

# **ADDENDUM F**

**October 4, 2019**

## **BIDDING AND CONTRACT DOCUMENTS**

**FOR**

**Various Elevator Modernizations**

**PROJECT NO. 112008**

**CONTRACT NO. 112008-LF-2019-129**



The following changes, additions, or deletions shall be made to the following documents as indicated for this Project; and all other terms and conditions shall remain the same. Each bidder is responsible for transmitting this information to all affected subcontractors and suppliers before the Bid Deadline.

1. **SUPPLEMENTARY INSTRUCTIONS TO BIDDERS**

**Delete** existing Supplementary Instructions to Bidders and replace with the one issued in this Addendum.

2. **SPECIFICATION TABLE OF CONTENTS**

**Delete** existing Specification Table of Contents and replace with the one issued in this Addendum.

3. **SPECIFICATION 14 2210 MODERNIZATION OF ELEVATORS- ATHLETICS BUILDING**

**Delete** existing Specification 14 2210 Modernization of Elevators- Athletics Building and replace with the one issued in this Addendum.

4. **SPECIFICATION 14 2210 MODERNIZATION OF ELEVATORS- ENTOMOLOGY**

**Delete** existing Specification 14 2210 Modernization of Elevators- Entomology and replace it with the one issued on this Addendum.

5. **SPECIFICATION 14 2210 MODERNIZATION OF ELEVATORS-SPIETH HALL**

**Delete** existing Specification 14 2210 Modernization of Elevators- Spieth Hall and replace it with the one issued on this Addendum.

6. **SPECIFICATION 14 2210 MODERNIZATION OF ELEVATORS- WATKINS HALL**

**Delete** existing Specification 14 2210 Modernization of Elevators- Watkins Hall and replace it with the one issued on this Addendum.

7. **SPECIFICATION 14 2210 MODERNIZATION OF ELEVATORS- WEBBER HALL**

**Delete** existing Specification 14 2210 Modernization of Elevators- Webber Hall and replace it with the one issued on this Addendum.

8. **SPECIFICATION 02 8216 HAZARDOUS SOIL, ASBESTOS & LEAD ABATEMENT OF NON-FRIABLE FLOOR TILE**

**Delete** existing Specification 02 8216 Hazardous Soil, Asbestos & Lead Abatement of Non-Friable Floor Tile and replace it with the one issued on this Addendum.

**END OF ADDENDUM**

## SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1. Contract Time: As specified in Section 1 of the Bid Form.
2. List of Subcontractors (Bid Form Paragraph 9.0) and List of Changes in Subcontractors Due to Alternates (Bid Form Paragraph 10.0).

The default rule is that, if a Bidder lists one subcontractor for a Work Activity (such as "Electrical") under Bid Form Paragraph 9.0 and a different subcontractor for the same Work Activity (such as "Electrical") for the Alternate Work under Bid Form Paragraph 10.0 without reference to the Alternate, then it is deemed that the second subcontractor listed in Paragraph 10.0 will perform the Base Bid Work and the Alternate Work, unless the Bidder expressly writes otherwise.

A Bidder may list more than one subcontractor per trade, provided that the Work Activity to be performed by each listed subcontractor is adequately described on the spaces provided on the Bid Form, so that which subcontractor will perform which Work Activity can be determined.

For example, in case of Alternates, if a Bidder wants one subcontractor to perform the electrical Base Bid Work and another subcontractor to perform the electrical Alternate Work, then the Bidder should list the first subcontractor under Bid Form Paragraph 9.0 as performing the "Electrical" Work Activity, and list the second subcontractor under Bid Form Paragraph 10.0 (for listing changes in subcontractors due to Alternates) as performing the "Electrical Alt" or "Electrical Alt Work" or "Electrical Alt Only" or similarly to define the Alternate Work Activity separately to be performed.

3. Requests for clarification or interpretation of the Bidding Documents must be submitted in writing, and shall be addressed only to:

Kara Longtin  
Email: [kara.longtin@ucr.edu](mailto:kara.longtin@ucr.edu)  
Tel: 951.827.2610

**The deadline to submit requests for clarification or interpretation is on or before 10:00 AM, on Friday, October 18, 2019.**

**An optional site visit will be held on October 10, 2019, at 8:00 AM to provide the opportunity for all GC/Subs to review the elevator locations and scope of work. Bidders who wish to attend this optional site visit are to meet at the PD&C office, Room 210-16, no later than 8AM; transportation will be provided to campus. Subcontractors are not required to attend; however, we recommend that bidders attend with their subcontractors.**

4. The mandatory Pre-Bid Conference and Site Visit will be conducted at the time and location specified in the ADVERTISEMENT FOR BIDS, bound herein. (Attendance is mandatory. As evidence of attendance, bidders must sign the attendance sheet provided by University at the Pre-Bid Conference and Site Visit.)
5. Bids must be received on or before the Bid Deadline and only at the location specified in the **ADVERTISEMENT**.
6. Bids will be opened at the same location specified in the **ADVERTISEMENT** for the receipt of bids.
7. Contractor will be assessed as liquidated damages the sum of **\$750.00** for each day the Work remains incomplete beyond the expiration of the Contract Time. After Substantial Completion, the

- rate for liquidated damages shall be reduced to the sum of **\$250.00** per day. See Article 5 of the Agreement for detailed requirements
8. Replace the existing Paragraph 1.4 with the following:
    - 1.4 The term "Bid Deadline" means the date and time on or before which Bids must be received, as designated in the **ADVERTISEMENT** and which may be revised by Addenda.
  9. Replace the existing Paragraph 3.1.1 with the following:
    - 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the **ADVERTISEMENT**.
  10. Replace the existing Paragraph 3.5.1 with the following:
    - 3.5.1 Addenda will be issued only by University and only in writing. Addenda will be identified as such and will be mailed or delivered to all Planholders. At its sole discretion, the University may elect to deliver Addenda via facsimile or email to Planholders who have provided a facsimile number or email address for receipt of Addenda or communications.
  11. Replace the existing Paragraph 3.5.3 with the following:
    - 3.5.3 Addenda will be issued such that Planholders should receive them no later than 72 hours prior to the Bid Deadline. Addenda withdrawing the request for Bids or postponing the Bid Deadline may be issued anytime prior to the Bid Deadline.
  12. Replace the existing Paragraph 5.2.4 with the following:
    - 5.2.4 Bid Security will be returned after the contract has been awarded. Notwithstanding the preceding, if a Bidder fails or refuses, within **10** days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents, the University will retain that Bidder's Bid Security. If the Bid Security is in the form of a Bid Bond, the Bid Security will be retained until the University has been appropriately compensated; if the Bid Security is in the form of certified check, the University will negotiate said check and after deducting its damages, return any balance to Bidder.
  13. Replace the existing Paragraph 5.4.4 with the following:
    - 5.4.4 Bids may not be modified, withdrawn, or canceled within **60** days after the Bid Deadline.
  14. Replace the existing Paragraph 6.3.1 with the following:
    - 6.3.1 University will have the right, but is not required, to waive nonmaterial irregularities in a Bid. If the University awards the Contract, it will be awarded to the responsible Bidder submitting the lowest responsive Bid as determined by University and who is not rejected by University for failing or refusing, within **10** days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents.
  15. Replace the existing Paragraph 6.3.5 with the following:
    - 6.3.5 University will select the apparent lowest responsive and responsible Bidder and notify such Bidder on University's form within **50** days (unless the number of days is modified in Supplementary Instructions to Bidders) after the Bid Deadline or reject all Bids. Within **10** days after receipt of notice of selection as the apparent lowest responsive and responsible Bidder, Bidder shall submit to University all of the following items:
      - .1 One original of the Agreement signed by Bidder.

- .2 One original of the Payment Bond required under Article 11 of the General Conditions.
  - .3 One original of the Performance Bond required under Article 11 of the General Conditions.
  - .4 Certificates of Insurance on form provided by University required under Article 11 of the General Conditions.
  - .5 Names of all Subcontractors, with their addresses, telephone and facsimile numbers, contact persons, portions of the Work and designation of any Subcontractor as a Small Business Enterprise (SBE), Disadvantaged Business Enterprise (DBE), Women-owned Business Enterprise (WBE) and Disabled Veteran Business Enterprise (DVBE) on the Report of Subcontractor Information form, along with a completed Self-Certification form, contained in the Exhibits. Evidence, as required by University, of the reliability and responsibility of the proposed Subcontractors such as statements of experience, statements of financial condition, and references.
  - .6 Preliminary Contract Schedule as required under Article 3 of the General Conditions.
  - .7 If Bidder wishes to utilize securities in lieu of retention beginning with the first Application for Payment, a completed Selection of Retention Options form accompanied by a completed Escrow Agreement for Deposit of Securities in Lieu of Retention and Deposit of Retention in the form contained in the Exhibits.
  - .8 Cost Breakdown as required by Article 9 of the General Conditions.
16. Replace the existing Paragraph 6.3.7 with the following:
- 6.3.7 If Bidder submits originals of the signed Agreement and all other items required to be submitted to University within **10** days after receipt of notice of selection as the apparent lowest responsive and responsible Bidder, and if all such items comply with the requirements of the Bidding Documents and are acceptable to University, University will award the Contract to Bidder by signing the Agreement and returning a signed copy of the Agreement to Bidder.
17. Replace the existing Paragraph 6.3.8 with the following:
- 6.3.8 If University consents to the withdrawal of the Bid of the apparent lowest responsive and responsible Bidder, or the apparent lowest responsive and responsible Bidder fails or refuses to sign the Agreement or submit to University all of the items required by the Bidding Documents, within **10** days after receipt of notice of selection, or that Bidder is not financially or otherwise qualified to perform the Contract, University may reject such Bidder's Bid and select the next apparent lowest responsive Bidder, until all Bids are exhausted, or reject all Bids. Any Bidder whose Bid is rejected because the Bidder has failed or refused, within **10** days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents, shall be liable to the University for all resulting damages.
18. The University has negotiated contracts with certain suppliers (listed in the "Information Available to Bidders") to supply materials to University construction projects. Bidders may be able to obtain favorable pricing from the listed suppliers for materials required for this Contract. Bidders are not obligated to obtain any required materials from the listed suppliers. Use of any of the listed suppliers is at the Bidder's risk, and the University does provide any warranties, express or implied, with respect to the listed suppliers, their products and/or services. In particular, University does not warrant that the listed suppliers, their products and/or services are suitable for this Project.

19. **PREVAILING WAGE INFORMATION:** A bidder can obtain the prevailing wage information through the internet at [www.dir.ca.gov](http://www.dir.ca.gov) or at <http://www.dir.ca.gov/DLSR/PWD>.

END OF SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

## SPECIFICATIONS

### TABLE OF CONTENTS

#### Division 01 – General Requirements

<u>Initial Issue</u>	<u>Revision</u>	<u>Section #</u>	<u>Title</u>
		<b>01 1100</b>	<b>Summary of Work</b>
		<b>01 1400</b>	<b>Work Restrictions</b>
		<b>01 2300</b>	<b>Alternates</b>
		<b>01 2500</b>	<b>Product Options, Requirements &amp; Substitution Procedures</b>
		<b>01 2613</b>	<b>Requests for Information &amp; Instructions (RFI) Procedures</b>
		<b>01 3113</b>	<b>Coordination</b>
		<b>01 3119</b>	<b>Project Meetings</b>
		<b>01 3200</b>	<b>Document Control</b>
		<b>01 3216</b>	<b>Schedules</b>
		<b>01 3280</b>	<b>Electronic Data Transfer</b>
		<b>01 3300</b>	<b>Submittals</b>
		<b>01 3520</b>	<b>Design Assist Procedures</b>
		<b>01 3543</b>	<b>Environmental Procedures</b>
		<b>01 3546</b>	<b>Indoor Air Quality Procedures &amp; Requirements</b>
		<b>01 4100</b>	<b>Regulatory Requirements</b>
		<b>01 4200</b>	<b>References</b>
		<b>01 4300</b>	<b>Inspection of Work</b>
		<b>01 4500</b>	<b>Quality Control</b>
		<b>01 4516</b>	<b>Contractor’s Quality Control Program</b>
		<b>01 4520</b>	<b>Concrete Moisture Testing</b>
		<b>01 5100</b>	<b>Temporary Utilities</b>
		<b>01 5200</b>	<b>Construction Facilities</b>
		<b>01 5300</b>	<b>Temporary Construction</b>
		<b>01 5400</b>	<b>Construction Aids</b>

<u>Initial Issue</u>	<u>Revision</u>	<u>Section #</u>	<u>Title</u>
		<b>01 5500</b>	<b>Vehicular Access and Parking</b>
		<b>01 5600</b>	<b>Temporary Barriers and Enclosures</b>
		<b>01 5700</b>	<b>Temporary Controls</b>
		<b>01 5800</b>	<b>Temporary Signage</b>
		<b>01 6000</b>	<b>Product Requirements</b>
		<b>01 7100</b>	<b>Examination and Preparation</b>
		<b>01 7329</b>	<b>Cutting and Patching</b>
		<b>01 7400</b>	<b>Cleaning and Waste Management</b>
		<b>01 7700</b>	<b>Contract Closeout</b>
		<b>01 7839</b>	<b>As-Built Documents</b>
		<b>01 8113</b>	<b>Sustainable Design Requirements</b>
		<b>01 9113</b>	<b>General Commissioning Requirements</b>
 <b>Division 14 – Conveying Equipment</b>			
<b><u>Addendum F, October 3, 2019</u></b>	<b><u>14 2210</u></b>	<b><u>Modernization of Elevators – Athletic Building</u></b>	
<b><u>Addendum F, October 3, 2019</u></b>	<b><u>14 2210</u></b>	<b><u>Modernization of Elevators - Entomology</u></b>	
<b><u>Addendum F, October 3, 2019</u></b>	<b><u>14 2210</u></b>	<b><u>Modernization of Elevators – Spieth Hall</u></b>	
<b><u>Addendum F, October 3, 2019</u></b>	<b><u>14 2210</u></b>	<b><u>Modernization of Elevators – Watkins Hall</u></b>	
<b><u>Addendum F, October 3, 2019</u></b>	<b><u>14 2210</u></b>	<b><u>Modernization of Elevators – Webber Hall</u></b>	

END OF SPECIFICATIONS  
TABLE OF CONTENTS



## SECTION 02 8216

### HAZARDOUS SOIL, ASBESTOS & LEAD ABATEMENT OF NON-FRIABLE FLOOR TILE

#### PART 1 – GENERAL

##### 1.1 SUMMARY

- A. Provisions of the General and Supplementary Conditions and Division 01 apply to this section.
- B. Regulatory Requirements shall include, but not be limited to:
  - 1. U.S. Environmental Protection Agency Regulations for Asbestos (Title 40, Code of Federal Regulations, Part 61, Subpart M, and Part 763, Subpart E.)
  - 2. Title 8, Article 4, California Code of Regulations Construction Industry Safety Orders, Section 1529 "Asbestos" or current revised California regulations.
  - 3. South Coast Air Quality Management District (SCAQMD) Rule 1403.

##### 1.2 SECTION DEFINITIONS AND ACRONYMS

- A. Abatement – Procedures to control fiber release from Asbestos Containing Materials or Asbestos Containing Construction Materials. Includes Removal, Encapsulation, Enclosures, Repair, Demolition, and Renovation activities but does not include Asbestos Related Disturbance.
- B. AHERA - Asbestos Hazard Emergency Response Act, 40 CFR, Part 763, Subpart E, and subsequent amendments.
- C. Air Filtration and Ventilation System - A portable exhaust system, equipped with HEPA filtration, and capable of maintaining a constant air flow into a Regulated Area from adjacent areas and exhausted outside the Regulated Area.
- D. Amended Water - Water to which a surfactant (wetting agent) has been added.



- E. ANSI - American National Standards Institute.
- F. Asbestos - Means the asbestiform varieties of chrysotile (Serpentine); crocidolite (Riebeckite); amosite (cummingtonitegrunerite); anthophyllite; tremolite; and actinolite.
- G. Asbestos Containing Construction Material (ACCM) – Means any manufactured construction material which contains more than one tenth of one percent (0.1 percent) Asbestos by weight.
- H. Asbestos Containing Material (ACM) – Means any material containing more than one-percent (1 percent) Asbestos.
- I. Asbestos Containing Waste (Non-hazardous) – Non-Friable Asbestos Containing Material including, but not limited to, floor covering, roofing materials and cementitious materials requiring disposal.
- J. Asbestos Containing Waste (Hazardous) – Friable Asbestos Containing Materials and Asbestos contaminated objects and debris requiring disposal.
- K. Asbestos Related Disturbance – Is the drilling, coring, removal or similar disturbance of ACCM or ACM not to exceed three square feet in any one opening and not to disturb 100 square feet or greater cumulatively on any one project (contract).
- L. ASTM - American Society for Testing and Materials.
- M. Building ID Number or Code - A six digit alphanumeric identification code assigned to each building on an Owner site, also referred to as the insurance code, ID number or similar terms.
- N. Bulk Samples - Samples of building or other materials collected for analysis to determine the presence and quantities of Asbestos.
- O. Class I, II, III, and IV asbestos work has the meaning as defined in California Code of Regulations Title 8, Section 1529.
- P. Clean Room - An uncontaminated area or room, which is a part of the worker Decontamination Enclosure System with provisions for storage of worker's street clothes and clean protective equipment.
- Q. Competent Person - Has the same meaning as defined in the California Code of Regulations Title 8, as it relates to, "Competent

Person."

- R. Controlled Disturbance – An activity by which a contractor disturbs an asbestos containing material or an asbestos containing construction material using the work practices allowed for in this specification and in compliance with regulatory limitations.
- S. Curtained Doorway – A device to allow ingress and egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs may be submitted for review.
- T. Decontamination – The process of eliminating Asbestos contamination from building surfaces, objects, and property, by cloths, mops, or other utensils dampened with water and disposed of afterwards as Asbestos contaminated waste.
- U. Decontamination Enclosure System – Means an enclosed area, which is adjacent and connected to the Regulated Area, consisting of an Equipment Room, Shower Room, and Clean Room for the Decontamination of workers, materials, and equipment contaminated with Asbestos.
- V. Demolition - The wrecking or taking out of any load supporting structural member of a facility together with any related handling operations.
- W. DOSH - Division of Occupational Safety and Health or Cal/OSHA.
- X. DOT – Department of Transportation.
- Y. DTSC – Department of Toxic Substances Control.
- Z. Encapsulating Material - A liquid material applied to Asbestos Containing Materials which controls the possible release of Asbestos fibers from the material either by creating a membrane over the surface (bridging agent) or by penetrating into the material and binding its components together (penetrating Encapsulating Material).
- AA. Encapsulation - The application of an Encapsulating Material to

Asbestos Containing Materials to prevent the release of Asbestos fibers into the air.

- BB. Enclosure - The construction or application of an airtight, impermeable, permanent barrier around Asbestos Containing Material to control the release of Asbestos fibers into the air.
- CC. Equipment Room - A room within the worker Decontamination Enclosure System with provisions for storage of used clothing and equipment and for controlled transfer of materials and equipment into and out of the regulated area.
- DD. Facility Component – Means any part of a facility including equipment.
- EE. FETU – Facilities Environmental Technical Unit.
- FF. Fixed Object - A piece of equipment, furniture, or improvement in the Work area, which cannot be removed from the Work area.
- GG. Friable Asbestos - Asbestos Containing Material which, when dry, can be crumbled, pulverized or reduced to a powder by hand pressure or as defined by current regulations.
- HH. Glove Bag Technique - A method with limited applications for removing small amounts of Asbestos Containing Material from short piping runs, valves, joints, elbows, and other non-planar surfaces in a Work area. The glove bag assembly is a manufactured or fabricated device consisting of a glove bag (typically constructed of 6 mil transparent polyethylene or polyvinyl chloride plastic), two inward projecting long sleeves gloves, an internal tool pouch, and labeled for Asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all Asbestos fibers released during the process. All workers who are permitted to perform the Glove Bag Technique shall be thoroughly trained, experienced, and skilled in this method.
- II. Hazardous Waste - Means Friable Asbestos generated and prepared for waste disposal. Does not include non-friable material or materials containing one-percent or less of Asbestos as determined by PLM and/or the point counting method.
- JJ. HEPA Filter - Means a filtering system capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles 0.3

microns in diameter or larger. For respirators this shall include NIOSH rated P-100 cartridges only.

- KK. HEPA Vacuum - A vacuum system furnished with HEPA filtration.
- LL. High Volume Vacuum - A vacuum system with the capacity to collect material through a four inch diameter hose a minimum distance of 150 feet. This system shall be furnished with HEPA Filter at the air exhaust port and water applicators within the hopper.
- MM. HVAC – Heating, Ventilation, and Air Conditioning System.
- NN. Location Code - Refers to a unique four digit numeric code assigned by the Owner to each of its Project sites.
- OO. Lockdown Coat – A material applied to surfaces where Asbestos has been completely removed. The manufacturer shall determine the concentration of this material.
- PP. Member – A component part of a structure complete in itself.
- QQ. Movable Object - A portable piece of equipment or furniture in the Work area, which can be removed from the Work area.
- RR. NESHAP - National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).
- SS. NIOSH - National Institute for Occupational Safety and Health.
- TT. Outside Air - Air outside of buildings and structures.
- UU. Owner Consultant (OC) - Refers to the firm, company or individual designated by the Owner.
- VV. PCM - Phase Contrast Microscopy as it relates to clearance air, personnel exposure assessment, and ambient air monitoring. This procedure must follow the NIOSH Method 7400, Asbestos Fibers by PCM.
- WW. PLM - Polarized Light Microscopy used for bulk sample analysis with dispersion staining for the determination and quantifying of Asbestos in Bulk Samples building materials.
- XX. Regulated Area - Designated rooms, spaces or areas of the Project in which asbestos Abatement actions are to be performed or which

may become contaminated as a result of Abatement activities. A contained Work area is a Work area, which has been sealed and furnished with a Decontamination Enclosure System. A non-contained Work area is an isolated or controlled access Work area, which has not been sealed or furnished with a Decontamination Enclosure System.

- YY. Removal – Means all operations where all ACM and/or PACM is removed or stripped from structures or substrates including Demolition.
- ZZ. Renovation – Means the modifying of any existing structure, facility, or portion thereof.
- AAA. SCAQMD – South Coast Air Quality Management District.
- BBB. Shower Room - A room between the Clean Room and the Equipment Room in the worker Decontamination Enclosure System furnished with hot and cold running water controllable at the tap, and suitably arranged for complete showering during Decontamination.
- CCC. Small Scale Short Duration – Such work not to exceed amounts greater than those which can be contained in a single glove bag or may not exceed amounts greater than those which can be contained in a single prefabricated mini-enclosure. Such an enclosure shall conform spatially and geometrically to the localized work area, in order to perform its intended containment function, and as completely defined in 40CFR, 763, Subpart E, Appendix C, Asbestos Model Accreditation Plan, section 8, a thru j.
- DDD. Staging Area - Areas near the Waste Transfer Airlock where containerized Asbestos waste is temporarily placed prior to permanent removal from the Work area.
- EEE. Surfactant - A chemical wetting agent added to water.
- FFF. TEM - Transmission Electron Microscopy as defined for Asbestos clearance air monitoring within AHERA. This procedure must follow the NIOSH Method 7402, Asbestos Fibers by TEM.
- GGG. TSI - Thermal System Insulation as defined in AHERA.
- HHH. USEPA or EPA – United States Environmental Protection Agency.

- III. Visible Emissions - Any emissions from a known or suspected Asbestos Containing Material that is visually discernible.
  - JJJ. Waste Transfer Airlock - A Decontamination system provided for transferring containerized waste from inside to outside of the Work area.
- 1.03 POLICIES AND PROCEDURES
- A. The Owner has a zero tolerance policy for uncontrolled Asbestos releases during construction or Abatement Work. An Asbestos release requiring an emergency response is any uncontrolled release of Asbestos Containing Construction Materials. The Owner shall be immediately notified of all such uncontrolled releases.
  - B. Pre-qualified Asbestos Abatement Subcontractors are not permitted to subcontract any Abatement work to a lower tier Subcontractor without the prior written approval of the Owner.
  - C. Where ACM is damaged or disturbed, except during Controlled Disturbance or Abatement, all Work in that room shall cease, the room be vacated immediately, the Owner Consultant notified of the disturbance with corrective action provided as required by the Owner Consultant.
  - D. The following requirements shall be a part of the contract in conformance with Rule 1403 of the South Coast Air Quality Management District and Title 8, of the California Code of Regulations.
  - E. The asbestos-containing floor tile materials located in areas identified in the scope of work of this contract have been sampled, tested, and found to be a Class I non-friable asbestos-containing material under the provisions of Rule 1403, and contain greater than 0.1 percent asbestos as defined in the California Code of Regulations.
  - F. The following requirements apply to the notification, certification, work area preparation, removal, transportation, disposal, cleanup and clearance monitoring of non-friable asbestos-containing floor tile materials. The language herein shall not be construed to conflict with, or supersede any regulatory requirements in the law.

1.4 ROLES AND RESPONSIBILITIES

A. Roles and Functions:

1. Coordinate the Work of this section directly with the Owner and/or Owner Consultant.
2. All Work under this section shall be performed in strict accordance with all applicable Federal, State, and Local regulations, standards, and codes governing asbestos Abatement and any other Work performed in conjunction with the Asbestos Abatement Work.
3. The most recent edition of any relevant regulation, standard, document, or code is in effect. Where conflict among the requirements or with this Specification exists, the most stringent requirement shall be provided.

1.5 NOTIFICATION

- A. Contractor shall be responsible for notifying AQMD as required by Rule 1403, and notice to the Division of Occupational Safety and Health and pay any related fees as required. A copy of these notifications shall be provided to the District prior to the start of work.

1.6 CERTIFICATION

- A. All employees involved in the removal of asbestos-containing materials in schools, whether friable or non-friable, shall be accredited as required by AHERA (40CFR, Part 763, Subpart E).
- B. Each worker is required to have, at a minimum, a current certificate documenting asbestos worker accreditation.
- C. The lead/competent person shall be designated by name, be on the site at all times during the abatement process, and shall have a certificate documenting contractor/supervisor accreditation.
- D. The lead/competent person shall be responsible for ensuring all regulations, procedures, and contractual requirements pertaining to asbestos-containing material removal are strictly adhered to while performing the work required by this contract.
- E. If more than one shift will be worked and more than one lead/competent person will work on this project, all shall be



designated by name, and at least one of these shall be on the site at all times during the abatement process.

1.07 PERSONAL PROTECTION

- A. All persons entering the work area shall be required to wear, at a minimum, protective clothing and respiratory protection.
- B. Respiratory protection shall be sufficient to protect employees from the determined concentration of asbestos in the work area as required by Title 8 of the California Code of Regulations, but never less than a half-face negative pressure respirator with dual P-100 HEPA filtered cartridges.
- C. Hand and eye protection shall be worn when activities warrant it, including, but not limited to removal of “pop-ups” from the concrete.

1.08 WORK AREA PREPARATION

- A. Shut off all air handling systems, where possible, within or affecting the area of containment, without disrupting use of other occupied areas of the building, or modify the system so as to restrict any source of air movement into or out of the work area through the air handling system.
- B. Remove from the work area all objects not fastened to the structure prior to the commencement of area isolation. This includes, but is not limited to, items hanging from ceilings or walls. Boxes, equipment, etc., removed from the work area shall be stored as directed by the District Representative.
- C. Unless otherwise specified, all baseboards, base shoe or toe kick covering floor tile shall be removed. Care shall be taken to prevent damage to the base. Fasteners shall be removed from the base. Base removed shall be marked with the room number and wall from which it was removed, and stored in a secure location as directed by the District representative. Upon clearance and tear down of isolation all base listed above shall be returned to the room from which these were removed.
- D. Clean and cover with an airtight seal all porous, dropped, or perforated ceilings, stationary objects, doors, windows, vents, air circulating units, and registers (where the air handling system is turned off), in the work area, with 6-mil polyethylene sheeting,

sealed around all edges. This does not include the opening for ingress and egress of the isolated work space.

- E. Cover all wall surfaces six (6) feet from the floor down to a maximum of two inches above the floor. Wall coverings shall be, at a minimum, one layer of 4-mil minimum thickness polyethylene sheeting. The integrity of the sheeting and the seals shall be maintained at all times until clearance is given to remove isolation.
- F. Construct a dual chamber mini-enclosure with weighted flaps made of polyethylene sheeting at each passage opening including the separation in the center. The mini-enclosure shall be of at least sufficient size for comfortable changing of clothing without disrupting the flap seal.
- G. Seal the mini-enclosure to the entrance sheeting in such a manner that the wall covering in the work area can be taken down at a later time without disturbing the seal of the mini-enclosure.
- H. Enclosure installation shall not interfere with the closing and securing of any door. The door(s) shall be locked at the end of the workday.

## 1.9 REMOVAL

- A. Adequately wet the surface area to be removed with amended water initially and continually during the entire removal and waste packaging process. This shall be applied with an airless sprayer at a low pressure setting.
- B. Only manual pry bars, scrapers, and chisels or similar tools shall be used to remove these materials. Every effort shall be made to loosen the flooring material with the least breakage or chipping possible. If excessive breakage is unavoidable, the tile may be heated with electric heat guns to facilitate removal with limited breakage. Ground fault interrupters shall be used with electrical devices.
- C. Combustible products including, but not limited to, adhesive removing chemicals or solvents shall not be permitted within a school building for use on this type of work.
- D. Flooring shall be removed in small manageable sections and debris shall be cleaned and containerized before proceeding with the next

section. A manageable section in this requirement is defined as an abatement area that can be cleaned and containerized as removal occurs. All containers shall be removed from the work area to the storage facility by the end of the shift.

- E. All excess material, backing, and/or adhesive on the floor surface shall be scraped off while applying amended water. Bonded residues from the adhesive may remain but all three dimensional ridges and accumulations shall be removed. No petroleum or citrus-based materials shall be applied to the floor for any purpose.
- F. "Pop-ups" (rock explosions) and raised concrete on floors shall be removed by hammering while applying amended water. Do NOT sand, grind, shot peen or sandblast adhesive or mastic. Do NOT dry scrape.
- G. The use of mechanical systems including, but not limited to, bead blasters are not permitted without written approval by the Facilities Environmental Technical Unit.

1.10 CLEANING AND CLEARANCE

- A. Gather remaining water and debris on the floor surface using a floor squeegee or similar tool. Do NOT use tools that can cause fibers to be rendered airborne, such as brooms, blowers, etc.
- B. Place the debris in clear 6-mil polyethylene bags. Seal all bags by "goose-neck" twisting and taping. All waste bags shall be labeled as required by SCAQMD, Rule 1403.
- C. Clean all surfaces within the work area by HEPA vacuuming, wet mopping, or wiping with amended water.
- D. Dustpans, squeegees, shovels, etc., shall be non-metallic. No brooms shall be permitted for abatement purposes.
- E. Once the area is cleaned, that is, there is no visible residue or debris as determined by the authorized District representative, a continuous coat of post removal lock-down material shall be applied to the removal substrate. It is the responsibility of the contractor to ensure the compatibility of the lock-down material with the replacement material to be applied on the substrate.
- F. All over spray on walls, floor base, molding, etc. shall be removed

while the lock-down material is wet.

- G. After the lock-down material settles and dries, the wall sheeting shall be removed, placed in 6-mil waste bags labeled in accordance with current local, State and Federal regulations and transported to the storage or waste container. Clean any residual debris that may exist from surfaces under the sheeting by wet wipe and HEPA vacuuming. The Campus shall be notified when this has been accomplished.
- H. An inspection of the work area by the authorized University Representative shall be performed. If the area fails to pass the visual inspection the contractor shall be required to re-clean the work area and, at the discretion of the authorized University Representative, apply an additional lock-down coat in the work area.
- I. The contractor shall be responsible for costs incurred by the University for additional inspections and clearance air monitoring resulting from a failure or failures to pass the clearance air testing.
- J. Only after clearance is provided by the University's authorized representative may the critical barrier sheeting and mini-enclosure be removed, sealed in 6-mil polyethylene waste bags, and placed in the disposal container.

#### 1.11 TRANSPORTING AND DISPOSAL OF HAZARDOUS SUBSTANCES

- A. Collect one composite sample from each media type (solid, liquid, or sludge) of potentially hazardous substance stored in 55-gallon drums, stockpiled, or otherwise identified at the Project site for the purposes of obtaining approvals for proper transport and disposal of the suspect materials. Cover solid waste materials and stockpiled soils with an HDPE liner to prevent storm water runoff from contaminating surrounding areas.
- A. Contractor to determine quantity of drums necessary to properly dispose of hazardous substances. Contractor shall load, handle and transport drums (within Campus) containing hazardous substance to University for proper disposal in accordance with Federal and State regulations.
- B. The storage/transportation container for the waste generated from floor removal shall be lockable and fully enclosed.

- C. Contractor shall transport the waste material from the work area to the disposal bin or waste container in an enclosed drum container. At no time shall the Contractor transport the waste to the container while students and staff are occupying the route to the container.
- D. The contractor shall comply with regulations of the Department of Transportation, Department of Health Services and all other regulatory agencies as it pertains to labeling, transporting and disposal of friable and non-friable asbestos-containing waste.
- E. The contractor shall provide and complete the NON-hazardous waste manifest for transporting this waste.
- F. Waste, including used personal protective equipment and isolation materials, shall be disposed of as hazardous waste. A hazardous waste manifest shall be submitted to the University upon transport and disposal of this waste.

