

**THIS PRINT COVERS CALENDAR ITEM NO.: 11**

**SAN FRANCISCO  
MUNICIPAL TRANSPORTATION AGENCY**

**DIVISION:** Transit

**BRIEF DESCRIPTION:**

Authorizing the Director of Transportation to execute a contract with Complete Coach Works to perform mid-life overhaul services to replace and rehabilitate systems for up to 152 standard (40-ft) Hybrid Electric New Flyer coaches and 69 articulated (60-ft) Hybrid Electric New Flyer coaches, in an amount not to exceed \$95,443,127.86, and for a term not to exceed five years.

**SUMMARY:**

- Maintenance data shows that rehabilitation of the coach fleet can sustain current reliability, help reduce incidents of breakdowns, prevent service interruptions, and help reduce costly repairs. Replacing or overhauling the sub-component systems will bring the coaches into a state of good repair, therefore sustaining coach reliability and availability.
- The full Mid-Life Overhaul Program will consist of three phases, and this Phase II will include substantial work on 152 40-ft hybrid coaches and 69 60-ft hybrid coaches.
- The contract amount is for approximately \$95 million and the funding sources for this project are expected to be the Federal Transit Administration formula funds, San Francisco County Transportation Authority Proposition L Transportation Sales Tax funds, Proposition B General funds, Low Carbon Fuel Sales funds, and Developer Fees.
- The MTA Board approved the request for proposals (RFP) on July 16, 2024, in Resolution No. 240618-083, under the SFMTA Board policy that it must approve all RFPs for contracts requiring Board of Supervisors approval, and San Francisco Charter Section 9.118 requires the Board of Supervisors to approve all non-construction contracts estimated to be over \$10 million.
- On August 30, 2024, SFMTA Fleet Engineering issued an RFP for the Mid-Life Overhaul Project to replace and rehabilitate systems for up to 221 coaches.
- On November 8, 2024, the SFMTA received a proposal from Complete Coach Works (CCW) to perform the work.
- Per San Francisco Administrative Code Section 21.4(b), the SFMTA project team entered into negotiations with CCW.
- The SFMTA now requests authorization for the Director of Transportation to execute Contract No. SFMTA-2024-74-FTA: Mid-Life Overhaul of the 40-ft & 60-ft Hybrid Electric coaches.

**ENCLOSURES:**

1. SFMTA Board Resolution
2. Contract with Complete Coach Works

**APPROVALS:**

**DATE**

DIRECTOR *Judson True*

October 2, 2025

SECRETARY *Chilms*

October 2, 2025

**ASSIGNED SFMTAB CALENDAR DATE:** October 7, 2025

## **PURPOSE**

To authorize the Director of Transportation to execute a contract with Complete Coach Works, to perform mid-life overhaul services to replace and rehabilitate systems for up to 152 standard (40-ft) Hybrid Electric New Flyer coaches and 69 articulated (60-ft) Hybrid Electric New Flyer coaches, in an amount not to exceed \$95,443,127.86, and for a term not to exceed five years.

## **STRATEGIC PLAN GOALS AND TRANSIT FIRST POLICY PRINCIPLES**

- Goal 5: Deliver reliable and equitable transportation services.
- Goal 6: Eliminate pollution and greenhouse gas emissions by increasing use of transit, walking, and bicycling.
- Goal 8: Deliver quality projects on-time and on-budget.
- Goal 9: Fix things before they break and modernize systems and infrastructure.
- Goal 10: Position the agency for financial success.

This action supports the following SFMTA Transit First Policy Principles:

1. To ensure quality of life and economic health in San Francisco, the primary objective of the transportation system must be the safe and efficient movement of people and goods.
2. Public transit, including taxis and vanpools, is an economically and environmentally sound alternative to transportation by individual automobiles. Within San Francisco, travel by public transit, by bicycle and on foot must be an attractive alternative to travel by private automobile.
9. The ability of the City and County to reduce traffic congestion depends on the adequacy of regional public transportation. The City and County shall promote the use of regional mass transit and the continued development of an integrated, reliable, regional public transportation system.
10. The City and County shall encourage innovative solutions to meet public transportation needs wherever possible and where the provision of such service will not adversely affect the service provided by the Municipal Railway.

## **DESCRIPTION**

The SFMTA began its current fleet replacement program in 2013. This program represents a strong partnership between the fleet engineering and maintenance staff. Over this decade long process, the SFMTA has purchased 856 coaches. Additionally, the SFMTA has transformed its rubber tire asset management program by adopting the following principals:

- Establish a consistent average fleet age of 5-8 years and smooth out peaks and valleys for coach maintenance.
- Develop performance-based specifications for procurements that prioritize coach safety and

reliability and encourages industry innovation and maintainability through proven design & commonality of replacement parts.

- Continue robust maintenance standards and practices established in 2014 including maintaining or exceeding Original Equipment Manufacturer (OEM) schedules and updating based on fleet trends; and institutionalize a midlife overhaul program to promote excellent performance throughout the full life cycle of the coach.
- Support the San Francisco Climate Action Plan and related city policies by investing in transit service to promote a high transit mode share, as well as continuing to invest in low- and zero-emission vehicles.
- Anticipate and accommodate vehicle expansion and fleet mix needs associated with current and future projected ridership growth, as well as major construction projects
- Continue reducing the spare ratios to 20 percent for large sub-fleets and 30 percent for sub-fleets with less than 50 vehicles

As a result of our adherence to these principles, the performance of the rubber tire fleet is stronger than it has been in at least three decades and is consistently maintaining a mean distance between service interruptions (MDBSI) that meets the daily coach availability demand.

Conducting a mid-life overhaul program is essential to maintaining the rubber tire fleet's current performance, so that the fleet does not begin to break down as it reaches the end of its useful life (12 years for the 40-ft and 60-ft hybrid buses). Additionally, a mid-life overhaul program is essential for efficient and cost-effective maintenance. For these reasons, SFCTA Proposition K Transportation Sales Tax (Prop K) and Prop L grant agreements require a commitment by the SFMTA to perform mid-life overhauls.

This project is Phase II of the overhaul program. It will address hybrid electric vehicles in the fleet and will include substantial work to 152 40-ft hybrid electric coaches, and 69 60-ft hybrid electric coaches.

The RFP for the 221 coaches was issued on August 30, 2024, with a submittal deadline of November 8, 2024. Complete Coach Works (CCW) was the only contractor to submit a proposal in response to this RFP. After the SFMTA thoroughly reviewed the proposal, per Admin Code Section 21.4(b), the SFMTA project team entered negotiations with CCW.

The contractor will be required to repair, refit, test, and commission each coach completely into revenue service condition in the same configuration as the rest of the overhauled coaches. The anticipated work includes, but is not limited to:

- Engineering analysis of structural damage, designing repair solution(s), and performing structural repairs as required.
- Restoring interior and exterior finish to match SFMTA livery.
- Identifying, repairing, replacing, reassembling, and re-installing all missing and damaged components as needed. The contractor is required to assume that the SFMTA will not be able to provide components or parts. The SFMTA will provide all available, repair-related

documentation (e.g., maintenance manuals with overhaul instructions and parts lists) to the contractor.

- Rebuilding each coach to the current specified design configuration even if that coach is not yet equipped with the most recent modifications.
- Performing acceptance testing in accordance with OEM procedures, dimensional verification, and quality assurance verification at the contractor's facility, and performing acceptance testing and commissioning after delivery of the coaches.
- Providing warranty support and support service for up to one year after acceptance of each vehicle.
- Performing unforeseeable work as directed by the SFMTA: The SFMTA has included an allowance for conditions that are latent in the coaches and arise in the course of other work. Unforeseeable work will be performed on a negotiated or time-and-materials (force account) basis.

The contractor will be responsible for any damage to these coaches or their components while the coaches are in the contractor's possession, including during shipment of the coaches. The contractor will repair or replace any damaged item at no cost to the SFMTA.

The contractor will supply all labor, inspections, engineering, tools, materials, parts, facilities, and equipment required to restore the coaches to the configuration of the rest of the fleet, to provide a level of performance, safety, quality of materials, workmanship, and reliability equal to the original coach, and will prepare all required detailed drawings, schematics, design calculations, stress analysis, and other specified technical documentation.

While the Technical Specifications in Volume 2 of the contract are intended to be comprehensive, they provide the functional requirements of the coach and do not show the exact details of the work to be performed. The contractor will have the overall responsibility of providing an adequate design of these coaches for the SFMTA service conditions. These coaches will be in regular daily SFMTA revenue service; therefore, the contractor must supplement the Technical Specifications with its own experience and know-how in overhauling and reconfiguring these coaches.

The contractor will be required to comply with all applicable federal, state, and local laws and regulations. In addition, the contractor is required to adhere to all applicable Society of Automotive Engineers (SAE), Institute of Electrical and Electronics Engineers (IEEE), and industries standards. It will be the full responsibility of the contractor to dispose of all removed equipment in a safe and legal manner.

## **STAKEHOLDER ENGAGEMENT**

Since this is an overhaul project that affects only the removal, replacement or rehabilitation of the coach systems, the SFMTA did not conduct public outreach. Within the SFMTA, Fleet Engineering staff worked with Vehicle Maintenance Personnel, Accessible Services, Transit Planning, and Labor Workforce representatives.

## **ALTERNATIVES CONSIDERED**

The alternative considered was to repair or replace these systems as they fail during service, but

that would impact coach availability and reliability. The mid-life overhaul program ensures that the transit fleet continues to operate reliably for its full useful life. Planning for mid-life overhauls also reduces the impact to the riding public, as work is performed on a predictable basis. In lieu of a mid-life program, the SFMTA would need to address component failures on a case-by-case, reactive basis, which would diminish the overall availability and reliability of this critical fleet. This is costly and disruptive to customers and would result in higher rates of fleet failures while in service. In addition, the unscheduled maintenance and labor costs would also impact SFMTA's operating budget.

