

PART 1 GENERAL**1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. This section describes the Aerial Tramway Maintenance Requirements.
- B. Related Sections:
1. 34 14 13 Aerial Tramway General Requirements
 2. 34 14 14 Aerial Tramway Ropeway Equipment
 3. 34 14 15 Aerial Tramway Electrical

1.3 REFERENCE STANDARDS

- A. The equipment is being installed in the State of California and City of San Francisco. The equipment designs and installations shall be capable of public service and shall comply with the following:
1. American National Standards Institute (ANSI)
 - a. ANSI B77.1 – Safety Standard for Passenger Ropeways
 - b. ANSI C1 – National Electric Safety Code
 2. NFPA 70 National Electrical Code
 3. NFPA 101 – Life Safety Code
 4. Underwriters Laboratories, Incorporated (U.L.)
 5. Americans with Disabilities Act (ADA), including all federal, state and local requirements.
 6. State of California, California Code of Regulations Title 8, Passenger Tramway Safety Orders (Division 1, Chapter 4, Subchapter 6.1)
 7. All codes referenced in the original equipment procurement specifications, as in the Contract Documents.
 8. In case of a conflict between codes, regulations, or standards, or this specification, the most stringent requirement shall take precedence.
 9. Reference to Codes and Standards shall mean the latest edition, including the amendment or revision in effect as of the date of the Contract unless a specific version is otherwise identified herein or by the Authority having jurisdiction.

1.4 QUALITY ASSURANCE

- A. The work of this section shall be performed by a company which specializes in the type of Aerial Tramway Maintenance work required for this Project, with a minimum of 5 years of documented successful experience and shall be performed by skilled workmen thoroughly experienced in the necessary crafts.
- B. Equipment design, materials, construction clearances, workmanship, and tests shall conform to the requirements of the codes and regulations listed in Paragraph 1.3, Reference Standards.
- C. Welding shall be performed in accordance with the requirements of AWS D1.1. Particular attention is called to Qualification of AWS D1.1. Welders shall produce evidence of current certification by the American Welding Society prior to performing any work on the equipment requiring welding.
- D. System Supplier shall maintain all original design tolerances and parameters during the duration of the contract. Failure of the System Supplier to maintain design tolerances shall constitute a default of contract and shall be remedied in accordance with the methods described in the General Conditions.
- E. The System Supplier shall implement and maintain a quality control and assurance program which applies to the Maintenance standards, procedures, and equipment used as part of this contract.

PART 2 GENERAL REQUIREMENTS

- A. The following paragraphs describe the general requirements to be used by the System Supplier for performance of the maintenance of the system.

2.1 GENERAL DESCRIPTION

- A. The System Supplier shall be responsible for the maintenance, as defined herein, of the aerial ropeway system (System) as procured as part of the Contract Documents. Without limiting the foregoing, the System Supplier shall maintain the System such that it operates in a safe, efficient and reliable manner consistent with the procurement.

Such maintenance shall be in compliance with all manufacturer documentation and recommendations, maintenance manuals, industry standards of care and any and all applicable codes or standards.

2.2 DEFINITIONS

- A. Parties
 - 1. Transbay Tower LLC – OWNER or designated representative
 - 2. System Supplier – manufacturer/supplier of the Gondola system equipment.
- B. Terms
 - 1. Codes – those documents listed in Paragraph 1.3, Reference Standards
 - 2. Maintenance Task – the work provided in accordance with provisions of this Section.
 - 3. As defined in the General Conditions and Special Provisions.

2.3 OPERATIONS CRITERIA

- A. General: The equipment shall be maintained to operate in the manner and fashion for which it was originally manufactured and installed on this project.
- B. Operational Requirements: Hours of operation shall be considered as sixteen (16) hours per day, seven (7) days per week.
- C. Environmental Operations Requirements:
 - 1. General: The equipment shall remain operational with minimal maintenance level adjustments during typical movement of the building.
 - 2. Sound Level: Equipment shall be maintained to operate at sound levels as specified in the applicable Sections of the Contract documents.
 - 3. Vibration: Equipment shall be maintained so that ground and structure-borne vibration caused by equipment operation shall not exceed the specifications for the applicable equipment according to the original equipment procurement Contract Documents.
- D. Fire Protection: System Supplier shall only provide spare parts and equipment constructed of non-combustible materials throughout, with the exception of the installation of electrical equipment and circuits.
- E. Operating Temperature Range: The equipment must be maintained to operate without degradation over the design temperature specified in the procurement original documents (34 14 13).