#### 1.12 GENERAL REQUIREMENTS

- A. Licensing and Registration: The contractor shall provide the University with written proof of asbestos certification as required by the Contractor State License Board and registration with the Division of Occupational Safety and Health.
- B. Product Compatibility: Provide written approval from the manufacturer of replacement materials indicating its compatibility with the encapsulating material to be used.
- C. Training Certification: Certificates documenting current AHERA accreditation for all workers and competent/lead persons shall be provided to the University prior to the start of any work. Contractor shall provide a copy of each certificate for all workers arriving on sites for the purpose of working on setup, removal or cleanup of the floor tile removal project. Any worker arriving without a certificate will be denied access to work on the project until a current certificate is provided. Each certificate shall require review and approval by the University before the individual employees of the contractor are permitted to work on a Campus project.
- D. Medical and Respiratory Clearance: All persons entering the work area are required to have been medically tested and approved to wear respiratory protection and to work in an asbestos

contaminated environment. Documentation of this approval is required prior to entry into the work area.

- E. Fit Testing: All persons required to wear respiratory protection shall be fit tested as required by the Title 8 CCR. Documentation of fit testing shall be provided prior to entry into the work area.
- F. Plastic Sheeting Requirements: All polyethylene sheeting, plastic or visqueen to be used in the performance of this contract shall be virgin grade (with no holes) and a fire retardant type. Abatement contractor shall provide documentation from the manufacturer verifying this requirement.
- G. First Aid and CPR: At least one employee of the Contractor trained and certified in first-aid and CPR is required to be on the site for the duration of the project.
- H. Maintenance of Working Area: The contractor shall keep the working area sufficiently clear of equipment, material, and implements of service to prevent endangering persons and damage to University property and to avoid an unsightly condition. Removal of such items shall be performed promptly upon completion of work. The contractor shall not use University facilities for disposal of debris and waste material, whether hazardous or non-hazardous, or asbestos-containing or non-asbestos-containing.
- I. Storage of Materials: The contractor shall confine the storage of material and equipment on site to the area designated by the University representative.
- J. Safety and Security:
  - 1. Comply with all laws, ordinances, rules and regulations applicable to the work.
  - 2. Provide adequate protection for all persons and all University property within the working area or approaches thereto, and shall furnish and erect temporary barricades where necessary.
  - 3. Upon entering a school site with a vehicle, the contractor, contractor's employees, subcontractors or their agents shall not drive on school premises while children are present, shall have a guide employed by the contractor to walk ahead of the vehicle in the path of the vehicle while the vehicle moves

at a slow and careful speed to ensure no injury or damage occurs, and the guide shall remain with the vehicle until the motor has been turned off and the parking brake has been set.

- K. **Work Schedules and Coordination:** The contractor shall plan a schedule of work with the University representative to provide vacated areas while work is in progress. Care shall be exercised by the contractor to minimize the inconvenience and danger to students and personnel.
- L. **Access:** The contractor, its employees, subcontractors, or other representatives, have no tenancy and shall be admitted to the grounds only for the proper execution of the work under this contract.
- M. **Workmanship and Labor:** All employees of the contractor, subcontractors or other representatives, shall be skilled in the type of work for which they are employed on this project and shall work under direction of competent superintendent.
- N. **Fees, Permits, Licenses, Patents, Royalties and Payment Thereof:** The contractor and contractor's employees and agents shall secure and maintain in force such licenses and permits as are required by law and shall conform to all Federal, State, and local laws, ordinances, and regulations covering the work under the contract. All operations and materials shall be in accordance with applicable laws, ordinances, and regulations.
- O. **Definitions:**
  - 1. For purposes of this contract, amended water is water with the addition of a surfactant, or wetting agent that provides a surface tension of 29 dynes/cm as tested using ASTM method D1331, Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface-Active Agents. All such wetting agents shall be approved by the authorized University Representative before application. Supply technical data sheets and material safety data sheets.
  - 2. Authorized University representative are the person or persons under whose direction the service shall be performed shall be the Project Manager, Department of Planning, Design & Construction of the University of California, Riverside and assigned agents including the Asbestos Technical Supervisor.

1.13 CLOSE-OUT DOCUMENTS

A. Provide the following close out documentation:

1. Filter change logs for all air filtration units (where applicable), water filtration units, and respirators.
2. Foreman's daily job reports.
3. Employee entry/exit logs for all containments.
4. Visitor entry/exit logs for all containments.
5. Manometer printout reports for all applicable containments.
6. Air sample results for personal monitoring or workers.
7. Air Samples for Abatement Work areas, and air filtration units (where applicable).
8. Copies of all Hazardous and Non-Hazardous Waste Manifests.
9. All Hazardous Waste weight tickets.
10. All signed Daily Personnel Report Forms.
11. Signed code of conduct form from each employee working on a Project.
12. Signed asbestos Abatement Project Personnel Logs.

B. Receipt of the last workday attendance log and the daily personal monitoring results shall be submitted within two days upon completion of the Abatement Work of this section.

1.14 LEAD RELATED DISTURBANCE

- A. "Renovation, repair or painting work performed on buildings constructed prior to 1978 require special handling and environmental monitoring when coated surfaces including, but not limited to, painted, varnished, and glazed surfaces are impacted. Coated surfaces applied prior to 1978 are assumed to be lead-



based. All work shall be performed in compliance with Facilities Standard Specification, Section 02 8333, "Lead Abatement and Lead Related Construction Work." XRF testing methodology is not acceptable in determining negative for lead content for Cal/OSHA compliance purposes, except for notification requirements. XRF may be used in determining lead-based paint for compliance with the U.S.E.P.A. Renovator, Repair, and Painting Rule. Disturbance of coated surfaces by contractors will be monitored by qualified District staff or Environmental Consultant sufficient to ensure that proper training and work procedures, cleanup, and waste handling are employed."

- B. All loose and flaky paint or coating that will or may be disturbed in the course of completing the scope of work shall be stabilized prior to abatement setup.

## PART 2 – PRODUCTS

### 2.1 LOCK-DOWN PRODUCTS

- A. The following products have been approved for use as an encapsulant/lock-down material on District projects, as well as compatible with replacement materials.
  - 1. Fiberset PM 7475 clear by Fiberlock Technologies, Inc., compatible with flooring.
  - 2. Fiberset PM 7470 white by Fiberlock Technologies, Inc., compatible with flooring.

## PART 3 – EXECUTION (Not Used)

END OF SECTION

## **SECTION 14 22 10**

### **MODERNIZATION OF ELEVATORS**

#### **PART 1 - GENERAL:**

##### **1.1 GENERAL CONDITIONS:**

- A. Bidding documents:
  - 1. Bidders shall examine existing conditions. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to Owner's Representative's attention during the pre-bid RFI period prior to the bid date. If no discrepancies are presented, changes required to accommodate bidder's equipment become the responsibility and cost to Contractor.
  - 2. Bidders are responsible to identify all required building related work at time of bidding and included with their bid documents.
- B. The specifications are written to be included as an attachment to the modernization contract.
- C. A copy of the final contract with all attachments shall be onsite in the machine room at all times.
- D. The Elevator Contractor shall be responsible for all building modifications to provide a code compliant elevator modernization. All sub-contractors will be contracted directly with the elevator contractor.
- E. Contractor shall provide a lock-box for each machine room.

##### **1.2 DEFINITIONS:**

- A. Main Lobby: Ground Level unless otherwise indicated.
- B. Fire Recall Level: As directed by local fire authority. As existing.
- C. Alternate Fire Recall Level: As directed by local fire authority. As existing.
- D. All retained existing equipment shall be of equal condition and life span as of new equipment.
- E. Serviceability: It is recognized that each manufacturers' system contains components that are proprietary to the development of their systems. The Owner may wish to have the elevator system maintained by another technically qualified service provider and by submitting a bid for this project, the manufacturer shall guarantee that for a minimum of 20 years they will provide the following:
  - 1. Diagnostic, adjusting and monitoring tools for all components including documents, manuals, and wiring diagrams. Devices shall not self-destruct, require charging or exchange. Remote monitoring devices are excluded from this requirement, however if such devices are removed all wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
  - 2. Manufacturer shall guarantee to support the equipment for this project with regard to notification to Owner of system corrective updates, provide and install such updates at no cost to Owner.
  - 3. Provide contact information for their separate parts warehouse so that the Owner or designated service provider can order parts on a 24-hour basis and delivered within 48 hours. Parts may be provided from inventory when adequate stock exists. In some

cases, parts will have to be special ordered from the factory or other vendor. Proprietary parts will be made available on an exchange basis.

4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at close out of the project and estimated escalation cost. The cost of these parts is what would be charged to Owner or other service provider.
5. Provide contact information for technical support so that the Owner or designated service provider can obtain technical support on a 24-hour basis to provide assistance in trouble shooting problems. Indicate hourly rate charged to Owner or designated service provider for such service.
6. In the event that a company other than the Original Equipment Manufacturer (OEM) maintains the elevators, and if the equipment was unable to be repaired by the non-OEM maintenance company, a factory-trained OEM technician would be required to assist (as it would if Contractor's own technician were in the same situation). If such an event was to occur, OEM Contractor would make its factory-trained technician available for assistance upon request of the Owner within three (3) business days, based on the original contractual hourly rates subject to established annual escalations. This shall survive any termination of the maintenance agreement.
7. The above will survive any termination of the maintenance agreement.
8. Contractor shall be defined as "Elevator Contractor".
9. Subcontractor shall be defined as any contractor contracted by either "Owner or Elevator Contractor".

### 1.3 DESCRIPTION:

#### A. Examination of site:

1. Contractor shall visit the building, examine the existing elevators and contract documents, determine condition of all retained components, space conditions, power supply and mainline disconnect.
2. Make all surveys necessary to meet the requirements of this specification and compatibility to products provided.

#### B. Field measurements:

1. Field verify dimensions before proceeding with the work.
2. Coordinate related work by other trades.
3. Contractor shall assume responsibility and provide full maintenance of the elevator equipment upon award of this contract and shall continue to do such throughout the modernization.

### 1.4 RELATED WORK INCLUDED BY OTHERS IN THIS SECTION UNDER THE ELEVATOR CONTRACT:

1. Contractor shall visit the building, examine the existing conditions, power supply, standby/emergency power supply, emergency battery lowering, mainline disconnect, and include all work needed to ensure a fully code compliant modernization. Contractor or his sub-contractors shall perform this work, which may include but is not limited to the following:
  - a. General:
    - 1) Self-closing and self-locking access doors and pit ladders (as req.)
    - 2) Providing supports to carry structural reaction, impact and uplift loads imposed by elevator equipment.

- 3) Block-outs, pockets and chases in walls and floors for signals, fixtures, and conduit.
- b. Electrical work:
  - 1) Power feeders: Modification to existing, or installation and connection of three phase power, through fused mainline switches or circuit breakers and extended to terminals of controllers. Provide continuous ground where needed.
  - 2) Light circuits: Single-phase circuit through disconnects and extended to controller for car lights and fan.
  - 3) Communication circuit: Telephone circuit terminated at junction box of each controller.
  - 4) Illumination: Lights with guards, illuminating light switches and convenience outlets in pits, machine rooms, controller areas and overhead sheave spaces.
  - 5) Conduit: Installation of electrical conduit and pull boxes with pull wire between hoistways and remote locations of each indicator and control panel.
  - 6) GFCI Outlets: Provide in machine room and pits.
  - 7) Provide NEMA 4 approved electrical devices and conduits for all electrical installed below the lowest sill level.
- c. Fire Life Safety: Stand alone system.
  - 1) Sensing devices: Installation and or removal modification to smoke detectors, heat detectors, shunt trip, sprinklers, or products of combustion sensors in elevator lobbies, machine rooms, hoistways and alternate fire recall floor with circuits terminated at junction box in machine rooms for emergency fire service operation.
  - 2) Provide fire proofing as required by local code authority.
- d. If work by others is excluded from the elevator contractors' scope of work, they shall coordinate with all sub-contractors to complete all required building related work prior to inspection at no additional cost to the Owner.

**1.5 RELATED WORK INCLUDED BY ELEVATOR CONTRACTOR IN THIS SECTION:**

1. Barricades: Full height self-closing self-locking barricades for protection of open hoistways during construction.
2. Temporary screens: Contractor shall provide code compliant hoistway screening between elevators before construction starts and remove at completion of project.
3. Painting: Field painting of prime-finish items constituting final finishes.
4. Card readers: Including wire from machine room j-box to car top j-box, interfacing with elevator controls and installation in elevator car, connection in machine room and testing of system.
5. Closed circuit T.V: Including wire from machine room j-box to elevator car top j-box, connection in machine room and testing. Car top and machine j-box and labeled.
6. Contractor shall coordinate and perform all pretesting of all building systems prior to inspection at no additional cost to the Owner.

**1.6 QUALITY ASSURANCE:**

- A. Qualifications of Contractors:

1. General: The entire elevator installation shall be installed and maintained by the acceptable Contractors listed or as qualified by addendum. No portion of the work shall be subcontracted unless qualified and accepted by addendum.
  2. Installer's qualifications: Installer must be a licensed, certified conveyance mechanic in the state where installation is located.
- B. Sub-contractors:
1. Contractor shall be solely responsible for any and all of the work done by his sub-contractor or other employees and all orders or instructions from the Owner's Representative shall be through him to them. It shall be Contractor's duty to see that all of his sub-contractors commence their work properly at the proper time, and carry it on with due diligence so that they do not delay or injure either work or materials; and that all damage caused by them or their workmen is properly made good by them or by himself at his cost.
  2. The use of sub-contractors is to be limited to work outside the scope of elevator construction work; for example, patching, painting, coring of walls, marble work and refinishing. Contractor or subcontractor will be responsible for any dry wall patching, patching and painting damaged in their scope of work.
- C. Quality of work and workmanship:
1. When completed, the installation shall be modern in all respects.
  2. All components specified as new shall be provided as new. All components specified to be retained may be provided as new at Contractor's option subject to approval of Owner's Representative. All retained components are to be examined, cleaned, adjusted, repaired and/or replaced with new parts. Contractor must be willing to accept all retained equipment on full maintenance without prorating.
  3. All work performed shall be conducted in a workmanship type manner.
- D. Requirements of regulatory agencies:
1. Codes: In accordance with the latest applicable edition requirements of the following and as specified:
    - a. A.D.A.: Americans with Disabilities Act
    - b. ASME: American Society of Mechanical Engineers - A17.1; Safety Code for Elevators and Escalators
    - c. CBC: Title 24; California Building Codes
    - d. CCR: Title 8; California Code of Regulations
    - e. IEEE
    - f. NEC: National Electric Code / NFPA 70.
    - g. NFPA-72
    - h. All local codes and Amendments and Administration, which govern
- E. Permits, Inspections, and Taxes:
1. Arrange and pay for inspections by governing authorities.
  2. Obtain and post operating permits per applicable code.
  3. Arrange and pay for all applicable taxes.
- F. Safety Policies and Practices:
1. Installation and maintenance contractors are required to follow their company's safety practices and policies

2. Installation and maintenance contractors are required to follow all practices and policies of the building management.
3. Installation and maintenance contractors are required to follow governing authorities' safety practices and policies.

#### 1.7 SUBMITTALS:

##### A. Shop drawings:

1. Submit three copies of the following prior to ordering any materials:
  - a. Layouts: Plan of machinery and hoistway spaces showing new equipment and existing equipment; include impact and static loads imposed on building structure and clearances around equipment.
  - b. Details: Submit details of cab shell and interiors, fixtures, and entrances.
  - c. Data: Indicate on layouts or separate data sheets; machine spaces heat release, power requirements, conduit runs outside of hoistways and machine rooms, car and counterweight roller guides, control systems, motor drive units and door operators.
  - d. Provide all structural submittals (as required) with an approved Professional Engineer stamp and signature.

##### B. Samples:

1. Provide samples of materials and finishes exposed to public view and additional, if specifically requested, 6 inch x 6 inch panels, 12 inch lengths or full size if smaller, as applicable.

#### 1.8 PRODUCT DELIVERY, STORAGE AND HANDLING:

##### A. Delivery and storage:

1. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. Storage space on site will be available. Additionally, a storage container is required to properly secure and store all equipment, it shall be provided at no cost to the Owner.

##### B. Handling:

1. Owner's Representative has the first right of refusal to retain any elevator components that are to be removed and modernized with new equipment. All removed components shall remain property of the Owner's Representative, until the Owner's Representative notifies Contractor, in writing, of removed components that Owner's Representative would like to retain. All remaining elevator equipment not to be retained by the Owner's Representative or reused by Contractor shall be promptly removed from the building by Contractor at no cost to the Owner's Representative, and become the property of Contractor.
2. Contractor shall make every attempt to recycle removed elevator equipment. Contractor shall correct any damage to building surfaces and surrounding areas if damaged during removal of this equipment, at no cost to the Owner's Representative.

##### C. Building operations:

1. The building will remain in operation during the execution of this contract. Cooperate with building management in scheduling work in such a way as not to cause interruption of or interference with the building operations.

##### D. Electrical shutdowns:

1. Temporary electrical shutdowns will not be allowed except for brief periods to be scheduled outside normal hours and at least forty-eight (48) hours in advance and approved by Owner's Representative.

1.9 WARRANTY:

A. Guarantee and Warranty:

1. Provide special project warranty, signed by Contractor, Installer and Manufacturer, agreeing to replace/repair/restore defective materials and workmanship of all work performed which may develop within one (1) year from final date of completion and acceptance of the **entire installation**. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failures, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

**PART 2 - PRODUCTS:**

2.1 DESCRIPTION OF SYSTEMS:

A. Elevator No. 1:

- |                               |                                    |
|-------------------------------|------------------------------------|
| 1. Type:                      | Hydraulic Direct Plunger           |
| 2. Capacity:                  | 2000 Pounds                        |
| 3. Speed:                     | 100 FPM                            |
| 4. Stops:                     | 3                                  |
| 5. Openings:                  | 3 (1, 2 Front and 1 Rear)          |
| 6. Travel:                    | Existing                           |
| 7. Control:                   | Soft Start AC                      |
| 8. Operation:                 | New Microprocessor Group Automatic |
| 9. Machine Location:          | Remote                             |
| 10. Special Operations:       |                                    |
| a. Independent Service        |                                    |
| b. Fire Emergency Service     |                                    |
| c. Tenant Security            |                                    |
| d. Emergency Battery Lowering |                                    |
| 11. Door Operation:           | Provide New                        |
| 12. Door Protection:          | Provide New                        |
| 13. Guide Rails:              | Retain                             |
| 14. Guide Shoes:              | Provide New                        |
| 15. Plunger Unit:             | Retain                             |
| 16. Cylinder Unit:            | Retain                             |
| 17. Buffers:                  | Retain                             |

- |     |                           |   |
|-----|---------------------------|---|
| 18. | Car Frame & Platforms:    | Retain  |
| 19. | Power Unit:               | Provide New   |
| 20. | Controllers:              | Provide New   |
| 21. | Piping:                   | Provide new   |
| 22. | Car Operating Panels:     | Provide New   |
| 23. | Car Position Indicators:  | Provide New   |
| 24. | Hall Position Indicators: | Provide New   |
| 25. | Service Cabinet:          | Provide New   |
| 26. | Communications:           | Provide New   |
| 27. | Hall Button Stations:     | Provide New   |
| 28. | Hall/Car Lanterns:        | Provide New   |
| 29. | Handicap Requirements:    | Provide New, as required  |
| 30. | Wiring:                   | Provide New   |
| 31. | Car Enclosure:            | Provide New   |
| 32. | Hoistway Entrances:       | Retain  |
| 33. | Miscellaneous Items:      |   |
|     | a.                        | Key Operated Hoistway Access  |
|     | b.                        | Seismic Requirements  |
|     | c.                        | Card Reader Provisions  |
|     | d.                        | Lobby Park Key Switch   |
|     | e.                        | Clean hoistways, machine rooms and equipment; paint machine room floor, pit floor, car top, and all existing metal work |
|     | f.                        | Top of car guardrail Provide new (as required)  |

## 2.2 MATERIALS:

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D exterior Grade Douglas Fir, fire retardant treated.
- C. Sheet steel: ASTM A366, uncoated, pickled, free from defects.
- D. Sound deadener: Fire retardant; spray, roller or adhesive applied; 3/16" thick.
- E. Stainless steel: ASTM A167; type 302 or 304.

## 2.3 FINISHES:

- A. Exposed-to-view surfaces:
  - 1. Provide as follows unless otherwise specified.
    - a. Aluminum: Clear anodized finish.
    - b. Sheet steel:
      - 1) Shop prime: Degrease clean of foreign substances and apply one coat of corrosion inhibiting primer compatible with finish paint selected. Hoistway items visible to public shall be painted one additional coat of black paint.



- 2) Finish paint: Three coats baked enamel; sand each coat smooth; color as selected.
  - c. Stainless steel:
    - 1) Plain: Satin, directional polish, No. 4 Mirror directional polish, unless otherwise specified.
  - d. Touch-up:
    - 1) Prime surfaces: Use same paint as factory for field touch-up.
    - 2) Finish painted surfaces: Refinish whole panel with shop prime and finish paint as specified above.
- B. Non-exposed-to-view surfaces:
- 1. Degrease or remove any rust and shop paint manufacturer's standard corrosion inhibiting primer.

## 2.4 AUTOMATIC OPERATION:

- A. General operation of individual elevators:
- 1. Provide a non-proprietary diagnostic microprocessor-controlled dispatching system, based on real time calculations, designed to monitor all types of traffic and sufficiently flexible so that it can be modified to accommodate changes in traffic patterns.
  - 2. Serial link communications: Provide a distributed processing network consisting of localized processors located in machine rooms, car stations, hall stations and top of car to allow system to make fast decisions based on data shared by the processor involved in the different operations of the elevators. For group dispatch operations, all elevators in the group shall be capable of acting as a group common dispatcher as the need arises.
  - 3. Fault diagnostic system: Provide Owner's Representative with all hardware such as on-board LED diagnostics, hand held device or laptop computer, as standard with manufacturer, and supporting software documentation. Diagnostic system shall be capable of determining faults most difficult to find, as well as be capable of performing all code required testing.
  - 4. The system shall be flexible, irrespective of the number of elevators in normal service.
- B. Simplex selective collective operation:
- 1. Arrange for simplex selective collective automatic operation. Operate elevators from a single riser of landing buttons and from operating device in car.
  - 2. Momentary pressure of one or more car or landing buttons, other than those for landing at which car is standing, starts car, and causes car to stop at first landing for which a car or landing call is registered corresponding to direction in which car is traveling. Stops made in order in which landings are reached, irrespective of sequence in which calls are registered.
  - 3. Double door operation not permitted. If an up-traveling car has a passenger for an intermediate floor and a down call is registered at that floor, with no calls above car, it travels to floor, opens door to let passenger out, then lights down direction arrow in hall lantern and accepts waiting passenger without closing and reopening doors.
  - 4.

## 2.5 SPECIAL OPERATIONS:

- A. Inspection operation:

1. Provide key-operated hoistway access device and car top operating device. Key switches shall be mounted in door frames with a separate cover plate at terminal landings.
- B. Independent service:
1. Independent service operation shall be provided so that, by means of a switch located in the car service cabinet, the car can be removed from automatic operation and be operated by an attendant. The attendant shall have full control of the starting, stopping and direction of car travel.
  2. The car shall respond to car buttons only. The hall signals for the car on independent service shall not operate.
- C. Operation under fire or other emergency conditions:
1. Provide special emergency service to comply with current ASME and CCR Title 8, CBC Title 24, and local codes having jurisdiction.
  2. Provide Phase 1 recall switch at main floor elevator lobby.
  3. Key switches at main floor shall be integrated in hall button station hoistway entrance jamb with engraved instructions.
- D. Tenant security:
1. Arrange control system to enable and disable car call buttons as follows:
    - a. Function, which locks out all cars in a group so that all car buttons are inoperative, except the main floor.
    - b. Function which locks out any selected car button for all elevators in a group serving that floor.
    - c. Tenant security operations can be overridden by cars on independent, any special emergency service or by card reader access.
- E. Lobby Park:
1. Arrange control system to enable the elevator, from either a key switch or time clock, to bring the elevators to the main lobby, cycle the doors and shut down. Leaving only the door open button functional. All emergency service operations shall over ride this feature.

## 2.6 DOOR OPERATION:

- A. Passenger type:
1. Provide door times available as specified under "Design Criteria."
  2. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.
  3. Door hold open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door hold times shall be adjustable independent of other floors.
  4. Provide closed loop regulated speed performance, onboard diagnostics, adjustable times, nudging, and test switches.
- B. Door operator:

1. Elevator No. All: Provide new heavy-duty master type solid state closed loop door operators mounted on car enclosure utilizing minimum 12-gauge support angles to isolate from direct mounting of operator on the car top.
  2. Pre-approved closed loop heavy duty door operators:
    - a. GAL Linear
    - b. GAL MOVFR
  3. Provide code compliant door weight data tag.
- C. Door Protection:
1. Elevator No. All: Remove existing door protection devices and provide new electronic optical 3D scanning type:
    - a. Provide a door protective system which does not rely on physical contact with a person or object to inhibit door movement or initiate door reversal.
    - b. Pre-approved optical door sensors:
      - 1) Elevator Contractor
      - 2) Adams GateKeeper Max
      - 3) Formula Systems
      - 4) Janus Pana40 Plus
      - 5) Janus Pana Chrome 3D, with voice annunciation
      - 6) Tritronics Leading Edge
    - c. The system shall be able to detect a 2-inch diameter rod introduced at any position within the door movement and between the height of 2 inches and 63 inches above sill level.
    - d. Detection of intrusion into the protected area shall cause the doors, if fully open, to be held in the open position and, if closing, to reverse to fully open position.
    - e. If doors are prevented from closing for an adjustable period of 15 to 45 seconds or upon activation of fire emergency service, they shall proceed to close at reduced speed and a loud buzzer shall sound. Door closing force shall not exceed 2-1/2 ft.-lb. when door re-opening device is not in operation.
    - f. For side-opening doors, the detector for the strike jamb side shall be recessed, flush with strike jamb.

## 2.7 SIGNALS AND OPERATING FIXTURES:

- A. General:
1. Provide signals and fixtures as shown and specified. Location and arrangement of fixtures shall comply with disabled access requirements.
    - a. Passenger Elevator Buttons: Provide minimum 1-inch diameter mechanical, with fully illuminated buttons with LED's and engraved identifications. Buttons shall be raised 1/8 inch from surrounding surface with square shoulders. Survivor, Bruiser or equal.
    - b. Switches: Toggle type typically or key operated where noted.
    - c. Provide six (6) keys for each elevator keyed device, with proper labeled identification upon turnover of elevator.
    - d. Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.

- e. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Owner's Representative's approval.
- f. Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected. No applied engraved plates.
- g. Lamps: Miniature LED type.
- h. Audible Chimes: Electronic adjustable audible chimes; bell type gong not acceptable.
- i. Provide floor passing signal of the adjustable electronic audible chime type.
- j. Tactile Markings: Provide raised Braille and alpha characters, numerals or symbols adjacent to operating buttons and devices used by the public according to local codes. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons or integral "fishtail" type.
- k. Acceptable manufacturers: EPCO, ERM, MAD, or INNOVATION, fixtures with 5/8" engraved identifications. Operation of car or hall button shall cause button to illuminate. Response of car to car or hall call shall cause corresponding button to extinguish.
- l. Faceplates: Provide of material and finish as indicated and specified; 1/8-inch minimum thickness with sharp edges relieved. Faceplates shall be sized to cover holes left by removal of existing fixtures where new fixtures are provided and provided with engraved fire sign, per A17.1. New faceplates shall cover all existing holes or Contractor shall patch at no additional cost to the Owner.
- m. Audible chimes: Electronic adjustable audible chimes from 75 to 85 dB in elevator lobby 3' - 0" above floor and 3' - 0" away from elevator entrance; bell type gong not acceptable.

B. Car operating panels:

- 1. General: Provide buttons numbered to conform to floors served and the following:
  - a. Locate top operating button at 48 inches above floor.
  - b. Locate emergency stop switch and illuminated alarm button in bottom row at 35 inches above floor.
  - c. Provide "Door Open" and "Door Close" buttons located above emergency stop and alarm of same design as car button.
  - d. All signage required by local codes shall be engraved and painted as directed by Owner's representative.
  - e. Provide fire emergency features, per code. Provide FEO-F1 key switch for fire service unless local code requires different.
  - f. Make provisions for card readers in Elevator No. 1.
- 2. Elevator No. 1: Provide one new panel per car; integrate cabinets, buttons and engraving into swing front return panels without applied faceplate. Entire front return shall swing on concealed hinges with concealed locking means for servicing.

C. Car position indicators:

- 1. Provide car position indicators with 2 inch indications corresponding to floor designations with matching direction arrows. Provide "X" or "E" indications for elevators with express zones.
  - a. Elevator No. 1: Provide new digital alpha numeric type segmented LED readout indicator with minimum two-inch high indications mounted integral with each car operating panel.

D. Service cabinet:

1. Provide new cabinet, door with a lock and concealed hinge as an integral part of car operating panel mounted with flush hairline joints. Cabinet door shall be provided with a flush glazed window of required size to hold elevator-operating permit, mounted horizontally. Service cabinet shall contain the following:
  - a. Independent service switch
  - b. Two-speed ventilation switch (Hi-Off-Low)
  - c. Light switch as applicable
  - d. Inspection switch, key operated
  - e. Duplex GFI convenience outlet
  - f. Buzzers as required
  - g. Constant pressure test switch for emergency car lighting
  - h. Card reader over-ride switch-key operated

E. Communication equipment:

1. Elevator No. 1: Provide a new complete communication system in compliance with ADA regulations consisting of a combination speaker/microphone, amplifier, automatic dialer with 4 number rollover capability and matching car station push button with telephone symbol to activate system and acknowledgment lights. Mount in car operating panel behind a pattern of holes, wire to machine room and program automatic dialer as directed by Owner's Representative.

F. Hall button fixtures:

1. Each fixture shall contain buttons, which light to indicate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two buttons and terminal fixtures with one. Engrave fire-exiting instructions on faceplates. Provide minimum of two fasteners at top and bottom of faceplate.
  - a. Elevator No. 1: Provide each elevator group of elevators with one riser of hall button stations.

G. Hall position indicators:

1. Provide with indications corresponding to floor designations with matching direction arrows.
  - a. Elevator No. 1: Provide new digital alphanumeric type segmented LED readout indicator with minimum two-inch high indications. Combine with hall lantern.

H. Car lanterns:

1. Manufacturer's standard dual car riding lantern mounted at a maximum height above floor. Lens shall be flush with faceplate or face of jamb.
2. Lantern illuminates and chimes as doors open. Provide single chime for up direction and double chime for down direction. Chime sound level shall be at 10 decibels over ambient.

I. Disabled access requirements:

1. Provide to meet local codes having jurisdiction including handrail and button configuration.
  - a. Car operating panels: Provide raised Braille and alpha characters, numerals or symbols to the left of operating buttons and devices used by the public. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be

of same size and shape as buttons. Raised characters shall be white on a black background with Braille designations directly below the character. Provide "star" at main egress landing.

- b. Entrances: Provide raised Braille and alpha characters, numerals or symbols similar to those for car stations of size required by governing authority. Locate on each entrance jamb at 60 inches above floor indicating floor designation. Material and finish of plates shall match hall button station faceplates. Material and finish of plates shall be white on black. (CA only) Provide with contrasting background. Braille designation shall be to the bottom of the raised character. Provide mounting means similar to those on car panels. Braille designation shall be to the bottom of the raised character. Provide "star" at main egress landing.
- c. Entrances: Provide plate with elevator number for first floor entrance. Character shall be a minimum of 3". For Destination Dispatching Systems, Braille shall include the elevator number or letter designation as well as the floor designation. Material and finish of plates shall be white on black.

## 2.8 WIRING:

### A. General:

- 1. Provide all necessary wiring and 25% spares between cars and controllers and to all remote-control stations; minimum of eight. Furnish shielded wires in cables for all communications card readers, cameras, digital displays, and speakers. Include four additional pairs of shielded spares and two RG-6 coaxial cables or equivalent, for each car. Electrical wire runs will be free of splices or connection unless at designated junction points.

### B. Traveling Cables:

- 1. Use minimum number of traveling cables. Include shielded wires and spares as noted above. Cord thoroughly and protect cables from rubbing against hoistways or car items. Provide with steel cable core and properly anchored to relieve strain on individual conductors.
- 2. All traveling cables shall be wired from machine to elevator, without junction box or spliced connections.

### C. Hoistway Wiring:

- 1. All wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
- 2. If junction boxes are used, NEC approved terminal strips shall be used and properly identified.
- 3. No splices shall be allowed.

### D. Work light and GFCI convenience outlet:

- 1. Provide on top of car with protective plastic lamp guard.
- 2. Provide compact fluorescent type (CFL)

### E. Stop switch:

- 1. Provide in each pit. Provide NEMA 4 enclosure.
- 2. Provide on each top of car.

### F. Alarm gong:

1. Provide on top of each car to be actuated by corresponding alarm button or emergency stop switch.

G. Auxiliary disconnect switches:

1. Provide as required in remote controller rooms or at remote equipment not in view of mainline switches; include all wiring and conduit.

H. CCTV circuit:

1. Provide provisions for closed circuit television camera in elevators. Run from elevator car top to outside of the elevator machine room, as directed by Owner at no additional cost to the Owner.

## 2.9 CAR ENCLOSURES:

A. General:

1. Elevator No. 1: Provide an emergency car lighting unit mounted on top of car, battery driven and self-rechargeable. Upon outage of normal power the unit shall, within 5 seconds, light two lamps as part of normal car lighting. The unit shall have sufficient capacity to keep the lights in continuous operation for four hours and the alarm bell for one hour. Provide a readily accessible means for testing the unit in service cabinet. Light fixtures mounted in car front returns or operating panels are not acceptable. Illuminate lights directly over car operating panels.