## FUNDING IMPACT

A budget of \$120,573,287 has been developed for this project with funding as outlined below. The budget includes the cost of the coach repairs, spare parts, special tools, schematics, unforeseeable work, exterior body work, taxes, project engineering, maintenance support, and consultant support. The following is the detailed project budget and funding plan:

<b>Contract</b>	<b>Costs</b>
<b>Complete Coach Works Contract Total</b>	
Vehicles (221)	\$89,943,127.86
Spare Parts	\$250,000.00
Special Tools	\$250,000.00
As-Built Drawings, Updated Schematics, and Parts Lists	Inclusive
Unforeseeable Work and Exterior Body Work	\$5,000,000.00
<b>Subtotal Complete Coach Works Contract</b>	<b>\$95,443,127.86</b>
<b>Other Associated Costs</b>	
Sales Tax (8.625%)	\$8,231,969.78
Soft Costs –Planning, Preliminary Design, Detail Design, Project Administration, Inspection and Consultant Support.	11,750,344.20
In-house Materials Purchases	\$5,147,845.16
<b>Total Contract Cost</b>	<b>\$120,573,287.00</b>

<b>Funding Sources</b>	<b>Amount</b>
FTA Section 5307 Urbanized Area Formula Funds	\$91,008,083
CTC State Transportation Improvement Program Funds	\$7,952,000
CCSF Low Carbon Fuel Sales	\$561,331
Mission Rock Developer Fees	\$5,267,431
General Fund Population Baseline	\$3,144,442
SFCTA Sales Tax	\$12,640,000
<b>Total</b>	<b>\$120,573,287</b>

### Abbreviations:

- FTA – Federal Transit Administration
- CTC – California Transportation Commission
- CCSF – City & County of San Francisco
- SFCTA – San Francisco County Transportation Authority

## **ENVIRONMENTAL REVIEW**

On June 17, 2025, the SFMTA, under authority delegated by the Planning Department, determined that Contract No. SFMTA-2024-74-FTA is not a “project” under the California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations Sections 15060(c) and 15378(b).

A copy of the CEQA determination is on file with the Secretary to the SFMTA Board of Directors and is incorporated herein by reference.

## **OTHER APPROVALS RECEIVED OR STILL REQUIRED**

The contract award will require approval from the Board of Supervisors.

The City Attorney's Office has reviewed this calendar item.

## **RECOMMENDATION**

Staff recommends that the SFMTA Board approve the request to authorize the Director of Transportation to execute a contract with Complete Coach Works to perform mid-life overhaul services to replace and rehabilitate systems for up to 152 standard (40-ft) Hybrid Electric New Flyer coaches and 69 articulated (60-ft) Hybrid Electric New Flyer coaches, in an amount not to exceed \$95,443,127.86, and for a term not to exceed five years.

SAN FRANCISCO  
MUNICIPAL TRANSPORTATION AGENCY  
BOARD OF DIRECTORS

RESOLUTION No. \_\_\_\_\_

WHEREAS, The current rubber tire fleet consistently maintains a mean distance between service interruptions (MDBSI) that meets the daily coach availability demand and is the best performance the fleet has achieved in several decades; and,

WHEREAS, A midlife overhaul program is needed to sustain the current MDBSI until the end of the asset life of each coach (12 years for 40-ft and 60-ft hybrid coaches); and,

WHEREAS, The Transportation Authority Proposition K and Proposition L Transportation Sales Tax grant agreements require the SFMTA to perform mid-life overhauls on all vehicles; and,

WHEREAS, This overhaul program will include substantial work to 221 coaches that have reached their mid-life period; and,

WHEREAS, On July 16, 2024, in Resolution No. 240618-083 the MTA Board approved a Request for Proposals (RFP), under the San Francisco Municipal Transportation Agency (SFMTA) Board policy that it approve all RFPs for contracts requiring Board of Supervisors approval, and San Francisco Charter Section 9.118 requires the Board of Supervisors to approve all non-construction contracts estimated to be over \$10 million; and,

WHEREAS, On August 30, 2024, SFMTA Fleet Engineering issued an RFP for the Mid-Life Overhaul Phase II to replace or rehabilitate systems for up to 152 standard (40-ft) Hybrid Electric New Flyer coaches and 69 articulated (60-ft) Hybrid Electric New Flyer coaches; and,

WHEREAS, On November 8, 2024, the SFMTA received one proposal from Complete Coach Works (CCW); and,

WHEREAS, Per Admin Code Section 21.4(b), the SFMTA project team entered negotiations with CCW; and,

WHEREAS, SFMTA staff has negotiated an agreement with Complete Coach Works (CCW), to perform Mid-Life Overhaul Phase II to replace or rehabilitate systems for up to 152 standard (40-ft) Hybrid Electric New Flyer coaches and 69 articulated (60-ft) Hybrid Electric New Flyer coaches; and,

WHEREAS, On June 17, 2025, the SFMTA, under authority delegated by the Planning Department, determined that Contract No. SFMTA-2024-74-FTA is not a “project” under the California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations Sections 15060(c) and 15378(b); and,

WHEREAS, A copy of the CEQA determination is on file with the Secretary to the

SFMTA Board of Directors and is incorporated herein by reference; now, therefore, be it

RESOLVED, That the San Francisco Municipal Transportation Agency Board of Directors authorizes the Director of Transportation to execute, in a form substantially similar to that provided to this body, Contract No. SFMTA-2024-74-FTA: Mid-Life Overhaul of the 40-ft & 60-ft Hybrid Electric coaches with Complete Coach Works, to perform mid-life overhaul services to replace and rehabilitate systems for up to 152 standard (40-ft) Hybrid Electric New Flyer coaches and 69 articulated (60-ft) Hybrid Electric New Flyer coaches, in an amount not to exceed \$95,443,127.86, and for a term not to exceed five years; and, be it further

RESOLVED, That the San Francisco Municipal Transportation Agency Board of Directors recommends this matter to the Board of Supervisors for its approval of Contract No. SFMTA-2024-74-FTA.

I certify that the foregoing resolution was adopted by the San Francisco Municipal Transportation Agency Board of Directors at its meeting of October 7, 2025.

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Secretary to the Board of Directors  
San Francisco Municipal Transportation Agency



**City and County of San Francisco  
Municipal Transportation Agency  
One South Van Ness Ave., 7<sup>th</sup> Floor  
San Francisco, California 94103**

**Agreement between the City and County of San Francisco and**

**Complete Coach Works**

**Contract No. SFMTA-2024-74-FTA**

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**City and County of San Francisco  
Municipal Transportation Agency  
One South Van Ness Ave., 7<sup>th</sup> Floor  
San Francisco, California 94103**

**Agreement between the City and County of San Francisco and  
Complete Coach Works  
Contract No. SFMTA-2024-74-FTA**

This Agreement is made as of \_\_\_\_\_, in the City and County of San Francisco (City), State of California, by and between Complete Coach Works, a California corporation (Contractor), and City, a municipal corporation, acting by and through its Municipal Transportation Agency (SFMTA).

**Recitals**

**A.** The SFMTA wishes to obtain the services of a qualified firm to perform system replacement and overhaul/rehabilitation for up to 152 standard (40') Hybrid Electric New Flyer Coaches, and 69 articulated (60') Hybrid Electric New Flyer Coaches, as described in the Request for Proposals (RFP), Volume 1, and in the Technical Specifications, Volume 2.

**B.** This Agreement was competitively procured as required by San Francisco Administrative Code Chapter 21.1 through a Request for Proposals (RFP) issued on August 30, 2024, pursuant to which City selected Contractor as the highest-qualified scorer.

**C.** The Small Business Enterprise (SBE) subcontracting participation requirement for this Agreement is 10%.

**D.** Contractor represents and warrants that it is qualified to perform the Services required by City as set forth under this Agreement.

**E.** The City's Civil Service Commission approved Contract number DHRPSC0005375 for this Agreement on July 7, 2025.

**F.** The City's Board of Supervisors approved this Agreement by [insert resolution number] on [insert date of Commission or Board action].

Now, THEREFORE, the parties agree as follows:

**Article 1      Definitions**

The following definitions apply to this Agreement.

**1.1**      **“Acceptance”** means the formal written acceptance by the City that all Work, or a specific portion thereof, under the Contract has been satisfactorily completed.

**1.2** “**Agreement**” or “**Contract**” means this contract document covering the performance of the Work and furnishing of labor, materials, equipment, tools, and services, including Work incidental to the procurement, to include the Technical Specifications, all Conformed Contract Documents, the Contract bonds or other security all attached appendices, and all applicable City Ordinances and Mandatory City Requirements that are specifically incorporated into this Agreement by reference as provided herein.

**1.3** “**Award**” means notification from the City to Contractor of acceptance of Contractor’s Proposal, subject to the execution and approval of a satisfactory Contract and bond to secure the performance of the Contract, and to such other conditions as may be specified or otherwise required by law.

**1.4** “**Buses**” or “**Coaches**” or “**Vehicles**” means the vehicles rehabilitated under this Contract.

**1.5** “**CCO**” means the SFMTA Contract Compliance Office.

**1.6** “**City**” or “**the City**” means the City and County of San Francisco, a municipal corporation, acting by and through its Municipal Transportation Agency.

**1.7** “**City Data**” means that data as described in Article 13 of this Agreement, which includes, without limitation, all data collected, used, maintained, processed, stored, or generated by or on behalf of the City in connection with this Agreement. City Data includes, without limitation, Confidential Information.