2.4 JOB CONDITIONS

- A. Project Representation: The System Supplier shall designate a representative to be the primary contact to the OWNER.
- B. Onsite Support: The System Supplier shall provide onsite support for unscheduled Maintenance and rectification of unscheduled downtime within 24 hours of notification by the OWNER. In addition the System Supplier shall provide onsite routine preventative Maintenance each month to meet the requirements of the authorities having jurisdiction and the Maintenance manuals and service bulletins provided by the System Supplier. All preventative Maintenance shall be done when the system is not operating for public transport during hours to be coordinated with the OWNER.

2.5 SUBMITTALS

- A. The following submittals shall be considered as a minimum requirement with additional submittal requirements specifications located in various sections of this specification.
 - 1. Drawings:
 - a. Submit drawings and specifications of any replacement parts, subsystems, or components used as alternative to Original Equipment Manufacturer (OEM) supplied equipment prior to use. Such submittal shall clearly indicate that the part is an alternative and indicate the reason for the proposed substitution.
 - b. Reliability and maintenance histories of replacement parts, subsystems, or components used as alternative to OEM supplied equipment shall be submitted to OWNER prior to use.
 - c. Samples of replacement parts, subsystems, or components used as an alternative to OEM supplied equipment shall be provided. Finishes shall be submitted as such: 6 to 8 inch square samples for sheet materials; and 10 to 12-inch lengths of running trim materials.
 - 2. Operations and Maintenance Materials: The System Supplier shall submit all changes, modifications, or addendum to the Operation and Maintenance Manuals as originally provided by the System Supplier which are due to the System Supplier's use of alternative replacement parts, subsystems, or components. In addition, any changes to the manuals due to the System Suppliers Maintenance

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- practices shall be provided by the System Supplier. The System Supplier shall submit four (4) sets of Operation and Maintenance manuals changes, modifications or addendum at least annually.
3. Progress Reports: The System Supplier shall be required to submit progress reports with each invoice. Progress reports shall include descriptions of completed work, scheduled maintenance, projection of overhaul or major system replacement schedule and implications, and potential operational problems and shall comply with related requirements of the Contract Documents.
 4. Certificates and Permits: The System Supplier shall be responsible for maintaining the equipment such that the OWNER can obtain operating permits, as required by governing authorities to allow normal, unrestricted use of the equipment.

PART 3 ROPEWAY OPERATION AND MAINTENANCE REQUIREMENTS

- A. The System Supplier shall be responsible for maintaining the System, linking the plaza of the Transbay Tower located at 415 Mission Street, San Francisco, California with the adjacent Transbay Transit Center Park located on the roof of the Transit Center. The system will operate sixteen (16) hours per day seven days per week, throughout the term of the Contract in accordance with the Maintenance Task requirements. Without limiting the foregoing, the System Supplier shall maintain the System in a safe, efficient and reliable manner.
- B. The initial period of service for the Maintenance Task shall be three years from the final acceptance by the OWNER. The System Supplier shall provide the OWNER with an option for an additional two years for the System Supplier to provide the Maintenance Task.

3.1 SYSTEM OPERATIONS REQUIREMENTS

- A. The OWNER shall be responsible for operation of the System in accordance with operating instructions provided by the System Supplier. These operating instructions shall detail requirements for any and all labor, supervision and services necessary to operate the System. In addition the System Supplier shall provide offsite capabilities to monitor the system to assist the OWNER in troubleshooting any operational problem. In addition, the System Supplier shall provide and maintain a system that will automatically record daily pre-operational checks that are required by the Authorities Having Jurisdiction and that are completed by the OWNER.

3.2 SYSTEM MAINTENANCE REQUIREMENTS

- A. The System Supplier shall maintain the System in compliance with all codes and regulations as well as in a First Class Operating Condition on a periodic basis throughout the term of the Contract, except for OWNER provided work. (See Paragraph 3.3 Owner Provided Work)
- B. The System Supplier shall provide all labor, supervision and services, and replenish/maintain OWNER'S spare parts, repair materials, supplies, tools, instruments, equipment, carriers, and all other items and services, whether or not mentioned in these Contract Documents, for the Maintenance of the System including but not limited to:
 1. Scheduled normal and preventative Maintenance including inspecting, testing, adjusting, lubricating, repairing, cleaning, touch-up painting and replacing expendable/consumable parts in accordance with the schedule for this work.
 2. Unscheduled maintenance as required to identify and remedy failures/malfunctions.
 3. Maintenance, Load and Safety testing, as required by codes, regulations and standards.
 4. Replenish/maintain spare parts, materials and supplies inventories.
 5. Maintenance reports, daily logs and record-keeping.
 6. Update maintenance manuals with appropriate safety reviews.