## 2.10 HOISTWAY ENTRANCES; PASSENGER TYPE:

A. General:

1. Retain existing or provide new as specified.

B. Hangers and Tracks:

1. Elevator No. 1: Provide all new door tracks and hanger assemblies. Sheave type with two-point suspension. Steel sheaves with flanged groove and resilient sound-absorbing tires. Minimum 2-1/2-inch diameter for hoistway, 3 inch for car. Manufacturer's heavy-duty tracks and ball or roller bearing with adjustable up thrusts.

C. Hanger headers:

1. Elevator No. 1: Retain existing. Modify for new door tracks, reinforce and refinish.

D. Struts:

1. Elevator No. 1: Retain existing, clean and paint.
  - a. Provide rubber door stops.

E. Closers:

1. Elevator No. 1: Provide new cable relating torsion spring mechanical type or broken arm jack knife type as required for door assembly.

F. Dust and hanger covers:

1. Elevator No. 1: Retain existing, clean and refinish with black paint. Replace damaged and missing dust covers.

G. Fascia, toe and head guards:

1. Elevator No. 1: Retain existing, modify to comply with code, refinish with black paint and refasten for greater rigidity.

- H. Interlocks:
  - 1. Elevator No. 1: Provide all new. Equip each hoistway door with a tamper-proof interlock which shall prevent operation of the car until doors are locked in the close position as defined by the Code and shall prevent opening of doors at landing from corridor side unless car is at rest at landing in leveling zone or, hoistway access switch is used. Provide all new type "SF" high temperature wiring for interlock circuits.
- I. Pick-up roller assemblies:
  - 1. Elevator No. 1: Provide all new pick-up roller assemblies as required for door operating equipment furnished.
- J. Door restrictor:
  - 1. Elevator No. 1: Provide new, door restrictor device compatible with new door equipment.
- K. Sills:
  - 1. Elevator No. 1: Retain existing, power clean to metal and refinish, full length of sill.
- L. Limit Switches:
  - 1. Elevator No. 1: Provide new
- M. Frames:
  - 1. Elevator No. 1: Retain existing. Clean and refinish as scheduled. Frames to be refinished by others.
- N. Hoistway doors:
  - 1. Elevator No. 1: Retain existing, re-hang to remove all twists, provide two new gibs per panel and one fire gib per panel which will remain engaged in sill if guiding member is destroyed.
  - 2. Provide new full height astragals and missing or damaged non-vision wings matching finish of door panels. Contractor must use the original reinforcing on existing hoistway and car doors for mounting hangers, pickup rollers, drive vanes, etc. If original reinforcing is not reusable for drive vanes and pickup rollers, Contractor shall furnish new reinforcing (minimum of 1/4" thick plate) welded to the door face. A minimum of four (4) 5/16" threaded bolts is to be used for attachment to the reinforcing plate. Where slotted holes are provided in the attachment block, a 1/4" dowel pin is to be fitted after doors locks are set up. Clean and refinish door panels as scheduled. Door panels to be refinished by others. Vandal resistant paint. Remove door panels before painting.

## 2.11 HYDRAULIC ELEVATOR EQUIPMENT:

- A. Design Criteria:
  - 1. Performance:
    - a. Contract Speed: Maximum ten percent (10%) speed variation under any loading condition in the up direction.
    - b. Motion Time: From start to stop of elevators motion as measured in both directions for a typical one floor run under any loading condition.
      - 1) Elevator No. :8.5 seconds
    - c. Door Open Times:
      - 1) Elevator No. :2.0 seconds



- d. Door close times: Minimum, without exceeding kinetic energy and closing force, allowed by code.
  - e. Door dwell times: Comply with A.D.A. formula and provide separate adjustable timers with initial settings as follows:
    - 1) Main lobby hall call: 5.0 to 6.0 seconds.
    - 2) Upper lobby hall call: 5.0 to 6.0 seconds.
    - 3) Car call: 5.0 to 6.0 seconds. Choose one.
    - 4) Interruption of door protective device: Reduce dwell to 1 second.
  - f. Leveling: Within 1/4 inch under any loading condition. Level into floor at all times, do not overrun floor and level back.
  - g. Hydraulic pressure: Hydraulic components shall be factory tested for 600 PSI. Maximum operating pressure shall be 425 PSI.
2. Operating qualities: Owner's Representative will judge riding qualities of cars and enforce the following requirements. Make all necessary adjustments.
- a. Acceleration and deceleration: Starting and stopping shall be smooth and comfortable, without obvious steps of acceleration. Slowdown, stopping and leveling shall be without jars or bumps. Elevator shall start movement within .5 seconds of fully closed doors. Stopping upon operation of emergency stop switch shall be rapid but not violent.
  - b. Horizontal Acceleration (ISO A95 Scaling): Maximum 12 mg peak-to-peak measured at full speed for full travel in both directions.
  - c. Vertical Vibration: Ride shall be free of vibration throughout acceleration, full speed and deceleration for full travel in both directions.
3. Sound control: (A Scaled – fast – Lmax over the duration of the operation).
- a. Vibration: Sound isolate machines and motor drives from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.
  - b. Airborne noise: Maximum acoustical output level of:
    - 1) 85 dB measured in machine room. With the meter located 3' - 0" from each machine room door at floor level.
    - 2) 55 dB measured in elevator cars during all sequences of operation.
    - 3) 50 dB measured in elevator lobbies. From the nearest staff work station to the elevator lobby.

#### 2.12 HYDRAULIC HOISTWAY EQUIPMENT:

- A. Guide rails and brackets:
  - 1. Elevator No. 1: Retain existing rails, realign, clean, check, tighten and replace Code non-complying brackets, fishplates and bolts. Provide log of the alignment corrections to the Owner's Representative.
- B. Guide shoes:
  - 1. Elevator No. 1: Provide new guide shoes of the roller type with neoprene tires, minimum 3/4-inch-wide and fully adjustable spring loaded to provide continuous contact with rail surfaces. Balance car to insure equal guide shoe pressure on all wheels and not exceed manufacturer's recommendations. Nominal roller diameter shall be 4" 6".
- C. Buffers:
  - 1. Retain existing.

- D. Car frame and platform:
  - 1. Elevator No. 1: Retain existing car frame. Clean down and tighten frame bolts. Static balance weight to be added as required.
- E. Platen isolation:
  - 1. Provide minimum 3/4-inch-thick steel plates between top of plunger and car frame with 1 inch rubber or neoprene isolation material between.
  - 2. Piping:
    - a. Replace all piping from the machine room to the elevator pit.
    - b. All piping to be welded except at the machine room and pit where Victaulic couplings can be used.
    - c. Provide new Victaulic couplings in Machine room and pit.
    - d. Pressure test entire line for leaks.
  - 3. Isolation coupling
    - a. Provide at least two isolation coupling one in the machine room and one in the pit.
- F. Pit Valves:
  - 1) Provide in each elevator pit a gate valve to shut off oil between cylinder and pumping plant.
  - 2) Provided new a pressure type line rupture safety valve to shut off oil between cylinder head and pit valve. Activation of safety valve shall not void operation of lowering valve.
- G. Oil:
  - 1. Hydraulic Fluid: USDA certified bio-based product, ultra-low toxicity, “readily” biodegradable, high performing fluid made from rapidly renewable plant stock; with antioxidant, anticorrosive, antifoaming, and metal passivating additives. Hydraulic fluid is approved by elevator manufacture for use with elevator equipment.
    - a. USDA certified bio-based product, >90% bio-based content, per ASTM D6866
    - b. Classified “Readily” biodegradable, per OECD 301B
    - c. >70% Biodegradability, per ASTM D5864
    - d. >20,000 ppm Aquatic toxicity, per EPA-821-R-02-012
    - e. >220 Viscosity Index, ASTM D2270
    - f. 25 Viscosity at 400C, cSt., per ASTM D445
    - g. >2200C, Flash Point, per ASTM D92

## 2.13 MACHINE ROOM EQUIPMENT:

- A. General:
  - 1. Provide equipment to fit existing space and structural limitations. Coordinate related electrical, structural and mechanical work with other trades.
- B. Pumping plant:
  - 1. Provide new.
    - a. General: Self-contained unit with sound reducing cabinet and sound isolated base.

- b. Pump: IMO, Roper or accepted equal for 150 SSU oil, belt driven or submersible. Maximum speed 3600 RPM. Maximum pressure 425 pounds per square inch.
- c. Tank: Capacity equal to plunger displacement plus 50%. Provide strainers, oil level gauge and device to maintain uniform oil temperature.
- d. Valves: Integral type by Elevator Equipment Company, Maxton Company or by elevator manufacturer. Provide conveniently located manual lowering valve accessible without removing pumping plant enclosure panels.
- e. Motor: General Electric, Imperial, Westinghouse or accepted equal; maximum speed 1800 RPM for belt driven and 3600 RPM for submersible. Provide minimum 120 start heavy-duty motor, continuous rated, 50 degrees C. temperature rise, Class A insulation or 70 degrees C. rise for Class B insulation.
- f. Muffler/Silencer: Blow-out proof type between pumping plant and cylinder.

C. Controller:

- 1. Integral, floor or wall mounted as applicable to space conditions. Include door operating relays combined with controller. Provide solid state soft starting with starting switches rated at minimum 57% of horsepower rating. IEC method of line starter application is unacceptable. Provide three (3) manual reset overload relays, one in each line and reverse phase relay. Provide externally mounted permanently identified junction boxes on controller cabinets for termination of communication circuits. Design controller to accommodate future stops. Pre-approved controllers:
  - a. Motion Control Engineering HMC-2000

D. Hydraulic elevator protective circuit:

- 1. In the event the car should stall due to low oil in the system or, if for other cause the car fails to reach the top landing within a predetermined time while traveling "up", a special circuit shall be provided which shall automatically return the car to the bottom landing and open the doors for 10 seconds after which the elevator will close doors and completely shut down. Recycling the mainline switch shall restore Service.
- 2. Hydraulic Elevator Oil Cooling System: Provide an oil cooler to maintain operating temperatures between 105 – 115 degrees, an oil cooler consisting of temperature sensors monitoring high and low hydraulic fluid temperatures a special circuit shall be provided which shall automatically activate the oil cooler system and maintain its operation until hydraulic fluid temperature are achieved. Reference "Work by Others" for dedicated electrical disconnect. Conduit and wiring in elevator equipment room.

E. Hydraulic elevator battery emergency lowering operation:

- 1. Provide a battery driven unit which will initiate operation of the Protective Circuit and lower elevator to bottom landing in the event of a power failure.
- 2. Service shall be restored automatically upon restoration of normal power supply.
- 3. Arrange with an exposed method of testing.
- 4. Arrange circuitry so that, if the mainline switch is open when the power transfer takes place, the elevator will not respond to the operation of the protective circuit.
- 5. Provide a double pole-isolating switch on the battery unit to disconnect the battery output.

**PART 3 - EXECUTION:**

**3.1 INSTALLATION:**

**A. General:**

1. Install per manufacturer's requirements, those of regulatory agencies and as specified.

**B. Welded Construction:**

1. Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustments, inspection, maintenance and replacement of worn parts.
2. Comply with AWS standards for workmanship and for qualifications of welding operators.

**C. Sound Isolation:**

1. Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.

**D. Lubrication:**

1. Lubricate operating parts of systems as recommended by manufacturer.

**E. Hazardous Disposal Certification:**

1. Contractor to provide oil and hazardous waste removal documentation per required EPA standards. Provide copy of documentation to Owner.

**F. Alignment:**

1. Coordinate alignment of hoistway entrances with elevator guide rails, for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe workable dimensions at each landing.
2. Align guide rails plumb and parallel with maximum deviation of 1/16 inch. Anchorage of guide rails in pits shall not compromise waterproofing.

**G. Graphics:**

1. Provide graphics visible to public as selected by Owner's Representative.

**H. Manufacturer's nameplates:**

1. Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.

**I. Cleaning of the installation:**

1. After the installation of each elevator has been completed and immediately prior to the carrying out of the tests, the machine room and all equipment therein, the elevator hoistways including outside of car and all ledges and similar areas, the elevator pit and equipment therein, and all door hanger runners, guides, tracks and sills shall be thoroughly cleaned down, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish shall be removed from site.

**J. Finish painting after tests:**

1. After satisfactory completion of the tests, any damage to the paint work shall be made good and the installation re-cleaned, if necessary, after which at least one final coat of gloss oil resistant or enamelled paint shall be applied by brushing or spraying in

Contractor's customary colors to all the existing and new equipment in the machine room and also to such items in the hoistway or elsewhere which have received only a primer coat.

2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

K. Painting of machine room floor and pit floors:

1. After the completion of the entire installation and the floor of each machine room allocated space and pit areas shall be thoroughly cleaned down and brush painted with one coat of traffic paint having oil resistant properties. Pit floors shall be painted after the completion of the waterproofing. Owner's Representative will advise the color.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

3.2 NOISE CONTROL:

A. General:

1. Contractor, in the preparation and the execution of the work, shall recognize the particular and mandatory requirements of the remodeling project due to the character of the work and the use occupancy of the building.
2. Contractor shall perform all noisy work as directed by Owner's Representative.

B. Building operations:

1. Noise and vibration generated by this construction for this work may, at times, create a problem for the operations of the building. In the event the noise produced by the construction work conflicts with the building function, Contractor, at the request of the Owner's Representative, shall reduce or stop the noise.
2. All disruptive work including removal of old materials and deliveries of new materials shall be done on overtime at no additional cost to Owner.
3. All disruptive work will be performed after hours at no additional cost to Owner.

C. Measurement:

1. The noise level shall be measured on the "A" Scale of a sound level meter as follows:
  - a. With the meter located 3' - 0" from the nearest staff work station to the elevator lobby, the sound level shall not exceed 65 db.
  - b. With the meter located 3' - 0" from outside of each machine room door at floor level, the sound level shall not exceed 70 db.
  - c. With the meter located 3' - 0" from any hoistway door at any level, the sound level shall not exceed 70 db.

D. Types of noise generating work:

1. All heavy demolition (concrete walls and floors).
2. All grinding, chipping, pounding, sanding and cutting of holes and core drilling.

3.3 FIELD QUALITY CONTROL:

A. Regulatory agencies inspection:

1. Upon completion of elevators, Contractor shall provide instruments, weights and personnel to conduct test required by regulatory agencies. Contractor shall submit a complete report describing the results of the tests.

B. Examination and testing:

1. When installation is ready for final acceptance, notify and assist Owner's Representative in making a walk-through inspection of entire installation to assure workmanship and equipment complies with contract documents. Provide equipment to perform the following tests:
  - a. One-hour heat and run test with full load in car. Perform for one car of each duty.
    - 1) Stop car at each floor in each direction.
    - 2) Verify that temperatures do not exceed manufacturer's motor ratings.
    - 3) Performance and leveling tests shall be made before and after heat and run test.
  - b. Check and verify operation of all safety features and special operations.
    - 1) Measure horizontal acceleration.
    - 2) Measure acoustical output levels in machine room, lobbies and cars.

C. Correction:

1. Make corrections to defects or discrepancies at no cost to Owner's Representative. Should discrepancies be such that re-examination and retesting is required, Contractor shall pay for all costs including those of Owner's Representative's fees.

D. Final acceptance:

1. Final acceptance of the installation will be made only after all corrections are complete, final submittals and certificates received and the Owner's Representative is satisfied and the installation is complete in all respects.

3.4 INSTRUCTIONS:

- A. Instruct Owner's personnel in proper use of each system.

3.5 PROJECT RECORD DOCUMENTS:

A. As-built drawings:

1. Contractor shall maintain at the job site a separate and complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for such change.
2. Changes, as they occur, will be marked on the record set of drawings on a daily basis.

B. Record drawings:

1. Contractor shall prepare "as-built" drawings in duplicate of any changes to electrical work on prints supplied by the Owner's Representative. During the course of construction, actual locations to scale shall be shown for all runs of mechanical and electrical work, installed in walls and floors or otherwise concealed. This shall cover all piping, electrical wiring; whether in conduit or cable, duct work, etc. shall be located, in addition, by dimension. All services shall be identified in ink on the prints.
2. In addition, Contractor shall keep a complete record copy of the plans and specifications for the use in preparing "as-built" plans and specifications at the end of the job. Contractor shall sign and date the prints and deliver them to the Owner's Representative.

**END OF SECTION**

## **SECTION 14 22 10**

### **MODERNIZATION OF ELEVATORS**

#### **PART 1 - GENERAL:**

##### **1.1 GENERAL CONDITIONS:**

- A. Bidding documents:
  - 1. Bidders shall examine existing conditions. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to Owner's Representative's attention during the pre-bid RFI period prior to the bid date. If no discrepancies are presented, changes required to accommodate bidder's equipment become the responsibility and cost to Contractor.
  - 2. Bidders are responsible to identify all required building related work at time of bidding and included with their bid documents.
- B. The specifications are written to be included as an attachment to the modernization contract.
- C. A copy of the final contract with all attachments shall be onsite in the machine room at all times.
- D. The Elevator Contractor shall be responsible for all building modifications to provide a code compliant elevator modernization. All sub-contractors will be contracted directly with the elevator contractor.
- E. Contractor shall provide a lock-box for each machine room.

##### **1.2 DEFINITIONS:**

- A. Main Lobby: Ground Level unless otherwise indicated.
- B. Fire Recall Level: As directed by local fire authority. As existing.
- C. Alternate Fire Recall Level: As directed by local fire authority. As existing.
- D. All retained existing equipment shall be of equal condition and life span as of new equipment.
- E. Serviceability: It is recognized that each manufacturers' system contains components that are proprietary to the development of their systems. The Owner may wish to have the elevator system maintained by another technically qualified service provider and by submitting a bid for this project, the manufacturer shall guarantee that for a minimum of 20 years they will provide the following:
  - 1. Diagnostic, adjusting and monitoring tools for all components including documents, manuals, and wiring diagrams. Devices shall not self-destruct, require charging or exchange. Remote monitoring devices are excluded from this requirement, however if such devices are removed all wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
  - 2. Manufacturer shall guarantee to support the equipment for this project with regard to notification to Owner of system corrective updates, provide and install such updates at no cost to Owner.
  - 3. Provide contact information for their separate parts warehouse so that the Owner or designated service provider can order parts on a 24-hour basis and delivered within 48 hours. Parts may be provided from inventory when adequate stock exists. In some



cases, parts will have to be special ordered from the factory or other vendor. Proprietary parts will be made available on an exchange basis.

4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at close out of the project and estimated escalation cost. The cost of these parts is what would be charged to Owner or other service provider.
5. Provide contact information for technical support so that the Owner or designated service provider can obtain technical support on a 24-hour basis to provide assistance in trouble shooting problems. Indicate hourly rate charged to Owner or designated service provider for such service.
6. In the event that a company other than the Original Equipment Manufacturer (OEM) maintains the elevators, and if the equipment was unable to be repaired by the non-OEM maintenance company, a factory-trained OEM technician would be required to assist (as it would if Contractor's own technician were in the same situation). If such an event was to occur, OEM Contractor would make its factory-trained technician available for assistance upon request of the Owner within three (3) business days, based on the original contractual hourly rates subject to established annual escalations. This shall survive any termination of the maintenance agreement.
7. The above will survive any termination of the maintenance agreement.
8. Contractor shall be defined as "Elevator Contractor".
9. Subcontractor shall be defined as any contractor contracted by either "Owner or Elevator Contractor".

### 1.3 DESCRIPTION:

#### A. Examination of site:

1. Contractor shall visit the building, examine the existing elevators and contract documents, determine condition of all retained components, space conditions, power supply and mainline disconnect.
2. Make all surveys necessary to meet the requirements of this specification and compatibility to products provided.

#### B. Field measurements:

1. Field verify dimensions before proceeding with the work.
2. Coordinate related work by other trades.
3. Contractor shall assume responsibility and provide full maintenance of the elevator equipment upon award of this contract and shall continue to do such throughout the modernization.

### 1.4 RELATED WORK INCLUDED BY OTHERS IN THIS SECTION UNDER THE ELEVATOR CONTRACT:

1. Contractor shall visit the building, examine the existing conditions, power supply, standby/emergency power supply, emergency battery lowering, mainline disconnect, and include all work needed to ensure a fully code compliant modernization. Contractor or his sub-contractors shall perform this work, which may include but is not limited to the following:
  - a. General:
    - 1) Self-closing and self-locking access doors and pit ladders (as req.)
    - 2) Providing supports to carry structural reaction, impact and uplift loads imposed by elevator equipment.

- 3) Block-outs, pockets and chases in walls and floors for signals, fixtures, and conduit.
- b. Electrical work:
  - 1) Power feeders: Modification to existing, or installation and connection of three phase power, through fused mainline switches or circuit breakers and extended to terminals of controllers. Provide continuous ground where needed.
  - 2) Light circuits: Single-phase circuit through disconnects and extended to controller for car lights and fan.
  - 3) Communication circuit: Telephone circuit terminated at junction box of each controller.
  - 4) Illumination: Lights with guards, illuminating light switches and convenience outlets in pits, machine rooms, controller areas and overhead sheave spaces.
  - 5) Conduit: Installation of electrical conduit and pull boxes with pull wire between hoistways and remote locations of each indicator and control panel.
  - 6) GFCI Outlets: Provide in machine room and pits.
  - 7) Provide NEMA 4 approved electrical devices and conduits for all electrical installed below the lowest sill level.
- c. Fire Life Safety: Stand alone system.
  - 1) Sensing devices: Installation and or removal modification to smoke detectors, heat detectors, shunt trip, sprinklers, or products of combustion sensors in elevator lobbies, machine rooms, hoistways and alternate fire recall floor with circuits terminated at junction box in machine rooms for emergency fire service operation.
  - 2) Provide fire proofing as required by lode code authority.
- d. If work by others is excluded from the elevator contractors' scope of work, they shall coordinate with all sub-contractors to complete all required building related work prior to inspection at no additional cost to the Owner.

**1.5 RELATED WORK INCLUDED BY ELEVATOR CONTRACTOR IN THIS SECTION:**

1. Barricades: Full height self-closing self-locking barricades for protection of open hoistways during construction.
2. Temporary screens: Contractor shall provide code compliant hoistway screening between elevators before construction starts and remove at completion of project.
3. Painting: Field painting of prime-finish items constituting final finishes.
4. Card readers: Including wire from machine room j-box to car top j-box, interfacing with elevator controls and installation in elevator car, connection in machine room and testing of system.
5. Closed circuit T.V: Including wire from machine room j-box to elevator car top j-box, connection in machine room and testing. Car top and machine j-box and labeled.
6. Contractor shall coordinate and perform all pretesting of all building systems prior to inspection at no additional cost to the Owner.

**1.6 QUALITY ASSURANCE:**

- A. Qualifications of Contractors:

1. General: The entire elevator installation shall be installed and maintained by the acceptable Contractors listed or as qualified by addendum. No portion of the work shall be subcontracted unless qualified and accepted by addendum.
  2. Installer's qualifications: Installer must be a licensed, certified conveyance mechanic in the state where installation is located.
- B. Sub-contractors:
1. Contractor shall be solely responsible for any and all of the work done by his sub-contractor or other employees and all orders or instructions from the Owner's Representative shall be through him to them. It shall be Contractor's duty to see that all of his sub-contractors commence their work properly at the proper time, and carry it on with due diligence so that they do not delay or injure either work or materials; and that all damage caused by them or their workmen is properly made good by them or by himself at his cost.
  2. The use of sub-contractors is to be limited to work outside the scope of elevator construction work; for example, patching, painting, coring of walls, marble work and refinishing. Contractor of sub-contractor will be responsible for any drywall damage, patching and painting in regards to their scope of work.
- C. Quality of work and workmanship:
1. When completed, the installation shall be modern in all respects.
  2. All components specified as new shall be provided as new. All components specified to be retained may be provided as new at Contractor's option subject to approval of Owner's Representative. All retained components are to be examined, cleaned, adjusted, repaired and/or replaced with new parts. Contractor must be willing to accept all retained equipment on full maintenance without prorating.
  3. All work performed shall be conducted in a workmanship type manner.
- D. Requirements of regulatory agencies:
1. Codes: In accordance with the latest applicable edition requirements of the following and as specified:
    - a. A.D.A.: Americans with Disabilities Act
    - b. ASME: American Society of Mechanical Engineers - A17.1; Safety Code for Elevators and Escalators
    - c. CBC: Title 24; California Building Codes
    - d. CCR: Title 8; California Code of Regulations
    - e. IEEE
    - f. NEC: National Electric Code / NFPA 70.
    - g. NFPA-72
    - h. All local codes and Amendments and Administration, which govern
- E. Permits, Inspections, and Taxes:
1. Arrange and pay for inspections by governing authorities.
  2. Obtain and post operating permits per applicable code.
  3. Arrange and pay for all applicable taxes.
- F. Safety Policies and Practices:
1. Installation and maintenance contractors are required to follow their company's safety practices and policies

2. Installation and maintenance contractors are required to follow all practices and policies of the building management.
3. Installation and maintenance contractors are required to follow governing authorities' safety practices and policies.

#### 1.7 SUBMITTALS:

##### A. Shop drawings:

1. Submit three copies of the following prior to ordering any materials:
  - a. Layouts: Plan of machinery and hoistway spaces showing new equipment and existing equipment; include impact and static loads imposed on building structure and clearances around equipment.
  - b. Details: Submit details of cab shell and interiors, fixtures, and entrances.
  - c. Data: Indicate on layouts or separate data sheets; machine spaces heat release, power requirements, conduit runs outside of hoistways and machine rooms, car and counterweight roller guides, control systems, motor drive units and door operators.
  - d. Provide all structural submittals (as required) with an approved Professional Engineer stamp and signature.

##### B. Samples:

1. Provide samples of materials and finishes exposed to public view and additional, if specifically requested, 6 inch x 6 inch panels, 12 inch lengths or full size if smaller, as applicable.

#### 1.8 PRODUCT DELIVERY, STORAGE AND HANDLING:

##### A. Delivery and storage:

1. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. Storage space on site will be available. Additionally, a storage container is required to properly secure and store all equipment, it shall be provided at no cost to the Owner.

##### B. Handling:

1. Owner's Representative has the first right of refusal to retain any elevator components that are to be removed and modernized with new equipment. All removed components shall remain property of the Owner's Representative, until the Owner's Representative notifies Contractor, in writing, of removed components that Owner's Representative would like to retain. All remaining elevator equipment not to be retained by the Owner's Representative or reused by Contractor shall be promptly removed from the building by Contractor at no cost to the Owner's Representative, and become the property of Contractor.
2. Contractor shall make every attempt to recycle removed elevator equipment. Contractor shall correct any damage to building surfaces and surrounding areas if damaged during removal of this equipment, at no cost to the Owner's Representative.

##### C. Building operations:

1. The building will remain in operation during the execution of this contract. Cooperate with building management in scheduling work in such a way as not to cause interruption of or interference with the building operations.

##### D. Electrical shutdowns:

1. Temporary electrical shutdowns will not be allowed except for brief periods to be scheduled outside normal hours and at least forty-eight (48) hours in advance and approved by Owner's Representative.

1.9 WARRANTY:

A. Guarantee and Warranty:

1. Provide special project warranty, signed by Contractor, Installer and Manufacturer, agreeing to replace/repair/restore defective materials and workmanship of all work performed which may develop within one (1) year from final date of completion and acceptance of the **entire installation**. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failures, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

**PART 2 - PRODUCTS:**

2.1 DESCRIPTION OF SYSTEMS:

A. Elevator No. 1:

- |                               |                                    |
|-------------------------------|------------------------------------|
| 1. Type:                      | Hydraulic Direct Plunger           |
| 2. Capacity:                  | 2000 Pounds                        |
| 3. Speed:                     | 100 FPM                            |
| 4. Stops:                     | 2 at 1,2                           |
| 5. Openings:                  | 2 Inline                           |
| 6. Travel:                    | Existing                           |
| 7. Control:                   | Soft Start AC                      |
| 8. Operation:                 | New Microprocessor Group Automatic |
| 9. Machine Location:          | Remote                             |
| 10. Special Operations:       |                                    |
| a. Independent Service        |                                    |
| b. Fire Emergency Service     |                                    |
| c. Tenant Security            |                                    |
| d. Emergency Battery Lowering |                                    |
| 11. Door Operation:           | Provide New                        |
| 12. Door Protection:          | Provide New                        |
| 13. Guide Rails:              | Retain                             |
| 14. Guide Shoes:              | Provide New                        |
| 15. Plunger Unit:             | Retain                             |
| 16. Cylinder Unit:            | Retain                             |
| 17. Buffers:                  | Retain                             |

- |     |                           |   |
|-----|---------------------------|---|
| 18. | Car Frame & Platforms:    | Retain  |
| 19. | Power Unit:               | Provide New   |
| 20. | Controllers:              | Provide New   |
| 21. | Piping:                   | Retain and Pressure Test  |
| 22. | Car Operating Panels:     | Provide New   |
| 23. | Car Position Indicators:  | Provide New   |
| 24. | Hall Position Indicators: | Provide New   |
| 25. | Service Cabinet:          | Provide New   |
| 26. | Communications:           | Provide New   |
| 27. | Hall Button Stations:     | Provide New   |
| 28. | Hall/Car Lanterns:        | Provide New   |
| 29. | Handicap Requirements:    | Provide New, as required  |
| 30. | Wiring:                   | Provide New   |
| 31. | Car Enclosure:            | Retain  |
| 32. | Hoistway Entrances:       | Retain  |
| 33. | Miscellaneous Items:      |   |
|     | a.                        | Key Operated Hoistway Access  |
|     | b.                        | Seismic Requirements  |
|     | c.                        | Card Reader Provisions  |
|     | d.                        | Lobby Park Key Switch   |
|     | e.                        | Clean hoistways, machine rooms and equipment; paint machine room floor, pit floor, car top, and all existing metal work |
|     | f.                        | Top of car guardrail Provide new (as required)  |

## 2.2 MATERIALS:

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D exterior Grade Douglas Fir, fire retardant treated.
- C. Sheet steel: ASTM A366, uncoated, pickled, free from defects.
- D. Sound deadener: Fire retardant; spray, roller or adhesive applied; 3/16" thick.
- E. Stainless steel: ASTM A167; type 302 or 304.

## 2.3 FINISHES:

- A. Exposed-to-view surfaces:
  - 1. Provide as follows unless otherwise specified.
    - a. Aluminum: Clear anodized finish.
    - b. Sheet steel:
      - 1) Shop prime: Degrease clean of foreign substances and apply one coat of corrosion inhibiting primer compatible with finish paint selected. Hoistway items visible to public shall be painted one additional coat of black paint.

- 2) Finish paint: Three coats baked enamel; sand each coat smooth; color as selected.
  - c. Stainless steel:
    - 1) Plain: Satin, directional polish, No. 4 Mirror directional polish, unless otherwise specified.
  - d. Touch-up:
    - 1) Prime surfaces: Use same paint as factory for field touch-up.
    - 2) Finish painted surfaces: Refinish whole panel with shop prime and finish paint as specified above.
- B. Non-exposed-to-view surfaces:
- 1. Degrease or remove any rust and shop paint manufacturer's standard corrosion inhibiting primer.

## 2.4 AUTOMATIC OPERATION:

- A. General operation of individual elevators:
- 1. Provide a non-proprietary diagnostic microprocessor-controlled dispatching system, based on real time calculations, designed to monitor all types of traffic and sufficiently flexible so that it can be modified to accommodate changes in traffic patterns.
  - 2. Serial link communications: Provide a distributed processing network consisting of localized processors located in machine rooms, car stations, hall stations and top of car to allow system to make fast decisions based on data shared by the processor involved in the different operations of the elevators. For group dispatch operations, all elevators in the group shall be capable of acting as a group common dispatcher as the need arises.
  - 3. Fault diagnostic system: Provide Owner's Representative with all hardware such as on-board LED diagnostics, hand held device or laptop computer, as standard with manufacturer, and supporting software documentation. Diagnostic system shall be capable of determining faults most difficult to find, as well as be capable of performing all code required testing.
  - 4. The system shall be flexible, irrespective of the number of elevators in normal service.
- B. Simplex selective collective operation:
- 1. Arrange for simplex selective collective automatic operation. Operate elevators from a single riser of landing buttons and from operating device in car.
  - 2. Momentary pressure of one or more car or landing buttons, other than those for landing at which car is standing, starts car, and causes car to stop at first landing for which a car or landing call is registered corresponding to direction in which car is traveling. Stops made in order in which landings are reached, irrespective of sequence in which calls are registered.
  - 3. Double door operation not permitted. If an up-traveling car has a passenger for an intermediate floor and a down call is registered at that floor, with no calls above car, it travels to floor, opens door to let passenger out, then lights down direction arrow in hall lantern and accepts waiting passenger without closing and reopening doors.