**1.8** “**CMD**” means the Contract Monitoring Division of the City.

**1.9** “**Conditional Acceptance**” means the circumstance in which a Vehicle has been delivered to the SFMTA and placed in revenue service despite not having met all requirements for Acceptance.

**1.10** “**Confidential Information**” means confidential City information including, but not limited to, personal-identifiable information (PII), protected health information (PHI), or individual financial information that is subject to local, state or federal laws restricting the use and disclosure of such information, including, but not limited to, Article 1, Section 1 of the California Constitution; the California Information Practices Act (Civil Code § 1798 et seq.); the California Confidentiality of Medical Information Act (Civil Code § 56 et seq.); the federal Gramm-Leach-Bliley Act (15 U.S.C. §§ 6801(b) and 6805(b)(2)); the privacy and information security aspects of the Administrative Simplification provisions of the federal Health Insurance Portability and Accountability Act (45 CFR Part 160 and Subparts A, C, and E of part 164); and San Francisco Administrative Code Chapter 12M (Chapter 12M) Confidential Information includes, without limitation, City Data.

**1.11** “**Conformed Contract Documents**” Contract documents revised to incorporate all addenda, and information included in the Contractor's Proposal and accepted by the City.



**1.12 “Contract Administrator”** means the contract administrator assigned to the Contract by the SFMTA, or his or her designated agent.

**1.13 “Contract Modification”** means a written amendment to the Contract, agreed to by the City and Contractor, covering changes in the Conformed Contract Documents within the general scope of the Contract and establishing the basis of payment and time adjustments for the Work affected by the changes.

**1.14 “Contractor”** means Complete Coach Works, 1863 Service Court, Riverside, CA 92507.

**1.15 “Controller”** means the Controller of the City.

**1.16 “Correction”** means the elimination of a Defect.

**1.17 “Day”** (whether or not capitalized) means a calendar day, unless otherwise designated.

**1.18 “Defect”** means any patent or latent malfunctions or failure in manufacture or design of any component or subsystem.

**1.19 “Deliverables”** means Contractor’s work product resulting from the Services provided by Contractor to City during the course of Contractor’s performance of the Agreement, including without limitation, the work product described in the “Technical Specifications” attached as Appendix A.

**1.20 “Director”** means the Director of Transportation of the SFMTA or his or her designee.

**1.21 “Disadvantage Business Enterprise” or “DBE”** means a for-profit, small business concern owned and controlled by a socially and economically disadvantaged person(s) as defined in 49 Code of Federal Regulations (CFR) Section 26.5.

**1.22 “Effective Date”** means the date the SFMTA notifies Contractor through a Purchase Order that the Controller has certified the availability of funds for this Agreement (as provided in Section 3.1) and the SFMTA directs Contractor to commence performing the Services.

**1.23 “Exterior Body Work” or “Body Work”** means the repair of miscellaneous damage to the exterior of the Coaches.

**1.24 “Final Acceptance”** means the formal written Acceptance by the Director of Transportation or his or her designee that all Contract Deliverables for the Contract have been satisfactorily completed and accepted.

**1.25 “First Article Coach”** means the first Coach on each Sales Release (SR) order completed with the Overhaul Work.

**1.26 “Force Account”** refers to Unforeseeable Work or Exterior Body Work performed on a time-and-materials basis when there is no existing agreement on cost (see the Force Account provisions in Appendix C.

**1.27 “Mandatory City Requirements”** means those City laws set forth in the San Francisco Municipal Code, including the duly authorized rules, regulations, and guidelines implementing such laws that impose specific duties and obligations upon Contractor.

**1.28 “Notice to Proceed”** means written notice to the Contractor of the date on which it shall begin prosecution of the Work to be done under the Contract.

**1.29 “Party” and “Parties”** mean the City and Contractor either collectively or individually.

**1.30 “Project Manager”** means the project manager assigned to the Contract for the SFMTA, or his or her designated agent.

**1.31 “Proposal”** means the technical and management information and prices submitted by Contractor in response to the RFP.

**1.32 “Purchase Order”** means the written order issued by the City to the Contractor, authorizing the Effective Date as provided in Section 2.1.

**1.33 “Request for Proposals” or “RFP”** means the Request for Proposals (Volumes 1 and 2) issued by the SFMTA on August 30, 2024 for the system replacement and overhaul/rehabilitation for up to 152 standard (40’) Hybrid Electric New Flyer Coaches, and 69 articulated (60’) Hybrid Electric New Flyer Coaches, as amended by addenda.

**1.34 “San Francisco Municipal Transportation Agency” or “SFMTA”** means the agency of City with jurisdiction over all surface transportation in San Francisco, as provided under Article VIIIA of the City’s Charter.

**1.35 “Small Business Enterprise” or “SBE”** means a for-profit, small business concern with a three-year average gross revenue that do not exceed the thresholds set forth in RFP Appendix A, Section III.B and either: 1) is certified under any of the following programs: the State of California's Small Business Program with the Department of General Services (State Program), the City and County of San Francisco's LBE Program (City Program), or the California Unified Certification Program (Federal DBE program), or 2) has received written confirmation from CCO that it meets the SFMTA’s program eligibility requirements.

**1.36 “Subcontractor” or “Supplier”** means any individual, partnership, firm, or corporation that, under an agreement with Contractor, undertakes integrally on the Project the partial or total design, manufacture, performance of, or furnishes one or more items of work under the terms of the Contract. As used in this Agreement, the terms Subcontractor and Supplier are synonymous.

**1.37 “Technical Specifications”** means the portion of the Conformed Contract Documents found in Volume 2 that contain the specifications, provisions, and requirements that detail the Work and the materials, products (including the assembly and testing), and other requirements relative to the performance of the Work.

**1.38 “Unavoidable Delay”** means an interruption of the work beyond the control of the Contractor, which the Contractor could not have avoided by the exercise of care, prudence, foresight, and diligence. Such delays include and are limited to acts of God; floods; windstorms; tornadoes; wars; riots; insurrections; epidemics; quarantine restrictions; strikes and lockouts; freight embargoes; acts of a governmental agency; priorities or privileges established for the manufacture, assembly, or allotment of materials by order, decree, or otherwise of the United States or by any department, bureau, commission, committee, agent, or administrator of any legally constituted public authority; changes in the work ordered by the City insofar as they necessarily require additional time in which to complete the entire work; the prevention by the City of the Contractor's commencing or prosecuting the work. The duration of said Unavoidable Delay shall be limited to the extent that the commencement, prosecution, and completion of the work are delayed thereby, as determined by the City.

**1.39 “Unforeseeable Work”** means any work performed by the Contractor that is not reasonably able to be anticipated or expected upon the delivery of the Coaches and that is not included in the Scope of Work found in the Technical Specifications.

**1.40 “Work” or “Services”** means the furnishing of all design, engineering, manufacturing, labor, supervision, services, products, materials, machinery, equipment, tools, supplies, and facilities and the performance of all requirements called for by the Contract and necessary to the completion and warranty of the Vehicles, including all services, labor, supervision, materials, equipment, actions and other requirements to be performed and furnished by Contractor under this Agreement.

**1.41 “Working Days”** means those Days during which regular business is conducted, excluding Saturdays, Sundays, and all Federal, State, and municipal holidays that are observed by the SFMTA during the duration of the Contract.

## **Article 2      Term of the Agreement**

**2.1**      The term of this Agreement shall commence on the Effective Date and expire five years thereafter, unless earlier terminated as otherwise provided herein.

**2.2**      The City has two options to renew the Agreement for a period of 12 months each. The City may extend this Agreement beyond the expiration date by exercising an option at the Director of Transportation's sole and absolute discretion and by modifying this Agreement as provided in Section 11.5 (Modification of this Agreement).

## **Article 3 Financial Matters**

### **3.1 Certification of Funds; Budget and Fiscal Provisions**

**3.1.1 Termination in the Event of Non-Appropriation.** This Agreement is subject to the budget and fiscal provisions of the City's Charter. Charges will accrue only after prior written authorization certified by the Controller in the form of a Purchase Order, and the amount of City's obligation hereunder shall not at any time exceed the amount certified for the purpose and period stated in such advance authorization. This Agreement will terminate without penalty, liability or expense of any kind to City at the end of any fiscal year if funds are not appropriated for the next succeeding fiscal year. If funds are appropriated for a portion of the fiscal year, this Agreement will terminate, without penalty, liability or expense of any kind at the end of the term for which funds are appropriated. City has no obligation to make appropriations for this Agreement in lieu of appropriations for new or other agreements. City budget decisions are subject to the discretion of the Mayor and the Board of Supervisors. Contractor's assumption of risk of possible non-appropriation is part of the consideration for this Agreement.

THIS SECTION CONTROLS AGAINST ANY AND ALL OTHER PROVISIONS OF THIS AGREEMENT.

**3.1.2 Maximum Costs.** The City's payment obligation to Contractor cannot at any time exceed the amount certified by City's Controller for the purpose and period stated in such certification. Absent an authorized Emergency per the City Charter or applicable Code, no City representative is authorized to offer or promise, nor is the City required to honor, any offered or promised payments to Contractor under this Agreement in excess of the certified maximum amount without the Controller having first certified the additional promised amount and the Parties having modified this Agreement as provided in Section 11.5 (Modification of this Agreement).

**3.2 Authorization to Commence Work.** Contractor shall not commence any work under this Agreement until City has issued formal written authorization to proceed, such as a Purchase Order, or Notice to Proceed. Such authorization may be for a partial or full scope of work.