3.3 OWNER PROVIDED WORK

- A. Structural Maintenance: The OWNER shall provide structural maintenance of the foundations, anchor points and station areas not including automatic station platform doors.
- B. Station Finish and Signage: The OWNER shall maintain the passenger station finish and directional signs.

3.4 WARRANTY

- A. Maintenance Staff Labor: Pursuant to this Contract, the System Supplier is obligated to the OWNER under various warranties, and is obligated to the OWNER to also provide and support manufacturer's warranties. The System Supplier agrees that the Maintenance Staff size will not take into account any labor requirements to perform warranty work and that no warranty work will be done by the Maintenance Staff without in each instance the advance written agreement by the OWNER'S representative. The System Supplier agrees that any warranty work done by the Maintenance Staff will not constitute part of the Maintenance Task, shall not delay or otherwise interfere with any work required under the Maintenance Task and shall be at no expense to the OWNER. The OWNER shall be entitled to a prompt credit against any amounts payable to the System Supplier, or

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- reimbursement from the System Supplier, of all costs attributable to the use of Maintenance Staff labor for warranty work.
- B. Usage of Owner's Spare Parts: The OWNER has purchased or will purchase spare parts as part of the System supply. These spare parts are to be the property of OWNER. The System Supplier shall have the right to use the OWNER'S spare parts in performing warranty work pursuant to this Contract, provided that:
1. The System Supplier's doing so will not delay or otherwise interfere with the Work required under the Maintenance Task; and
 2. The System Supplier promptly replaces such spare parts in the OWNER's spare parts inventory at no expense to the OWNER or, at the OWNER'S option, provides the OWNER with a prompt credit against any amounts payable to the System Supplier or reimbursement of the replacement cost of all parts used.
- C. Parts and Materials Warranty
1. Without limiting any warranties provided by the System Supplier, spare parts and materials under this Contract (including both initial and replacement items) shall be warranted against defective materials and workmanship, improper performance, and non-compliance with the Contract Documents for a period of one year after the date the Maintenance Task commences. After the first year of the Maintenance Task, all spare parts and materials shall be warranted by System Supplier for thirty (30) days following installation on the system and for any additional period covered by any applicable manufacturer's warranty. This requirement does not apply to consumables. Documentation of installation and use shall be furnished by the System Supplier to the OWNER monthly.
 2. During the applicable warranty period the System Supplier shall repair or replace at this own expense, all spare parts and materials that may develop defects, whether these defects may be inherent in the spare parts or materials, in the functioning of the piece of equipment, or in the functioning and operation of pieces of equipment operating together as a functional unit. Any such repaired or replacement spare part or material shall also be warranted in the same manner as new parts or materials would be under this Section. Nothing herein shall limit the System Supplier's liability and responsibility under this Contract or at law or in equity for faulty or defective materials or workmanship which may be discovered by the OWNER after the end of any applicable warranty period.

3.5 OVERHAUL TASKS

- A. Overhaul is to renovate, make like new, restore or renew a component, assembly or subsystem of the System requiring work beyond the scope of scheduled preventative Maintenance adjustments, replacement of consumables and minor repairs.
- B. Long Term Overhauls are those overhauls identified in the System Supplier's proposal in terms of operating hours or cycles or operation which are not projected to occur more frequently than annually in reference to that item. The System Supplier is responsible for performing all long term overhauls at no additional cost to the OWNER as part of this Contract.
- C. Notwithstanding any of the above, the performance of the OVERHAUL task that necessitates a disruption to normal scheduled operations shall require written approval from the OWNER and coordination with the OWNER before it is performed.

3.6 HOUSEKEEPING

- A. Disposal of Maintenance Waste: The System Supplier shall be responsible for collecting all trash and refuse from the System that is generated from System Supplier's activities relating to the System and for removing the same in accordance with local ordinances.

3.7 STAFFING

- A. The System Supplier shall provide telephone staff support to the OWNER during all operating periods; shall provide remote connection to the System equipment for troubleshooting; shall provide onsite emergency Maintenance staff within 24 hours of a request by the OWNER; shall provide onsite Maintenance personnel on a monthly basis for preventative Maintenance tasks and shall provide onsite Maintenance personnel for scheduled and unscheduled Maintenance or required subsystem replacements.