## 2.5 SPECIAL OPERATIONS:

- A. Inspection operation:

1. Provide key-operated hoistway access device and car top operating device. Key switches shall be mounted in door frames with a separate cover plate at terminal landings.
- B. Independent service:
1. Independent service operation shall be provided so that, by means of a switch located in the car service cabinet, the car can be removed from automatic operation and be operated by an attendant. The attendant shall have full control of the starting, stopping and direction of car travel.
  2. The car shall respond to car buttons only. The hall signals for the car on independent service shall not operate.
- C. Operation under fire or other emergency conditions:
1. Provide special emergency service to comply with current ASME and CCR Title 8, CBC Title 24, and local codes having jurisdiction.
  2. Provide Phase 1 recall switch at main floor elevator lobby.
  3. Key switches at main floor shall be integrated in hall button station hoistway entrance jamb with engraved instructions.
- D. Tenant security:
1. Arrange control system to enable and disable car call buttons as follows:
    - a. Function, which locks out all cars in a group so that all car buttons are inoperative, except the main floor.
    - b. Function which locks out any selected car button for all elevators in a group serving that floor.
    - c. Tenant security operations can be overridden by cars on independent, any special emergency service or by card reader access.
- E. Lobby Park:
1. Arrange control system to enable the elevator, from either a key switch or time clock, to bring the elevators to the main lobby, cycle the doors and shut down. Leaving only the door open button functional. All emergency service operations shall over ride this feature.
- 2.6 DOOR OPERATION:
- A. Passenger type:
1. Provide door times available as specified under "Design Criteria."
  2. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.
  3. Door hold open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door hold times shall be adjustable independent of other floors.
  4. Provide closed loop regulated speed performance, onboard diagnostics, adjustable times, nudging, and test switches.
- B. Door operator:



1. Elevator No. All: Provide new heavy-duty master type solid state closed loop door operators mounted on car enclosure utilizing minimum 12-gauge support angles to isolate from direct mounting of operator on the car top.
  2. Pre-approved closed loop heavy duty door operators:
    - a. GAL Linear
    - b. GAL MOVFR
  3. Provide code compliant door weight data tag.
- C. Door Protection:
1. Elevator No. All: Remove existing door protection devices and provide new electronic optical 3D scanning type:
    - a. Provide a door protective system which does not rely on physical contact with a person or object to inhibit door movement or initiate door reversal.
    - b. Pre-approved optical door sensors:
      - 1) Elevator Contractor
      - 2) Adams GateKeeper Max
      - 3) Formula Systems
      - 4) Janus Pana40 Plus
      - 5) Janus Pana Chrome 3D, with voice annunciation
      - 6) Tritronics Leading Edge
    - c. The system shall be able to detect a 2-inch diameter rod introduced at any position within the door movement and between the height of 2 inches and 63 inches above sill level.
    - d. Detection of intrusion into the protected area shall cause the doors, if fully open, to be held in the open position and, if closing, to reverse to fully open position.
    - e. If doors are prevented from closing for an adjustable period of 15 to 45 seconds or upon activation of fire emergency service, they shall proceed to close at reduced speed and a loud buzzer shall sound. Door closing force shall not exceed 2-1/2 ft.-lb. when door re-opening device is not in operation.
    - f. For side-opening doors, the detector for the strike jamb side shall be recessed, flush with strike jamb.

## 2.7 SIGNALS AND OPERATING FIXTURES:

- A. General:
1. Provide signals and fixtures as shown and specified. Location and arrangement of fixtures shall comply with disabled access requirements.
    - a. Passenger Elevator Buttons: Provide minimum 1-inch diameter mechanical, with fully illuminated buttons with LED's and engraved identifications. Buttons shall be raised 1/8 inch from surrounding surface with square shoulders. Survivor, Bruiser or equal.
    - b. Switches: Toggle type typically or key operated where noted.
    - c. Provide six (6) keys for each elevator keyed device, with proper labeled identification upon turnover of elevator.
    - d. Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.

- e. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Owner's Representative's approval.
  - f. Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected. No applied engraved plates.
  - g. Lamps: Miniature LED type.
  - h. Audible Chimes: Electronic adjustable audible chimes; bell type gong not acceptable.
  - i. Provide floor passing signal of the adjustable electronic audible chime type.
  - j. Tactile Markings: Provide raised Braille and alpha characters, numerals or symbols adjacent to operating buttons and devices used by the public according to local codes. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons or integral "fishtail" type.
  - k. Acceptable manufacturers: EPCO, ERM, MAD, or INNOVATION, fixtures with 5/8" engraved identifications. Operation of car or hall button shall cause button to illuminate. Response of car to car or hall call shall cause corresponding button to extinguish.
  - l. Faceplates: Provide of material and finish as indicated and specified; 1/8-inch minimum thickness with sharp edges relieved. Faceplates shall be sized to cover holes left by removal of existing fixtures where new fixtures are provided and provided with engraved fire sign, per A17.1. New faceplates shall cover all existing holes or Contractor shall patch at no additional cost to the Owner.
  - m. Audible chimes: Electronic adjustable audible chimes from 75 to 85 dB in elevator lobby 3' - 0" above floor and 3' - 0" away from elevator entrance; bell type gong not acceptable.
- B. Car operating panels:
- 1. General: Provide buttons numbered to conform to floors served and the following:
    - a. Locate top operating button at 48 inches above floor.
    - b. Locate emergency stop switch and illuminated alarm button in bottom row at 35 inches above floor.
    - c. Provide "Door Open" and "Door Close" buttons located above emergency stop and alarm of same design as car button.
    - d. All signage required by local codes shall be engraved and painted as directed by Owner's representative.
    - e. Provide fire emergency features, per code. Provide FEO-F1 key switch for fire service unless local code requires different.
    - f. Make provisions for card readers in Elevator No. 1.
  - 2. Elevator No. 1-2: Provide one new panel per car; integrate cabinets, buttons and engraving into swing front return panels without applied faceplate. Entire front return shall swing on concealed hinges with concealed locking means for servicing.
- C. Car position indicators:
- 1. Provide car position indicators with 2 inch indications corresponding to floor designations with matching direction arrows. Provide "X" or "E" indications for elevators with express zones.
    - a. Elevator No. 1-2: Provide new digital alpha numeric type segmented LED readout indicator with minimum two-inch high indications mounted integral with each car operating panel.

- D. Service cabinet:
1. Provide new cabinet, door with a lock and concealed hinge as an integral part of car operating panel mounted with flush hairline joints. Cabinet door shall be provided with a flush glazed window of required size to hold elevator-operating permit, mounted horizontally. Service cabinet shall contain the following:
    - a. Independent service switch
    - b. Two-speed ventilation switch (Hi-Off-Low)
    - c. Light switch as applicable
    - d. Inspection switch, key operated
    - e. Duplex GFI convenience outlet
    - f. Buzzers as required
    - g. Constant pressure test switch for emergency car lighting
    - h. Card reader over-ride switch-key operated
- E. Communication equipment:
1. Elevator No. 1: Provide a new complete communication system in compliance with ADA regulations consisting of a combination speaker/microphone, amplifier, automatic dialer with 4 number rollover capability and matching car station push button with telephone symbol to activate system and acknowledgment lights. Mount in car operating panel behind a pattern of holes, wire to machine room and program automatic dialer as directed by Owner's Representative.
- F. Hall button fixtures:
1. Each fixture shall contain buttons, which light to indicate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two buttons and terminal fixtures with one. Engrave fire-exiting instructions on faceplates. Provide minimum of two fasteners at top and bottom of faceplate.
    - a. Elevator No. 1: Provide each elevator group of elevators with one riser of hall button stations.
- G. Hall position indicators:
1. Provide with indications corresponding to floor designations with matching direction arrows.
    - a. Elevator No. 1: Provide new digital alphanumeric type segmented LED readout indicator with minimum two-inch high indications. Combine with hall lantern.
- H. Car lanterns:
1. Manufacturer's standard dual car riding lantern mounted at a maximum height above floor. Lens shall be flush with faceplate or face of jamb.
  2. Lantern illuminates and chimes as doors open. Provide single chime for up direction and double chime for down direction. Chime sound level shall be at 10 decibels over ambient.
- I. Disabled access requirements:
1. Provide to meet local codes having jurisdiction including handrail and button configuration.
    - a. Car operating panels: Provide raised Braille and alpha characters, numerals or symbols to the left of operating buttons and devices used by the public. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be

of same size and shape as buttons. Raised characters shall be white on a black background with Braille designations directly below the character. Provide "star" at main egress landing.

- b. Entrances: Provide raised Braille and alpha characters, numerals or symbols similar to those for car stations of size required by governing authority. Locate on each entrance jamb at 60 inches above floor indicating floor designation. Material and finish of plates shall match hall button station faceplates. Material and finish of plates shall be white on black. (CA only) Provide with contrasting background. Braille designation shall be to the bottom of the raised character. Provide mounting means similar to those on car panels. Braille designation shall be to the bottom of the raised character. Provide "star" at main egress landing.
- c. Entrances: Provide plate with elevator number for first floor entrance. Character shall be a minimum of 3". For Destination Dispatching Systems, Braille shall include the elevator number or letter designation as well as the floor designation. Material and finish of plates shall be white on black.

## 2.8 WIRING:

### A. General:

- 1. Provide all necessary wiring and 25% spares between cars and controllers and to all remote-control stations; minimum of eight. Furnish shielded wires in cables for all communications card readers, cameras, digital displays, and speakers. Include four additional pairs of shielded spares and two RG-6 coaxial cables or equivalent, for each car. Electrical wire runs will be free of splices or connection unless at designated junction points.

### B. Traveling Cables:

- 1. Use minimum number of traveling cables. Include shielded wires and spares as noted above. Cord thoroughly and protect cables from rubbing against hoistways or car items. Provide with steel cable core and properly anchored to relieve strain on individual conductors.
- 2. All traveling cables shall be wired from machine to elevator, without junction box or spliced connections.

### C. Hoistway Wiring:

- 1. All wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
- 2. If junction boxes are used, NEC approved terminal strips shall be used and properly identified.
- 3. No splices shall be allowed.

### D. Work light and GFCI convenience outlet:

- 1. Provide on top of car with protective plastic lamp guard.
- 2. Provide compact fluorescent type (CFL)

### E. Stop switch:

- 1. Provide in each pit. Provide NEMA 4 enclosure.
- 2. Provide on each top of car.

### F. Alarm gong:

1. Provide on top of each car to be actuated by corresponding alarm button or emergency stop switch.

G. Auxiliary disconnect switches:

1. Provide as required in remote controller rooms or at remote equipment not in view of mainline switches; include all wiring and conduit.

H. CCTV circuit:

1. Provide provisions for closed circuit television camera in elevators. Run from elevator car top to outside of the elevator machine room, as directed by Owner at no additional cost to the Owner.

2.9 CAR ENCLOSURES:

A. General:

1. Provide an emergency car lighting unit mounted on top of car, battery driven and self-rechargeable. Upon outage of normal power the unit shall, within 5 seconds, light two lamps as part of normal car lighting. The unit shall have sufficient capacity to keep the lights in continuous operation for four hours and the alarm bell for one hour. Provide a readily accessible means for testing the unit in service cabinet. Light fixtures mounted in car front returns or operating panels are not acceptable. Illuminate lights directly over car operating panels.

2.10 HOISTWAY ENTRANCES; PASSENGER TYPE:

A. General:

1. Retain existing or provide new as specified.

B. Hangers and Tracks:

1. Elevator No. 1: Provide all new door tracks and hanger assemblies. Sheave type with two-point suspension. Steel sheaves with flanged groove and resilient sound-absorbing tires. Minimum 2-1/2-inch diameter for hoistway, 3 inch for car. Manufacturer's heavy-duty tracks and ball or roller bearing with adjustable up thrusts.

C. Hanger headers:

1. Elevator No. 1: Retain existing. Modify for new door tracks, reinforce and refinish.

D. Struts:

1. Elevator No. 1: Retain existing, clean and paint.
  - a. Provide rubber door stops.

E. Closers:

1. Elevator No. 1: Provide new cable relating torsion spring mechanical type or broken arm jack knife type as required for door assembly.

F. Dust and hanger covers:

1. Elevator No. 1: Retain existing, clean and refinish with black paint. Replace damaged and missing dust covers.

G. Fascia, toe and head guards:

1. Elevator No. 1: Retain existing, modify to comply with code, refinish with black paint and refasten for greater rigidity.

H. Interlocks:

1. Elevator No. 1: Provide all new. Equip each hoistway door with a tamper-proof interlock which shall prevent operation of the car until doors are locked in the close position as defined by the Code and shall prevent opening of doors at landing from corridor side unless car is at rest at landing in leveling zone or, hoistway access switch is used. Provide all new type "SF" high temperature wiring for interlock circuits.
- I. Pick-up roller assemblies:
    1. Elevator No. 1: Provide all new pick-up roller assemblies as required for door operating equipment furnished.
  - J. Door restrictor:
    1. Elevator No. 1: Provide new, door restrictor device compatible with new door equipment.
  - K. Sills:
    1. Elevator No. 1: Retain existing, power clean to metal and refinish, full length of sill.
  - L. Limit Switches:
    1. Elevator No. 1: Provide new
  - M. Frames:
    1. Elevator No. 1: Retain existing. Clean and refinish as scheduled. Frames to be refinished by others.
  - N. Hoistway doors:
    1. Elevator No. 1: Retain existing, re-hang to remove all twists, provide two new gibs per panel and one fire gib per panel which will remain engaged in sill if guiding member is destroyed.
    2. Provide new full height astragals and missing or damaged non-vision wings matching finish of door panels. Contractor must use the original reinforcing on existing hoistway and car doors for mounting hangers, pickup rollers, drive vanes, etc. If original reinforcing is not reusable for drive vanes and pickup rollers, Contractor shall furnish new reinforcing (minimum of 1/4" thick plate) welded to the door face. A minimum of four (4) 5/16" threaded bolts is to be used for attachment to the reinforcing plate. Where slotted holes are provided in the attachment block, a 1/4" dowel pin is to be fitted after doors locks are set up. Clean and refinish door panels as scheduled. Door panels to be refinished by others. Vandal resistant paint. Remove door panels before painting.

## 2.11 HYDRAULIC ELEVATOR EQUIPMENT:

- A. Design Criteria:
  1. Performance:
    - a. Contract Speed: Maximum ten percent (10%) speed variation under any loading condition in the up direction.
    - b. Motion Time: From start to stop of elevators motion as measured in both directions for a typical one floor run under any loading condition.
      - 1) Elevator No. :8.5 seconds
    - c. Door Open Times:
      - 1) Elevator No. :2.0 seconds
    - d. Door close times: Minimum, without exceeding kinetic energy and closing force, allowed by code.

- e. Door dwell times: Comply with A.D.A. formula and provide separate adjustable timers with initial settings as follows:
    - 1) Main lobby hall call: 5.0 to 6.0 seconds.
    - 2) Upper lobby hall call: 5.0 to 6.0 seconds.
    - 3) Car call: 5.0 to 6.0 seconds. Choose one.
    - 4) Interruption of door protective device: Reduce dwell to 1 second.
  - f. Leveling: Within 1/4 inch under any loading condition. Level into floor at all times, do not overrun floor and level back.
  - g. Hydraulic pressure: Hydraulic components shall be factory tested for 600 PSI. Maximum operating pressure shall be 425 PSI.
2. Operating qualities: Owner's Representative will judge riding qualities of cars and enforce the following requirements. Make all necessary adjustments.
- a. Acceleration and deceleration: Starting and stopping shall be smooth and comfortable, without obvious steps of acceleration. Slowdown, stopping and leveling shall be without jars or bumps. Elevator shall start movement within .5 seconds of fully closed doors. Stopping upon operation of emergency stop switch shall be rapid but not violent.
  - b. Horizontal Acceleration (ISO A95 Scaling): Maximum 12 mg peak-to-peak measured at full speed for full travel in both directions.
  - c. Vertical Vibration: Ride shall be free of vibration throughout acceleration, full speed and deceleration for full travel in both directions.
3. Sound control: (A Scaled – fast – Lmax over the duration of the operation).
- a. Vibration: Sound isolate machines and motor drives from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.
  - b. Airborne noise: Maximum acoustical output level of:
    - 1) 85 dB measured in machine room. With the meter located 3' - 0" from each machine room door at floor level.
    - 2) 55 dB measured in elevator cars during all sequences of operation.
    - 3) 50 dB measured in elevator lobbies. From the nearest staff work station to the elevator lobby.

## 2.12 HYDRAULIC HOISTWAY EQUIPMENT:

- A. Guide rails and brackets:
  - 1. Elevator No. 1: Retain existing rails, realign, clean, check, tighten and replace Code non-complying brackets, fishplates and bolts. Provide log of the alignment corrections to the Owner's Representative.
- B. Guide shoes:
  - 1. Elevator No. 1: Provide new guide shoes of the roller type with neoprene tires, minimum 3/4-inch-wide and fully adjustable spring loaded to provide continuous contact with rail surfaces. Balance car to insure equal guide shoe pressure on all wheels and not exceed manufacturer's recommendations. Nominal roller diameter shall be 4" 6".
- C. Buffers:
  - 1. Retain existing.
- D. Car frame and platform:

1. Elevator No. 1: Retain existing car frame. Clean down and tighten frame bolts. Static balance weight to be added as required.
- E. Platen isolation:
1. Provide minimum 3/4-inch-thick steel plates between top of plunger and car frame with 1 inch rubber or neoprene isolation material between.
  2. Piping:
    - a. Reuse existing.
    - b. Provide new gaskets for Victaulic fittings and pressure test for leaks.
  3. Isolation coupling
    - a. Provide at least two isolation coupling one in the machine room and one in the pit.
- F. Pit Valves:
- 1) Provide in each elevator pit a gate valve to shut off oil between cylinder and pumping plant.
  - 2) Provided new a pressure type line rupture safety valve to shut off oil between cylinder head and pit valve. Activation of safety valve shall not void operation of lowering valve.
- G. Oil:
1. Hydraulic Fluid: USDA certified bio-based product, ultra-low toxicity, “readily” biodegradable, high performing fluid made from rapidly renewable plant stock; with antioxidant, anticorrosive, antifoaming, and metal passivating additives. Hydraulic fluid is approved by elevator manufacture for use with elevator equipment.
    - a. USDA certified bio-based product, >90% bio-based content, per ASTM D6866
    - b. Classified “Readily” biodegradable, per OECD 301B
    - c. >70% Biodegradability, per ASTM D5864
    - d. >20,000 ppm Aquatic toxicity, per EPA-821-R-02-012
    - e. >220 Viscosity Index, ASTM D2270
    - f. 25 Viscosity at 400C, cSt., per ASTM D445
    - g. >2200C, Flash Point, per ASTM D92

## 2.13 MACHINE ROOM EQUIPMENT:

- A. General:
1. Provide equipment to fit existing space and structural limitations. Coordinate related electrical, structural and mechanical work with other trades.
- B. Pumping plant:
1. Provide new.
    - a. General: Self-contained unit with sound reducing cabinet and sound isolated base.
    - b. Pump: IMO, Roper or accepted equal for 150 SSU oil, belt driven or submersible. Maximum speed 3600 RPM. Maximum pressure 425 pounds per square inch.
    - c. Tank: Capacity equal to plunger displacement plus 50%. Provide strainers, oil level gauge and device to maintain uniform oil temperature.



- d. Valves: Integral type by Elevator Equipment Company, Maxton Company or by elevator manufacturer. Provide conveniently located manual lowering valve accessible without removing pumping plant enclosure panels.
  - e. Motor: General Electric, Imperial, Westinghouse or accepted equal; maximum speed 1800 RPM for belt driven and 3600 RPM for submersible. Provide minimum 120 start heavy-duty motor, continuous rated, 50 degrees C. temperature rise, Class A insulation or 70 degrees C. rise for Class B insulation.
  - f. Muffler/Silencer: Blow-out proof type between pumping plant and cylinder.
- C. Controller:
- 1. Integral, floor or wall mounted as applicable to space conditions. Include door operating relays combined with controller. Provide solid state soft starting with starting switches rated at minimum 57% of horsepower rating. IEC method of line starter application is unacceptable. Provide three (3) manual reset overload relays, one in each line and reverse phase relay. Provide externally mounted permanently identified junction boxes on controller cabinets for termination of communication circuits. Design controller to accommodate future stops. Pre-approved controllers:
    - a. Motion Control Engineering HMC-2000
- D. Hydraulic elevator protective circuit:
- 1. In the event the car should stall due to low oil in the system or, if for other cause the car fails to reach the top landing within a predetermined time while traveling "up", a special circuit shall be provided which shall automatically return the car to the bottom landing and open the doors for 10 seconds after which the elevator will close doors and completely shut down. Recycling the mainline switch shall restore Service.
  - 2. Hydraulic Elevator Oil Cooling System: Provide an oil cooler to maintain operating temperatures between 105 – 115 degrees, an oil cooler consisting of temperature sensors monitoring high and low hydraulic fluid temperatures a special circuit shall be provided which shall automatically activate the oil cooler system and maintain its operation until hydraulic fluid temperature are achieved. Reference "Work by Others" for dedicated electrical disconnect. Conduit and wiring in elevator equipment room.
- E. Hydraulic elevator battery emergency lowering operation:
- 1. Provide a battery driven unit which will initiate operation of the Protective Circuit and lower elevator to bottom landing in the event of a power failure.
  - 2. Service shall be restored automatically upon restoration of normal power supply.
  - 3. Arrange with an exposed method of testing.
  - 4. Arrange circuitry so that, if the mainline switch is open when the power transfer takes place, the elevator will not respond to the operation of the protective circuit.
  - 5. Provide a double pole-isolating switch on the battery unit to disconnect the battery output.

**PART 3 - EXECUTION:**

3.1 INSTALLATION:

- A. General:
  - 1. Install per manufacturer's requirements, those of regulatory agencies and as specified.
- B. Welded Construction:

1. Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustments, inspection, maintenance and replacement of worn parts.
  2. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation:
1. Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.
- D. Lubrication:
1. Lubricate operating parts of systems as recommended by manufacturer.
- E. Hazardous Disposal Certification:
1. Contractor to provide oil and hazardous waste removal documentation per required EPA standards. Provide copy of documentation to Owner.
- F. Alignment:
1. Coordinate alignment of hoistway entrances with elevator guide rails, for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe workable dimensions at each landing.
  2. Align guide rails plumb and parallel with maximum deviation of 1/16 inch. Anchorage of guide rails in pits shall not compromise waterproofing.
- G. Graphics:
1. Provide graphics visible to public as selected by Owner's Representative.
- H. Manufacturer's nameplates:
1. Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.
- I. Cleaning of the installation:
1. After the installation of each elevator has been completed and immediately prior to the carrying out of the tests, the machine room and all equipment therein, the elevator hoistways including outside of car and all ledges and similar areas, the elevator pit and equipment therein, and all door hanger runners, guides, tracks and sills shall be thoroughly cleaned down, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish shall be removed from site.
- J. Finish painting after tests:
1. After satisfactory completion of the tests, any damage to the paint work shall be made good and the installation re-cleaned, if necessary, after which at least one final coat of gloss oil resistant or enamelled paint shall be applied by brushing or spraying in Contractor's customary colors to all the existing and new equipment in the machine room and also to such items in the hoistway or elsewhere which have received only a primer coat.
  2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.
- K. Painting of machine room floor and pit floors:

1. After the completion of the entire installation, the floor and walls of each machine room and pit areas shall be thoroughly cleaned down and brush painted with one coat of traffic paint having oil resistant properties. Pit floors shall be painted after the completion of the waterproofing. Owner's Representative will advise the color.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

### 3.2 NOISE CONTROL:

#### A. General:

1. Contractor, in the preparation and the execution of the work, shall recognize the particular and mandatory requirements of the remodeling project due to the character of the work and the use occupancy of the building.
2. Contractor shall perform all noisy work as directed by Owner's Representative.

#### B. Building operations:

1. Noise and vibration generated by this construction for this work may, at times, create a problem for the operations of the building. In the event the noise produced by the construction work conflicts with the building function, Contractor, at the request of the Owner's Representative, shall reduce or stop the noise.
2. All disruptive work including removal of old materials and deliveries of new materials shall be done on overtime at no additional cost to Owner.
3. All disruptive work will be performed after hours at no additional cost to Owner.

#### C. Measurement:

1. The noise level shall be measured on the "A" Scale of a sound level meter as follows:
  - a. With the meter located 3' - 0" from the nearest staff work station to the elevator lobby, the sound level shall not exceed 65 db.
  - b. With the meter located 3' - 0" from outside of each machine room door at floor level, the sound level shall not exceed 70 db.
  - c. With the meter located 3' - 0" from any hoistway door at any level, the sound level shall not exceed 70 db.

#### D. Types of noise generating work:

1. All heavy demolition (concrete walls and floors).
2. All grinding, chipping, pounding, sanding and cutting of holes and core drilling.

### 3.3 FIELD QUALITY CONTROL:

#### A. Regulatory agencies inspection:

1. Upon completion of elevators, Contractor shall provide instruments, weights and personnel to conduct test required by regulatory agencies. Contractor shall submit a complete report describing the results of the tests.

#### B. Examination and testing:

1. When installation is ready for final acceptance, notify and assist Owner's Representative in making a walk-through inspection of entire installation to assure workmanship and equipment complies with contract documents. Provide equipment to perform the following tests:

- a. One-hour heat and run test with full load in car. Perform for one car of each duty.
        - 1) Stop car at each floor in each direction.
        - 2) Verify that temperatures do not exceed manufacturer's motor ratings.
        - 3) Performance and leveling tests shall be made before and after heat and run test.
      - b. Check and verify operation of all safety features and special operations.
        - 1) Measure horizontal acceleration.
        - 2) Measure acoustical output levels in machine room, lobbies and cars.
  - C. Correction:
    - 1. Make corrections to defects or discrepancies at no cost to Owner's Representative. Should discrepancies be such that re-examination and retesting is required, Contractor shall pay for all costs including those of Owner's Representative's fees.
  - D. Final acceptance:
    - 1. Final acceptance of the installation will be made only after all corrections are complete, final submittals and certificates received and the Owner's Representative is satisfied and the installation is complete in all respects.
- 3.4 INSTRUCTIONS:
- A. Instruct Owner's personnel in proper use of each system.
- 3.5 PROJECT RECORD DOCUMENTS:
- A. As-built drawings:
    - 1. Contractor shall maintain at the job site a separate and complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for such change.
    - 2. Changes, as they occur, will be marked on the record set of drawings on a daily basis.
  - B. Record drawings:
    - 1. Contractor shall prepare "as-built" drawings in duplicate of any changes to electrical work on prints supplied by the Owner's Representative. During the course of construction, actual locations to scale shall be shown for all runs of mechanical and electrical work, installed in walls and floors or otherwise concealed. This shall cover all piping, electrical wiring; whether in conduit or cable, duct work, etc. shall be located, in addition, by dimension. All services shall be identified in ink on the prints.
    - 2. In addition, Contractor shall keep a complete record copy of the plans and specifications for the use in preparing "as-built" plans and specifications at the end of the job. Contractor shall sign and date the prints and deliver them to the Owner's Representative.

**END OF SECTION**

## **SECTION 14 22 10**

### **MODERNIZATION OF ELEVATORS**

#### **PART 1 - GENERAL:**

##### **1.1 GENERAL CONDITIONS:**

- A. Bidding documents:
  - 1. Bidders shall examine existing conditions. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to Owner's Representative's attention during the pre-bid RFI period prior to the bid date. If no discrepancies are presented, changes required to accommodate bidder's equipment become the responsibility and cost to Contractor.
  - 2. Bidders are responsible to identify all required building related work at time of bidding and included with their bid documents.
- B. The specifications are written to be included as an attachment to the modernization contract.
- C. A copy of the final contract with all attachments shall be onsite in the machine room at all times.
- D. The Elevator Contractor shall be responsible for all building modifications to provide a code compliant elevator modernization. All sub-contractors will be contracted directly with the elevator contractor.
- E. Contractor shall provide a lock-box for each machine room.

##### **1.2 DEFINITIONS:**

- A. Main Lobby: Ground Level unless otherwise indicated.
- B. Fire Recall Level: As directed by local fire authority. As existing.
- C. Alternate Fire Recall Level: As directed by local fire authority. As existing.
- D. All retained existing equipment shall be of equal condition and life span as of new equipment.
- E. Serviceability: It is recognized that each manufacturers' system contains components that are proprietary to the development of their systems. The Owner may wish to have the elevator system maintained by another technically qualified service provider and by submitting a bid for this project, the manufacturer shall guarantee that for a minimum of 20 years they will provide the following:
  - 1. Diagnostic, adjusting and monitoring tools for all components including documents, manuals, and wiring diagrams. Devices shall not self-destruct, require charging or exchange. Remote monitoring devices are excluded from this requirement, however if such devices are removed all wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
  - 2. Manufacturer shall guarantee to support the equipment for this project with regard to notification to Owner of system corrective updates, provide and install such updates at no cost to Owner.
  - 3. Provide contact information for their separate parts warehouse so that the Owner or designated service provider can order parts on a 24-hour basis and delivered within 48 hours. Parts may be provided from inventory when adequate stock exists. In some

cases, parts will have to be special ordered from the factory or other vendor. Proprietary parts will be made available on an exchange basis.

4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at close out of the project and estimated escalation cost. The cost of these parts is what would be charged to Owner or other service provider.
5. Provide contact information for technical support so that the Owner or designated service provider can obtain technical support on a 24-hour basis to provide assistance in trouble shooting problems. Indicate hourly rate charged to Owner or designated service provider for such service.
6. In the event that a company other than the Original Equipment Manufacturer (OEM) maintains the elevators, and if the equipment was unable to be repaired by the non-OEM maintenance company, a factory-trained OEM technician would be required to assist (as it would if Contractor's own technician were in the same situation). If such an event was to occur, OEM Contractor would make its factory-trained technician available for assistance upon request of the Owner within three (3) business days, based on the original contractual hourly rates subject to established annual escalations. This shall survive any termination of the maintenance agreement.
7. The above will survive any termination of the maintenance agreement.
8. Contractor shall be defined as "Elevator Contractor".
9. Subcontractor shall be defined as any contractor contracted by either "Owner or Elevator Contractor".

### 1.3 DESCRIPTION:

- A. Examination of site:
  1. Contractor shall visit the building, examine the existing elevators and contract documents, determine condition of all retained components, space conditions, power supply and mainline disconnect.
  2. Make all surveys necessary to meet the requirements of this specification and compatibility to products provided.
- B. Field measurements:
  1. Field verify dimensions before proceeding with the work.
  2. Coordinate related work by other trades.
  3. Contractor shall assume responsibility and provide full maintenance of the elevator equipment upon award of this contract and shall continue to do such throughout the modernization.

### 1.4 RELATED WORK INCLUDED BY OTHERS IN THIS SECTION UNDER THE ELEVATOR CONTRACT:

1. Contractor shall visit the building, examine the existing conditions, power supply, standby/emergency power supply, emergency battery lowering, mainline disconnect, and include all work needed to ensure a fully code compliant modernization. Contractor or his sub-contractors shall perform this work, which may include but is not limited to the following:
  - a. General:
    - 1) Self-closing and self-locking access doors and pit ladders (as req.)
    - 2) Providing supports to carry structural reaction, impact and uplift loads imposed by elevator equipment.

- 3) Block-outs, pockets and chases in walls and floors for signals, fixtures, and conduit.
- b. Electrical work:
  - 1) Power feeders: Modification to existing, or installation and connection of three phase power, through fused mainline switches or circuit breakers and extended to terminals of controllers. Provide continuous ground where needed.
  - 2) Light circuits: Single-phase circuit through disconnects and extended to controller for car lights and fan.
  - 3) Communication circuit: Telephone circuit terminated at junction box of each controller.
  - 4) Illumination: Lights with guards, illuminating light switches and convenience outlets in pits, machine rooms, controller areas and overhead sheave spaces.
  - 5) Conduit: Installation of electrical conduit and pull boxes with pull wire between hoistways and remote locations of each indicator and control panel.
  - 6) GFCI Outlets: Provide in machine room and pits.
  - 7) Provide NEMA 4 approved electrical devices and conduits for all electrical installed below the lowest sill level.
- c. Fire Life Safety: Stand alone system.
  - 1) Sensing devices: Installation and or removal modification to smoke detectors, heat detectors, shunt trip, sprinklers, or products of combustion sensors in elevator lobbies, machine rooms, hoistways and alternate fire recall floor with circuits terminated at junction box in machine rooms for emergency fire service operation.
  - 2) Provide fire proofing as required by lode code authority.
- d. If work by others is excluded from the elevator contractors' scope of work, they shall coordinate with all sub-contractors to complete all required building related work prior to inspection at no additional cost to the Owner.

**1.5 RELATED WORK INCLUDED BY ELEVATOR CONTRACTOR IN THIS SECTION:**

1. Barricades: Full height self-closing self-locking barricades for protection of open hoistways during construction.
2. Temporary screens: Contractor shall provide code compliant hoistway screening between elevators before construction starts and remove at completion of project.
3. Painting: Field painting of prime-finish items constituting final finishes.
4. Card readers: Including wire from machine room j-box to car top j-box, interfacing with elevator controls and installation in elevator car, connection in machine room and testing of system.
5. Closed circuit T.V: Including wire from machine room j-box to elevator car top j-box, connection in machine room and testing. Car top and machine j-box and labeled.
6. Contractor shall coordinate and perform all pretesting of all building systems prior to inspection at no additional cost to the Owner.