### **3.3 Compensation**

#### **3.3.1 Calculation of Charges and Contract Not to Exceed Amount .**

Contractor shall provide an invoice to the SFMTA pursuant to the Schedule set out in Appendix B.5 (Payment Milestones). Compensation shall be made for goods and/or Services identified in the invoice that the Director of Transportation, or his or her designee, in his or her sole discretion, concludes have been satisfactorily performed. In no event shall the amount of this Agreement exceed Ninety five million four hundred forty-three thousand one hundred twenty eight dollars (\$95,443,128). The breakdown of charges associated with this Agreement appears in Appendix B.1, (Schedule of Prices). Compensation for Unforeseeable Work and Exterior Body Work shall be negotiated as a lump sum or, if the parties are unable to agree on an amount,

on a Force Account basis with a maximum not-to-exceed amount, according to the provisions of Appendix C, (Force Account Provisions). As described in Appendix B.5, (Payment Milestones), the City may withhold 5% of payment as retention until the conclusion of the Agreement if agreed to by both Parties. In no event shall City be liable for interest or late charges for any late payments. City will not honor minimum service order charges for any Services covered by this Agreement.

### **3.3.2 Payment Limited to Satisfactory Services and Delivery of Goods .**

Contractor is not entitled to any payments from City until the SFMTA approves the goods and/or Services, including any furnished Deliverables delivered under this Agreement. Payments to Contractor by City shall not excuse Contractor from its obligation to replace unsatisfactory Deliverables, including equipment, components, materials or other goods and/or Services even if the unsatisfactory character of such Deliverables, equipment, components, materials, goods or Services was apparent or could have been detected at the time such payment was made. Non-conforming Services may be rejected by the City and in such case, must be replaced by Contractor without delay at no cost to the City.

**3.3.3 Withhold Payments.** If Contractor fails to provide Deliverables, equipment, components, materials, other goods and/or Services in accordance with Contractor's obligations under this Agreement, the City may withhold any and all payments due Contractor until such failure to perform is cured, and Contractor shall not stop work as a result of City's withholding of payments as provided herein.

**3.3.4 Invoice Format.** Invoices furnished by Contractor under this Agreement must be in a form acceptable to the Controller and the SFMTA, and include a unique invoice number and a specific invoice date. City will make payment as specified in Section 3.3.7, or in such alternate manner as the Parties have mutually agreed upon in writing. Each Contractor invoice shall contain the following information:

- (a) Contract Number
- (b) Purchase Order Number
- (c) PeopleSoft Supplier Name and ID
- (d) Relevant milestones
- (e) Description of the Services performed and/or goods delivered
- (f) Quantity of items
- (g) Unit price
- (h) Sales/use tax (if applicable)
- (i) Total contract price/invoice amount
- (j) Supporting documentation and/or documentation referencing submittal or delivery.

Invoices that do not include all required information or contain inaccurate information will not be processed for payment.

### 3.3.5 Payment Terms

(a) **Payment Due Date:** Unless the SFMTA notifies the Contractor that a dispute exists, Payment will be made within 30 Days, measured from (1) the delivery of goods and/or the rendering of services or (2) the date of receipt of the invoice, whichever is later. Payment is deemed to be made on the date on which City has issued a check to Contractor or, if Contractor has agreed to electronic payment, the date on which City has posted the electronic payment to Contractor.

(b) **Reserved. (Payment Discount Terms)**

(c) **No Late Fees:** No additional charge shall accrue against City in the event City does not make payment within any time specified by Contractor.

**3.3.6 Progress Payment Form.** The Controller is not authorized to pay invoices submitted by Contractor prior to Contractor's submission of the SFMTA Progress Payment Form (SFMTA Form No. 6). If the Progress Payment Form is not submitted with Contractor's invoice, the Controller will notify the SFMTA and Contractor of the omission. If Contractor's failure to provide the SFMTA Progress Payment Form is not explained to the Controller's satisfaction, the Controller will withhold 20 % of the payment due pursuant to that invoice until the SFMTA Progress Payment Form is provided.

**3.3.7 SBE/DBE Payment and Utilization Tracking System.** Contractor shall pay SBE/DBE subcontractors within three business days as required by Appendix D, Section XXXI, Prompt Payment. Within ten business days of the SFMTA's payment of an invoice, Contractor shall confirm that all subcontractors have been paid via the B2GNow System (<https://sfmta.diversitycompliance.com/>). Failure to submit all required payment information to the City's Financial System with each payment request may result in the withholding of 20% of the payment due.

### 3.3.8 Getting Paid by the City for Goods and/or Services

(a) The City utilizes a commercial product through its banking partner to pay City contractors electronically. Contractor shall sign up to receive electronic payments to be paid under this Agreement. To sign up for electronic payments, visit SF City Partner at [sf.gov](http://sf.gov).

(b) At the option of City, Contractor may be required to submit invoices directly in the City's financial and procurement system. Refer to <https://sfcitypartner.sfgov.org/pages/training.aspx> for more information.

### 3.3.9 Grant-Funded Contracts

(a) **Disallowance.** If Contractor requests or receives payment from City for Services, reimbursement for which is later disallowed by the State of California or United States Government, Contractor shall promptly refund the disallowed amount to City upon City's request. At its option, City may offset the amount disallowed from any payment due or to

become due to Contractor under this Agreement or any other Agreement between Contractor and City.

(b) **Grant Terms.** The funding for this Agreement is provided to the SFMTA in full or in part by a Federal or State grant. As part of the terms of receiving the funds, the SFMTA must incorporate some of the terms into this Agreement (Grant Terms). The incorporated Grant Terms may be found in Appendix D (Federal Contract Requirement). To the extent that any Grant Term is inconsistent with any other provisions of this Agreement such that Contractor is unable to comply with both the Grant Terms and the other provision(s), the Grant Terms shall apply.

(c) **Subcontractors.** As required by the Grant Terms, Contractor shall insert applicable provisions into each lower-tier subcontract. Contractor is responsible for compliance with the Grant Terms by any subcontractor, lower-tier subcontractor, or service provider.

**3.4 Audit and Inspection of Records.** Contractor agrees to maintain and make available to the City, during regular business hours, accurate books and accounting records relating to its Services. Contractor will permit City to audit, examine and make copies from such books and records, and to make audits of all invoices, materials, payrolls, records or personnel and other data related to all other matters covered by this Agreement, whether funded in whole or in part under this Agreement. Contractor shall maintain such data and records in an accessible location and condition for a period of not less than five years after final payment under this Agreement or until after final audit has been resolved, whichever is later. The State of California or any Federal agency having an interest in the subject matter of this Agreement shall have the same rights as conferred upon City by this Section. Contractor shall include the same audit and inspection rights and record retention requirements in all subcontracts.

**3.5 Submitting False Claims.** The full text of San Francisco Administrative Code Chapter 21, Section 21.35, including the enforcement and penalty provisions, is incorporated into this Agreement. Any contractor or subcontractor who submits a false claim shall be liable to the City for the statutory penalties set forth in that section.

## **Article 4 Services and Resources**

**4.1 Services Contractor Agrees to Perform.** Contractor agrees to perform system replacement and Overhaul/Rehabilitation for up to 152 standard (40') Hybrid Electric New Flyer Coaches, and 69 articulated (60') Hybrid Electric New Flyer Coaches as described in the RFP, according to the Project Delivery Schedule set forth in Appendix B.4. Contractor agrees to perform the Work provided for in the Conformed Contract Documents. Officers and employees of the City are not authorized to request, and the City is not required to compensate for, Services beyond the Scope of Services listed in Appendix A, unless Appendix A is modified as provided in Section 11.5 (Modification of this Agreement).

**4.2 Changes.** The SFMTA may at any time, by a written order, make changes within the general scope of this Agreement. Such change shall serve to modify this Agreement to the extent necessary to execute the change as directed. If any such change causes an increase or decrease in the cost of, or the time required for, the performance of any part of the Services under this Agreement, whether changed or not changed by the order, the SFMTA shall make an equitable adjustment in the contract price, the delivery schedule, or both, and shall modify the Agreement accordingly. The Contractor must assert its right to an adjustment under this article within three Working Days from the date of receipt of the written order. Failure by Contractor to give timely notice of the change could constitute waiver of a claim for an equitable adjustment. However, if the SFMTA decides that the facts justify it, the SFMTA may receive and act upon a proposal submitted at any time before final payment of the Agreement. If the Contractor's proposal includes the cost of equipment or materials made obsolete or excess by the change, the SFMTA shall have the right to prescribe the manner of the disposition of such equipment or materials. Failure to agree to any adjustment shall be a dispute under Section 11.6, Dispute Resolution Procedure. However, nothing in this provision shall excuse the Contractor from proceeding with the Agreement as changed.

**4.3 Qualified Personnel.** Contractor represents and warrants that it is qualified to perform the Services required by City, and that all Services will be performed by competent personnel with the degree of skill and care required by current and sound professional procedures and practices. Contractor will comply with City's reasonable requests regarding assignment and/or removal of personnel, but all personnel, including those assigned at City's request, must be supervised by Contractor. Contractor shall commit sufficient resources for timely completion within the project schedule.

#### **4.4 Subcontracting**

**4.4.1 Subcontracts.** Contractor may subcontract portions of the Services only upon prior written approval of City. Contractor is responsible for its Subcontractors throughout the course of the work required to perform the Services. All subcontracts must incorporate the terms of Article 10 (Additional Requirements Incorporated by Reference) of this Agreement, unless inapplicable. Neither Party shall, on the basis of this Agreement, contract on behalf of, or in the name of, the other Party. Any agreement made in violation of this provision shall be null and void.

