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MP-1 SYSTEM INTERFACES AND COORDINATION

MP-1.1 INTRODUCTION

The Core Systems Contractor shall be responsible for all Work required to design, manufacture, install and construct the Core Systems and shall provide on-going operations and maintenance for passenger service of the HHCTCP for a period defined in the Agreement.

This Section addresses the interfaces between Core Systems elements provided by the Core Systems Contractor and any infrastructure, facilities, services, data, or other work being provided by others. The Core Systems Contractor shall inspect the related work, review the drawings and documentation provided by the City, and coordinate with the City to identify and successfully comply with all interface requirements in order to perform all Work required to provide a System that fulfills the provisions of the Contract.

The Core Systems Contractor shall coordinate all Core Systems interfaces so that the Work is properly integrated into the right-of-way, the surrounding communities, and all facilities, equipment, and data provided by others. This coordination shall be effected through the City, unless otherwise directed by the City.

The Core Systems Contractor shall establish and maintain a systematic, documented, comprehensive, and verifiable systems integration process to be applied throughout the duration of the Contract. This process shall ensure that interfaces and interaction between infrastructure, facilities, subsystems, software, and operations and maintenance activities, have been identified and engineered to function together as an integrated system. The Core Systems Contractor shall define methods to confirm compatibility between Project elements, and carry out the necessary tests or other verification activities to demonstrate that every element functions and performs properly, both individually and as part of the complete System.

MP-1.1.1 Interface Control Manual

The Core Systems Contractor shall develop an Interface Control Manual (ICM) addressing the interfaces of the Work with (i) the right-of-way and any infrastructure contained therein; (ii) the work of Fixed Facilities Contractors (FFCs), consisting of Design-Builders, final designers, and constructors of all fixed facilities associated with the Project; (iii) any adjoining facilities; (iv) public and private utilities; (v) local emergency services; and (vi) any other facilities, materials or equipment not provided by the Contractor but which are part of the Project. The ICM shall delineate the portions of the Work that interface with the work of the FFCs, and the portions of the work of each FFC that interface with the Work, identifying each specific interface and allocating responsibility, consistent with their respective contracts, among the Core Systems Contractor and the FFCs for the design of the interfacing work, and for defining the technical standards and criteria to be applied in designing, installing and constructing the interfacing work, so as to ensure that the fixed facilities work is compatible, fully coordinated and consistent with the Work.

The Core Systems Contractor shall update the ICM when significant changes to the Work or FFC Interface Work are made. The ICM shall be furnished to each Other Contractor performing work on the Project. Upon completion of development of the initial ICM, and upon completion of any update thereof, a copy shall be furnished to the City. Each FFC will be required by the City to develop the design of the fixed facilities under its Fixed Facility Contract and perform construction consistent with the requirements of the ICM.

The ICM shall list all major System elements and define which elements have a direct or indirect interface or interaction. The ICM shall, as a minimum, define:

- A. The entity within the Core Systems Contractor's organization responsible for managing and engineering the interface.
- B. The agreed interface arrangement (physical installation, power supply, signal levels, transfer characteristics, and other factors).
- C. The functional, performance, reliability, maintainability, and safety requirements of the individual elements forming the interface.
- D. The proposed method and schedule for verifying the interface integrity, the individual element performance, and the combined System performance, with appropriate pass/fail criteria for each.

The Core Systems Contractor is directed to the HHCTCP Draft ICM (Reference Documents) for description of the Project contracts planned and the preliminary analysis of the interfaces between the contracts. This document is not intended to provide to the Core Systems Contractor a detailed description of all interfaces; rather it is a description of general interface areas.

MP-1.2 REVIEW AND CERTIFICATION OF DESIGNS BY OTHERS

The Core Systems Contractor shall review the fixed facilities designs of the FFCs pursuant to the provisions of this Section, the Proposal Exhibit and other applicable provisions of the Contract Documents for patent conflicts with the core systems. The Core Systems Contractor shall review and verify that (i) the designs of the FFC interface work included in each FFC's work are generally compatible and consistent with the designs for the fixed facilities and systems developed by the Core Systems Contractor and the requirements set forth in the ICM; and (ii) the work to be performed pursuant to such design documents, if constructed and installed in accordance with such design documents, will accommodate and allow construction and installation of the Work.. The CSC shall provide to the City written comments identifying any patent conflicts in the FFC's design. CSC shall not be responsible or liable for any cost increases to the FFC's work resulting from comments provided under this Section.