**1.6 QUALITY ASSURANCE:**

- A. Qualifications of Contractors:

1. General: The entire elevator installation shall be installed and maintained by the acceptable Contractors listed or as qualified by addendum. No portion of the work shall be subcontracted unless qualified and accepted by addendum.
  2. Installer's qualifications: Installer must be a licensed, certified conveyance mechanic in the state where installation is located.
- B. Sub-contractors:
1. Contractor shall be solely responsible for any and all of the work done by his sub-contractor or other employees and all orders or instructions from the Owner's Representative shall be through him to them. It shall be Contractor's duty to see that all of his sub-contractors commence their work properly at the proper time, and carry it on with due diligence so that they do not delay or injure either work or materials; and that all damage caused by them or their workmen is properly made good by them or by himself at his cost.
  2. The use of sub-contractors is to be limited to work outside the scope of elevator construction work; for example, patching, painting, coring of walls, marble work and refinishing. Contractor of sub-contractor will be responsible for any drywall damage, patching and painting in regards to their scope of work.
- C. Quality of work and workmanship:
1. When completed, the installation shall be modern in all respects.
  2. All components specified as new shall be provided as new. All components specified to be retained may be provided as new at Contractor's option subject to approval of Owner's Representative. All retained components are to be examined, cleaned, adjusted, repaired and/or replaced with new parts. Contractor must be willing to accept all retained equipment on full maintenance without prorating.
  3. All work performed shall be conducted in a workmanship type manner.
- D. Requirements of regulatory agencies:
1. Codes: In accordance with the latest applicable edition requirements of the following and as specified:
    - a. A.D.A.: Americans with Disabilities Act
    - b. ASME: American Society of Mechanical Engineers - A17.1; Safety Code for Elevators and Escalators
    - c. CBC: Title 24; California Building Codes
    - d. CCR: Title 8; California Code of Regulations
    - e. IEEE
    - f. NEC: National Electric Code / NFPA 70.
    - g. NFPA-72
    - h. All local codes and Amendments and Administration, which govern
- E. Permits, Inspections, and Taxes:
1. Arrange and pay for inspections by governing authorities.
  2. Obtain and post operating permits per applicable code.
  3. Arrange and pay for all applicable taxes.
- F. Safety Policies and Practices:
1. Installation and maintenance contractors are required to follow their company's safety practices and policies



2. Installation and maintenance contractors are required to follow all practices and policies of the building management.
3. Installation and maintenance contractors are required to follow governing authorities' safety practices and policies.

1.7 SUBMITTALS:

A. Shop drawings:

1. Submit three copies of the following prior to ordering any materials:
  - a. Layouts: Plan of machinery and hoistway spaces showing new equipment and existing equipment; include impact and static loads imposed on building structure and clearances around equipment.
  - b. Details: Submit details of cab shell and interiors, fixtures, and entrances.
  - c. Data: Indicate on layouts or separate data sheets; machine spaces heat release, power requirements, conduit runs outside of hoistways and machine rooms, car and counterweight roller guides, control systems, motor drive units and door operators.
  - d. Provide all structural submittals (as required) with an approved Professional Engineer stamp and signature.

B. Samples:

1. Provide samples of materials and finishes exposed to public view and additional, if specifically requested, 6 inch x 6 inch panels, 12 inch lengths or full size if smaller, as applicable.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Delivery and storage:

1. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. Storage space on site will be available. Additionally, a storage container is required to properly secure and store all equipment, it shall be provided at no cost to the Owner.

B. Handling:

1. Owner's Representative has the first right of refusal to retain any elevator components that are to be removed and modernized with new equipment. All removed components shall remain property of the Owner's Representative, until the Owner's Representative notifies Contractor, in writing, of removed components that Owner's Representative would like to retain. All remaining elevator equipment not to be retained by the Owner's Representative or reused by Contractor shall be promptly removed from the building by Contractor at no cost to the Owner's Representative, and become the property of Contractor.
2. Contractor shall make every attempt to recycle removed elevator equipment. Contractor shall correct any damage to building surfaces and surrounding areas if damaged during removal of this equipment, at no cost to the Owner's Representative.

C. Building operations:

1. The building will remain in operation during the execution of this contract. Cooperate with building management in scheduling work in such a way as not to cause interruption of or interference with the building operations.

D. Electrical shutdowns:

1. Temporary electrical shutdowns will not be allowed except for brief periods to be scheduled outside normal hours and at least forty-eight (48) hours in advance and approved by Owner's Representative.

1.9 WARRANTY:

A. Guarantee and Warranty:

1. Provide special project warranty, signed by Contractor, Installer and Manufacturer, agreeing to replace/repair/restore defective materials and workmanship of all work performed which may develop within one (1) year from final date of completion and acceptance of the **entire installation**. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failures, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

**PART 2 - PRODUCTS:**

2.1 DESCRIPTION OF SYSTEMS:

A. Elevator No. 1 - 2:

- |                               |   |
|-------------------------------|---|
| 1. Type:                      | Hydraulic Direct Plunger                        |
| 2. Capacity:                  | 5000 Pounds                                     |
| 3. Speed:                     | 100 FPM   |
| 4. Stops:                     | 3 B, 1, 2 Elevator 1<br>4 B, 1, 2, 3 Elevator 2 |
| 5. Openings:                  | 3 Elevator 1<br>4 Elevator 2                    |
| 6. Travel:                    | Existing  |
| 7. Control:                   | Soft Start AC                                   |
| 8. Operation:                 | New Microprocessor Group Automatic              |
| 9. Machine Location:          | Remote  |
| 10. Special Operations:       |   |
| a. Independent Service        |   |
| b. Fire Emergency Service     |   |
| c. Tenant Security            |   |
| d. Emergency Battery Lowering |   |
| 11. Door Operation:           | Provide New                                     |
| 12. Door Protection:          | Provide New                                     |
| 13. Guide Rails:              | Retain  |
| 14. Guide Shoes:              | Provide New                                     |
| 15. Plunger Unit:             | Provide New                                     |

- |     |                           |   |
|-----|---------------------------|---|
| 16. | Cylinder Unit:            | Provide New   |
| 17. | Buffers:                  | Retain  |
| 18. | Car Frame & Platforms:    | Retain  |
| 19. | Power Unit:               | Provide New   |
| 20. | Controllers:              | Provide New   |
| 21. | Piping:                   | Retain and Pressure Test  |
| 22. | Car Operating Panels:     | Provide New   |
| 23. | Car Position Indicators:  | Provide New   |
| 24. | Hall Position Indicators: | Provide New   |
| 25. | Service Cabinet:          | Provide New   |
| 26. | Communications:           | Provide New   |
| 27. | Hall Button Stations:     | Provide New   |
| 28. | Hall/Car Lanterns:        | Provide New   |
| 29. | Handicap Requirements:    | Provide New, as required  |
| 30. | Wiring:                   | Provide New   |
| 31. | Car Enclosure:            | Retain  |
| 32. | Hoistway Entrances:       | Retain  |
| 33. | Miscellaneous Items:      |   |
|     | a.                        | Key Operated Hoistway Access  |
|     | b.                        | Seismic Requirements  |
|     | c.                        | Card Reader Provisions  |
|     | d.                        | Lobby Park Key Switch   |
|     | e.                        | Clean hoistways, machine rooms and equipment; paint machine room floor, pit floor, car top, and all existing metal work |
|     | f.                        | Top of car guardrail Provide new (as required)  |

## 2.2 MATERIALS:

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D exterior Grade Douglas Fir, fire retardant treated.
- C. Sheet steel: ASTM A366, uncoated, pickled, free from defects.
- D. Sound deadener: Fire retardant; spray, roller or adhesive applied; 3/16" thick.
- E. Stainless steel: ASTM A167; type 302 or 304.

## 2.3 FINISHES:

- A. Exposed-to-view surfaces:
  - 1. Provide as follows unless otherwise specified.
    - a. Aluminum: Clear anodized finish.
    - b. Sheet steel:

- 1) Shop prime: Degrease clean of foreign substances and apply one coat of corrosion inhibiting primer compatible with finish paint selected. Hoistway items visible to public shall be painted one additional coat of black paint.
  - 2) Finish paint: Three coats baked enamel; sand each coat smooth; color as selected.
  - c. Stainless steel:
    - 1) Plain: Satin, directional polish, No. 4 Mirror directional polish, unless otherwise specified.
  - d. Touch-up:
    - 1) Prime surfaces: Use same paint as factory for field touch-up.
    - 2) Finish painted surfaces: Refinish whole panel with shop prime and finish paint as specified above.
- B. Non-exposed-to-view surfaces:
- 1. Degrease or remove any rust and shop paint manufacturer's standard corrosion inhibiting primer.
- 2.4 AUTOMATIC OPERATION:
- A. General operation of individual elevators:
- 1. Provide a non-proprietary diagnostic microprocessor-controlled dispatching system, based on real time calculations, designed to monitor all types of traffic and sufficiently flexible so that it can be modified to accommodate changes in traffic patterns.
  - 2. Serial link communications: Provide a distributed processing network consisting of localized processors located in machine rooms, car stations, hall stations and top of car to allow system to make fast decisions based on data shared by the processor involved in the different operations of the elevators. For group dispatch operations, all elevators in the group shall be capable of acting as a group common dispatcher as the need arises.
  - 3. Fault diagnostic system: Provide Owner's Representative with all hardware such as on-board LED diagnostics, hand held device or laptop computer, as standard with manufacturer, and supporting software documentation. Diagnostic system shall be capable of determining faults most difficult to find, as well as be capable of performing all code required testing.
  - 4. The system shall be flexible, irrespective of the number of elevators in normal service.
- A. Simplex selective collective operation:
- 1. Arrange for simplex selective collective automatic operation. Operate elevators from a single riser of landing buttons and from operating device in car.
  - 2. Momentary pressure of one or more car or landing buttons, other than those for landing at which car is standing, starts car, and causes car to stop at first landing for which a car or landing call is registered corresponding to direction in which car is traveling. Stops made in order in which landings are reached, irrespective of sequence in which calls are registered.
  - 3. Double door operation not permitted. If an up-traveling car has a passenger for an intermediate floor and a down call is registered at that floor, with no calls above car, it travels to floor, opens door to let passenger out, then lights down direction arrow in hall lantern and accepts waiting passenger without closing and reopening doors.

2.5 SPECIAL OPERATIONS:

- A. Inspection operation:
  - 1. Provide key-operated hoistway access device and car top operating device. Key switches shall be mounted in door frames with a separate cover plate at terminal landings.
- B. Independent service:
  - 1. Independent service operation shall be provided so that, by means of a switch located in the car service cabinet, the car can be removed from automatic operation and be operated by an attendant. The attendant shall have full control of the starting, stopping and direction of car travel.
  - 2. The car shall respond to car buttons only. The hall signals for the car on independent service shall not operate.
- C. Operation under fire or other emergency conditions:
  - 1. Provide special emergency service to comply with current ASME and CCR Title 8, CBC Title 24, and local codes having jurisdiction.
  - 2. Provide Phase 1 recall switch at main floor elevator lobby.
  - 3. Key switches at main floor shall be integrated in hall button station hoistway entrance jamb with engraved instructions.
- D. Tenant security:
  - 1. Arrange control system to enable and disable car call buttons as follows:
    - a. Function, which locks out all cars in a group so that all car buttons are inoperative, except the main floor.
    - b. Function which locks out any selected car button for all elevators in a group serving that floor.
    - c. Tenant security operations can be overridden by cars on independent, any special emergency service or by card reader access.
- E. Lobby Park:
  - 1. Arrange control system to enable the elevator, from either a key switch or time clock, to bring the elevators to the main lobby, cycle the doors and shut down. Leaving only the door open button functional. All emergency service operations shall over ride this feature.

2.6 DOOR OPERATION:

- A. Passenger type:
  - 1. Provide door times available as specified under "Design Criteria."
  - 2. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.
  - 3. Door hold open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door hold times shall be adjustable independent of other floors.
  - 4. Provide closed loop regulated speed performance, onboard diagnostics, adjustable times, nudging, and test switches.
- B. Door operator:

1. Elevator No. All: Provide new heavy-duty master type solid state closed loop door operators mounted on car enclosure utilizing minimum 12-gauge support angles to isolate from direct mounting of operator on the car top.
  2. Pre-approved closed loop heavy duty door operators:
    - a. GAL Linear
    - b. GAL MOVFR
  3. Provide code compliant door weight data tag.
- C. Door Protection:
1. Elevator No. All: Remove existing door protection devices and provide new electronic optical 3D scanning type:
    - a. Provide a door protective system which does not rely on physical contact with a person or object to inhibit door movement or initiate door reversal.
    - b. Pre-approved optical door sensors:
      - 1) Elevator Contractor
      - 2) Adams GateKeeper Max
      - 3) Formula Systems
      - 4) Janus Pana40 Plus
      - 5) Janus Pana Chrome 3D, with voice annunciation
      - 6) Tritronics Leading Edge
    - c. The system shall be able to detect a 2-inch diameter rod introduced at any position within the door movement and between the height of 2 inches and 63 inches above sill level.
    - d. Detection of intrusion into the protected area shall cause the doors, if fully open, to be held in the open position and, if closing, to reverse to fully open position.
    - e. If doors are prevented from closing for an adjustable period of 15 to 45 seconds or upon activation of fire emergency service, they shall proceed to close at reduced speed and a loud buzzer shall sound. Door closing force shall not exceed 2-1/2 ft.-lb. when door re-opening device is not in operation.
    - f. For side-opening doors, the detector for the strike jamb side shall be recessed, flush with strike jamb.

## 2.7 SIGNALS AND OPERATING FIXTURES:

- A. General:
1. Provide signals and fixtures as shown and specified. Location and arrangement of fixtures shall comply with disabled access requirements.
    - a. Passenger Elevator Buttons: Provide minimum 1-inch diameter mechanical, with fully illuminated buttons with LED's and engraved identifications. Buttons shall be raised 1/8 inch from surrounding surface with square shoulders. Survivor, Bruiser or equal.
    - b. Switches: Toggle type typically or key operated where noted.
    - c. Provide six (6) keys for each elevator keyed device, with proper labeled identification upon turnover of elevator.
    - d. Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.

- e. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Owner's Representative's approval.
  - f. Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected. No applied engraved plates.
  - g. Lamps: Miniature LED type.
  - h. Audible Chimes: Electronic adjustable audible chimes; bell type gong not acceptable.
  - i. Provide floor passing signal of the adjustable electronic audible chime type.
  - j. Tactile Markings: Provide raised Braille and alpha characters, numerals or symbols adjacent to operating buttons and devices used by the public according to local codes. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons or integral "fishtail" type.
  - k. Acceptable manufacturers: EPCO, ERM, MAD, or INNOVATION, fixtures with 5/8" engraved identifications. Operation of car or hall button shall cause button to illuminate. Response of car to car or hall call shall cause corresponding button to extinguish.
  - l. Faceplates: Provide of material and finish as indicated and specified; 1/8-inch minimum thickness with sharp edges relieved. Faceplates shall be sized to cover holes left by removal of existing fixtures where new fixtures are provided and provided with engraved fire sign, per A17.1. New faceplates shall cover all existing holes or Contractor shall patch at no additional cost to the Owner.
  - m. Audible chimes: Electronic adjustable audible chimes from 75 to 85 dB in elevator lobby 3' - 0" above floor and 3' - 0" away from elevator entrance; bell type gong not acceptable.
- B. Car operating panels:
- 1. General: Provide buttons numbered to conform to floors served and the following:
    - a. Locate top operating button at 48 inches above floor.
    - b. Locate emergency stop switch and illuminated alarm button in bottom row at 35 inches above floor.
    - c. Provide "Door Open" and "Door Close" buttons located above emergency stop and alarm of same design as car button.
    - d. All signage required by local codes shall be engraved and painted as directed by Owner's representative.
    - e. Provide fire emergency features, per code. Provide FEO-F1 key switch for fire service unless local code requires different.
    - f. Make provisions for card readers in Elevator No. 1-2.
  - 2. Elevator No. 1-2: Provide one new panel per car; integrate cabinets, buttons and engraving into swing front return panels without applied faceplate. Entire front return shall swing on concealed hinges with concealed locking means for servicing.
- C. Car position indicators:
- 1. Provide car position indicators with 2 inch indications corresponding to floor designations with matching direction arrows. Provide "X" or "E" indications for elevators with express zones.
    - a. Elevator No. 1-2: Provide new digital alpha numeric type segmented LED readout indicator with minimum two-inch high indications mounted integral with each car operating panel.

D. Service cabinet:

1. Provide new cabinet, door with a lock and concealed hinge as an integral part of car operating panel mounted with flush hairline joints. Cabinet door shall be provided with a flush glazed window of required size to hold elevator-operating permit, mounted horizontally. Service cabinet shall contain the following:
  - a. Independent service switch
  - b. Two-speed ventilation switch (Hi-Off-Low)
  - c. Light switch as applicable
  - d. Inspection switch, key operated
  - e. Duplex GFI convenience outlet
  - f. Buzzers as required
  - g. Constant pressure test switch for emergency car lighting
  - h. Card reader over-ride switch-key operated

E. Communication equipment:

1. Elevator No. 1-2: Provide a new complete communication system in compliance with ADA regulations consisting of a combination speaker/microphone, amplifier, automatic dialer with 4 number rollover capability and matching car station push button with telephone symbol to activate system and acknowledgment lights. Mount in car operating panel behind a pattern of holes, wire to machine room and program automatic dialer as directed by Owner's Representative.

F. Hall button fixtures:

1. Each fixture shall contain buttons, which light to indicate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two buttons and terminal fixtures with one. Engrave fire-exiting instructions on faceplates. Provide minimum of two fasteners at top and bottom of faceplate.
  - a. Elevator No. 1-2: Provide each elevator group of elevators with one riser of hall button stations.

G. Hall position indicators:

1. Provide with indications corresponding to floor designations with matching direction arrows.
  - a. Elevator No. 1-2: Provide new digital alphanumeric type segmented LED readout indicator with minimum two-inch high indications. Combine with hall lantern.

H. Car lanterns:

1. Manufacturer's standard dual car riding lantern mounted at a maximum height above floor. Lens shall be flush with faceplate or face of jamb.
2. Lantern illuminates and chimes as doors open. Provide single chime for up direction and double chime for down direction. Chime sound level shall be at 10 decibels over ambient. Hall lanterns:

I. Disabled access requirements:

1. Provide to meet local codes having jurisdiction including handrail and button configuration.
  - a. Car operating panels: Provide raised Braille and alpha characters, numerals or symbols to the left of operating buttons and devices used by the public. Indications may be engraved directly on faceplates or separate plates flush



mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons. Raised characters shall be white on a black background with Braille designations directly below the character. Provide "star" at main egress landing.

- b. Entrances: Provide raised Braille and alpha characters, numerals or symbols similar to those for car stations of size required by governing authority. Locate on each entrance jamb at 60 inches above floor indicating floor designation. Material and finish of plates shall match hall button station faceplates. Material and finish of plates shall be white on black. (CA only) Provide with contrasting background. Braille designation shall be to the bottom of the raised character. Provide mounting means similar to those on car panels. Braille designation shall be to the bottom of the raised character. Provide "star" at main egress landing.
- c. Entrances: Provide plate with elevator number for first floor entrance. Character shall be a minimum of 3". For Destination Dispatching Systems, Braille shall include the elevator number or letter designation as well as the floor designation. Material and finish of plates shall be white on black.

## 2.8 WIRING:

### A. General:

- 1. Provide all necessary wiring and 25% spares between cars and controllers and to all remote-control stations; minimum of eight. Furnish shielded wires in cables for all communications card readers, cameras, digital displays, and speakers. Include four additional pairs of shielded spares and two RG-6 coaxial cables or equivalent, for each car. Electrical wire runs will be free of splices or connection unless at designated junction points.

### B. Traveling Cables:

- 1. Use minimum number of traveling cables. Include shielded wires and spares as noted above. Cord thoroughly and protect cables from rubbing against hoistways or car items. Provide with steel cable core and properly anchored to relieve strain on individual conductors.
- 2. All traveling cables shall be wired from machine to elevator, without junction box or spliced connections.

### C. Hoistway Wiring:

- 1. All wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
- 2. If junction boxes are used, NEC approved terminal strips shall be used and properly identified.
- 3. No splices shall be allowed.

### D. Work light and GFCI convenience outlet:

- 1. Provide on top of car with protective plastic lamp guard.
- 2. Provide compact fluorescent type (CFL)

### E. Stop switch:

- 1. Provide in each pit. Provide NEMA 4 enclosure.
- 2. Provide on each top of car.

### F. Alarm gong:

1. Provide on top of each car to be actuated by corresponding alarm button or emergency stop switch.
- G. Auxiliary disconnect switches:
  1. Provide as required in remote controller rooms or at remote equipment not in view of mainline switches; include all wiring and conduit.
- H. CCTV circuit:
  1. Provide provisions for closed circuit television camera in elevators. Run from elevator car top to outside of the elevator machine room, as directed by Owner at no additional cost to the Owner.

## 2.9 CAR ENCLOSURES

- A. Service/Passenger cars; Elevator No. 1 - 2:
  1. Provide an emergency car lighting unit mounted on top of car, battery driven and self-rechargeable. Upon outage of normal power the unit shall, within 5 seconds, light two lamps as part of normal car lighting. The unit shall have sufficient capacity to keep the lights in continuous operation for four hours and the alarm bell for one hour. Provide a readily accessible means for testing the unit in service cabinet. Light fixtures mounted in car front returns or operating panels are not acceptable. Illuminate lights directly over car operating panels.

## 2.10 HOISTWAY ENTRANCES; PASSENGER TYPE:

- A. General:
  1. Retain existing or provide new as specified.
- B. Hangers and Tracks:
  1. Elevator No. 1-2: Provide all new door tracks and hanger assemblies. Sheave type with two-point suspension. Steel sheaves with flanged groove and resilient sound-absorbing tires. Minimum 2-1/2-inch diameter for hoistway, 3 inch for car. Manufacturer's heavy-duty tracks and ball or roller bearing with adjustable up thrusts.
- C. Hanger headers:
  1. Elevator No. 1-2: Retain existing. Modify for new door tracks, reinforce and refinish.
- D. Struts:
  1. Elevator No. 1-2: Retain existing, clean and paint.
    - a. Provide rubber door stops.
- E. Closers:
  1. Elevator No. 1-2: Provide new cable relating torsion spring mechanical type or broken arm jack knife type as required for door assembly.
- F. Dust and hanger covers:
  1. Elevator No. 1-2: Retain existing, clean and refinish with black paint. Replace damaged and missing dust covers.
- G. Fascia, toe and head guards:
  1. Elevator No. 1-2: Retain existing, modify to comply with code, refinish with black paint and refasten for greater rigidity.
- H. Interlocks:

1. Elevator No. 1-2: Provide all new. Equip each hoistway door with a tamper-proof interlock which shall prevent operation of the car until doors are locked in the close position as defined by the Code and shall prevent opening of doors at landing from corridor side unless car is at rest at landing in leveling zone or, hoistway access switch is used. Provide all new type "SF" high temperature wiring for interlock circuits.
- I. Pick-up roller assemblies:
    1. Elevator No. 1-2: Provide all new pick-up roller assemblies as required for door operating equipment furnished.
  - J. Door restrictor:
    1. Elevator No. 1-2: Provide new, door restrictor device compatible with new door equipment.
  - K. Sills:
    1. Elevator No. 1-2: Retain existing, power clean to metal and refinish, full length of sill.
  - L. Limit Switches:
    1. Elevator No. 1-2: Provide new
  - M. Frames:
    1. Elevator No. 1-2: Retain existing. Clean and refinish as scheduled. Frames to be refinished by others.
  - N. Hoistway doors:
    1. Elevator No. 1-2: Retain existing, re-hang to remove all twists, provide two new gibs per panel and one fire gib per panel which will remain engaged in sill if guiding member is destroyed.
    2. Provide new full height astragals and missing or damaged non-vision wings matching finish of door panels. Contractor must use the original reinforcing on existing hoistway and car doors for mounting hangers, pickup rollers, drive vanes, etc. If original reinforcing is not reusable for drive vanes and pickup rollers, Contractor shall furnish new reinforcing (minimum of 1/4" thick plate) welded to the door face. A minimum of four (4) 5/16" threaded bolts is to be used for attachment to the reinforcing plate. Where slotted holes are provided in the attachment block, a 1/4" dowel pin is to be fitted after doors locks are set up. Clean and refinish door panels as scheduled. Door panels to be refinished by others. Vandal resistant paint. Remove door panels before painting.

## 2.11 HYDRAULIC ELEVATOR EQUIPMENT:

- A. Design Criteria:
  1. Performance:
    - a. Contract Speed: Maximum ten percent (10%) speed variation under any loading condition in the up direction.
    - b. Motion Time: From start to stop of elevators motion as measured in both directions for a typical one floor run under any loading condition.
      - 1) Elevator No. :8.5 seconds
    - c. Door Open Times:
      - 1) Elevator No. :2.0 seconds
    - d. Door close times: Minimum, without exceeding kinetic energy and closing force, allowed by code.

- e. Door dwell times: Comply with A.D.A. formula and provide separate adjustable timers with initial settings as follows:
    - 1) Main lobby hall call: 5.0 to 6.0 seconds.
    - 2) Upper lobby hall call: 5.0 to 6.0 seconds.
    - 3) Car call: 5.0 to 6.0 seconds. Choose one.
    - 4) Interruption of door protective device: Reduce dwell to 1 second.
  - f. Leveling: Within 1/4 inch under any loading condition. Level into floor at all times, do not overrun floor and level back.
  - g. Hydraulic pressure: Hydraulic components shall be factory tested for 600 PSI. Maximum operating pressure shall be 425 PSI.
2. Operating qualities: Owner's Representative will judge riding qualities of cars and enforce the following requirements. Make all necessary adjustments.
- a. Acceleration and deceleration: Starting and stopping shall be smooth and comfortable, without obvious steps of acceleration. Slowdown, stopping and leveling shall be without jars or bumps. Elevator shall start movement within .5 seconds of fully closed doors. Stopping upon operation of emergency stop switch shall be rapid but not violent.
  - b. Horizontal Acceleration (ISO A95 Scaling): Maximum 12 mg peak-to-peak measured at full speed for full travel in both directions.
  - c. Vertical Vibration: Ride shall be free of vibration throughout acceleration, full speed and deceleration for full travel in both directions.
3. Sound control: (A Scaled – fast – Lmax over the duration of the operation).
- a. Vibration: Sound isolate machines and motor drives from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.
  - b. Airborne noise: Maximum acoustical output level of:
    - 1) 85 dB measured in machine room. With the meter located 3' - 0" from each machine room door at floor level.
    - 2) 55 dB measured in elevator cars during all sequences of operation.
    - 3) 50 dB measured in elevator lobbies. From the nearest staff work station to the elevator lobby.

**2.12 HYDRAULIC HOISTWAY EQUIPMENT:**

- A. Guide rails and brackets:
  - 1. Elevator No. 1-2: Retain existing rails, realign, clean, check, tighten and replace Code non-complying brackets, fishplates and bolts. Provide log of the alignment corrections to the Owner's Representative.
- B. Guide shoes:
  - 1. Elevator No. 1-2: Provide new guide shoes of the roller type with neoprene tires, minimum 3/4-inch-wide and fully adjustable spring loaded to provide continuous contact with rail surfaces. Balance car to insure equal guide shoe pressure on all wheels and not exceed manufacturer's recommendations. Nominal roller diameter shall be 4" 6".
- C. Buffers:
  - 1. Retain existing.
- D. Car frame and platform:

1. Elevator No. 1-2: Retain existing car frame. Clean down and tighten frame bolts. Static balance weight to be added as required.
- E. Platen isolation:
1. Provide minimum 3/4-inch-thick steel plates between top of plunger and car frame with 1 inch rubber or neoprene isolation material between.
- F. Cylinder:
1. Provide new
    - a. Cylinder well and casing: Remove existing cylinder plunger unit and provide new as follows:
      - 1) Well: The Elevator Installer shall familiarize himself with existing conditions and be responsible for drilling cylinder wells.
      - 2) Casing: Provide steel casing, 12 inches greater in diameter than wrapped cylinder and proper depth to retain hole and provide structural integrity of PVC casing. Provide minimum 10-gauge corrosion resistant well casing, water tight joints and closed bottom. Weld seams solid at multiple casing joints. Provide a steel ring at top of casing to be keyed into pit floor. Provide watertight seal at bottom using 2' - 0" thick non-shrink concrete plug of type for installation under water where drive casing is required and closed bottom casing cannot be installed.
      - 3) Provide minimum 3/8-inch-thick PVC or HDPE casing with watertight sealed couplings and bottom end caps. Inside diameter shall be 6" greater than outside diameter of cylinder. Extend PVC or HDPE above pit floor. Seal top of PVC or HPDE and provide an inspection port of 2" diameter by 4" long PVC pipe with threaded cap. Adjust for current code.
      - 4) Provide 16-hours for removal of existing cylinder assembly and 24-hours of drilling at no additional cost to the owner.
      - 5) Provide NTE 20 barrels for Elevator 1 and 25 barrels for Elevator 2 for spoils removal at no additional cost to owner. UCR will be responsible for disposal of the barrels.
      - 6) Remove spoils at no additional cost to owner.
      - 7) Installation: Set cylinder and PVC or HPDE casing within steel casing. Backfill between all voids with clean dry neutral silica sand, well tamped. After cylinder is set, provide a watertight laminating or epoxy resin seal between PVC and top of cylinder. Plunger and cylinder shall be plumb within 1/16 inch. Updated per new code or reference to be code compliant
    - b. Provide oil monitoring device as required per local code authorities.
    - c. Cylinder: Steel pipe, factory tested for a minimum of 600 pounds/square inch working pressure. Sandblast or wire brush outside of cylinder to remove rust and scale. Paint with heavy coat of epoxy or mastic. Work shall be done in shop and repaired in field if coating is damaged.
    - d. Plunger: Use seamless steel pipe or tubing, minimum Schedule 80. Plunger shall be no more than 0.010 inch out of round and straight within 1/16 inch. Protect during shipping and installation to avoid damage. If plunger is gouged, scarred or shows visible tool marks, it shall be replaced. Finish shall be 20 micro inches or finer. Plunger top shall be isolated from car frame. Plungers with follower guides are not acceptable.
    - e. Packing: Provide packing, which inhibits leaking of oil with drip ring and means to collect any oil leakage. Example, 5-gallon bucket.

- f. Piping: Minimum Schedule 80 steel pipe suitable for 600 pounds pressure. No hoses shall be used in any part of piping. Provide sound isolating couplings in oil line between jack and pumping plant. Support piping using vibration isolating mounts or hangers with integral felt or neoprene at least 1/4" thick. Use threaded or welded joints throughout except at the connections to power unit and cylinder unit. Use no more than two Victaulic type connections in the machine room and two in the pit area.
  - 1) Overhead and Exposed Piping: Use Victaulic method of piping throughout system with Victaulic type 77 fittings or equal. Provide drip deflectors at pipe joints where pipes run above inaccessible ceiling areas to prevent damage to these areas in case of joint leakage.
  - 2) Underground Piping: Protect with extruded high-density polyethylene coating having a thickness of 25 to 60 mills applied with a minimum 8 mill thickness of modified rubber adhesive material all as manufactured by Plexco or equal. Install piping on 3" bed of clean, dry sand and backfill with additional 3" of sand.
  - 3) Testing: Before enclosing pipe system, close ends, fill with fluid, establish 600 PSI pressure and allow to stand for 24 hours. Make corrective repairs to leaks or pressure drop.
- 2. Piping:
  - a. Reuse existing.
  - b. Provide new gaskets for Victaulic fittings and pressure test entire line for leaks.
- 3. Isolation coupling
  - a. Provide at least two isolation coupling one in the machine room and one in the pit.
- G. Pit Valves:
  - 1) Provide in each elevator pit a gate valve to shut off oil between cylinder and pumping plant.
  - 2) Provided new a pressure type line rupture safety valve to shut off oil between cylinder head and pit valve. Activation of safety valve shall not void operation of lowering valve.
- H. Oil:
  - 1. Hydraulic Fluid: USDA certified bio-based product, ultra-low toxicity, "readily" biodegradable, high performing fluid made from rapidly renewable plant stock; with antioxidant, anticorrosive, antifoaming, and metal passivating additives. Hydraulic fluid is approved by elevator manufacture for use with elevator equipment.
    - a. USDA certified bio-based product, >90% bio-based content, per ASTM D6866
    - b. Classified "Readily" biodegradable, per OECD 301B
    - c. >70% Biodegradability, per ASTM D5864
    - d. >20,000 ppm Aquatic toxicity, per EPA-821-R-02-012
    - e. >220 Viscosity Index, ASTM D2270
    - f. 25 Viscosity at 400C, cSt., per ASTM D445
    - g. >2200C, Flash Point, per ASTM D92

**2.13 MACHINE ROOM EQUIPMENT:**

- A. General:

1. Provide equipment to fit existing space and structural limitations. Coordinate related electrical, structural and mechanical work with other trades.
- B. Pumping plant:
1. Provide new.
    - a. General: Self-contained unit with sound reducing cabinet and sound isolated base.
    - b. Pump: IMO, Roper or accepted equal for 150 SSU oil, belt driven or submersible. Maximum speed 3600 RPM. Maximum pressure 425 pounds per square inch.
    - c. Tank: Capacity equal to plunger displacement plus 50%. Provide strainers, oil level gauge and device to maintain uniform oil temperature.
    - d. Valves: Integral type by Elevator Equipment Company, Maxton Company or by elevator manufacturer. Provide conveniently located manual lowering valve accessible without removing pumping plant enclosure panels.
    - e. Motor: General Electric, Imperial, Westinghouse or accepted equal; maximum speed 1800 RPM for belt driven and 3600 RPM for submersible. Provide minimum 120 start heavy-duty motor, continuous rated, 50 degrees C. temperature rise, Class A insulation or 70 degrees C. rise for Class B insulation.
    - f. Muffler/Silencer: Blow-out proof type between pumping plant and cylinder.
- C. Controller:
1. Integral, floor or wall mounted as applicable to space conditions. Include door operating relays combined with controller. Provide solid state soft starting with starting switches rated at minimum 57% of horsepower rating. IEC method of line starter application is unacceptable. Provide three (3) manual reset overload relays, one in each line and reverse phase relay. Provide externally mounted permanently identified junction boxes on controller cabinets for termination of communication circuits. Design controller to accommodate future stops. Pre-approved controllers:
    - a. Motion Control Engineering HMC-2000
- D. Hydraulic elevator protective circuit:
1. In the event the car should stall due to low oil in the system or, if for other cause the car fails to reach the top landing within a predetermined time while traveling "up", a special circuit shall be provided which shall automatically return the car to the bottom landing and open the doors for 10 seconds after which the elevator will close doors and completely shut down. Recycling the mainline switch shall restore Service.
  2. Hydraulic Elevator Oil Cooling System: Provide an oil cooler to maintain operating temperatures between 105 – 115 degrees, an oil cooler consisting of temperature sensors monitoring high and low hydraulic fluid temperatures a special circuit shall be provided which shall automatically activate the oil cooler system and maintain its operation until hydraulic fluid temperature are achieved. Reference "Work by Others" for dedicated electrical disconnect. Conduit and wiring in elevator equipment room.
- E. Hydraulic elevator battery emergency lowering operation:
1. Provide a battery driven unit which will initiate operation of the Protective Circuit and lower elevator to bottom landing in the event of a power failure.
  2. Service shall be restored automatically upon restoration of normal power supply.
  3. Arrange with an exposed method of testing.