#### **4.4.2 Prompt Payment to Subcontractors**

(a) Payments to subcontractors are governed by Appendix D, Section XXXI, Prompt Payment.

(b) Contractor shall include the prompt payment requirements in its subcontracts and shall require every Subcontractor of every tier to include these payment requirements in its subcontracts with lower tier Subcontractors.

#### **4.4.3 Reserved. (List of Subcontractors)**



## **4.5 Independent Contractor; Payment of Employment Taxes and Other Expenses**

**4.5.1 Independent Contractor.** For the purposes of this Section, “Contractor” shall be deemed to include not only Contractor, but also any agent or employee of Contractor. Contractor acknowledges and agrees that at all times, Contractor is an independent contractor and is wholly responsible for the manner in which it performs the Services and work required under this Agreement. Contractor, its agents, and employees will not represent or hold themselves out to be employees of the City at any time. Contractor shall not have employee status with City, nor be entitled to participate in any plans, arrangements, or distributions by City pertaining to or in connection with any retirement, health or other benefits that City may offer its employees. Contractor is liable for its acts and omissions. Contractor shall be responsible for all obligations and payments, whether imposed by federal, state or local law, including, but not limited to, FICA, income tax withholdings, unemployment compensation, insurance, and other similar responsibilities related to Contractor’s performing Services and work, or any agent or employee of Contractor providing same. Nothing in this Agreement shall be construed as creating an employment or agency relationship between City and Contractor or any of its agents or employees. Contractor agrees to maintain and make available to City, upon request and during regular business hours, accurate books and accounting records demonstrating Contractor’s compliance with this Section. Should City determine that Contractor, is not performing in accordance with the requirements of this Section, City shall provide Contractor with written notice of such failure. Within five business days of Contractor’s receipt of such notice, and in accordance with Contractor policy and procedure, Contractor shall remedy the deficiency. Notwithstanding, if City believes that an action of Contractor, warrants immediate remedial action by Contractor, City shall contact Contractor and provide Contractor in writing with the reason for requesting such immediate action.

**4.5.2 Payment of Employment Taxes and Other Expenses.** Should City, in its discretion, or a relevant taxing authority such as the Internal Revenue Service or the State Employment Development Division, or both, determine that Contractor is an employee for purposes of collection of any employment taxes, the amounts payable under this Agreement shall be reduced by amounts equal to both the employee and employer portions of the tax due (and offsetting any credits for amounts already paid by Contractor which can be applied against this liability). City shall then forward those amounts to the relevant taxing authority. Should a relevant taxing authority determine a liability for past Services performed by Contractor for City, upon notification of such fact by City, Contractor shall promptly remit such amount due or arrange with City to have the amount due withheld from future payments to Contractor under this Agreement (again, offsetting any amounts already paid by Contractor which can be applied as a credit against such liability). A determination of employment status pursuant to this Section 4.4 shall be solely limited to the purposes of the particular tax in question, and for all other purposes of this Agreement, Contractor shall not be considered an employee of City. Notwithstanding the foregoing, Contractor agrees to indemnify and hold harmless City and its

officers, agents and employees from, and, if requested, shall defend them against any and all claims, losses, costs, damages, and expenses, including attorneys' fees, arising from this Section.

**4.6 Assignment.** The Services to be performed by Contractor are personal in character. This Agreement may not be directly or indirectly assigned, novated, or otherwise transferred, unless first approved by the SFMTA by written instrument executed and approved in the same manner as this Agreement. Any purported Assignment made in violation of this provision shall be null and void.

**4.7 Warranty.** Contractor warrants to City that the Services will be performed with the degree of skill and care that is required by current, good and sound professional procedures and practices, and in conformance with generally accepted professional standards prevailing at the time the Services are performed so as to ensure that all Services performed are correct and appropriate for the purposes contemplated in this Agreement. See Article 10 of the Technical Specifications for specific warranty provisions.

**4.8 Liquidated Damages.** By entering into this Agreement, Contractor agrees that Contractor agrees that in the event deliveries are not completed within the number of Days indicated in Appendix B.4 and the Technical Specifications, Article 12, or if Contractor fails to correct fleet defects in accordance with the Technical Specifications, Section 10.4, as may be revised by Contract Modifications, City will suffer damages that will be impracticable or extremely difficult to determine; further, Contractor agrees that the amounts listed below for each day of delay beyond scheduled milestones and timelines are not a penalty, but are a reasonable estimate of the loss that City will incur based on the delay, established in light of the circumstances existing at the time this contract was awarded. Except where the delay is the result of an Unavoidable Delay, City may deduct a sum representing the liquidated damages from any money due to Contractor. Such deductions shall not be considered a penalty, but rather agreed monetary damages sustained by City because of Contractor's failure to deliver to City within the time fixed or such extensions of time permitted in writing by the SFMTA. Liquidated damages imposed under this Agreement shall be in addition to any other damages that are recoverable by the City specified elsewhere in the Contract.

<b>Item</b>	<b>Cost</b>
Failure to deliver the Coaches by the times stated in Exhibit B.4	\$500 per Coach per Day
Failure to deliver all other Project Deliverables (special tools, spare parts, drawings)	\$500 per Day per Deliverable
Warranty Fleet Defect Correction (see Technical Specifications, Section 10.4.1)	\$200 per Coach per Day

**4.9 Performance and Payment Security.** The following provisions set forth financial guarantees that must be met by Contractor. Contractor may choose to meet the requirements of this Section 4.9 by obtaining either the required bonds or an irrevocable letter of credit (Letter of Credit) in an equivalent amount, or another form of security equivalent to the required bonds and acceptable to the City at its sole discretion.

**4.9.1 Bonds.** Within 20 days following the receipt of a notice of tentative Award of Contract, and until completion of all Contract obligations and Acceptance by City of the final vehicle, the Contractor shall furnish to City a performance and a payment (labor and materials) bond in a form acceptable to City in an amount not less than \$4,000,000 to guarantee Contractor's faithful performance of all obligations of the Contract, including warranty obligations in existence until the last Vehicle is accepted, and to guarantee Contractor's payment to all suppliers of labor and materials under this Contract.

**4.9.2 Requirements for Bonds**

(a) Bonding entities on the above bonds must be legally authorized to engage in the business of furnishing performance bonds in the State of California. All bonding entities must be satisfactory to the SFMTA and to the Controller and Risk Manager of the City.

(b) During the period covered by the Agreement, if any of the sureties upon the bond shall have an AM Best rating that falls below A-, VIII, or become insolvent and unable to pay promptly the amount of such bond to the extent to which the surety might be liable, Contractor, within 30 Days after notice given by the SFMTA to Contractor, shall by supplemental bond or otherwise, substitute another and sufficient surety approved by SFMTA in place of the surety becoming insolvent or unable to pay. If Contractor fails within such 30-Day period to substitute another and sufficient surety, Contractor, if the SFMTA so elects, shall be deemed to be in default in the performance of its obligations hereunder and upon the said bond. The City, in addition to any and all other remedies, may terminate the Agreement or bring any proper suit or proceeding against moneys then due or which thereafter may become due Contractor under the Agreement. The amount for which the surety shall have justified on the bond and the moneys so deducted shall be held by City as collateral for the performance of the conditions of the bond.

**4.10 Spare Parts and Special Tools.** The contract amount shall include an allowance of \$250,000 for spare parts and \$250,000 for special tools to service the vehicles overhauled under this Agreement. The Contractor shall provide to SFMTA lists of recommended spare parts and special tools, along with prices for each item listed. The SFMTA may apply these allowances toward listed parts or tools, but may also use the allowance to purchase other parts or tools that are needed but not listed on the recommended lists. Prices shall remain firm for 24 months after Notice to Proceed.

**4.11 Emergency - Priority 1 Service.** . In case of an emergency that affects any part of the San Francisco Bay Area, Contractor will give the City and County of San Francisco Priority 1 service with regard to the Services procured under this Agreement unless preempted by State and/or Federal laws. Contractor will make every good faith effort in attempting to deliver Services using all modes of transportation available. In addition, the Contractor shall charge fair and competitive prices for Services ordered during an emergency and not covered under the awarded Agreement.

## **Article 5 Insurance and Indemnity**

### **5.1 Insurance**

**5.1.1 Required Coverages.** Without in any way limiting Contractor’s liability pursuant to the “Indemnification” section of this Agreement, Contractor must maintain in force, during the full term of the Agreement, insurance in the following amounts and coverages:

(a) Commercial General Liability Insurance with limits not less than \$1,000,000 each occurrence for Bodily Injury and Property Damage, including Contractual Liability, Personal Injury, Products and Completed Operations.

(b) Commercial Automobile Liability Insurance with limits not less than \$1,000,000 each occurrence, “Combined Single Limit” for Bodily Injury and Property Damage, including Owned, Non-Owned and Hired auto coverage, as applicable.

(c) Workers’ Compensation, in statutory amounts, with Employers’ Liability Limits not less than \$1,000,000 each accident, injury, or illness.

(d) Professional liability insurance, applicable to Contractor’s profession, with limits not less than \$1,000,000 for each claim with respect to negligent acts, errors or omissions in connection with the Services.

(e) Reserved. (Technology Errors and Omissions Liability coverage)

(f) Reserved. (Cyber and Privacy Insurance)

(g) Reserved. (Pollution Liability Insurance)

(h) Bailee’s insurance in a form appropriate for the nature of City property in the care, custody, or control of Contractor, on an all-risk form including earthquake and flood, for 100% of the replacement value.

(i) Cargo insurance in a form appropriate for the nature of City property while in transit, on an all-risk form including earthquake and flood for 100% of the replacement value.