- A. If the procurement process for a Fixed Facility Contract has not commenced (i.e., if a request for proposals or advertisement for bids has not been issued) as of the date of issuance of the Notice to Proceed, then, prior to issuance of the request for proposals or advertisement for bids, the preliminary design for such Fixed Facility Contract will be delivered to the Core Systems Contractor by the City, and the Core Systems Contractor shall review the preliminary design and submit its comments to the City as to whether the preliminary design of the FFC interface work is compatible and consistent, within ten (10) Work Days after receipt of such preliminary design. The Core Systems Contractor is encouraged to suggest changes that would reduce Project implementation costs or improve efficiencies in System operations and maintenance. The City shall incorporate into its preliminary design the comments set forth in the Core Systems Contractor's report.

Upon award of a Fixed Facility Contract and again upon receipt by the City of the proposed final design prepared by the FFC, the FFC's design will be provided to the Core Systems Contractor by the City, and the Core Systems Contractor shall review the design and submit its comments to the City as to whether the design of the FFC interface work is compatible and consistent, within ten (10) Work Days after receipt of such design. The City shall then furnish the Core Systems Contractor's comments to the FFC and incorporate the comments set forth in the Core Systems Contractor's report into the FFC's final design.

- B. If the procurement for a Fixed Facility Contract is in process (i.e., if a request for proposals or advertisement for bids has been issued but a contract has not been awarded) as of the date of issuance of the Notice to Proceed, the design for such Fixed Facility Contract will be provided forthwith to the Core Systems Contractor by the City, and the Core Systems Contractor shall review the design for the purposes set forth above and shall submit its comments thereon to the City within ten (10) Work Days after receipt of the design. The Core Systems Contractor is encouraged to suggest changes that would reduce Project implementation costs or improve efficiencies in System operations and maintenance. The City shall then furnish the Core Systems Contractor's comments to the FFC and shall, incorporate the comments set forth in the Core Systems Contractor's comments into the FFC's final design.
- C. Following the incorporation of the comments of the Core Systems Contractor set forth in its report into the FFC's final design, the City will submit to the Core Systems Contractor the FFC's final design for review. The Core Systems Contractor shall, within twenty (20) Work Days of its receipt of a FFC's final design, either issue the certification set forth in SP-10.2.D, below, or issue the certification with exceptions or qualifications (as described below) and deliver the certification to the City. Notwithstanding such certification, the Core Systems Contractor shall not assume any responsibility or liability or otherwise certify that the FFC's design is properly designed or engineered according to the City's requirements, laws, codes, ordinances or otherwise, or that the FFC's design is constructible, feasible, can be constructed according to the schedule/milestone requirements or that the FFC's design is free from latent conflicts or design deficiencies.

If exceptions or qualifications are taken, the Contracting Officer may either (i) submit the exceptions and qualifications to the FFC for further revisions to its design (with a resubmission to the Core Systems Contractor for certification pursuant to paragraph D, or (ii) if the City disagrees with the exceptions or qualifications taken by the Core Systems Contractor, refer the matter to the dispute resolution process set forth in SP-7. The FFC's design, as certified pursuant to this Section, is referred to herein as the "Approved Design".

- D. In each case, the Core Systems Contractor's design review certification shall include the following language:

"The Core Systems Contractor hereby certifies to the City that the design concepts for the FFC interface work (as defined in the Contract between the City and the Core Systems Contractor dated as of _____, 20XX (the "Contract")) shown on the design documents listed on Exhibit __ attached hereto, and all specific designs, details and other information related to the FFC interface work shown on the design documents, are generally compatible and consistent with the designs for the construction and installation of all Work to be performed by the Core Systems Contractor under the Contract, and with the requirements set forth in the ICM issued by the Core Systems Contractor dated _____, and that the work to be performed pursuant to the design documents listed on Exhibit ____, if constructed in accordance with the design documents, will accommodate and allow construction and installation of the Work to be performed under the Contract"

