travel. Mount integral with hall lanterns at Lobby floor.

E. Faceplate Material and Finish: Stainless steel satin finish all fixtures.

F. 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.

G. Voice Synthesizer: Provide electronic device with easily reprogrammable message and female voice to announce car direction, floor, emergency exiting instructions, etc.

2.12 GROUP DISPLAY AND MONITORING SYSTEMS

A. Firefighters' Control Panel, Cars 1-3 Locate in building at Lobby Level. Fixture faceplate, stainless steel satin finish, including the following features:

1. Car position and direction indicator (digital-readout or color LCD Flat Panel Display). Identify each position indicator with car number identification.
2. Indicator showing operating status of car.
3. Manual car standby power selection switches and power status indicators.
4. Two-position firefighters' emergency return switches and indicators with engraved instructions filled red.
5. Firefighters' telephone jack.
6. Firefighters Control Panel shall be located as directed by Consultant/Owner. Where applicable, identify all indicators and manual switches with appropriate engraving. Provide conduit and wiring to control panel.

B. Firefighters' Key Box: Flush-mounted box with lockable hinged cover. Engrave instructions for use on cover per Local Fire Authority requirements.

2.13 INTERCOM AND DISTRESS SIGNAL SYSTEM

A. General: Provide intercommunication system, Cars 1-3. Include all wiring between elevator hoistways and control panels. Include the following stations:

Station Location	Type Station	Selection Buttons to Call
Elevator Machine Room	Master	Control Panels, Cars 1-3
Lobby Control Panel	Master	Machine Rooms, Cars 1-3
Firefighters' Control Panel	Master	Machine Rooms, Cars 1-3
All Cars	Remote	Lobby Control Panel

B. Basic Equipment:
1. Amplifier providing static-free voice transmission with adequate volume and minimum distortion at all stations, with pre-amplifier capable of receiving voice and music inputs from building and emergency building communication system.
2. Activation of emergency building communication system overrides all other conversations and permits one-way conversation to all master stations in system.
3. Master Stations:
   a. Speaker-microphone combination, and/or handset for two-way communication.
   b. Selection buttons to enable communication with all master stations. Maintain continual reception of hands-free reply from station when a selected button is depressed.
   c. Two-Position "Talk/Listen" Button: Press to talk; release to listen.
   d. Illuminate "in use" light when any master station is being used.
   e. Reset button to make system available for use by any master station.
   f. Volume control knob for adjustment of incoming volume.
   g. Button to establish communications with all stations.
   h. Distress light in lobby panel which illuminates when "push to call" button or alarm button in car is actuated. Energize distress light and buzzer or chime until intercom selection button for that car has been depressed. Sound buzzer or chime in lobby panel simultaneously with illumination of distress light.
4. Remote Stations:
   a. Station in car shall be activated by "push to call" two-way communication button. "Push to call" button 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. Provide

"push to call" button tactile symbol, engraved signage, and Braille adjacent to button.

b. Locate car microphone and speaker, or transceiver/speaker combination in car canopy with drilled speaker pattern, with shielded wiring to machine room junction box.

C. Station Housings:

1. House master station in machine room in a metal compartment with baked enamel finish. Attach to the group elevator supervisory control panel or wall mount. Provide communication handset with 25'-0" long cord.
2. Provide control center master intercoms with stainless steel satin finish faceplates and engraved operating instructions. Coordinate faceplate size and installation of units with building Console Supplier.

2.14 SEISMIC OPERATIONS AND EQUIPMENT

A. Provide design, components, and operation per governing code. Provide dual counterweight derailment sensing wires vertically each side of counterweight the entire height of travel. The counterweight frame shall be equipped with a minimum of four derailment rings. A dual axis seismic switch shall be provided that will activate at no less than 0.15 times gravity in the vertical or horizontal directions. A minimum of one seismic switch shall be provided per single or group of elevators. Counterweight retainer plates must be bolted.

PART 3 - EXECUTION

3.1 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.

3.2 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.

3.3 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. Machine room equipment, and pit equipment.
   3. Neatly touch up damaged factory-painted surfaces with original paint color. Protect machine-finish surfaces against corrosion.

G. Paint machine room and pit floors.

3.4 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.

3.5 ADJUSTMENTS

A. Install rails plumb and align vertically with tolerance of 1/16" in 100'-0". Secure 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, power conversion units, brakes, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

3.6 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.

3.7 ACCEPTANCE REVIEW AND TESTS

A. See Section 01 1700, Article 1.02, Consultant’s Final Observation and Review Requirements.

3.8 PURCHASER’S INFORMATION

A. See Section 01 1700, Article 1.03, Final Contract Compliance Review.

END OF SECTION