3.8 TRAINING

- A. The System Supplier shall train/retrain his own and all Subsystem Supplier personnel. At no time shall an employee-in-training be permitted to perform any maintenance tasks for which that person has not been certified.

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- B. Refresher training shall be required on at least an annual basis with respect to all hazardous aspects of the Work and any employee found to be in violation of any prescribed safety procedures/practices shall at a minimum be required to undergo immediate/supervised safety awareness training.
 - C. Annually the System Supplier shall provide training of OWNER personnel on the System operating concepts, inspections, use of logs, System Supplier's plan for handling emergencies, means and locations for gaining access to the System cabin, maintenance area, and equipment rooms, and hazards associated with performing activities in the vicinity of the System.

3.9 TOOLS, EQUIPMENT, SPARE PARTS AND SUPPLIES

- A. Inventory: An inventory of tools, spare parts and supplies shall be developed as required in section 34 14 13 and maintained by the System Supplier. This inventory shall be updated annually and submitted to the OWNER for review thirty (30) days prior to the anniversary of the date that the Maintenance Task commences, which coincides with the Date of Final Acceptance.
- B. Use of Owner's Spare Parts: In performing the Work under the Contract, the System Supplier shall use spare parts in the Spare Parts Inventory. The OWNER shall own all such spare parts. Spare parts are critical to the operation and performance of the System, especially items which have a long manufacturing lead time. Spare parts used to maintain the System during the Maintenance Contract period shall be replaced by the System Supplier in a timely manner. There shall be no costs to the OWNER for spare parts in the spare parts inventory other than as included in the applicable Contract Amount as shown on the applicable pricing form or in any applicable Contract Adjustment Amount. The System Supplier should notify the OWNER whenever spare parts are removed from the OWNER's inventory and of the schedule for replacement. The OWNER may upon written notice to the System Supplier obtain any or all such spare parts directly and any costs (including the System Supplier's fee applicable thereto) related to acquiring such spare parts in the Contract Amount or in any Contract Adjustment Amount shall be promptly credited to the OWNER.
- C. Annual Determination: The System Supplier shall make an annual determination of Spare Parts Inventory requirements versus actual inventory and report the results with recommendations to the Owner along with submittal of the revised inventory (Paragraph 3.9.A Inventory).
- D. Economic Choice: The System Supplier shall make a determination of the economic choice of maintaining the spare parts inventory, with the alternative being on-site versus off-site repair, repair versus replacement, internal work versus outside purchase and purchase versus service contract. The frequency of these determinations shall be a function of the conditions in terms of accumulated experience, complexity and volume, on-Site capability and capacity, but not limited to end of service contracts. The System Supplier shall make a report of these determinations annually along with submittal of the revised inventory (Paragraph 3.9.A Inventory). In making such determinations the System Supplier is required to maximize efficiency, minimize costs to the OWNER and still meet the System Supplier's obligations under the contract documents. In no case shall the System Supplier fail to assess the implications to safety or reliability for any such economic choice.
- E. Supplies and Services: The supply inventory shall be maintained at a satisfactory level in the most cost-effective manner. At the completion date of this Contract, all residual supplies are the property of the OWNER.
- F. Equipment and Tools: The OWNER's inventory of maintenance equipment and tools shall be maintained by the System Supplier in good working condition, normal wear and tear excepted, for their intended use and stowed and protected from harmful environments.

3.10 MANUALS

- A. The maintenance manuals provided by the System Supplier under the requirements of section 34 14 13 shall be updated periodically throughout the term of the Maintenance Contract and for training purposes in accordance with any equipment modifications, procedure changes, schedule adjustments, or other pertinent items. Six (6) months prior to the end of the Contract, the System Supplier shall submit six (6) copies of manual revision pages to the OWNER for inclusion in the OWNER'S record copies of the manuals. These revisions shall update the manuals to reflect current as-built status of the System and equipment and to incorporate latest revisions of all operating procedures, maintenance schedules and procedures, and all training procedures. Any changes to the maintenance manuals shall include a safety review and update to the safety-related precautions in the manuals.