- E. Upon the delivery by the Core Systems Contractor of a certification as set forth in this Section MP-1.2, paragraph D above, the Core Systems Contractor shall be estopped from making or raising a Claim or defense of any nature based, directly or indirectly, on allegations that the designs of the FFC interface work reflected in the design documents to which the certification relates are not compatible, coordinated and consistent with the designs for the Core Systems Contractor's Work and the requirements of the ICM, or that work performed in accordance with

the design documents will not accommodate or allow construction and installation of the Work without interference or conflict, or allegations of similar import, provided such claim is based on a conflict or design deficiency of a nature that CSC reasonably should have discovered during the review process.

MP-1.3 REVIEW OF SCHEDULING OF FIXED FACILITY CONTRACT WORK

At any time after the date of execution of the Contract when the City begins the procurement process for a Fixed Facility Contract, but prior to the issuance of the related request for construction bids, the City will submit to the Core Systems Contractor for its review and comment a proposed schedule for the work to be performed under that particular Fixed Facility Contract. The Core Systems Contractor shall (i) analyze the proposed scheduling of the work under such Fixed Facility Contract in terms of the CPM Schedule for the Work and the timely, orderly and efficient conduct of the Work; (ii) identify to the City all activities, milestones and associated dates with respect to the work of such Fixed Facility Contract that are critical in ensuring the timely, orderly and efficient completion of the Work; and (iii) furnish to the City a recommended schedule, optimizing the performance and completion of the work of such Fixed Facility Contract.

After award of the Fixed Facility Contract for construction, the City will require each FFC responsible to provide to the Core Systems Contractor a copy of the proposed detailed CPM schedule required to be submitted by the FFC to the City. The Core Systems Contractor shall review each such proposed schedule for the purposes of determining conformity with the Core Systems Contractor's Baseline Schedule, and shall provide any comments on the proposed CPM schedule to the City.

MP-1.4 CORE SYSTEMS CONTRACTOR'S SYSTEMS INTEGRATION MANAGER

The Core Systems Contractor shall appoint a full-time Systems Integration Manager who shall support the City's Systems Integration Manager as required to ensure that all interfaces affecting the Work are identified and resolved in a manner that is compatible, coordinated, and consistent with the Work. Each FFC will also be required to appoint its own Systems Integration Manager. The Core Systems Contractor's Systems Integration Manager shall meet with the City and the Systems Integration Manager of each FFC on a regularly scheduled basis as determined by the City's Systems Integration Manager, to track and resolve interface issues related to HHCTCP design, construction, testing, and operation.

The Core Systems Contractor's Systems Integration Manager shall develop and maintain the ICM.

Once the contact rail has been energized over any segment of the System, the Core Systems Contractor's Systems Integration Manager shall henceforth coordinate access to that segment of the System.

MP-1.5 COORDINATION WITH OTHER CONTRACTORS

The Fixed Facility Contracts will be awarded during the period of the Core Systems DBOM Contract Work. The performance of the Fixed Facility Contracts may affect the scheduling and performance of the Work. Promptly following the execution of each Fixed Facility Contract, the Core Systems Contractor and the FFC will meet to discuss the interrelationship of their respective schedules, identifying all interfacing activities and milestones that are critical in ensuring the timely, orderly and efficient completion of each other's work.

MP-1.5.1 Schedule Coordination Meetings

In addition to the requirements of SP-4.9 Coordination, during the term of the Contract, the Core Systems Contractor shall attend a meeting with all other active Project contractors no less frequently than monthly at the Core Systems Contractor's main Site office or such other place as may be mutually agreed upon.

The City will determine the date and time of each Contractor Schedule Coordination Meeting and shall notify the other Project contractors in writing at least ten (10) Work Days prior to each such meeting. The City will lead each Contractor Schedule Coordination Meeting. The purpose of the Contractor Schedule Coordination Meetings shall be for all Project contractors to (i) coordinate schedules and construction activities to facilitate the design and construction of the various elements of the Project; (ii) allow for the Core Systems installation and the Fixed Facilities construction work to occur on a coordinated, efficient and expeditious basis; and (iii) minimize waste and duplication of efforts by the Project contractors.