4. Arrange circuitry so that, if the mainline switch is open when the power transfer takes place, the elevator will not respond to the operation of the protective circuit.
5. Provide a double pole-isolating switch on the battery unit to disconnect the battery output.

**PART 3 - EXECUTION:**

**3.1 INSTALLATION:**

- A. General:
  1. Install per manufacturer's requirements, those of regulatory agencies and as specified.
- B. Welded Construction:
  1. Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustments, inspection, maintenance and replacement of worn parts.
  2. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation:
  1. Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.
- D. Lubrication:
  1. Lubricate operating parts of systems as recommended by manufacturer.
- E. Hazardous Disposal Certification:
  1. Contractor to provide oil and hazardous waste removal documentation per required EPA standards. Provide copy of documentation to Owner.
- F. Alignment:
  1. Coordinate alignment of hoistway entrances with elevator guide rails, for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe workable dimensions at each landing.
  2. Align guide rails plumb and parallel with maximum deviation of 1/16 inch. Anchorage of guide rails in pits shall not compromise waterproofing.
- G. Graphics:
  1. Provide graphics visible to public as selected by Owner's Representative.
- H. Manufacturer's nameplates:
  1. Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.
- I. Cleaning of the installation:
  1. After the installation of each elevator has been completed and immediately prior to the carrying out of the tests, the machine room and all equipment therein, the elevator hoistways including outside of car and all ledges and similar areas, the elevator pit and equipment therein, and all door hanger runners, guides, tracks and sills shall be



thoroughly cleaned down, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish shall be removed from site.

J. Finish painting after tests:

1. After satisfactory completion of the tests, any damage to the paint work shall be made good and the installation re-cleaned, if necessary, after which at least one final coat of gloss oil resistant or enamelled paint shall be applied by brushing or spraying in Contractor's customary colors to all the existing and new equipment in the machine room and also to such items in the hoistway or elsewhere which have received only a primer coat.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

K. Painting of machine room floor and pit floors:

1. After the completion of the entire installation, the floor of each machine room and pit areas shall be thoroughly cleaned down and brush painted with one coat of traffic paint having oil resistant properties. Pit floors shall be painted after the completion of the waterproofing. Owner's Representative will advise the color.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

3.2 NOISE CONTROL:

A. General:

1. Contractor, in the preparation and the execution of the work, shall recognize the particular and mandatory requirements of the remodeling project due to the character of the work and the use occupancy of the building.
2. Contractor shall perform all noisy work as directed by Owner's Representative.

B. Building operations:

1. Noise and vibration generated by this construction for this work may, at times, create a problem for the operations of the building. In the event the noise produced by the construction work conflicts with the building function, Contractor, at the request of the Owner's Representative, shall reduce or stop the noise.
2. All disruptive work including removal of old materials and deliveries of new materials shall be done on overtime at no additional cost to Owner.
3. All disruptive work will be performed after hours at no additional cost to Owner.

C. Measurement:

1. The noise level shall be measured on the "A" Scale of a sound level meter as follows:
  - a. With the meter located 3' - 0" from the nearest staff work station to the elevator lobby, the sound level shall not exceed 65 db.
  - b. With the meter located 3' - 0" from outside of each machine room door at floor level, the sound level shall not exceed 70 db.
  - c. With the meter located 3' - 0" from any hoistway door at any level, the sound level shall not exceed 70 db.

D. Types of noise generating work:

1. All heavy demolition (concrete walls and floors).
2. All grinding, chipping, pounding, sanding and cutting of holes and core drilling.

### 3.3 FIELD QUALITY CONTROL:

- A. Regulatory agencies inspection:
  - 1. Upon completion of elevators, Contractor shall provide instruments, weights and personnel to conduct test required by regulatory agencies. Contractor shall submit a complete report describing the results of the tests.
- B. Examination and testing:
  - 1. When installation is ready for final acceptance, notify and assist Owner's Representative in making a walk-through inspection of entire installation to assure workmanship and equipment complies with contract documents. Provide equipment to perform the following tests:
    - a. One-hour heat and run test with full load in car. Perform for one car of each duty.
      - 1) Stop car at each floor in each direction.
      - 2) Verify that temperatures do not exceed manufacturer's motor ratings.
      - 3) Performance and leveling tests shall be made before and after heat and run test.
    - b. Check and verify operation of all safety features and special operations.
      - 1) Measure horizontal acceleration.
      - 2) Measure acoustical output levels in machine room, lobbies and cars.
- C. Correction:
  - 1. Make corrections to defects or discrepancies at no cost to Owner's Representative. Should discrepancies be such that re-examination and retesting is required, Contractor shall pay for all costs including those of Owner's Representative's fees.
- D. Final acceptance:
  - 1. Final acceptance of the installation will be made only after all corrections are complete, final submittals and certificates received and the Owner's Representative is satisfied and the installation is complete in all respects

### 3.4 INSTRUCTIONS:

- A. Instruct Owner's personnel in proper use of each system.

### 3.5 PROJECT RECORD DOCUMENTS:

- A. As-built drawings:
  - 1. Contractor shall maintain at the job site a separate and complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for such change.
  - 2. Changes, as they occur, will be marked on the record set of drawings on a daily basis.
- B. Record drawings:
  - 1. Contractor shall prepare "as-built" drawings in duplicate of any changes to electrical work on prints supplied by the Owner's Representative. During the course of construction, actual locations to scale shall be shown for all runs of mechanical and electrical work, installed in walls and floors or otherwise concealed. This shall cover all piping, electrical wiring; whether in conduit or cable, duct work, etc. shall be located, in addition, by dimension. All services shall be identified in ink on the prints.

2. In addition, Contractor shall keep a complete record copy of the plans and specifications for the use in preparing "as-built" plans and specifications at the end of the job. Contractor shall sign and date the prints and deliver them to the Owner's Representative.

**END OF SECTION**

## **SECTION 14 22 10**

### **MODERNIZATION OF ELEVATORS**

#### **PART 1 - GENERAL:**

##### **1.1 GENERAL CONDITIONS:**

- A. Bidding documents:
  - 1. Bidders shall examine existing conditions. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to Owner's Representative's attention during the pre-bid RFI period prior to the bid date. If no discrepancies are presented, changes required to accommodate bidder's equipment become the responsibility and cost to Contractor.
  - 2. Bidders are responsible to identify all required building related work at time of bidding and included with their bid documents.
- B. The specifications are written to be included as an attachment to the modernization contract.
- C. A copy of the final contract with all attachments shall be onsite in the machine room at all times.
- D. The Elevator Contractor shall be responsible for all building modifications to provide a code compliant elevator modernization. All sub-contractors will be contracted directly with the elevator contractor.
- E. Contractor shall provide a lock-box for each machine room.

##### **1.2 DEFINITIONS:**

- A. Main Lobby: Ground Level unless otherwise indicated.
- B. Fire Recall Level: As directed by local fire authority. As existing.
- C. Alternate Fire Recall Level: As directed by local fire authority. As existing.
- D. All retained existing equipment shall be of equal condition and life span as of new equipment.
- E. Serviceability: It is recognized that each manufacturers' system contains components that are proprietary to the development of their systems. The Owner may wish to have the elevator system maintained by another technically qualified service provider and by submitting a bid for this project, the manufacturer shall guarantee that for a minimum of 20 years they will provide the following:
  - 1. Diagnostic, adjusting and monitoring tools for all components including documents, manuals, and wiring diagrams. Devices shall not self-destruct, require charging or exchange. Remote monitoring devices are excluded from this requirement, however if such devices are removed all wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
  - 2. Manufacturer shall guarantee to support the equipment for this project with regard to notification to Owner of system corrective updates, provide and install such updates at no cost to Owner.
  - 3. Provide contact information for their separate parts warehouse so that the Owner or designated service provider can order parts on a 24-hour basis and delivered within 48 hours. Parts may be provided from inventory when adequate stock exists. In some

cases, parts will have to be special ordered from the factory or other vendor. Proprietary parts will be made available on an exchange basis.

4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at close out of the project and estimated escalation cost. The cost of these parts is what would be charged to Owner or other service provider.
5. Provide contact information for technical support so that the Owner or designated service provider can obtain technical support on a 24-hour basis to provide assistance in trouble shooting problems. Indicate hourly rate charged to Owner or designated service provider for such service.
6. In the event that a company other than the Original Equipment Manufacturer (OEM) maintains the elevators, and if the equipment was unable to be repaired by the non-OEM maintenance company, a factory-trained OEM technician would be required to assist (as it would if Contractor's own technician were in the same situation). If such an event was to occur, OEM Contractor would make its factory-trained technician available for assistance upon request of the Owner within three (3) business days, based on the original contractual hourly rates subject to established annual escalations. This shall survive any termination of the maintenance agreement.
7. The above will survive any termination of the maintenance agreement.
8. Contractor shall be defined as "Elevator Contractor".
9. Subcontractor shall be defined as any contractor contracted by either "Owner or Elevator Contractor".

### 1.3 DESCRIPTION:

#### A. Examination of site:

1. Contractor shall visit the building, examine the existing elevators and contract documents, determine condition of all retained components, space conditions, power supply and mainline disconnect.
2. Make all surveys necessary to meet the requirements of this specification and compatibility to products provided.

#### B. Field measurements:

1. Field verify dimensions before proceeding with the work.
2. Coordinate related work by other trades.
3. Contractor shall assume responsibility and provide full maintenance of the elevator equipment upon award of this contract and shall continue to do such throughout the modernization.

### 1.4 RELATED WORK INCLUDED BY OTHERS IN THIS SECTION UNDER THE ELEVATOR CONTRACT:

1. Contractor shall visit the building, examine the existing conditions, power supply, standby/emergency power supply, emergency battery lowering, mainline disconnect, and include all work needed to ensure a fully code compliant modernization. Contractor or his sub-contractors shall perform this work, which may include but is not limited to the following:
  - a. General:
    - 1) Self-closing and self-locking access doors and pit ladders (as req.)
    - 2) Providing supports to carry structural reaction, impact and uplift loads imposed by elevator equipment.

- 3) Block-outs, pockets and chases in walls and floors for signals, fixtures, and conduit.
- b. Electrical work:
  - 1) Power feeders: Modification to existing, or installation and connection of three phase power, through fused mainline switches or circuit breakers and extended to terminals of controllers. Provide continuous ground where needed.
  - 2) Light circuits: Single-phase circuit through disconnects and extended to controller for car lights and fan.
  - 3) Communication circuit: Telephone circuit terminated at junction box of each controller.
  - 4) Illumination: Lights with guards, illuminating light switches and convenience outlets in pits, machine rooms, controller areas and overhead sheave spaces.
  - 5) Conduit: Installation of electrical conduit and pull boxes with pull wire between hoistways and remote locations of each indicator and control panel.
  - 6) GFCI Outlets: Provide in machine room and pits.
  - 7) Provide NEMA 4 approved electrical devices and conduits for all electrical installed below the lowest sill level.
- c. Fire Life Safety: Stand alone system.
  - 1) Sensing devices: Installation and or removal modification to smoke detectors, heat detectors, shunt trip, sprinklers, or products of combustion sensors in elevator lobbies, machine rooms, hoistways and alternate fire recall floor with circuits terminated at junction box in machine rooms for emergency fire service operation.
  - 2) Provide fire proofing as required by lode code authority.
- d. If work by others is excluded from the elevator contractors' scope of work, they shall coordinate with all sub-contractors to complete all required building related work prior to inspection at no additional cost to the Owner.

**1.5 RELATED WORK INCLUDED BY ELEVATOR CONTRACTOR IN THIS SECTION:**

1. Barricades: Full height self-closing self-locking barricades for protection of open hoistways during construction.
2. Temporary screens: Contractor shall provide code compliant hoistway screening between elevators before construction starts and remove at completion of project.
3. Painting: Field painting of prime-finish items constituting final finishes.
4. Card readers: Including wire from machine room j-box to car top j-box, interfacing with elevator controls and installation in elevator car, connection in machine room and testing of system.
5. Closed circuit T.V: Including wire from machine room j-box to elevator car top j-box, connection in machine room and testing. Car top and machine j-box and labeled.
6. Contractor shall coordinate and perform all pretesting of all building systems prior to inspection at no additional cost to the Owner.

**1.6 QUALITY ASSURANCE:**

- A. Qualifications of Contractors:

1. General: The entire elevator installation shall be installed and maintained by the acceptable Contractors listed or as qualified by addendum. No portion of the work shall be subcontracted unless qualified and accepted by addendum.
  2. Installer's qualifications: Installer must be a licensed, certified conveyance mechanic in the state where installation is located.
- B. Sub-contractors:
1. Contractor shall be solely responsible for any and all of the work done by his sub-contractor or other employees and all orders or instructions from the Owner's Representative shall be through him to them. It shall be Contractor's duty to see that all of his sub-contractors commence their work properly at the proper time, and carry it on with due diligence so that they do not delay or injure either work or materials; and that all damage caused by them or their workmen is properly made good by them or by himself at his cost.
  2. The use of sub-contractors is to be limited to work outside the scope of elevator construction work; for example, patching, painting, coring of walls, marble work and refinishing. Contractor of sub-contractor will be responsible for any drywall damage, patching and painting in regards to their scope of work.
- C. Quality of work and workmanship:
1. When completed, the installation shall be modern in all respects.
  2. All components specified as new shall be provided as new. All components specified to be retained may be provided as new at Contractor's option subject to approval of Owner's Representative. All retained components are to be examined, cleaned, adjusted, repaired and/or replaced with new parts. Contractor must be willing to accept all retained equipment on full maintenance without prorating.
  3. All work performed shall be conducted in a workmanship type manner.
- D. Requirements of regulatory agencies:
1. Codes: In accordance with the latest applicable edition requirements of the following and as specified:
    - a. A.D.A.: Americans with Disabilities Act
    - b. ASME: American Society of Mechanical Engineers - A17.1; Safety Code for Elevators and Escalators
    - c. CBC: Title 24; California Building Codes
    - d. CCR: Title 8; California Code of Regulations
    - e. IEEE
    - f. NEC: National Electric Code / NFPA 70.
    - g. NFPA-72
    - h. All local codes and Amendments and Administration, which govern
- E. Permits, Inspections, and Taxes:
1. Arrange and pay for inspections by governing authorities.
  2. Obtain and post operating permits per applicable code.
  3. Arrange and pay for all applicable taxes.
- F. Safety Policies and Practices:
1. Installation and maintenance contractors are required to follow their company's safety practices and policies

2. Installation and maintenance contractors are required to follow all practices and policies of the building management.
3. Installation and maintenance contractors are required to follow governing authorities' safety practices and policies.

1.7 SUBMITTALS:

A. Shop drawings:

1. Submit three copies of the following prior to ordering any materials:
  - a. Layouts: Plan of machinery and hoistway spaces showing new equipment and existing equipment; include impact and static loads imposed on building structure and clearances around equipment.
  - b. Details: Submit details of cab shell and interiors, fixtures, and entrances.
  - c. Data: Indicate on layouts or separate data sheets; machine spaces heat release, power requirements, conduit runs outside of hoistways and machine rooms, car and counterweight roller guides, control systems, motor drive units and door operators.
  - d. Provide all structural submittals (as required) with an approved Professional Engineer stamp and signature.

B. Samples:

1. Provide samples of materials and finishes exposed to public view and additional, if specifically requested, 6 inch x 6 inch panels, 12 inch lengths or full size if smaller, as applicable.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Delivery and storage:

1. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. Storage space on site will be available. Additionally, a storage container is required to properly secure and store all equipment, it shall be provided at no cost to the Owner.

B. Handling:

1. Owner's Representative has the first right of refusal to retain any elevator components that are to be removed and modernized with new equipment. All removed components shall remain property of the Owner's Representative, until the Owner's Representative notifies Contractor, in writing, of removed components that Owner's Representative would like to retain. All remaining elevator equipment not to be retained by the Owner's Representative or reused by Contractor shall be promptly removed from the building by Contractor at no cost to the Owner's Representative, and become the property of Contractor.
2. Contractor shall make every attempt to recycle removed elevator equipment. Contractor shall correct any damage to building surfaces and surrounding areas if damaged during removal of this equipment, at no cost to the Owner's Representative.

C. Building operations:

1. The building will remain in operation during the execution of this contract. Cooperate with building management in scheduling work in such a way as not to cause interruption of or interference with the building operations.

D. Electrical shutdowns:



1. Temporary electrical shutdowns will not be allowed except for brief periods to be scheduled outside normal hours and at least forty-eight (48) hours in advance and approved by Owner's Representative.

1.9 WARRANTY:

A. Guarantee and Warranty:

1. Provide special project warranty, signed by Contractor, Installer and Manufacturer, agreeing to replace/repair/restore defective materials and workmanship of all work performed which may develop within one (1) year from final date of completion and acceptance of the **entire installation**. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failures, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

**PART 2 - PRODUCTS:**

2.1 DESCRIPTION OF SYSTEMS:

A. Elevator No. 1:

- |                               |                                    |
|-------------------------------|------------------------------------|
| 1. Type:                      | Hydraulic Direct Plunger           |
| 2. Capacity:                  | 2400 Pounds                        |
| 3. Speed:                     | 100 FPM                            |
| 4. Stops:                     | 2                                  |
| 5. Openings:                  | 2 Inline                           |
| 6. Travel:                    | Existing                           |
| 7. Control:                   | Soft Start AC                      |
| 8. Operation:                 | New Microprocessor Group Automatic |
| 9. Machine Location:          | Remote                             |
| 10. Special Operations:       |                                    |
| a. Independent Service        |                                    |
| b. Fire Emergency Service     |                                    |
| c. Tenant Security            |                                    |
| d. Emergency Battery Lowering |                                    |
| 11. Door Operation:           | Provide New                        |
| 12. Door Protection:          | Provide New                        |
| 13. Guide Rails:              | Retain                             |
| 14. Guide Shoes:              | Provide New                        |
| 15. Plunger Unit:             | Provide New                        |
| 16. Cylinder Unit:            | Provide New                        |
| 17. Buffers:                  | Retain                             |

- |     |                           |   |
|-----|---------------------------|---|
| 18. | Car Frame & Platforms:    | Retain  |
| 19. | Power Unit:               | Provide New   |
| 20. | Controllers:              | Provide New   |
| 21. | Piping:                   | Retain and Pressure Test  |
| 22. | Car Operating Panels:     | Provide New   |
| 23. | Car Position Indicators:  | Provide New   |
| 24. | Hall Position Indicators: | Provide New   |
| 25. | Service Cabinet:          | Provide New   |
| 26. | Communications:           | Provide New   |
| 27. | Hall Button Stations:     | Provide New   |
| 28. | Hall/Car Lanterns:        | Provide New   |
| 29. | Handicap Requirements:    | Provide New, as required  |
| 30. | Wiring:                   | Provide New   |
| 31. | Car Enclosure:            | Retain  |
| 32. | Hoistway Entrances:       | Retain  |
| 33. | Miscellaneous Items:      |   |
|     | a.                        | Key Operated Hoistway Access  |
|     | b.                        | Seismic Requirements  |
|     | c.                        | Card Reader Provisions  |
|     | d.                        | Lobby Park Key Switch   |
|     | e.                        | Clean hoistways, machine rooms and equipment; paint machine room floor, pit floor, car top, and all existing metal work |
|     | f.                        | Top of car guardrail Provide new (as required)  |

## 2.2 MATERIALS:

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D exterior Grade Douglas Fir, fire retardant treated.
- C. Sheet steel: ASTM A366, uncoated, pickled, free from defects.
- D. Sound deadener: Fire retardant; spray, roller or adhesive applied; 3/16" thick.
- E. Stainless steel: ASTM A167; type 302 or 304.

## 2.3 FINISHES:

- A. Exposed-to-view surfaces:
  - 1. Provide as follows unless otherwise specified.
    - a. Aluminum: Clear anodized finish.
    - b. Sheet steel:
      - 1) Shop prime: Degrease clean of foreign substances and apply one coat of corrosion inhibiting primer compatible with finish paint selected. Hoistway items visible to public shall be painted one additional coat of black paint.

- 2) Finish paint: Three coats baked enamel; sand each coat smooth; color as selected.
  - c. Stainless steel:
    - 1) Plain: Satin, directional polish, No. 4 Mirror directional polish, unless otherwise specified.
  - d. Touch-up:
    - 1) Prime surfaces: Use same paint as factory for field touch-up.
    - 2) Finish painted surfaces: Refinish whole panel with shop prime and finish paint as specified above.
- B. Non-exposed-to-view surfaces:
- 1. Degrease or remove any rust and shop paint manufacturer's standard corrosion inhibiting primer.

**2.4 AUTOMATIC OPERATION:**

- A. General operation of individual elevators:
- 1. Provide a non-proprietary diagnostic microprocessor-controlled dispatching system, based on real time calculations, designed to monitor all types of traffic and sufficiently flexible so that it can be modified to accommodate changes in traffic patterns.
  - 2. Serial link communications: Provide a distributed processing network consisting of localized processors located in machine rooms, car stations, hall stations and top of car to allow system to make fast decisions based on data shared by the processor involved in the different operations of the elevators. For group dispatch operations, all elevators in the group shall be capable of acting as a group common dispatcher as the need arises.
  - 3. Fault diagnostic system: Provide Owner's Representative with all hardware such as on-board LED diagnostics, hand held device or laptop computer, as standard with manufacturer, and supporting software documentation. Diagnostic system shall be capable of determining faults most difficult to find, as well as be capable of performing all code required testing.
  - 4. The system shall be flexible, irrespective of the number of elevators in normal service.
- B. Simplex selective collective operation:
- 1. Arrange for simplex selective collective automatic operation. Operate elevators from a single riser of landing buttons and from operating device in car.
  - 2. Momentary pressure of one or more car or landing buttons, other than those for landing at which car is standing, starts car, and causes car to stop at first landing for which a car or landing call is registered corresponding to direction in which car is traveling. Stops made in order in which landings are reached, irrespective of sequence in which calls are registered.
  - 3. Double door operation not permitted. If an up-traveling car has a passenger for an intermediate floor and a down call is registered at that floor, with no calls above car, it travels to floor, opens door to let passenger out, then lights down direction arrow in hall lantern and accepts waiting passenger without closing and reopening doors.
  - 4.

**2.5 SPECIAL OPERATIONS:**

- A. Inspection operation:

1. Provide key-operated hoistway access device and car top operating device. Key switches shall be mounted in door frames with a separate cover plate at terminal landings.
- B. Independent service:
1. Independent service operation shall be provided so that, by means of a switch located in the car service cabinet, the car can be removed from automatic operation and be operated by an attendant. The attendant shall have full control of the starting, stopping and direction of car travel.
  2. The car shall respond to car buttons only. The hall signals for the car on independent service shall not operate.
- C. Operation under fire or other emergency conditions:
1. Provide special emergency service to comply with current ASME and CCR Title 8, CBC Title 24, and local codes having jurisdiction.
  2. Provide Phase 1 recall switch at main floor elevator lobby.
  3. Key switches at main floor shall be integrated in hall button station hoistway entrance jamb with engraved instructions.
- D. Tenant security:
1. Arrange control system to enable and disable car call buttons as follows:
    - a. Function, which locks out all cars in a group so that all car buttons are inoperative, except the main floor.
    - b. Function which locks out any selected car button for all elevators in a group serving that floor.
    - c. Tenant security operations can be overridden by cars on independent, any special emergency service or by card reader access.
- E. Lobby Park:
1. Arrange control system to enable the elevator, from either a key switch or time clock, to bring the elevators to the main lobby, cycle the doors and shut down. Leaving only the door open button functional. All emergency service operations shall over ride this feature.
- 2.6 DOOR OPERATION:
- A. Passenger type:
1. Provide door times available as specified under "Design Criteria."
  2. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.
  3. Door hold open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door hold times shall be adjustable independent of other floors.
  4. Provide closed loop regulated speed performance, onboard diagnostics, adjustable times, nudging, and test switches.
- B. Door operator:

1. Elevator No. All: Provide new heavy-duty master type solid state closed loop door operators mounted on car enclosure utilizing minimum 12-gauge support angles to isolate from direct mounting of operator on the car top.
  2. Pre-approved closed loop heavy duty door operators:
    - a. GAL Linear
    - b. GAL MOVFR
  3. Provide code compliant door weight data tag.
- C. Door Protection:
1. Elevator No. All: Remove existing door protection devices and provide new electronic optical 3D scanning type:
    - a. Provide a door protective system which does not rely on physical contact with a person or object to inhibit door movement or initiate door reversal.
    - b. Pre-approved optical door sensors:
      - 1) Elevator Contractor
      - 2) Adams GateKeeper Max
      - 3) Formula Systems
      - 4) Janus Pana40 Plus
      - 5) Janus Pana Chrome 3D, with voice annunciation
      - 6) Tritronics Leading Edge
    - c. The system shall be able to detect a 2-inch diameter rod introduced at any position within the door movement and between the height of 2 inches and 63 inches above sill level.
    - d. Detection of intrusion into the protected area shall cause the doors, if fully open, to be held in the open position and, if closing, to reverse to fully open position.
    - e. If doors are prevented from closing for an adjustable period of 15 to 45 seconds or upon activation of fire emergency service, they shall proceed to close at reduced speed and a loud buzzer shall sound. Door closing force shall not exceed 2-1/2 ft.-lb. when door re-opening device is not in operation.
    - f. For side-opening doors, the detector for the strike jamb side shall be recessed, flush with strike jamb.

## 2.7 SIGNALS AND OPERATING FIXTURES:

- A. General:
1. Provide signals and fixtures as shown and specified. Location and arrangement of fixtures shall comply with disabled access requirements.
    - a. Passenger Elevator Buttons: Provide minimum 1-inch diameter mechanical, with fully illuminated buttons with LED's and engraved identifications. Buttons shall be raised 1/8 inch from surrounding surface with square shoulders. Survivor, Bruiser or equal.
    - b. Switches: Toggle type typically or key operated where noted.
    - c. Provide six (6) keys for each elevator keyed device, with proper labeled identification upon turnover of elevator.
    - d. Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.

- e. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Owner's Representative's approval.
  - f. Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected. No applied engraved plates.
  - g. Lamps: Miniature LED type.
  - h. Audible Chimes: Electronic adjustable audible chimes; bell type gong not acceptable.
  - i. Provide floor passing signal of the adjustable electronic audible chime type.
  - j. Tactile Markings: Provide raised Braille and alpha characters, numerals or symbols adjacent to operating buttons and devices used by the public according to local codes. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons or integral "fishtail" type.
  - k. Acceptable manufacturers: EPCO, ERM, MAD, or INNOVATION, fixtures with 5/8" engraved identifications. Operation of car or hall button shall cause button to illuminate. Response of car to car or hall call shall cause corresponding button to extinguish.
  - l. Faceplates: Provide of material and finish as indicated and specified; 1/8-inch minimum thickness with sharp edges relieved. Faceplates shall be sized to cover holes left by removal of existing fixtures where new fixtures are provided and provided with engraved fire sign, per A17.1. New faceplates shall cover all existing holes or Contractor shall patch at no additional cost to the Owner.
  - m. Audible chimes: Electronic adjustable audible chimes from 75 to 85 dB in elevator lobby 3' - 0" above floor and 3' - 0" away from elevator entrance; bell type gong not acceptable.
- B. Car operating panels:
- 1. General: Provide buttons numbered to conform to floors served and the following:
    - a. Locate top operating button at 48 inches above floor.
    - b. Locate emergency stop switch and illuminated alarm button in bottom row at 35 inches above floor.
    - c. Provide "Door Open" and "Door Close" buttons located above emergency stop and alarm of same design as car button.
    - d. All signage required by local codes shall be engraved and painted as directed by Owner's representative.
    - e. Provide fire emergency features, per code. Provide FEO-F1 key switch for fire service unless local code requires different.
    - f. Make provisions for card readers in Elevator No. 1.
  - 2. Elevator No. 1-2: Provide one new panel per car; integrate cabinets, buttons and engraving into swing front return panels without applied faceplate. Entire front return shall swing on concealed hinges with concealed locking means for servicing.
- C. Car position indicators:
- 1. Provide car position indicators with 2 inch indications corresponding to floor designations with matching direction arrows. Provide "X" or "E" indications for elevators with express zones.
    - a. Elevator No. 1-2: Provide new digital alpha numeric type segmented LED readout indicator with minimum two-inch high indications mounted integral with each car operating panel.

- D. Service cabinet:
1. Provide new cabinet, door with a lock and concealed hinge as an integral part of car operating panel mounted with flush hairline joints. Cabinet door shall be provided with a flush glazed window of required size to hold elevator-operating permit, mounted horizontally. Service cabinet shall contain the following:
    - a. Independent service switch
    - b. Two-speed ventilation switch (Hi-Off-Low)
    - c. Light switch as applicable
    - d. Inspection switch, key operated
    - e. Duplex GFI convenience outlet
    - f. Buzzers as required
    - g. Constant pressure test switch for emergency car lighting
    - h. Card reader over-ride switch-key operated
- E. Communication equipment:
1. Elevator No. 1: Provide a new complete communication system in compliance with ADA regulations consisting of a combination speaker/microphone, amplifier, automatic dialer with 4 number rollover capability and matching car station push button with telephone symbol to activate system and acknowledgment lights. Mount in car operating panel behind a pattern of holes, wire to machine room and program automatic dialer as directed by Owner's Representative.
- F. Hall button fixtures:
1. Each fixture shall contain buttons, which light to indicate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two buttons and terminal fixtures with one. Engrave fire-exiting instructions on faceplates. Provide minimum of two fasteners at top and bottom of faceplate.
    - a. Elevator No. 1: Provide each elevator group of elevators with one riser of hall button stations.
- G. Hall position indicators:
1. Provide with indications corresponding to floor designations with matching direction arrows.
    - a. Elevator No. 1: Provide new digital alphanumeric type segmented LED readout indicator with minimum two-inch high indications. Combine with hall lantern.
- H. Car lanterns:
1. Manufacturer's standard dual car riding lantern mounted at a maximum height above floor. Lens shall be flush with faceplate or face of jamb.
  2. Lantern illuminates and chimes as doors open. Provide single chime for up direction and double chime for down direction. Chime sound level shall be at 10 decibels over ambient.
- I. Disabled access requirements:
1. Provide to meet local codes having jurisdiction including handrail and button configuration.
    - a. Car operating panels: Provide raised Braille and alpha characters, numerals or symbols to the left of operating buttons and devices used by the public. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be

of same size and shape as buttons. Raised characters shall be white on a black background with Braille designations directly below the character. Provide "star" at main egress landing.

- b. Entrances: Provide raised Braille and alpha characters, numerals or symbols similar to those for car stations of size required by governing authority. Locate on each entrance jamb at 60 inches above floor indicating floor designation. Material and finish of plates shall match hall button station faceplates. Material and finish of plates shall be white on black. (CA only) Provide with contrasting background. Braille designation shall be to the bottom of the raised character. Provide mounting means similar to those on car panels. Braille designation shall be to the bottom of the raised character. Provide "star" at main egress landing.
- c. Entrances: Provide plate with elevator number for first floor entrance. Character shall be a minimum of 3". For Destination Dispatching Systems, Braille shall include the elevator number or letter designation as well as the floor designation. Material and finish of plates shall be white on black.

## 2.8 WIRING:

### A. General:

- 1. Provide all necessary wiring and 25% spares between cars and controllers and to all remote-control stations; minimum of eight. Furnish shielded wires in cables for all communications card readers, cameras, digital displays, and speakers. Include four additional pairs of shielded spares and two RG-6 coaxial cables or equivalent, for each car. Electrical wire runs will be free of splices or connection unless at designated junction points.

### B. Traveling Cables:

- 1. Use minimum number of traveling cables. Include shielded wires and spares as noted above. Cord thoroughly and protect cables from rubbing against hoistways or car items. Provide with steel cable core and properly anchored to relieve strain on individual conductors.
- 2. All traveling cables shall be wired from machine to elevator, without junction box or spliced connections.

### C. Hoistway Wiring:

- 1. All wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
- 2. If junction boxes are used, NEC approved terminal strips shall be used and properly identified.
- 3. No splices shall be allowed.

### D. Work light and GFCI convenience outlet:

- 1. Provide on top of car with protective plastic lamp guard.
- 2. Provide compact fluorescent type (CFL)

### E. Stop switch:

- 1. Provide in each pit. Provide NEMA 4 enclosure.
- 2. Provide on each top of car.

### F. Alarm gong:



1. Provide on top of each car to be actuated by corresponding alarm button or emergency stop switch.

G. Auxiliary disconnect switches:

1. Provide as required in remote controller rooms or at remote equipment not in view of mainline switches; include all wiring and conduit.

H. CCTV circuit:

1. Provide provisions for closed circuit television camera in elevators. Run from elevator car top to outside of the elevator machine room, as directed by Owner at no additional cost to the Owner.