(j) Inland Marine insurance approved by the City Risk Manager, in a form appropriate for the nature of City property in the care, custody, or control of Contractor including while in transit, on an all-risk form including earthquake and flood, in the amount not less than \$10 million.

### **5.1.2 Additional Insured**

(a) The Commercial General Liability policy must be endorsed to name as Additional Insured the City and County of San Francisco, its Officers, Agents, and Employees.

(b) The Commercial Automobile Liability Insurance policy must be endorsed to name as Additional Insured the City and County of San Francisco, its Officers, Agents, and Employees.

(c) Reserved. (Pollution Auto Liability Insurance Additional Insured Endorsement)

### **5.1.3 Waiver of Subrogation**

(a) The Workers' Compensation Liability Insurance policy(ies) shall include a waiver of subrogation in favor of the City for all work performed by the Contractor, its employees, agents and subcontractors.

### **5.1.4 Primary Insurance**

(a) The Commercial General Liability Insurance policy shall provide that such policies are primary insurance to any other insurance available to the Additional Insureds, with respect to any claims arising out of this Agreement, and that the insurance applies separately to each insured against whom claim is made or suit is brought.

(b) The Commercial Automobile Liability Insurance policy shall provide that such policies are primary insurance to any other insurance available to the Additional Insureds, with respect to any claims arising out of this Agreement, and that the insurance applies separately to each insured against whom claim is made or suit is brought.

(c) Reserved. (Pollution Auto Liability Insurance Additional Insured Endorsement)

### **5.1.5 Other Insurance Requirements**

(a) Thirty days' advance written notice shall be provided to the City of cancellation, intended non-renewal, or reduction in coverages, except for non-payment, for which no less than 10 Days' notice shall be provided to City. Notices shall be sent to the City address set forth in Section 11.1 (Notices to the Parties). All notices, certificates and endorsements shall include the SFMTA contract number and title on the cover page.

(b) Should any of the required insurance be provided under a claims-made form, Contractor shall maintain such coverage continuously throughout the term of this Agreement and, without lapse, for a period of three years beyond the expiration of this Agreement, to the effect that, should occurrences during the Agreement term give rise to claims made after expiration of the Agreement, such claims shall be covered by such claims-made policies.

(c) Should any of the required insurance be provided under a form of coverage that includes a general annual aggregate limit or provides that claims investigation or legal defense costs be included in such general annual aggregate limit, such general annual aggregate limit shall be double the occurrence or claims limits specified above.

(d) Should any required insurance lapse during the term of this Agreement, requests for payments originating after such lapse shall not be processed until the City receives satisfactory evidence of reinstated coverage as required by this Agreement, effective as of the lapse date. If insurance is not reinstated, the City may, at its sole option, terminate this Agreement effective on the date of such lapse of insurance.

(e) Before commencing any Services, Contractor shall furnish to City certificates of insurance including additional insured and waiver of subrogation status, as required, with insurers with ratings comparable to A-, VIII or higher that are authorized to do business in the State of California, and that are satisfactory to City, in form evidencing all coverages set forth above. Approval of the insurance by City shall not relieve or decrease Contractor's liability hereunder.

(f) If Contractor will use any Subcontractor(s) to provide Services, Contractor shall require the Subcontractor(s) to provide all necessary insurance and to name the City and County of San Francisco, its officers, agents and employees and the Contractor as additional insureds and waiver of subrogation in favor of the City, where required.

## **5.2 Indemnification**

**5.2.1** Contractor shall indemnify and hold harmless City and its officers, agents and employees from, and, if requested, shall defend them from and against any and all liabilities (legal, contractual or otherwise), losses, damages, costs, expenses, or claims for injury or damages (collectively, "Claims"), arising from or in any way connected with Contractor's performance of the Agreement, including but not limited to, any: (i) injury to or death of a person, including employees of City or Contractor; (ii) loss of or damage to property; (iii) violation of local, state, or federal common law, statute or regulation, including but not limited to privacy or personal identifiable information, health information, disability and labor laws or regulations; (iv) strict liability imposed by any law or regulation; or (v) losses arising from Contractor's execution of subcontracts not in accordance with the requirements of this Agreement applicable to Subcontractors, except to the extent that such indemnity is void or otherwise unenforceable under applicable law, and except where such Claims are the result of the active negligence or willful misconduct of City and are not contributed to by any act of, or by any omission to perform some duty imposed by law or agreement on Contractor, its Subcontractors, or either's agent or employee. The foregoing indemnity shall include, without limitation, reasonable fees of attorneys, Contractors and experts and related costs and City's costs of investigating any claims against the City.

**5.2.2** In addition to Contractor's obligation to indemnify City, Contractor specifically acknowledges and agrees that it has an immediate and independent obligation to defend City from any claim which actually or potentially falls within this indemnification provision, even if the allegations are or may be groundless, false or fraudulent, which obligation arises at the time such Claim is tendered to Contractor by City and continues at all times thereafter.

**5.2.3** Contractor shall indemnify and hold City harmless from all loss and liability, including attorneys' fees, court costs and all other litigation expenses for any infringement of the patent rights, copyright, trade secret or any other proprietary right or trademark, and all other intellectual property claims of any person or persons arising directly or indirectly from the receipt by City, or any of its officers or agents, of Contractor's Services.

**5.2.4** Under no circumstances will City indemnify or hold harmless Contractor

## **Article 6 Liability of the Parties**

**6.1 Liability of City.** CITY'S PAYMENT OBLIGATIONS UNDER THIS AGREEMENT SHALL BE LIMITED TO THE PAYMENT OF THE COMPENSATION PROVIDED FOR IN SECTION 3.3.1 (CALCULATION OF CHARGES AND CONTRACT NOT TO EXCEED AMOUNT) OF THIS AGREEMENT. NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT, IN NO EVENT SHALL CITY BE LIABLE, REGARDLESS OF WHETHER ANY CLAIM IS BASED ON CONTRACT OR TORT, FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT OR INCIDENTAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR THE SERVICES PERFORMED IN CONNECTION WITH THIS AGREEMENT.

**6.2 Liability for Use of Equipment.** City shall not be liable for any damage to persons or property as a result of the use, misuse or failure of any equipment used by Contractor, or any of its Subcontractors, or by any of their employees, even though such equipment is furnished, rented or loaned by City.

**6.3 Liability for Incidental and Consequential Damages.** Contractor shall be responsible for incidental and consequential damages resulting in whole or in part from Contractor's acts or omissions.

## **Article 7 Payment of Taxes**

**7.1 Contractor to Pay All Taxes.** Except for any applicable California sales and use taxes charged by Contractor to City, Contractor shall pay all taxes, including possessory interest taxes levied upon or as a result of this Agreement, or the Services delivered pursuant hereto. Contractor shall remit to the State of California any sales or use taxes paid by City to Contractor under this Agreement. Contractor agrees to promptly provide information requested by the City

to verify Contractor's compliance with any State requirements for reporting sales and use tax paid by City under this Agreement.

**7.2 Possessory Interest Taxes.** Contractor acknowledges that this Agreement may create a "possessory interest" for property tax purposes. Contractor accordingly agrees on behalf of itself and its permitted successors and assigns to report on behalf of the City to the County Assessor the information required by San Francisco Administrative Code Section 23.39, as amended from time to time, and any successor provision. Contractor further agrees to provide such other information as may be requested by the City to enable the City to comply with any reporting requirements for possessory interests that are imposed by applicable law.

**7.3 Withholding.** Contractor agrees that it is obligated to pay all amounts due to the City under the San Francisco Business and Tax Regulations Code during the term of this Agreement. Pursuant to Section 6.10-2 of the San Francisco Business and Tax Regulations Code, Contractor further acknowledges and agrees that City may withhold any payments due to Contractor under this Agreement if Contractor is delinquent in the payment of any amount required to be paid to the City under the San Francisco Business and Tax Regulations Code. Any payments withheld under this paragraph shall be made to Contractor, without interest, upon Contractor coming back into compliance with its obligations.

## **Article 8 Termination and Default**

### **8.1 Termination for Convenience**

**8.1.1 Exercise of Option.** City shall have the option, in its sole discretion, to terminate this Agreement, at any time during the term hereof, for convenience and without cause. City shall exercise this option by giving Contractor written notice of termination (Notice of Termination). The Notice of Termination shall specify the date on which termination of the Agreement shall become effective (Termination Date).

**8.1.2 Contractor Actions.** Upon receipt of the Notice of Termination, Contractor shall commence and perform, with diligence, all actions necessary on the part of Contractor to effect the termination of this Agreement on the Termination Date and to minimize the liability of Contractor and City to third parties as a result of the termination. All such actions shall be subject to the prior approval of City. Such actions may include any or all of the following, without limitation:

(a) Completing performance of any Services that the SFMTA requires Contractor to complete prior to the Termination Date.

(b) Halting the performance of all Services on and after the Termination Date.

(c) Cancelling all existing orders and subcontracts by the Termination Date, and not placing any further orders or subcontracts for materials, Services, equipment or other items.



(d) At the SFMTA's direction, assigning to City any or all of Contractor's right, title, and interest under the orders and subcontracts cancelled. Upon such assignment, the SFMTA shall have the right, in its sole discretion, to settle or pay any or all claims arising out of the cancellation of such orders and subcontracts.

(e) Subject to the SFMTA's approval, settling all outstanding liabilities and all claims arising out of the cancelled of orders and subcontracts.

(f) Taking such action as may be necessary, or as the SFMTA may direct, for the protection and preservation of any property related to this Agreement which is in the possession of Contractor and in which the SFMTA has or may acquire an interest.