MP-1.5.2 Scheduling of Work

The Core Systems Contractor shall cooperate and coordinate with all other Project contractors in scheduling and performing the Work and shall furnish to other Project contractors, upon request, copies of the Core Systems Contractor's CPM Schedule. The Core Systems Contractor shall proceed diligently to complete the Work in a manner that will permit other Project contractors to complete the work they are required to perform under their respective contracts by the interim and final completion dates set forth therein.

MP-1.5.3 Coordination of Activities

The Core Systems Contractor shall cooperate and coordinate with all other Project contractors with respect to aspects of its performance under the Contract which affect the performance of any other Project contractors. The Core Systems Contractor shall coordinate vendor delivery schedules and testing schedules to avoid impeding access of other Project contractors to their respective equipment and materials. The Core Systems Contractor shall cooperate with other Project contractors in adequately securing common gates and access ways, and establishing mutually acceptable procedures to protect the security of the equipment and materials of all Project contractors.

MP-1.6 INSPECTION OF FIXED FACILITIES

The FFCs will complete the construction and installation of the fixed facilities under their respective contracts at various stages during the Core Systems Contractor's Work. In many areas, the adequacy of the FFCs' work will influence the efficiency of the Core Systems Contractor's Work. Therefore, the Core Systems Contractor shall accompany the City on scheduled milestone inspections of the FFCs' work and assist in the formulation of any punchlists for corrective action. These inspections will be in accordance with the Fixed Facility Contract and will be performed under the authority of the City. The City and Core Systems Contractor will mutually agree as to the schedule of these inspections.

MP-1.7 RIGHT-OF-WAY REQUIREMENTS

Other contractors will confirm City-provided property rights and easements, occupancy rights for streets and public lands, acquisition of property for the Project, and any additional right-of-way required by the contractors for the Project. Any right-of-way needed by the Core Systems Contractor shall be identified and submitted to the City for review. Other than the right-of-way requirements identified by the Core Systems Contractor, the Work should be confined within the right-of-way provided for the City.

MP-1.8 MAINTENANCE AND STORAGE FACILITY

The site for the Maintenance and Storage Facility (MSF) will be provided by the City, as shown on the RFP Drawings. The Core Systems Contractor shall be responsible for coordinating with the MSF Design-Build Contractor on the detailed design of this facility and its construction, finish-out, furnishings, and equipping, including the Operations Control Center, supervisory offices, shops and other rooms, and passenger vehicle storage areas. The Core Systems Contractor's ICM shall provide detailed information regarding these interfaces.

The Core Systems Contractor shall define the power interfaces for its equipment in the ICM. Any and all costs associated with additional automation/features of the Manual operation areas of the MSF (See Design Criteria 14.7) are fully the Core System Contractor's responsibility.

MP-1.9 PUBLIC AND PRIVATE FACILITIES AND AGENCIES

MP-1.9.1 Construction Activities

The Core Systems Contractor shall be responsible to mitigate impacts to traffic, bus transit operations, and other transportation services; pedestrian access; utilities, including electricity, water, sewer, and gas; and other services along and adjacent to all public and private property affected by the construction of the Core Systems. The Core Systems Contractor shall complete all necessary design and implementation activities to meet this requirement and shall provide to the City and other approving or permitting agencies its mitigation plans.

MP-1.9.2 Master Agreements

The Core Systems Contractor shall support the City in negotiating master agreements with the affected public and private agencies, to define responsibilities, procedures, costs, and schedules, as appropriate, to provide for completion of the Work. The Core Systems Contractor shall work with the City and the local electric utility to coordinate the most cost-effective approach for electrical services for the Core Systems, including support in negotiating service rate structure for the on-going operations of the System. The City shall provide those third party agreements associated with the Core Systems Work with the RFP (refer to Engineering Data).

MP-1.9.3 Permit Process

The Core Systems Contractor shall identify the permits required for implementation of the Core Systems and on-going System operations and shall support the City in obtaining these permits.