2.9 CAR ENCLOSURES:

A. Passenger cars; Elevator No. 1:

1. Provide an emergency car lighting unit mounted on top of car, battery driven and self-rechargeable. Upon outage of normal power the unit shall, within 5 seconds, light two lamps as part of normal car lighting. The unit shall have sufficient capacity to keep the lights in continuous operation for four hours and the alarm bell for one hour. Provide a readily accessible means for testing the unit in service cabinet. Light fixtures mounted in car front returns or operating panels are not acceptable. Illuminate lights directly over car operating panels.

2.10 HOISTWAY ENTRANCES; PASSENGER TYPE:

A. General:

1. Retain existing or provide new as specified.

B. Hangers and Tracks:

1. Elevator No. 1: Provide all new door tracks and hanger assemblies. Sheave type with two-point suspension. Steel sheaves with flanged groove and resilient sound-absorbing tires. Minimum 2-1/2-inch diameter for hoistway, 3 inch for car. Manufacturer's heavy-duty tracks and ball or roller bearing with adjustable up thrusts.

C. Hanger headers:

1. Elevator No. 1: Retain existing. Modify for new door tracks, reinforce and refinish.

D. Struts:

1. Elevator No. 1: Retain existing, clean and paint.
  - a. Provide rubber door stops.

E. Closers:

1. Elevator No. 1: Provide new cable relating torsion spring mechanical type or broken arm jack knife type as required for door assembly.

F. Dust and hanger covers:

1. Elevator No. 1: Retain existing, clean and refinish with black paint. Replace damaged and missing dust covers.

G. Fascia, toe and head guards:

1. Elevator No. 1: Retain existing, modify to comply with code, refinish with black paint and refasten for greater rigidity.

H. Interlocks:

1. Elevator No. 1: Provide all new. Equip each hoistway door with a tamper-proof interlock which shall prevent operation of the car until doors are locked in the close position as defined by the Code and shall prevent opening of doors at landing from corridor side unless car is at rest at landing in leveling zone or, hoistway access switch is used. Provide all new type "SF" high temperature wiring for interlock circuits.
- I. Pick-up roller assemblies:
    1. Elevator No. 1: Provide all new pick-up roller assemblies as required for door operating equipment furnished.
  - J. Door restrictor:
    1. Elevator No. 1: Provide new, door restrictor device compatible with new door equipment.
  - K. Sills:
    1. Elevator No. 1: Retain existing, power clean to metal and refinish, full length of sill.
  - L. Limit Switches:
    1. Elevator No. 1: Provide new
  - M. Frames:
    1. Elevator No. 1: Retain existing. Clean and refinish as scheduled. Frames to be refinished by others.
  - N. Hoistway doors:
    1. Elevator No. 1: Retain existing, re-hang to remove all twists, provide two new gibs per panel and one fire gib per panel which will remain engaged in sill if guiding member is destroyed.
    2. Provide new full height astragals and missing or damaged non-vision wings matching finish of door panels. Contractor must use the original reinforcing on existing hoistway and car doors for mounting hangers, pickup rollers, drive vanes, etc. If original reinforcing is not reusable for drive vanes and pickup rollers, Contractor shall furnish new reinforcing (minimum of 1/4" thick plate) welded to the door face. A minimum of four (4) 5/16" threaded bolts is to be used for attachment to the reinforcing plate. Where slotted holes are provided in the attachment block, a 1/4" dowel pin is to be fitted after doors locks are set up. Clean and refinish door panels as scheduled. Door panels to be refinished by others. Vandal resistant paint. Remove door panels before painting.

**2.11 HYDRAULIC ELEVATOR EQUIPMENT:**

- A. Design Criteria:
  1. Performance:
    - a. Contract Speed: Maximum ten percent (10%) speed variation under any loading condition in the up direction.
    - b. Motion Time: From start to stop of elevators motion as measured in both directions for a typical one floor run under any loading condition.
      - 1) Elevator No. :8.5 seconds
    - c. Door Open Times:
      - 1) Elevator No. :2.0 seconds
    - d. Door close times: Minimum, without exceeding kinetic energy and closing force, allowed by code.

- e. Door dwell times: Comply with A.D.A. formula and provide separate adjustable timers with initial settings as follows:
    - 1) Main lobby hall call: 5.0 to 6.0 seconds.
    - 2) Upper lobby hall call: 5.0 to 6.0 seconds.
    - 3) Car call: 5.0 to 6.0 seconds. Choose one.
    - 4) Interruption of door protective device: Reduce dwell to 1 second.
  - f. Leveling: Within 1/4 inch under any loading condition. Level into floor at all times, do not overrun floor and level back.
  - g. Hydraulic pressure: Hydraulic components shall be factory tested for 600 PSI. Maximum operating pressure shall be 425 PSI.
2. Operating qualities: Owner's Representative will judge riding qualities of cars and enforce the following requirements. Make all necessary adjustments.
- a. Acceleration and deceleration: Starting and stopping shall be smooth and comfortable, without obvious steps of acceleration. Slowdown, stopping and leveling shall be without jars or bumps. Elevator shall start movement within .5 seconds of fully closed doors. Stopping upon operation of emergency stop switch shall be rapid but not violent.
  - b. Horizontal Acceleration (ISO A95 Scaling): Maximum 12 mg peak-to-peak measured at full speed for full travel in both directions.
  - c. Vertical Vibration: Ride shall be free of vibration throughout acceleration, full speed and deceleration for full travel in both directions.
3. Sound control: (A Scaled – fast – Lmax over the duration of the operation).
- a. Vibration: Sound isolate machines and motor drives from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.
  - b. Airborne noise: Maximum acoustical output level of:
    - 1) 85 dB measured in machine room. With the meter located 3' - 0" from each machine room door at floor level.
    - 2) 55 dB measured in elevator cars during all sequences of operation.
    - 3) 50 dB measured in elevator lobbies. From the nearest staff work station to the elevator lobby.

**2.12 HYDRAULIC HOISTWAY EQUIPMENT:**

- A. Guide rails and brackets:
  - 1. Elevator No. 1: Retain existing rails, realign, clean, check, tighten and replace Code non-complying brackets, fishplates and bolts. Provide log of the alignment corrections to the Owner's Representative.
- B. Guide shoes:
  - 1. Elevator No. 1: Provide new guide shoes of the roller type with neoprene tires, minimum 3/4-inch-wide and fully adjustable spring loaded to provide continuous contact with rail surfaces. Balance car to insure equal guide shoe pressure on all wheels and not exceed manufacturer's recommendations. Nominal roller diameter shall be 4" 6".
- C. Buffers:
  - 1. Retain existing.
- D. Car frame and platform:

1. Elevator No. 1: Retain existing car frame. Clean down and tighten frame bolts. Static balance weight to be added as required.
- E. Cylinder:
1. Provide new
    - a. Cylinder well and casing: Remove existing cylinder plunger unit and provide new as follows:
      - 1) Well: The Elevator Installer shall familiarize himself with existing conditions and be responsible for drilling cylinder wells.
      - 2) Casing: Provide steel casing, 12 inches greater in diameter than wrapped cylinder and proper depth to retain hole and provide structural integrity of PVC casing. Provide minimum 10-gauge corrosion resistant well casing, water tight joints and closed bottom. Weld seams solid at multiple casing joints. Provide a steel ring at top of casing to be keyed into pit floor. Provide watertight seal at bottom using 2' - 0" thick non-shrink concrete plug of type for installation under water where drive casing is required and closed bottom casing cannot be installed.
      - 3) Provide minimum 3/8-inch-thick PVC or HDPE casing with watertight sealed couplings and bottom end caps. Inside diameter shall be 6" greater than outside diameter of cylinder. Extend PVC or HDPE above pit floor. Seal top of PVC or HPDE and provide an inspection port of 2" diameter by 4" long PVC pipe with threaded cap. Adjust for current code.
      - 4) Provide 16-hours for removal of existing cylinder assembly and 24-hours of drilling at no additional cost to the owner.
      - 5) Provide NTE 20 barrels for spoils at no additional cost to owner. UCR will be responsible for the disposal.
      - 6) Remove spoils at no additional cost to owner.
      - 7) Installation: Set cylinder and PVC or HPDE casing within steel casing. Backfill between all voids with clean dry neutral silica sand, well tamped. After cylinder is set, provide a watertight laminating or epoxy resin seal between PVC and top of cylinder. Plunger and cylinder shall be plumb within 1/16 inch. Updated per new code or reference to be code compliant
    - b. Provide oil monitoring device as required per local code authorities.
    - c. Cylinder: Steel pipe, factory tested for a minimum of 600 pounds/square inch working pressure. Sandblast or wire brush outside of cylinder to remove rust and scale. Paint with heavy coat of epoxy or mastic. Work shall be done in shop and repaired in field if coating is damaged.
    - d. Plunger: Use seamless steel pipe or tubing, minimum Schedule 80. Plunger shall be no more than 0.010 inch out of round and straight within 1/16 inch. Protect during shipping and installation to avoid damage. If plunger is gouged, scarred or shows visible tool marks, it shall be replaced. Finish shall be 20 micro inches or finer. Plunger top shall be isolated from car frame. Plungers with follower guides are not acceptable.
    - e. Packing: Provide packing, which inhibits leaking of oil with drip ring and means to collect any oil leakage. Example, 5-gallon bucket.
    - f. Piping: Minimum Schedule 80 steel pipe suitable for 600 pounds pressure. No hoses shall be used in any part of piping. Provide sound isolating couplings in oil line between jack and pumping plant. Support piping using vibration isolating mounts or hangers with integral felt or neoprene at least 1/4" thick. Use threaded or welded joints throughout except at the connections to power unit and cylinder

unit. Use no more than two Victaulic type connections in the machine room and two in the pit area.

- 1) Overhead and Exposed Piping: Use Victaulic method of piping throughout system with Victaulic type 77 fittings or equal. Provide drip deflectors at pipe joints where pipes run above inaccessible ceiling areas to prevent damage to these areas in case of joint leakage.
- 2) Underground Piping: Protect with extruded high-density polyethylene coating having a thickness of 25 to 60 mills applied with a minimum 8 mill thickness of modified rubber adhesive material all as manufactured by Plexco or equal. Install piping on 3" bed of clean, dry sand and backfill with additional 3" of sand.
- 3) Testing: Before enclosing pipe system, close ends, fill with fluid, establish 600 PSI pressure and allow to stand for 24 hours. Make corrective repairs to leaks or pressure drop.

F. Platen isolation:

1. Provide minimum 3/4-inch-thick steel plates between top of plunger and car frame with 1 inch rubber or neoprene isolation material between.
2. Piping:
  - a. Reuse existing.
  - b. Provide new gaskets for Victaulic fittings and Pressure Test the entire line for leaks.
3. Isolation coupling
  - a. Provide at least two isolation coupling one in the machine room and one in the pit.

G. Pit Valves:

- 1) Provide in each elevator pit a gate valve to shut off oil between cylinder and pumping plant.
- 2) Provided new a pressure type line rupture safety valve to shut off oil between cylinder head and pit valve. Activation of safety valve shall not void operation of lowering valve.

H. Oil:

1. Hydraulic Fluid: USDA certified bio-based product, ultra-low toxicity, "readily" biodegradable, high performing fluid made from rapidly renewable plant stock; with antioxidant, anticorrosive, antifoaming, and metal passivating additives. Hydraulic fluid is approved by elevator manufacture for use with elevator equipment.
  - a. USDA certified bio-based product, >90% bio-based content, per ASTM D6866
  - b. Classified "Readily" biodegradable, per OECD 301B
  - c. >70% Biodegradability, per ASTM D5864
  - d. >20,000 ppm Aquatic toxicity, per EPA-821-R-02-012
  - e. >220 Viscosity Index, ASTM D2270
  - f. 25 Viscosity at 400C, cSt., per ASTM D445
  - g. >2200C, Flash Point, per ASTM D92

2.13 MACHINE ROOM EQUIPMENT:

A. General:

1. Provide equipment to fit existing space and structural limitations. Coordinate related electrical, structural and mechanical work with other trades.
- B. Pumping plant:
1. Provide new.
    - a. General: Self-contained unit with sound reducing cabinet and sound isolated base.
    - b. Pump: IMO, Roper or accepted equal for 150 SSU oil, belt driven or submersible. Maximum speed 3600 RPM. Maximum pressure 425 pounds per square inch.
    - c. Tank: Capacity equal to plunger displacement plus 50%. Provide strainers, oil level gauge and device to maintain uniform oil temperature.
    - d. Valves: Integral type by Elevator Equipment Company, Maxton Company or by elevator manufacturer. Provide conveniently located manual lowering valve accessible without removing pumping plant enclosure panels.
    - e. Motor: General Electric, Imperial, Westinghouse or accepted equal; maximum speed 1800 RPM for belt driven and 3600 RPM for submersible. Provide minimum 120 start heavy-duty motor, continuous rated, 50 degrees C. temperature rise, Class A insulation or 70 degrees C. rise for Class B insulation.
    - f. Muffler/Silencer: Blow-out proof type between pumping plant and cylinder.
- C. Controller:
1. Integral, floor or wall mounted as applicable to space conditions. Include door operating relays combined with controller. Provide solid state soft starting with starting switches rated at minimum 57% of horsepower rating. IEC method of line starter application is unacceptable. Provide three (3) manual reset overload relays, one in each line and reverse phase relay. Provide externally mounted permanently identified junction boxes on controller cabinets for termination of communication circuits. Design controller to accommodate future stops. Pre-approved controllers:
    - a. Motion Control Engineering HMC-2000
- D. Hydraulic elevator protective circuit:
1. In the event the car should stall due to low oil in the system or, if for other cause the car fails to reach the top landing within a predetermined time while traveling "up", a special circuit shall be provided which shall automatically return the car to the bottom landing and open the doors for 10 seconds after which the elevator will close doors and completely shut down. Recycling the mainline switch shall restore Service.
  2. Hydraulic Elevator Oil Cooling System: Provide an oil cooler to maintain operating temperatures between 105 – 115 degrees, an oil cooler consisting of temperature sensors monitoring high and low hydraulic fluid temperatures a special circuit shall be provided which shall automatically activate the oil cooler system and maintain its operation until hydraulic fluid temperature are achieved. Reference "Work by Others" for dedicated electrical disconnect. Conduit and wiring in elevator equipment room.
- E. Hydraulic elevator battery emergency lowering operation:
1. Provide a battery driven unit which will initiate operation of the Protective Circuit and lower elevator to bottom landing in the event of a power failure.
  2. Service shall be restored automatically upon restoration of normal power supply.
  3. Arrange with an exposed method of testing.

4. Arrange circuitry so that, if the mainline switch is open when the power transfer takes place, the elevator will not respond to the operation of the protective circuit.
5. Provide a double pole-isolating switch on the battery unit to disconnect the battery output.

**PART 3 - EXECUTION:**

**3.1 INSTALLATION:**

- A. General:
  1. Install per manufacturer's requirements, those of regulatory agencies and as specified.
- B. Welded Construction:
  1. Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustments, inspection, maintenance and replacement of worn parts.
  2. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation:
  1. Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.
- D. Lubrication:
  1. Lubricate operating parts of systems as recommended by manufacturer.
- E. Hazardous Disposal Certification:
  1. Contractor to provide oil and hazardous waste removal documentation per required EPA standards. Provide copy of documentation to Owner.
- F. Alignment:
  1. Coordinate alignment of hoistway entrances with elevator guide rails, for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe workable dimensions at each landing.
  2. Align guide rails plumb and parallel with maximum deviation of 1/16 inch. Anchorage of guide rails in pits shall not compromise waterproofing.
- G. Graphics:
  1. Provide graphics visible to public as selected by Owner's Representative.
- H. Manufacturer's nameplates:
  1. Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.
- I. Cleaning of the installation:
  1. After the installation of each elevator has been completed and immediately prior to the carrying out of the tests, the machine room and all equipment therein, the elevator hoistways including outside of car and all ledges and similar areas, the elevator pit and equipment therein, and all door hanger runners, guides, tracks and sills shall be

thoroughly cleaned down, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish shall be removed from site.

J. Finish painting after tests:

1. After satisfactory completion of the tests, any damage to the paint work shall be made good and the installation re-cleaned, if necessary, after which at least one final coat of gloss oil resistant or enamelled paint shall be applied by brushing or spraying in Contractor's customary colors to all the existing and new equipment in the machine room and also to such items in the hoistway or elsewhere which have received only a primer coat.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

K. Painting of machine room floor and pit floors:

1. After the completion of the entire installation, the floor of each machine room and pit areas shall be thoroughly cleaned down and brush painted with one coat of traffic paint having oil resistant properties. Pit floors shall be painted after the completion of the waterproofing. Owner's Representative will advise the color.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

3.2 NOISE CONTROL:

A. General:

1. Contractor, in the preparation and the execution of the work, shall recognize the particular and mandatory requirements of the remodeling project due to the character of the work and the use occupancy of the building.
2. Contractor shall perform all noisy work as directed by Owner's Representative.

B. Building operations:

1. Noise and vibration generated by this construction for this work may, at times, create a problem for the operations of the building. In the event the noise produced by the construction work conflicts with the building function, Contractor, at the request of the Owner's Representative, shall reduce or stop the noise.
2. All disruptive work including removal of old materials and deliveries of new materials shall be done on overtime at no additional cost to Owner.
3. All disruptive work will be performed after hours at no additional cost to Owner.

C. Measurement:

1. The noise level shall be measured on the "A" Scale of a sound level meter as follows:
  - a. With the meter located 3' - 0" from the nearest staff work station to the elevator lobby, the sound level shall not exceed 65 db.
  - b. With the meter located 3' - 0" from outside of each machine room door at floor level, the sound level shall not exceed 70 db.
  - c. With the meter located 3' - 0" from any hoistway door at any level, the sound level shall not exceed 70 db.

D. Types of noise generating work:

1. All heavy demolition (concrete walls and floors).
2. All grinding, chipping, pounding, sanding and cutting of holes and core drilling.



### 3.3 FIELD QUALITY CONTROL:

- A. Regulatory agencies inspection:
  - 1. Upon completion of elevators, Contractor shall provide instruments, weights and personnel to conduct test required by regulatory agencies. Contractor shall submit a complete report describing the results of the tests.
- B. Examination and testing:
  - 1. When installation is ready for final acceptance, notify and assist Owner's Representative in making a walk-through inspection of entire installation to assure workmanship and equipment complies with contract documents. Provide equipment to perform the following tests:
    - a. One-hour heat and run test with full load in car. Perform for one car of each duty.
      - 1) Stop car at each floor in each direction.
      - 2) Verify that temperatures do not exceed manufacturer's motor ratings.
      - 3) Performance and leveling tests shall be made before and after heat and run test.
    - b. Check and verify operation of all safety features and special operations.
      - 1) Measure horizontal acceleration.
      - 2) Measure acoustical output levels in machine room, lobbies and cars.
- C. Correction:
  - 1. Make corrections to defects or discrepancies at no cost to Owner's Representative. Should discrepancies be such that re-examination and retesting is required, Contractor shall pay for all costs including those of Owner's Representative's fees.
- D. Final acceptance:
  - 1. Final acceptance of the installation will be made only after all corrections are complete, final submittals and certificates received and the Owner's Representative is satisfied and the installation is complete in all respects.

### 3.4 INSTRUCTIONS:

- A. Instruct Owner's personnel in proper use of each system.

### 3.5 PROJECT RECORD DOCUMENTS:

- A. As-built drawings:
  - 1. Contractor shall maintain at the job site a separate and complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for such change.
  - 2. Changes, as they occur, will be marked on the record set of drawings on a daily basis.
- B. Record drawings:
  - 1. Contractor shall prepare "as-built" drawings in duplicate of any changes to electrical work on prints supplied by the Owner's Representative. During the course of construction, actual locations to scale shall be shown for all runs of mechanical and electrical work, installed in walls and floors or otherwise concealed. This shall cover all piping, electrical wiring; whether in conduit or cable, duct work, etc. shall be located, in addition, by dimension. All services shall be identified in ink on the prints.

2. In addition, Contractor shall keep a complete record copy of the plans and specifications for the use in preparing "as-built" plans and specifications at the end of the job. Contractor shall sign and date the prints and deliver them to the Owner's Representative.

**END OF SECTION**

## **SECTION 14 22 10**

### **MODERNIZATION OF ELEVATORS**

#### **PART 1 - GENERAL:**

##### **1.1 GENERAL CONDITIONS:**

- A. Bidding documents:
  - 1. Bidders shall examine existing conditions. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to Owner's Representative's attention during the pre-bid RFI period prior to the bid date. If no discrepancies are presented, changes required to accommodate bidder's equipment become the responsibility and cost to Contractor.
  - 2. Bidders are responsible to identify all required building related work at time of bidding and included with their bid documents.
- B. The specifications are written to be included as an attachment to the modernization contract.
- C. A copy of the final contract with all attachments shall be onsite in the machine room at all times.
- D. The Elevator Contractor shall be responsible for all building modifications to provide a code compliant elevator modernization. All sub-contractors will be contracted directly with the elevator contractor.
- E. Contractor shall provide a lock-box for each machine room.

##### **1.2 DEFINITIONS:**

- A. Main Lobby: Ground Level unless otherwise indicated.
- B. Fire Recall Level: As directed by local fire authority. As existing.
- C. Alternate Fire Recall Level: As directed by local fire authority. As existing.
- D. All retained existing equipment shall be of equal condition and life span as of new equipment.
- E. Serviceability: It is recognized that each manufacturers' system contains components that are proprietary to the development of their systems. The Owner may wish to have the elevator system maintained by another technically qualified service provider and by submitting a bid for this project, the manufacturer shall guarantee that for a minimum of 20 years they will provide the following:
  - 1. Diagnostic, adjusting and monitoring tools for all components including documents, manuals, and wiring diagrams. Devices shall not self-destruct, require charging or exchange. Remote monitoring devices are excluded from this requirement, however if such devices are removed all wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
  - 2. Manufacturer shall guarantee to support the equipment for this project with regard to notification to Owner of system corrective updates, provide and install such updates at no cost to Owner.
  - 3. Provide contact information for their separate parts warehouse so that the Owner or designated service provider can order parts on a 24-hour basis and delivered within 48 hours. Parts may be provided from inventory when adequate stock exists. In some

cases, parts will have to be special ordered from the factory or other vendor. Proprietary parts will be made available on an exchange basis.

4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at close out of the project and estimated escalation cost. The cost of these parts is what would be charged to Owner or other service provider.
5. Provide contact information for technical support so that the Owner or designated service provider can obtain technical support on a 24-hour basis to provide assistance in trouble shooting problems. Indicate hourly rate charged to Owner or designated service provider for such service.
6. In the event that a company other than the Original Equipment Manufacturer (OEM) maintains the elevators, and if the equipment was unable to be repaired by the non-OEM maintenance company, a factory-trained OEM technician would be required to assist (as it would if Contractor's own technician were in the same situation). If such an event was to occur, OEM Contractor would make its factory-trained technician available for assistance upon request of the Owner within three (3) business days, based on the original contractual hourly rates subject to established annual escalations. This shall survive any termination of the maintenance agreement.
7. The above will survive any termination of the maintenance agreement.
8. Contractor shall be defined as "Elevator Contractor".
9. Subcontractor shall be defined as any contractor contracted by either "Owner or Elevator Contractor".

### 1.3 DESCRIPTION:

#### A. Examination of site:

1. Contractor shall visit the building, examine the existing elevators and contract documents, determine condition of all retained components, space conditions, power supply and mainline disconnect.
2. Make all surveys necessary to meet the requirements of this specification and compatibility to products provided.

#### B. Field measurements:

1. Field verify dimensions before proceeding with the work.
2. Coordinate related work by other trades.
3. Contractor shall assume responsibility and provide full maintenance of the elevator equipment upon award of this contract and shall continue to do such throughout the modernization.

### 1.4 RELATED WORK INCLUDED BY OTHERS IN THIS SECTION UNDER THE ELEVATOR CONTRACT:

1. Contractor shall visit the building, examine the existing conditions, power supply, standby/emergency power supply, emergency battery lowering, mainline disconnect, and include all work needed to ensure a fully code compliant modernization. Contractor or his sub-contractors shall perform this work, which may include but is not limited to the following:
  - a. General:
    - 1) Self-closing and self-locking access doors and pit ladders (as req.)
    - 2) Providing supports to carry structural reaction, impact and uplift loads imposed by elevator equipment.

- 3) Block-outs, pockets and chases in walls and floors for signals, fixtures, and conduit.
- b. Electrical work:
  - 1) Power feeders: Modification to existing, or installation and connection of three phase power, through fused mainline switches or circuit breakers and extended to terminals of controllers. Provide continuous ground where needed.
  - 2) Light circuits: Single-phase circuit through disconnects and extended to controller for car lights and fan.
  - 3) Communication circuit: Telephone circuit terminated at junction box of each controller.
  - 4) Illumination: Lights with guards, illuminating light switches and convenience outlets in pits, machine rooms, controller areas and overhead sheave spaces.
  - 5) Conduit: Installation of electrical conduit and pull boxes with pull wire between hoistways and remote locations of each indicator and control panel.
  - 6) GFCI Outlets: Provide in machine room and pits.
  - 7) Provide NEMA 4 approved electrical devices and conduits for all electrical installed below the lowest sill level.
- c. Fire Life Safety: Stand alone system.
  - 1) Sensing devices: Installation and or removal modification to smoke detectors, heat detectors, shunt trip, sprinklers, or products of combustion sensors in elevator lobbies, machine rooms, hoistways and alternate fire recall floor with circuits terminated at junction box in machine rooms for emergency fire service operation.
  - 2) Provide fire proofing as required by lode code authority.
- d. If work by others is excluded from the elevator contractors' scope of work, they shall coordinate with all sub-contractors to complete all required building related work prior to inspection at no additional cost to the Owner.

**1.5 RELATED WORK INCLUDED BY ELEVATOR CONTRACTOR IN THIS SECTION:**

1. Barricades: Full height self-closing self-locking barricades for protection of open hoistways during construction.
2. Temporary screens: Contractor shall provide code compliant hoistway screening between elevators before construction starts and remove at completion of project.
3. Painting: Field painting of prime-finish items constituting final finishes.
4. Card readers: Including wire from machine room j-box to car top j-box, interfacing with elevator controls and installation in elevator car, connection in machine room and testing of system.
5. Closed circuit T.V: Including wire from machine room j-box to elevator car top j-box, connection in machine room and testing. Car top and machine j-box and labeled.
6. Contractor shall coordinate and perform all pretesting of all building systems prior to inspection at no additional cost to the Owner.

**1.6 QUALITY ASSURANCE:**

- A. Qualifications of Contractors:

1. General: The entire elevator installation shall be installed and maintained by the acceptable Contractors listed or as qualified by addendum. No portion of the work shall be subcontracted unless qualified and accepted by addendum.
  2. Installer's qualifications: Installer must be a licensed, certified conveyance mechanic in the state where installation is located.
- B. Sub-contractors:
1. Contractor shall be solely responsible for any and all of the work done by his sub-contractor or other employees and all orders or instructions from the Owner's Representative shall be through him to them. It shall be Contractor's duty to see that all of his sub-contractors commence their work properly at the proper time, and carry it on with due diligence so that they do not delay or injure either work or materials; and that all damage caused by them or their workmen is properly made good by them or by himself at his cost.
  2. The use of sub-contractors is to be limited to work outside the scope of elevator construction work; for example, patching, painting, coring of walls, marble work and refinishing. Contractor of sub-contractor will be responsible for any drywall damage, patching and painting in regards to their scope of work.
- C. Quality of work and workmanship:
1. When completed, the installation shall be modern in all respects.
  2. All components specified as new shall be provided as new. All components specified to be retained may be provided as new at Contractor's option subject to approval of Owner's Representative. All retained components are to be examined, cleaned, adjusted, repaired and/or replaced with new parts. Contractor must be willing to accept all retained equipment on full maintenance without prorating.
  3. All work performed shall be conducted in a workmanship type manner.
- D. Requirements of regulatory agencies:
1. Codes: In accordance with the latest applicable edition requirements of the following and as specified:
    - a. A.D.A.: Americans with Disabilities Act
    - b. ASME: American Society of Mechanical Engineers - A17.1; Safety Code for Elevators and Escalators
    - c. CBC: Title 24; California Building Codes
    - d. CCR: Title 8; California Code of Regulations
    - e. IEEE
    - f. NEC: National Electric Code / NFPA 70.
    - g. NFPA-72
    - h. All local codes and Amendments and Administration, which govern
- E. Permits, Inspections, and Taxes:
1. Arrange and pay for inspections by governing authorities.
  2. Obtain and post operating permits per applicable code.
  3. Arrange and pay for all applicable taxes.
- F. Safety Policies and Practices:
1. Installation and maintenance contractors are required to follow their company's safety practices and policies

2. Installation and maintenance contractors are required to follow all practices and policies of the building management.
3. Installation and maintenance contractors are required to follow governing authorities' safety practices and policies.

#### 1.7 SUBMITTALS:

##### A. Shop drawings:

1. Submit three copies of the following prior to ordering any materials:
  - a. Layouts: Plan of machinery and hoistway spaces showing new equipment and existing equipment; include impact and static loads imposed on building structure and clearances around equipment.
  - b. Details: Submit details of cab shell and interiors, fixtures, and entrances.
  - c. Data: Indicate on layouts or separate data sheets; machine spaces heat release, power requirements, conduit runs outside of hoistways and machine rooms, car and counterweight roller guides, control systems, motor drive units and door operators.
  - d. Provide all structural submittals (as required) with an approved Professional Engineer stamp and signature.

##### B. Samples:

1. Provide samples of materials and finishes exposed to public view and additional, if specifically requested, 6 inch x 6 inch panels, 12 inch lengths or full size if smaller, as applicable.

#### 1.8 PRODUCT DELIVERY, STORAGE AND HANDLING:

##### A. Delivery and storage:

1. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. Storage space on site will be available. Additionally, a storage container is required to properly secure and store all equipment, it shall be provided at no cost to the Owner.

##### B. Handling:

1. Owner's Representative has the first right of refusal to retain any elevator components that are to be removed and modernized with new equipment. All removed components shall remain property of the Owner's Representative, until the Owner's Representative notifies Contractor, in writing, of removed components that Owner's Representative would like to retain. All remaining elevator equipment not to be retained by the Owner's Representative or reused by Contractor shall be promptly removed from the building by Contractor at no cost to the Owner's Representative, and become the property of Contractor.
2. Contractor shall make every attempt to recycle removed elevator equipment. Contractor shall correct any damage to building surfaces and surrounding areas if damaged during removal of this equipment, at no cost to the Owner's Representative.

##### C. Building operations:

1. The building will remain in operation during the execution of this contract. Cooperate with building management in scheduling work in such a way as not to cause interruption of or interference with the building operations.

##### D. Electrical shutdowns:

1. Temporary electrical shutdowns will not be allowed except for brief periods to be scheduled outside normal hours and at least forty-eight (48) hours in advance and approved by Owner's Representative.

1.9 WARRANTY:

A. Guarantee and Warranty:

1. Provide special project warranty, signed by Contractor, Installer and Manufacturer, agreeing to replace/repair/restore defective materials and workmanship of all work performed which may develop within one (1) year from final date of completion and acceptance of the **entire installation**. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failures, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

**PART 2 - PRODUCTS:**

2.1 DESCRIPTION OF SYSTEMS:

A. Elevator No. 1:

- |                               |                                    |
|-------------------------------|------------------------------------|
| 1. Type:                      | Hydraulic Direct Plunger           |
| 2. Capacity:                  | 3250 Pounds                        |
| 3. Speed:                     | 100 FPM                            |
| 4. Stops:                     | 3 at 1,2,3                         |
| 5. Openings:                  | 3 Inline                           |
| 6. Travel:                    | Existing                           |
| 7. Control:                   | Soft Start AC                      |
| 8. Operation:                 | New Microprocessor Group Automatic |
| 9. Machine Location:          | Remote                             |
| 10. Special Operations:       |                                    |
| a. Independent Service        |                                    |
| b. Fire Emergency Service     |                                    |
| c. Tenant Security            |                                    |
| d. Emergency Battery Lowering |                                    |
| 11. Door Operation:           | Provide New                        |
| 12. Door Protection:          | Provide New                        |
| 13. Guide Rails:              | Retain                             |
| 14. Guide Shoes:              | Provide New                        |
| 15. Plunger Unit:             | Provide New                        |
| 16. Cylinder Unit:            | Provide New                        |
| 17. Buffers:                  | Retain                             |



- |     |                           |   |
|-----|---------------------------|---|
| 18. | Car Frame & Platforms:    | Retain  |
| 19. | Power Unit:               | Provide New   |
| 20. | Controllers:              | Provide New   |
| 21. | Piping:                   | Retain and Pressure Test  |
| 22. | Car Operating Panels:     | Provide New   |
| 23. | Car Position Indicators:  | Provide New   |
| 24. | Hall Position Indicators: | Provide New   |
| 25. | Service Cabinet:          | Provide New   |
| 26. | Communications:           | Provide New   |
| 27. | Hall Button Stations:     | Provide New   |
| 28. | Hall/Car Lanterns:        | Provide New   |
| 29. | Handicap Requirements:    | Provide New, as required  |
| 30. | Wiring:                   | Provide New   |
| 31. | Car Enclosure:            | Retain  |
| 32. | Hoistway Entrances:       | Retain  |
| 33. | Miscellaneous Items:      |   |
|     | a.                        | Key Operated Hoistway Access  |
|     | b.                        | Seismic Requirements  |
|     | c.                        | Card Reader Provisions  |
|     | d.                        | Lobby Park Key Switch   |
|     | e.                        | Clean hoistways, machine rooms and equipment; paint machine room floor, pit floor, car top, and all existing metal work |
|     | f.                        | Top of car guardrail Provide new (as required)  |

## 2.2 MATERIALS:

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D exterior Grade Douglas Fir, fire retardant treated.
- C. Sheet steel: ASTM A366, uncoated, pickled, free from defects.
- D. Sound deadener: Fire retardant; spray, roller or adhesive applied; 3/16" thick.
- E. Stainless steel: ASTM A167; type 302 or 304.