3.11 REPORTS

- A. Daily Operations Log: The OWNER shall maintain a Daily Incident Log on-site in which events of the day such as malfunction alarms, changes to the mode of operation, system disruptions, operator initiated actions, and other items required by the reference standards are recorded. The log shall show time of occurrence, time of restoration (if applicable) and provide a brief description of the incident. There shall also be a place for the central operator at the time to initial the entry. A separate log shall be executed for each day starting at 12:00 midnight. The System Supplier shall monitor the execution of these logs and from time to time, as may be justified, make notations with

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- regard to specific incidents so that these notations may be used in formulating the report explanations discussed below.
- B. Maintenance Log
1. The System Supplier shall maintain in the on-site maintenance office, a log of all preventive and corrective maintenance performed. The log shall identify subsystem assembly and components subjected to maintenance, part and serial number (where applicable), maintenance performed and/or disposition of the item for each maintenance entry.
 2. A summary of significant monthly maintenance activity including accumulated hours for the month shall be prepared from the log and included in the System Supplier's monthly report to the OWNER.
 3. The maintenance log shall in addition meet all of the requirements of the reference Paragraph 1.3 Reference Standards.
- C. Monthly Report: The System Supplier shall prepare a monthly report of maintenance activities and submit it for OWNER review with the monthly invoice. The report shall include a summary of significant maintenance activities and track accumulated hours, a summary of budget status versus the Contract Amount, a summary of planned/scheduled maintenance activities for the coming month, a summary of any problems that can be foreseen which should be of concern to the OWNER and a summary of any anticipated activity which will require OWNER approval or coordination.

3.12 RECORDS

- A. The System Supplier shall keep and maintain on-site original copies of all reports, manuals, plans, diagrams, schematics, documents and other records as defined herein) and information required by this or any other provision of the Contract Documents, including but not limited to:
5. Operations and Maintenance
 - d. Wire rope logs (historical records by group) records of failures and preventive/repair maintenance for each rope per the requirements of the reference standards in Paragraph 1.3 Reference Standards)
 - e. Preventive maintenance logs (historical records of failures and preventive/repair maintenance for each equipment group)
 - f. Other records determined as necessary during the development of the maintenance plan.
 6. Inventory of Parts
 - a. Equipment group and subdivisions thereof
 - b. Monthly record of use in maintenance task
 7. Project Documentation
 - a. All drawings
 - b. All schematic diagrams
 - c. System specifications
 - d. All test results
 - e. All Certifications and Approvals to operate
 - f. All manuals, parts list and training materials
 8. Warranties
 - a. Reports describing warranty work required
 - b. Reports describing warranty work performed
 - c. Costs and, if applicable, credit or reimbursement to OWNER for onsite labor or use of OWNER's parts
- B. All such records are the property of the OWNER. During the period of the Contract period, the OWNER shall have access to these records. The System Supplier shall guard against loss of permanent files and maintain a system for doing so. The OWNER may copy any or all such records in whatever form or forms it chooses at any time during the Contract period. Upon expiration or earlier termination of this Contract, the System Supplier shall immediately deliver all such records to the OWNER.
- C. Records shall include all reports, manuals, documents, data, statistics, computer data bases, tapes, correspondence, memorandums, drawings and other sources of information recorded in any manner or form which the System Supplier is required to record by any provisions of the Contract documents or which the System Supplier does record in connection with the System, the Work or this Contract.

3.13 SYSTEM CONDITION AT EXPIRATION

- A. It shall be the System Supplier's responsibility to assure all equipment is in compliance with codes and regulations as well as in a first class operating and maintenance condition at the expiration of the Contract, normal wear and tear excepted. All scheduled preventive maintenance work on all equipment shall have been performed as required by the preventive maintenance schedule.

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- B. The System Supplier shall also be responsible at the expiration of the Contract for the inventory of tools, spare parts, materials and supplies provided by the OWNER for all functions/systems as required for the work.
 - C. Thirty (30) days prior to expiration of the Contract, the System Supplier shall provide to the OWNER a complete and final report on the condition of all equipment, including inspection and test reports, and certified statements signed by the System Supplier representative, warranting the first class condition of operation and maintenance of all equipment and systems.
 - D. The OWNER shall have the right, but not obligation, of inspection during or after any of this work and shall notify System Supplier within seven (7) calendar days of receipt of System Supplier's certified statement of any noted discrepancies. The System Supplier shall then proceed to correct any discrepancies within or after the end of the Contract period necessary to complete the work. System Supplier shall notify the OWNER in writing upon completion of all Work.
 - E. Should the System Supplier fail to perform or complete any required Work prior to expiration of this Contract, the OWNER may have such Work performed by others at System Supplier's cost. System Supplier's retained amount may be utilized to cover such costs and any deficiency shall be promptly paid by the System Supplier to the OWNER.