**8.1.3 Contractor Invoice.** Within 30 Days after the Termination Date, Contractor shall submit to the SFMTA an invoice, which shall set forth each of the following as a separate line item:

(a) The reasonable cost to Contractor, without profit, for all Services provided prior to the Termination Date, for which the SFMTA has not already made payment. Reasonable costs may include a reasonable allowance for actual overhead, not to exceed a total of 10% of Contractor's direct costs for Services. Any overhead allowance shall be separately itemized. Contractor may also recover the reasonable cost of preparing the invoice.

(b) A reasonable allowance for profit on the cost of the Services described in the immediately preceding subsection (a), provided that Contractor can establish, to the satisfaction of the SFMTA, that Contractor would have made a profit had all Services under this Agreement been completed, and provided further, that the profit allowed shall in no event exceed 5% of such cost.

(c) The reasonable cost to Contractor of handling and returning material or equipment, delivered to the SFMTA or otherwise disposed of as directed by the SFMTA.

(d) A deduction for the cost of materials to be retained by Contractor, amounts realized from the sale of such materials and not otherwise recovered by or credited to the SFMTA, and any other appropriate credits to the SFMTA against the cost of the Services or other work.

**8.1.4 Nonrecoverable Costs.** In no event shall the City be liable for costs incurred by Contractor or any of its Subcontractors after the Termination Date, except for those costs specifically listed in Section 8.1.3. Such non-recoverable costs include, but are not limited to, anticipated profits on the Services under this Agreement, post-termination employee salaries, post-termination administrative expenses, post-termination overhead or unabsorbed overhead, attorneys' fees or other costs relating to the prosecution of a claim or lawsuit, prejudgment interest, or any other expense which is not reasonable or authorized under Section 8.1.3.

**8.1.5 Deductions.** In arriving at the amount due to Contractor under this Section, the SFMTA may deduct: (i) all payments previously made by the SFMTA for Services covered by Contractor's final invoice; (ii) any claim which the SFMTA may have against Contractor in connection with this Agreement; (iii) any invoiced costs or expenses excluded pursuant to the immediately preceding subsection 8.1.4; and (iv) in instances in which, in the opinion of the SFMTA, the cost of any Service performed under this Agreement is excessively high due to costs incurred to remedy or replace defective or rejected Services, the difference between the invoiced amount and the SFMTA's estimate of the reasonable cost of performing the invoiced Services in compliance with the requirements of this Agreement.

**8.1.6 Payment Obligation.** The City's payment obligation under this Section shall survive termination of this Agreement.

## **8.2 Termination for Default; Remedies**

**8.2.1 Event of Default.** Each of the following shall constitute an immediate event of default under this Agreement:

(a) Contractor fails or refuses to perform or observe any term, covenant or condition contained in any of the following Sections of this Agreement:

3.5	Submitting False Claims
4.6	Assignment
Article 5	Insurance and Indemnity
Article 7	Payment of Taxes
10.10	Alcohol and Drug-Free Workplace
11.10	Compliance with Laws
Article 13	Data and Security

(b) Contractor fails or refuses to perform or observe any other term, covenant or condition contained in this Agreement, including any obligation imposed by ordinance or statute and incorporated by reference herein, and such default is not cured within 10 days after written notice thereof from the SFMTA to Contractor. If Contractor defaults a second time in the same manner as a prior default cured by Contractor, the SFMTA may in its sole discretion immediately terminate the Agreement for default or grant an additional period not to exceed five days for Contractor to cure the default.

(c) Contractor (i) is generally not paying its debts as they become due; (ii) files, or consents by answer or otherwise to the filing against it of a petition for relief or reorganization or arrangement or any other petition in bankruptcy or for liquidation or to take advantage of any bankruptcy, insolvency or other debtors' relief law of any jurisdiction; (iii) makes an assignment for the benefit of its creditors; (iv) consents to the appointment of a custodian, receiver, trustee or other officer with similar powers of Contractor or of any substantial part of Contractor's property; or (v) takes action for the purpose of any of the foregoing.

(d) A court or government authority enters an order (i) appointing a custodian, receiver, trustee or other officer with similar powers with respect to Contractor, or with respect to any substantial part of Contractor’s property; (ii) constituting an order for relief, approving a petition for relief or reorganization or arrangement, or any other petition in bankruptcy or for liquidation, or to take advantage of any bankruptcy, insolvency or other debtors’ relief law of any jurisdiction; or (iii) ordering the dissolution, winding-up or liquidation of Contractor.

**8.2.2 Default Remedies.** On and after any Event of Default, City shall have the right to exercise its legal and equitable remedies, including, without limitation, the right to terminate this Agreement or to seek specific performance of all or any part of this Agreement. In addition, where applicable, City shall have the right (but no obligation) to cure (or cause to be cured) on behalf of Contractor any Event of Default; Contractor shall pay to City on demand all costs and expenses incurred by City in effecting such cure, with interest thereon from the date of incurrance at the maximum rate then permitted by law. City shall have the right to offset from any amounts due to Contractor under this Agreement or any other agreement between City and Contractor: (i) all damages, losses, costs or expenses incurred by City as a result of an Event of Default; and (ii) any liquidated damages levied upon Contractor pursuant to the terms of this Agreement; and (iii), any damages imposed by any ordinance or statute that is incorporated into this Agreement by reference, or into any other agreement with the City.

**8.2.3 No Waiver.** All remedies provided for in this Agreement may be exercised individually or in combination with any other remedy available hereunder or under applicable laws, rules and regulations. The exercise of any remedy shall not preclude or in any way be deemed to waive any other remedy. Nothing in this Agreement shall constitute a waiver or limitation of any rights that City may have under applicable law.

**8.2.4 Notice of Default.** Any notice of default must be sent in accordance with Article 11.

**8.3 Non-Waiver of Rights.** The omission by either Party at any time to enforce any default or right reserved to it, or to require performance of any of the terms, covenants, or provisions hereof by the other Party at the time designated, shall not be a waiver of any such default or right to which the Party is entitled, nor shall it in any way affect the right of the Party to enforce such provisions thereafter.

**8.4 Rights and Duties upon Termination or Expiration**

**8.4.1 Survival of Sections.** This Section and the following Sections of this Agreement listed below, shall survive termination or expiration of this Agreement:

- 3.3.2 Payment Limited to Satisfactory Services and Delivery of Goods
- 3.3.9(a) Grant Funded Contracts - Disallowance
- 3.4 Audit and Inspection of Records

3.5	Submitting False Claims
Article 5	Insurance and Indemnity
6.1	Liability of City
6.3	Liability for Incidental and Consequential Damages
Article 7	Payment of Taxes
8.1.6	Payment Obligation
8.2.2	Default Remedies
9.1	Ownership of Results
9.2	Works for Hire
11.6.3	Dispute Resolution Procedure
11.7	Agreement Made in California; Venue
11.8	Construction
11.9	Entire Agreement
11.10	Compliance with Laws
11.11	Severability
Article 13	Data and Security

**8.4.2 Contractor Duties.** Subject to the survival of the Sections identified in Section 8.4.1 above, if this Agreement is terminated prior to expiration of the term specified in Article 2, this Agreement shall be of no further force or effect. Contractor shall transfer title to City, and deliver in the manner, at the times, and to the extent, if any, directed by City, any work in progress, completed work, supplies, equipment, and other materials produced as a part of, or acquired in connection with the performance of this Agreement, and any completed or partially completed work which, if this Agreement had been completed, would have been required to be furnished to City.

## **Article 9 Rights In Deliverables**

**9.1 Ownership of Results.** Any interest of Contractor or its Subcontractors, in the Deliverables, including any drawings, plans, specifications, blueprints, studies, reports, memoranda, computation sheets, computer files and media or other documents prepared by Contractor or its Subcontractors for the purposes of this Agreement, shall become the property of and will be transmitted to City. However, unless expressly prohibited elsewhere in this Agreement, Contractor may retain and use copies for reference and as documentation of its experience and capabilities.

**9.2 Works for Hire.** If, in connection with Services, Contractor or its Subcontractors creates Deliverables including, without limitation, artwork, copy, posters, billboards, photographs, videotapes, audiotapes, systems designs, software, reports, diagrams, surveys, blueprints, source codes, or any other original works of authorship, whether in digital or any other format, such works of authorship shall be works for hire as defined under Title 17 of the United States Code, and all copyrights in such works shall be the property of the City. If any Deliverables created by Contractor or its Subcontractor(s) under this Agreement are ever

determined not to be works for hire under U.S. law, Contractor hereby assigns all Contractor's copyrights to such Deliverables to the City, agrees to provide any material and execute any documents necessary to effectuate such assignment, and agrees to include a clause in every subcontract imposing the same duties upon Subcontractor(s). With City's prior written approval, Contractor and its Subcontractor(s) may retain and use copies of such works for reference and as documentation of their respective experience and capabilities.

## **Article 10 Additional Requirements Incorporated by Reference**

**10.1 Laws Incorporated by Reference.** The full text of the laws listed in this Article 10, including enforcement and penalty provisions, are incorporated by reference into this Agreement. The full text of the San Francisco Municipal Code provisions incorporated by reference in this Article and elsewhere in the Agreement (Mandatory City Requirements) are available at [http://www.amlegal.com/codes/client/san-francisco\\_ca](http://www.amlegal.com/codes/client/san-francisco_ca).

**10.2 Conflict of Interest.** By executing this Agreement, Contractor certifies that it does not know of any fact which constitutes a violation of Section 15.103 of the City's Charter; Article III, Chapter 2 of City's Campaign and Governmental Conduct Code; Title 9, Chapter 7 of the California Government Code (Section 87100 *et seq.*), or Title 1, Division 4, Chapter 1, Article 4 of the California Government Code (Section 1090 *et seq.*), and further agrees promptly to notify the City if it becomes aware of any such fact during the term of this Agreement.