## 2.3 FINISHES:

- A. Exposed-to-view surfaces:
  - 1. Provide as follows unless otherwise specified.
    - a. Aluminum: Clear anodized finish.
    - b. Sheet steel:
      - 1) Shop prime: Degrease clean of foreign substances and apply one coat of corrosion inhibiting primer compatible with finish paint selected. Hoistway items visible to public shall be painted one additional coat of black paint.

- 2) Finish paint: Three coats baked enamel; sand each coat smooth; color as selected.
  - c. Stainless steel:
    - 1) Plain: Satin, directional polish, No. 4 Mirror directional polish, unless otherwise specified.
  - d. Touch-up:
    - 1) Prime surfaces: Use same paint as factory for field touch-up.
    - 2) Finish painted surfaces: Refinish whole panel with shop prime and finish paint as specified above.
- B. Non-exposed-to-view surfaces:
- 1. Degrease or remove any rust and shop paint manufacturer's standard corrosion inhibiting primer.

## 2.4 AUTOMATIC OPERATION:

- A. General operation of individual elevators:
- 1. Provide a non-proprietary diagnostic microprocessor-controlled dispatching system, based on real time calculations, designed to monitor all types of traffic and sufficiently flexible so that it can be modified to accommodate changes in traffic patterns.
  - 2. Serial link communications: Provide a distributed processing network consisting of localized processors located in machine rooms, car stations, hall stations and top of car to allow system to make fast decisions based on data shared by the processor involved in the different operations of the elevators. For group dispatch operations, all elevators in the group shall be capable of acting as a group common dispatcher as the need arises.
  - 3. Fault diagnostic system: Provide Owner's Representative with all hardware such as on-board LED diagnostics, hand held device or laptop computer, as standard with manufacturer, and supporting software documentation. Diagnostic system shall be capable of determining faults most difficult to find, as well as be capable of performing all code required testing.
  - 4. The system shall be flexible, irrespective of the number of elevators in normal service.
- B. Simplex selective collective operation:
- 1. Arrange for simplex selective collective automatic operation. Operate elevators from a single riser of landing buttons and from operating device in car.
  - 2. Momentary pressure of one or more car or landing buttons, other than those for landing at which car is standing, starts car, and causes car to stop at first landing for which a car or landing call is registered corresponding to direction in which car is traveling. Stops made in order in which landings are reached, irrespective of sequence in which calls are registered.
  - 3. Double door operation not permitted. If an up-traveling car has a passenger for an intermediate floor and a down call is registered at that floor, with no calls above car, it travels to floor, opens door to let passenger out, then lights down direction arrow in hall lantern and accepts waiting passenger without closing and reopening doors.
  - 4.

## 2.5 SPECIAL OPERATIONS:

- A. Inspection operation:

1. Provide key-operated hoistway access device and car top operating device. Key switches shall be mounted in door frames with a separate cover plate at terminal landings.
- B. Independent service:
1. Independent service operation shall be provided so that, by means of a switch located in the car service cabinet, the car can be removed from automatic operation and be operated by an attendant. The attendant shall have full control of the starting, stopping and direction of car travel.
  2. The car shall respond to car buttons only. The hall signals for the car on independent service shall not operate.
- C. Operation under fire or other emergency conditions:
1. Provide special emergency service to comply with current ASME and CCR Title 8, CBC Title 24, and local codes having jurisdiction.
  2. Provide Phase 1 recall switch at main floor elevator lobby.
  3. Key switches at main floor shall be integrated in hall button station hoistway entrance jamb with engraved instructions.
- D. Tenant security:
1. Arrange control system to enable and disable car call buttons as follows:
    - a. Function, which locks out all cars in a group so that all car buttons are inoperative, except the main floor.
    - b. Function which locks out any selected car button for all elevators in a group serving that floor.
    - c. Tenant security operations can be overridden by cars on independent, any special emergency service or by card reader access.
- E. Lobby Park:
1. Arrange control system to enable the elevator, from either a key switch or time clock, to bring the elevators to the main lobby, cycle the doors and shut down. Leaving only the door open button functional. All emergency service operations shall over ride this feature.
- 2.6 DOOR OPERATION:
- A. Passenger type:
1. Provide door times available as specified under "Design Criteria."
  2. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.
  3. Door hold open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door hold times shall be adjustable independent of other floors.
  4. Provide closed loop regulated speed performance, onboard diagnostics, adjustable times, nudging, and test switches.
- B. Door operator:

1. Elevator No. All: Provide new heavy-duty master type solid state closed loop door operators mounted on car enclosure utilizing minimum 12-gauge support angles to isolate from direct mounting of operator on the car top.
  2. Pre-approved closed loop heavy duty door operators:
    - a. GAL Linear
    - b. GAL MOVFR
  3. Provide code compliant door weight data tag.
- C. Door Protection:
1. Elevator No. All: Remove existing door protection devices and provide new electronic optical 3D scanning type:
    - a. Provide a door protective system which does not rely on physical contact with a person or object to inhibit door movement or initiate door reversal.
    - b. Pre-approved optical door sensors:
      - 1) Elevator Contractor
      - 2) Adams GateKeeper Max
      - 3) Formula Systems
      - 4) Janus Pana40 Plus
      - 5) Janus Pana Chrome 3D, with voice annunciation
      - 6) Tritronics Leading Edge
    - c. The system shall be able to detect a 2-inch diameter rod introduced at any position within the door movement and between the height of 2 inches and 63 inches above sill level.
    - d. Detection of intrusion into the protected area shall cause the doors, if fully open, to be held in the open position and, if closing, to reverse to fully open position.
    - e. If doors are prevented from closing for an adjustable period of 15 to 45 seconds or upon activation of fire emergency service, they shall proceed to close at reduced speed and a loud buzzer shall sound. Door closing force shall not exceed 2-1/2 ft.-lb. when door re-opening device is not in operation.
    - f. For side-opening doors, the detector for the strike jamb side shall be recessed, flush with strike jamb.

## 2.7 SIGNALS AND OPERATING FIXTURES:

- A. General:
1. Provide signals and fixtures as shown and specified. Location and arrangement of fixtures shall comply with disabled access requirements.
    - a. Passenger Elevator Buttons: Provide minimum 1-inch diameter mechanical, with fully illuminated buttons with LED's and engraved identifications. Buttons shall be raised 1/8 inch from surrounding surface with square shoulders. Survivor, Bruiser or equal.
    - b. Switches: Toggle type typically or key operated where noted.
    - c. Provide six (6) keys for each elevator keyed device, with proper labeled identification upon turnover of elevator.
    - d. Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.

- e. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Owner's Representative's approval.
  - f. Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected. No applied engraved plates.
  - g. Lamps: Miniature LED type.
  - h. Audible Chimes: Electronic adjustable audible chimes; bell type gong not acceptable.
  - i. Provide floor passing signal of the adjustable electronic audible chime type.
  - j. Tactile Markings: Provide raised Braille and alpha characters, numerals or symbols adjacent to operating buttons and devices used by the public according to local codes. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons or integral "fishtail" type.
  - k. Acceptable manufacturers: EPCO, ERM, MAD, or INNOVATION, fixtures with 5/8" engraved identifications. Operation of car or hall button shall cause button to illuminate. Response of car to car or hall call shall cause corresponding button to extinguish.
  - l. Faceplates: Provide of material and finish as indicated and specified; 1/8-inch minimum thickness with sharp edges relieved. Faceplates shall be sized to cover holes left by removal of existing fixtures where new fixtures are provided and provided with engraved fire sign, per A17.1. New faceplates shall cover all existing holes or Contractor shall patch at no additional cost to the Owner.
  - m. Audible chimes: Electronic adjustable audible chimes from 75 to 85 dB in elevator lobby 3' - 0" above floor and 3' - 0" away from elevator entrance; bell type gong not acceptable.
- B. Car operating panels:
- 1. General: Provide buttons numbered to conform to floors served and the following:
    - a. Locate top operating button at 48 inches above floor.
    - b. Locate emergency stop switch and illuminated alarm button in bottom row at 35 inches above floor.
    - c. Provide "Door Open" and "Door Close" buttons located above emergency stop and alarm of same design as car button.
    - d. All signage required by local codes shall be engraved and painted as directed by Owner's representative.
    - e. Provide fire emergency features, per code. Provide FEO-F1 key switch for fire service unless local code requires different.
    - f. Make provisions for card readers in Elevator No. 1.
  - 2. Elevator No. 1-2: Provide one new panel per car; integrate cabinets, buttons and engraving into swing front return panels without applied faceplate. Entire front return shall swing on concealed hinges with concealed locking means for servicing.
- C. Car position indicators:
- 1. Provide car position indicators with 2 inch indications corresponding to floor designations with matching direction arrows. Provide "X" or "E" indications for elevators with express zones.
    - a. Elevator No. 1-2: Provide new digital alpha numeric type segmented LED readout indicator with minimum two-inch high indications mounted integral with each car operating panel.

D. Service cabinet:

1. Provide new cabinet, door with a lock and concealed hinge as an integral part of car operating panel mounted with flush hairline joints. Cabinet door shall be provided with a flush glazed window of required size to hold elevator-operating permit, mounted horizontally. Service cabinet shall contain the following:
  - a. Independent service switch
  - b. Two-speed ventilation switch (Hi-Off-Low)
  - c. Light switch as applicable
  - d. Inspection switch, key operated
  - e. Duplex GFI convenience outlet
  - f. Buzzers as required
  - g. Constant pressure test switch for emergency car lighting
  - h. Card reader over-ride switch-key operated

E. Communication equipment:

1. Elevator No. 1: Provide a new complete communication system in compliance with ADA regulations consisting of a combination speaker/microphone, amplifier, automatic dialer with 4 number rollover capability and matching car station push button with telephone symbol to activate system and acknowledgment lights. Mount in car operating panel behind a pattern of holes, wire to machine room and program automatic dialer as directed by Owner's Representative.

F. Hall button fixtures:

1. Each fixture shall contain buttons, which light to indicate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two buttons and terminal fixtures with one. Engrave fire-exiting instructions on faceplates. Provide minimum of two fasteners at top and bottom of faceplate.
  - a. Elevator No. 1: Provide each elevator group of elevators with one riser of hall button stations.

G. Hall position indicators:

1. Provide with indications corresponding to floor designations with matching direction arrows.
  - a. Elevator No. 1: Provide new digital alphanumeric type segmented LED readout indicator with minimum two-inch high indications. Combine with hall lantern.

H. Car lanterns:

1. Manufacturer's standard dual car riding lantern mounted at a maximum height above floor. Lens shall be flush with faceplate or face of jamb.
2. Lantern illuminates and chimes as doors open. Provide single chime for up direction and double chime for down direction. Chime sound level shall be at 10 decibels over ambient.

I. Disabled access requirements:

1. Provide to meet local codes having jurisdiction including handrail and button configuration.
  - a. Car operating panels: Provide raised Braille and alpha characters, numerals or symbols to the left of operating buttons and devices used by the public. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be

of same size and shape as buttons. Raised characters shall be white on a black background with Braille designations directly below the character. Provide "star" at main egress landing.

- b. Entrances: Provide raised Braille and alpha characters, numerals or symbols similar to those for car stations of size required by governing authority. Locate on each entrance jamb at 60 inches above floor indicating floor designation. Material and finish of plates shall match hall button station faceplates. Material and finish of plates shall be white on black. (CA only) Provide with contrasting background. Braille designation shall be to the bottom of the raised character. Provide mounting means similar to those on car panels. Braille designation shall be to the bottom of the raised character. Provide "star" at main egress landing.
- c. Entrances: Provide plate with elevator number for first floor entrance. Character shall be a minimum of 3". For Destination Dispatching Systems, Braille shall include the elevator number or letter designation as well as the floor designation. Material and finish of plates shall be white on black.

## 2.8 WIRING:

### A. General:

- 1. Provide all necessary wiring and 25% spares between cars and controllers and to all remote-control stations; minimum of eight. Furnish shielded wires in cables for all communications card readers, cameras, digital displays, and speakers. Include four additional pairs of shielded spares and two RG-6 coaxial cables or equivalent, for each car. Electrical wire runs will be free of splices or connection unless at designated junction points.

### B. Traveling Cables:

- 1. Use minimum number of traveling cables. Include shielded wires and spares as noted above. Cord thoroughly and protect cables from rubbing against hoistways or car items. Provide with steel cable core and properly anchored to relieve strain on individual conductors.
- 2. All traveling cables shall be wired from machine to elevator, without junction box or spliced connections.

### C. Hoistway Wiring:

- 1. All wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
- 2. If junction boxes are used, NEC approved terminal strips shall be used and properly identified.
- 3. No splices shall be allowed.

### D. Work light and GFCI convenience outlet:

- 1. Provide on top of car with protective plastic lamp guard.
- 2. Provide compact fluorescent type (CFL)

### E. Stop switch:

- 1. Provide in each pit. Provide NEMA 4 enclosure.
- 2. Provide on each top of car.

### F. Alarm gong:

1. Provide on top of each car to be actuated by corresponding alarm button or emergency stop switch.

G. Auxiliary disconnect switches:

1. Provide as required in remote controller rooms or at remote equipment not in view of mainline switches; include all wiring and conduit.

H. CCTV circuit:

1. Provide provisions for closed circuit television camera in elevators. Run from elevator car top to outside of the elevator machine room, as directed by Owner at no additional cost to the Owner.

**2.9 CAR ENCLOSURES:**

A. Passenger cars; Elevator No. 1:

1. Provide an emergency car lighting unit mounted on top of car, battery driven and self-rechargeable. Upon outage of normal power the unit shall, within 5 seconds, light two lamps as part of normal car lighting. The unit shall have sufficient capacity to keep the lights in continuous operation for four hours and the alarm bell for one hour. Provide a readily accessible means for testing the unit in service cabinet. Light fixtures mounted in car front returns or operating panels are not acceptable. Illuminate lights directly over car operating panels.

**2.10 HOISTWAY ENTRANCES; PASSENGER TYPE:**

A. General:

1. Retain existing or provide new as specified.

B. Hangers and Tracks:

1. Elevator No. 1: Provide all new door tracks and hanger assemblies. Sheave type with two-point suspension. Steel sheaves with flanged groove and resilient sound-absorbing tires. Minimum 2-1/2-inch diameter for hoistway, 3 inch for car. Manufacturer's heavy-duty tracks and ball or roller bearing with adjustable up thrusts.

C. Hanger headers:

1. Elevator No. 1: Retain existing. Modify for new door tracks, reinforce and refinish.

D. Struts:

1. Elevator No. 1: Retain existing, clean and paint.
  - a. Provide rubber door stops.

E. Closers:

1. Elevator No. 1: Provide new cable relating torsion spring mechanical type or broken arm jack knife type as required for door assembly.

F. Dust and hanger covers:

1. Elevator No. 1: Retain existing, clean and refinish with black paint. Replace damaged and missing dust covers.

G. Fascia, toe and head guards:

1. Elevator No. 1: Retain existing, modify to comply with code, refinish with black paint and refasten for greater rigidity.

H. Interlocks:



1. Elevator No. 1: Provide all new. Equip each hoistway door with a tamper-proof interlock which shall prevent operation of the car until doors are locked in the close position as defined by the Code and shall prevent opening of doors at landing from corridor side unless car is at rest at landing in leveling zone or, hoistway access switch is used. Provide all new type "SF" high temperature wiring for interlock circuits.
- I. Pick-up roller assemblies:
    1. Elevator No. 1: Provide all new pick-up roller assemblies as required for door operating equipment furnished.
  - J. Door restrictor:
    1. Elevator No. 1: Provide new, door restrictor device compatible with new door equipment.
  - K. Sills:
    1. Elevator No. 1: Retain existing, power clean to metal and refinish, full length of sill.
  - L. Limit Switches:
    1. Elevator No. 1: Provide new
  - M. Frames:
    1. Elevator No. 1: Retain existing. Clean and refinish as scheduled. Frames to be refinished by others.
  - N. Hoistway doors:
    1. Elevator No. 1: Retain existing, re-hang to remove all twists, provide two new gibs per panel and one fire gib per panel which will remain engaged in sill if guiding member is destroyed.
    2. Provide new full height astragals and missing or damaged non-vision wings matching finish of door panels. Contractor must use the original reinforcing on existing hoistway and car doors for mounting hangers, pickup rollers, drive vanes, etc. If original reinforcing is not reusable for drive vanes and pickup rollers, Contractor shall furnish new reinforcing (minimum of 1/4" thick plate) welded to the door face. A minimum of four (4) 5/16" threaded bolts is to be used for attachment to the reinforcing plate. Where slotted holes are provided in the attachment block, a 1/4" dowel pin is to be fitted after doors locks are set up. Clean and refinish door panels as scheduled. Door panels to be refinished by others. Vandal resistant paint. Remove door panels before painting.

## 2.11 HYDRAULIC ELEVATOR EQUIPMENT:

- A. Design Criteria:
  1. Performance:
    - a. Contract Speed: Maximum ten percent (10%) speed variation under any loading condition in the up direction.
    - b. Motion Time: From start to stop of elevators motion as measured in both directions for a typical one floor run under any loading condition.
      - 1) Elevator No. :8.5 seconds
    - c. Door Open Times:
      - 1) Elevator No. :2.0 seconds
    - d. Door close times: Minimum, without exceeding kinetic energy and closing force, allowed by code.

- e. Door dwell times: Comply with A.D.A. formula and provide separate adjustable timers with initial settings as follows:
    - 1) Main lobby hall call: 5.0 to 6.0 seconds.
    - 2) Upper lobby hall call: 5.0 to 6.0 seconds.
    - 3) Car call: 5.0 to 6.0 seconds. Choose one.
    - 4) Interruption of door protective device: Reduce dwell to 1 second.
  - f. Leveling: Within 1/4 inch under any loading condition. Level into floor at all times, do not overrun floor and level back.
  - g. Hydraulic pressure: Hydraulic components shall be factory tested for 600 PSI. Maximum operating pressure shall be 425 PSI.
2. Operating qualities: Owner's Representative will judge riding qualities of cars and enforce the following requirements. Make all necessary adjustments.
- a. Acceleration and deceleration: Starting and stopping shall be smooth and comfortable, without obvious steps of acceleration. Slowdown, stopping and leveling shall be without jars or bumps. Elevator shall start movement within .5 seconds of fully closed doors. Stopping upon operation of emergency stop switch shall be rapid but not violent.
  - b. Horizontal Acceleration (ISO A95 Scaling): Maximum 12 mg peak-to-peak measured at full speed for full travel in both directions.
  - c. Vertical Vibration: Ride shall be free of vibration throughout acceleration, full speed and deceleration for full travel in both directions.
3. Sound control: (A Scaled – fast – Lmax over the duration of the operation).
- a. Vibration: Sound isolate machines and motor drives from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.
  - b. Airborne noise: Maximum acoustical output level of:
    - 1) 85 dB measured in machine room. With the meter located 3' - 0" from each machine room door at floor level.
    - 2) 55 dB measured in elevator cars during all sequences of operation.
    - 3) 50 dB measured in elevator lobbies. From the nearest staff work station to the elevator lobby.

## 2.12 HYDRAULIC HOISTWAY EQUIPMENT:

- A. Guide rails and brackets:
  - 1. Elevator No. 1: Retain existing rails, realign, clean, check, tighten and replace Code non-complying brackets, fishplates and bolts. Provide log of the alignment corrections to the Owner's Representative.
- B. Guide shoes:
  - 1. Elevator No. 1: Provide new guide shoes of the roller type with neoprene tires, minimum 3/4-inch-wide and fully adjustable spring loaded to provide continuous contact with rail surfaces. Balance car to insure equal guide shoe pressure on all wheels and not exceed manufacturer's recommendations. Nominal roller diameter shall be 4" 6".
- C. Buffers:
  - 1. Retain existing.
- D. Car frame and platform:

1. Elevator No. 1: Retain existing car frame. Clean down and tighten frame bolts. Static balance weight to be added as required.
- E. Cylinder:
1. Provide new
    - a. Cylinder well and casing: Remove existing cylinder plunger unit and provide new as follows:
      - 1) Well: The Elevator Installer shall familiarize himself with existing conditions and be responsible for drilling cylinder wells.
      - 2) Casing: Provide steel casing, 12 inches greater in diameter than wrapped cylinder and proper depth to retain hole and provide structural integrity of PVC casing. Provide minimum 10-gauge corrosion resistant well casing, water tight joints and closed bottom. Weld seams solid at multiple casing joints. Provide a steel ring at top of casing to be keyed into pit floor. Provide watertight seal at bottom using 2' - 0" thick non-shrink concrete plug of type for installation under water where drive casing is required and closed bottom casing cannot be installed.
      - 3) Provide minimum 3/8-inch-thick PVC or HDPE casing with watertight sealed couplings and bottom end caps. Inside diameter shall be 6" greater than outside diameter of cylinder. Extend PVC or HDPE above pit floor. Seal top of PVC or HPDE and provide an inspection port of 2" diameter by 4" long PVC pipe with threaded cap. Adjust for current code.
      - 4) Provide 16-hours for removal of existing cylinder assembly and 24-hours of drilling at no additional cost to the owner.
      - 5) Provide NTE 20 barrels for soils and oil removal. UCR will be responsible for the disposal of the barrels.
      - 6) Remove spoils at no additional cost to owner.
      - 7) Installation: Set cylinder and PVC or HPDE casing within steel casing. Backfill between all voids with clean dry neutral silica sand, well tamped. After cylinder is set, provide a watertight laminating or epoxy resin seal between PVC and top of cylinder. Plunger and cylinder shall be plumb within 1/16 inch. Updated per new code or reference to be code compliant
    - b. Provide oil monitoring device as required per local code authorities.
    - c. Cylinder: Steel pipe, factory tested for a minimum of 600 pounds/square inch working pressure. Sandblast or wire brush outside of cylinder to remove rust and scale. Paint with heavy coat of epoxy or mastic. Work shall be done in shop and repaired in field if coating is damaged.
    - d. Plunger: Use seamless steel pipe or tubing, minimum Schedule 80. Plunger shall be no more than 0.010 inch out of round and straight within 1/16 inch. Protect during shipping and installation to avoid damage. If plunger is gouged, scarred or shows visible tool marks, it shall be replaced. Finish shall be 20 micro inches or finer. Plunger top shall be isolated from car frame. Plungers with follower guides are not acceptable.
    - e. Packing: Provide packing, which inhibits leaking of oil with drip ring and means to collect any oil leakage. Example, 5-gallon bucket.
    - f. Piping: Minimum Schedule 80 steel pipe suitable for 600 pounds pressure. No hoses shall be used in any part of piping. Provide sound isolating couplings in oil line between jack and pumping plant. Support piping using vibration isolating mounts or hangers with integral felt or neoprene at least 1/4" thick. Use threaded or welded joints throughout except at the connections to power unit and cylinder

unit. Use no more than two Victaulic type connections in the machine room and two in the pit area.

- 1) Overhead and Exposed Piping: Use Victaulic method of piping throughout system with Victaulic type 77 fittings or equal. Provide drip deflectors at pipe joints where pipes run above inaccessible ceiling areas to prevent damage to these areas in case of joint leakage.
- 2) Underground Piping: Protect with extruded high-density polyethylene coating having a thickness of 25 to 60 mills applied with a minimum 8 mill thickness of modified rubber adhesive material all as manufactured by Plexco or equal. Install piping on 3" bed of clean, dry sand and backfill with additional 3" of sand.
- 3) Testing: Before enclosing pipe system, close ends, fill with fluid, establish 600 PSI pressure and allow to stand for 24 hours. Make corrective repairs to leaks or pressure drop.

F. Platen isolation:

1. Provide minimum 3/4-inch-thick steel plates between top of plunger and car frame with 1 inch rubber or neoprene isolation material between.
2. Piping:
  - a. Reuse existing.
  - b. Provide new gaskets for Victaulic fittings and Pressure Test the entire line for leaks.
3. Isolation coupling
  - a. Provide at least two isolation coupling one in the machine room and one in the pit.

G. Pit Valves:

- 1) Provide in each elevator pit a gate valve to shut off oil between cylinder and pumping plant.
- 2) Provided new a pressure type line rupture safety valve to shut off oil between cylinder head and pit valve. Activation of safety valve shall not void operation of lowering valve.

H. Oil:

1. Hydraulic Fluid: USDA certified bio-based product, ultra-low toxicity, "readily" biodegradable, high performing fluid made from rapidly renewable plant stock; with antioxidant, anticorrosive, antifoaming, and metal passivating additives. Hydraulic fluid is approved by elevator manufacture for use with elevator equipment.
  - a. USDA certified bio-based product, >90% bio-based content, per ASTM D6866
  - b. Classified "Readily" biodegradable, per OECD 301B
  - c. >70% Biodegradability, per ASTM D5864
  - d. >20,000 ppm Aquatic toxicity, per EPA-821-R-02-012
  - e. >220 Viscosity Index, ASTM D2270
  - f. 25 Viscosity at 400C, cSt., per ASTM D445
  - g. >2200C, Flash Point, per ASTM D92

2.13 MACHINE ROOM EQUIPMENT:

A. General:

1. Provide equipment to fit existing space and structural limitations. Coordinate related electrical, structural and mechanical work with other trades.
- B. Pumping plant:
1. Provide new.
    - a. General: Self-contained unit with sound reducing cabinet and sound isolated base.
    - b. Pump: IMO, Roper or accepted equal for 150 SSU oil, belt driven or submersible. Maximum speed 3600 RPM. Maximum pressure 425 pounds per square inch.
    - c. Tank: Capacity equal to plunger displacement plus 50%. Provide strainers, oil level gauge and device to maintain uniform oil temperature.
    - d. Valves: Integral type by Elevator Equipment Company, Maxton Company or by elevator manufacturer. Provide conveniently located manual lowering valve accessible without removing pumping plant enclosure panels.
    - e. Motor: General Electric, Imperial, Westinghouse or accepted equal; maximum speed 1800 RPM for belt driven and 3600 RPM for submersible. Provide minimum 120 start heavy-duty motor, continuous rated, 50 degrees C. temperature rise, Class A insulation or 70 degrees C. rise for Class B insulation.
    - f. Muffler/Silencer: Blow-out proof type between pumping plant and cylinder.
- C. Controller:
1. Integral, floor or wall mounted as applicable to space conditions. Include door operating relays combined with controller. Provide solid state soft starting with starting switches rated at minimum 57% of horsepower rating. IEC method of line starter application is unacceptable. Provide three (3) manual reset overload relays, one in each line and reverse phase relay. Provide externally mounted permanently identified junction boxes on controller cabinets for termination of communication circuits. Design controller to accommodate future stops. Pre-approved controllers:
    - a. Motion Control Engineering HMC-2000
- D. Hydraulic elevator protective circuit:
1. In the event the car should stall due to low oil in the system or, if for other cause the car fails to reach the top landing within a predetermined time while traveling "up", a special circuit shall be provided which shall automatically return the car to the bottom landing and open the doors for 10 seconds after which the elevator will close doors and completely shut down. Recycling the mainline switch shall restore Service.
  2. Hydraulic Elevator Oil Cooling System: Provide an oil cooler to maintain operating temperatures between 105 – 115 degrees, an oil cooler consisting of temperature sensors monitoring high and low hydraulic fluid temperatures a special circuit shall be provided which shall automatically activate the oil cooler system and maintain its operation until hydraulic fluid temperature are achieved. Reference "Work by Others" for dedicated electrical disconnect. Conduit and wiring in elevator equipment room.
- E. Hydraulic elevator battery emergency lowering operation:
1. Provide a battery driven unit which will initiate operation of the Protective Circuit and lower elevator to bottom landing in the event of a power failure.
  2. Service shall be restored automatically upon restoration of normal power supply.
  3. Arrange with an exposed method of testing.

4. Arrange circuitry so that, if the mainline switch is open when the power transfer takes place, the elevator will not respond to the operation of the protective circuit.
5. Provide a double pole-isolating switch on the battery unit to disconnect the battery output.

**PART 3 - EXECUTION:**

**3.1 INSTALLATION:**

**A. General:**

1. Install per manufacturer's requirements, those of regulatory agencies and as specified.

**B. Welded Construction:**

1. Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustments, inspection, maintenance and replacement of worn parts.
2. Comply with AWS standards for workmanship and for qualifications of welding operators.

**C. Sound Isolation:**

1. Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.

**D. Lubrication:**

1. Lubricate operating parts of systems as recommended by manufacturer.

**E. Hazardous Disposal Certification:**

1. Contractor to provide oil and hazardous waste removal documentation per required EPA standards. Provide copy of documentation to Owner.

**F. Alignment:**

1. Coordinate alignment of hoistway entrances with elevator guide rails, for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe workable dimensions at each landing.
2. Align guide rails plumb and parallel with maximum deviation of 1/16 inch. Anchorage of guide rails in pits shall not compromise waterproofing.

**G. Graphics:**

1. Provide graphics visible to public as selected by Owner's Representative.

**H. Manufacturer's nameplates:**

1. Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.

**I. Cleaning of the installation:**

1. After the installation of each elevator has been completed and immediately prior to the carrying out of the tests, the machine room and all equipment therein, the elevator hoistways including outside of car and all ledges and similar areas, the elevator pit and equipment therein, and all door hanger runners, guides, tracks and sills shall be

thoroughly cleaned down, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish shall be removed from site.

J. Finish painting after tests:

1. After satisfactory completion of the tests, any damage to the paint work shall be made good and the installation re-cleaned, if necessary, after which at least one final coat of gloss oil resistant or enamelled paint shall be applied by brushing or spraying in Contractor's customary colors to all the existing and new equipment in the machine room and also to such items in the hoistway or elsewhere which have received only a primer coat.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

K. Painting of machine room floor and pit floors:

1. After the completion of the entire installation, the floor of each machine room and pit areas shall be thoroughly cleaned down and brush painted with one coat of traffic paint having oil resistant properties. Pit floors shall be painted after the completion of the waterproofing. Owner's Representative will advise the color.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

3.2 NOISE CONTROL:

A. General:

1. Contractor, in the preparation and the execution of the work, shall recognize the particular and mandatory requirements of the remodeling project due to the character of the work and the use occupancy of the building.
2. Contractor shall perform all noisy work as directed by Owner's Representative.

B. Building operations:

1. Noise and vibration generated by this construction for this work may, at times, create a problem for the operations of the building. In the event the noise produced by the construction work conflicts with the building function, Contractor, at the request of the Owner's Representative, shall reduce or stop the noise.
2. All disruptive work including removal of old materials and deliveries of new materials shall be done on overtime at no additional cost to Owner.
3. All disruptive work will be performed after hours at no additional cost to Owner.

C. Measurement:

1. The noise level shall be measured on the "A" Scale of a sound level meter as follows:
  - a. With the meter located 3' - 0" from the nearest staff work station to the elevator lobby, the sound level shall not exceed 65 db.
  - b. With the meter located 3' - 0" from outside of each machine room door at floor level, the sound level shall not exceed 70 db.
  - c. With the meter located 3' - 0" from any hoistway door at any level, the sound level shall not exceed 70 db.

D. Types of noise generating work:

1. All heavy demolition (concrete walls and floors).
2. All grinding, chipping, pounding, sanding and cutting of holes and core drilling.

### 3.3 FIELD QUALITY CONTROL:

#### A. Regulatory agencies inspection:

1. Upon completion of elevators, Contractor shall provide instruments, weights and personnel to conduct test required by regulatory agencies. Contractor shall submit a complete report describing the results of the tests.

#### B. Examination and testing:

1. When installation is ready for final acceptance, notify and assist Owner's Representative in making a walk-through inspection of entire installation to assure workmanship and equipment complies with contract documents. Provide equipment to perform the following tests:
  - a. One-hour heat and run test with full load in car. Perform for one car of each duty.
    - 1) Stop car at each floor in each direction.
    - 2) Verify that temperatures do not exceed manufacturer's motor ratings.
    - 3) Performance and leveling tests shall be made before and after heat and run test.
  - b. Check and verify operation of all safety features and special operations.
    - 1) Measure horizontal acceleration.
    - 2) Measure acoustical output levels in machine room, lobbies and cars.

#### C. Correction:

1. Make corrections to defects or discrepancies at no cost to Owner's Representative. Should discrepancies be such that re-examination and retesting is required, Contractor shall pay for all costs including those of Owner's Representative's fees.

#### D. Final acceptance:

1. Final acceptance of the installation will be made only after all corrections are complete, final submittals and certificates received and the Owner's Representative is satisfied and the installation is complete in all respects.

### 3.4 INSTRUCTIONS:

- A. Instruct Owner's personnel in proper use of each system.

### 3.5 PROJECT RECORD DOCUMENTS:

#### A. As-built drawings:

1. Contractor shall maintain at the job site a separate and complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for such change.
2. Changes, as they occur, will be marked on the record set of drawings on a daily basis.

#### B. Record drawings:

1. Contractor shall prepare "as-built" drawings in duplicate of any changes to electrical work on prints supplied by the Owner's Representative. During the course of construction, actual locations to scale shall be shown for all runs of mechanical and electrical work, installed in walls and floors or otherwise concealed. This shall cover all piping, electrical wiring; whether in conduit or cable, duct work, etc. shall be located, in addition, by dimension. All services shall be identified in ink on the prints.



2. In addition, Contractor shall keep a complete record copy of the plans and specifications for the use in preparing "as-built" plans and specifications at the end of the job. Contractor shall sign and date the prints and deliver them to the Owner's Representative.

**END OF SECTION**