**10.3 Prohibition on Use of Public Funds for Political Activity.** In performing the Services, Contractor shall comply with San Francisco Administrative Code Chapter 12G, which prohibits funds appropriated by the City for this Agreement from being expended to participate in, support, or attempt to influence any political campaign for a candidate or for a ballot measure. Contractor is subject to the enforcement and penalty provisions in Chapter 12G.

**10.4 Consideration of Salary History.** Contractor shall comply with San Francisco Labor and Employment Code Article 141, the Consideration of Salary History Ordinance or "Pay Parity Act." Contractor is prohibited from considering current or past salary of an applicant in determining whether to hire the applicant or what salary to offer the applicant to the extent that such applicant is applying for employment to be performed on this Agreement or in furtherance of this Agreement, and whose application, in whole or part, will be solicited, received, processed or considered, whether or not through an interview, in the City or on City property. The ordinance also prohibits employers from (1) asking such applicants about their current or past salary or (2) disclosing a current or former employee's salary history without that employee's authorization unless the salary history is publicly available. Contractor is subject to the enforcement and penalty provisions in Article 141. Information about and the text of Article 141 is available on the web at <https://sfgov.org/olse/consideration-salary-history>. Contractor is required to comply with all of the applicable provisions of Article 141, irrespective of the listing of obligations in this Section.

## **10.5 Nondiscrimination Requirements**

**10.5.1 Nondiscrimination in Contracts.** Contractor shall comply with the provisions of San Francisco Labor and Employment Code Article 131 and 132. Contractor shall incorporate by reference in all subcontracts the provisions of Sections Articles 131.2 (a), 131.2(c)-(k), and 132.3 of the San Francisco Labor and Employment Code and shall require all Subcontractors to comply with such provisions. Contractor is subject to the enforcement and penalty provisions in Articles 131 and 132.

**10.5.2 Nondiscrimination in the Provision of Employee Benefits.** San Francisco Labor and Employment Code Article 131.2 applies to this Agreement. Contractor does not as of the date of this Agreement, and will not during the term of this Agreement, in any of its operations in San Francisco, on real property owned by San Francisco, or where work is being performed for the City elsewhere in the United States, discriminate in the provision of employee benefits between employees with domestic partners and employees with spouses and/or between the domestic partners and spouses of such employees, subject to the conditions set forth in San Francisco Labor and Employment Code Article 131.2.

## **10.6 Small Business Enterprise Program**

**10.6.1 General.** The SFMTA is committed to a Small Business Enterprise Program (SBE Program) for the participation of SBEs in contracting opportunities. In addition, the Contractor must comply with all applicable federal regulations regarding Small Business Enterprise (SBE) participation, as set out in Title 49, Part 26 of the Code of Federal Regulations, with respect to SBEs performing work under this Agreement. More information on federal SBE requirements can be found on the internet at: <http://www.fta.dot.gov/civilrights/12326.html>.

**10.6.2 Compliance with SBE Program.** Contractor shall comply with the SBE provisions contained in Appendix E attached to this Agreement and incorporated by reference as though fully set forth, including, but not limited to, achieving and maintaining the SBE goal set for the total dollar amount awarded for the services to be performed under this Agreement. Failure of Contractor to comply with any of these requirements shall be deemed a material breach of this Agreement.

**10.6.3 Nondiscrimination in Hiring.** Pursuant to City and SFMTA policy, Contractor is encouraged to recruit actively minorities and women for its workforce and take other steps within the law, such as on-the-job training and education, to ensure non-discrimination in Contractor's employment practices.

**10.7 Minimum Compensation Ordinance.** If San Francisco Labor and Employment Code Article 111 applies to this contract, Contractor shall pay covered employees no less than the minimum compensation required by San Francisco Labor and Employment Code Article 111, including a minimum hourly gross compensation, compensated time off, and uncompensated time off. Contractor is subject to the enforcement and penalty provisions in Article 111. Information about and the text of Article 111 is available on the web at <http://sfgov.org/olse/mco>. Contractor is required to comply with all of the applicable provisions

of Article 111, irrespective of the listing of obligations in this Section. By signing and executing this Agreement, Contractor certifies that it complies with Article 111.

**10.8 Reserved. (Health Care Accountability Ordinance)**

**10.9 First Source Hiring Program.** Contractor must comply with all of the applicable provisions of the First Source Hiring Program, Chapter 83 of the San Francisco Administrative Code, that apply to this Agreement, and Contractor is subject to the enforcement and penalty provisions in Chapter 83.

**10.10 Alcohol and Drug-Free Workplace.** City reserves the right to deny access to, or require Contractor to remove from, City facilities personnel of any Contractor or Subcontractor who City has reasonable grounds to believe has engaged in alcohol abuse or illegal drug activity which in any way impairs City's ability to maintain safe work facilities or to protect the health and well-being of City employees and the general public. City shall have the right of final approval for the entry or re-entry of any such person previously denied access to, or removed from, City facilities. Illegal drug activity means possessing, furnishing, selling, offering, purchasing, using or being under the influence of illegal drugs or other controlled substances for which the individual lacks a valid prescription. Alcohol abuse means possessing, furnishing, selling, offering, or using alcoholic beverages, or being under the influence of alcohol.

Contractor agrees in the performance of this Agreement to maintain a drug-free workplace by notifying employees that unlawful drug use is prohibited and specifying what actions will be taken against employees for violations; establishing an on-going drug-free awareness program that includes employee notification and, as appropriate, rehabilitation. Contractor can comply with this requirement by implementing a drug-free workplace program that complies with the Federal Drug-Free Workplace Act of 1988 (41 U.S.C. § 701).

**10.11 Limitations on Contributions.** By executing this Agreement, Contractor acknowledges its obligations under Section 1.126 of the City's Campaign and Governmental Conduct Code, which prohibits any person who contracts with, or is seeking a contract with, any department of the City for the rendition of personal services, for the furnishing of any material, supplies or equipment, for the sale or lease of any land or building, for a grant, loan or loan guarantee, or for a development agreement, from making any campaign contribution to (i) a City elected official if the contract must be approved by that official, a board on which that official serves, or the board of a state agency on which an appointee of that official serves, (ii) a candidate for that City elective office, or (iii) a committee controlled by such elected official or a candidate for that office, at any time from the submission of a proposal for the contract until the later of either the termination of negotiations for such contract or twelve months after the date the City approves the contract. The prohibition on contributions applies to each prospective party to the contract; each member of Contractor's board of directors; Contractor's chairperson, chief executive officer, chief financial officer and chief operating officer; any person with an ownership interest of more than 10% in Contractor; any Subcontractor listed in the bid or contract; and any committee that is sponsored or controlled by Contractor. Contractor certifies

that it has informed each such person of the limitation on contributions imposed by Section 1.126 by the time it submitted a proposal for the contract, and has provided the names of the persons required to be informed to the City department with whom it is contracting.

**10.12 Reserved. (Slavery Era Disclosure)**

**10.13 Reserved. (Working with Minors)**

**10.14 Consideration of Criminal History in Hiring and Employment Decisions**

**10.14.1** Contractor agrees to comply fully with and be bound by all of the provisions of Article 142 (City Contractor/Subcontractor Consideration of Criminal History in Hiring and Employment Decisions) of the San Francisco Labor and Employment Code (Article 142), including the remedies provided, and implementing regulations, as may be amended from time to time. The provisions of Article 142 are incorporated by reference and made a part of this Agreement as though fully set forth herein. The text of the Article 142 is available on the web at <http://sfgov.org/olse/fco>. Contractor is required to comply with all of the applicable provisions of Article 142, irrespective of the listing of obligations in this Section. Capitalized terms used in this Section and not defined in this Agreement shall have the meanings assigned to such terms in Article 142.

**10.14.2** The requirements of Article 142 shall only apply to a Contractor's or Subcontractor's operations to the extent those operations are in furtherance of the performance of this Agreement, shall apply only to applicants and employees who would be or are performing work in furtherance of this Agreement, and shall apply when the physical location of the employment or prospective employment of an individual is wholly or substantially within the City of San Francisco. Article 142 shall not apply when the application in a particular context would conflict with federal or state law or with a requirement of a government agency implementing federal or state law.

**10.15 Reserved. (Public Access to Nonprofit Records and Meetings)**

**10.16 Food Service Waste Reduction Requirements.** Contractor shall comply with the Food Service Waste Reduction Ordinance, as set forth in San Francisco Environment Code Chapter 16, including but not limited to the remedies for noncompliance provided therein.

**10.17 Reserved. (Distribution of Beverages and Water)**

**10.18 Tropical Hardwood and Virgin Redwood Ban.** Pursuant to San Francisco Environment Code Section 804(b), the City urges Contractor not to import, purchase, obtain, or use for any purpose, any tropical hardwood, tropical hardwood wood product, virgin redwood or virgin redwood wood product.

**10.19 Reserved. (Preservative-Treated Wood Products)**



## **Article 11     General Provisions**

**11.1 Notices to the Parties.** Unless otherwise indicated in this Agreement, all written communications sent by the Parties may be by U.S. mail or e-mail, and shall be addressed as follows:

To City:                    San Francisco Municipal Transportation Agency  
Fleet Engineering,  
700 Pennsylvania Avenue,  
Building B, 2nd Floor,  
San Francisco CA 94107  
Attention: Mr. Gary Chang  
Email: [Gary.Chang@sfmta.com](mailto:Gary.Chang@sfmta.com)

To Contractor: Complete Coach Works  
1863 Service Court  
Riverside, CA 92507  
Attention: Ms. Amber Lindsey  
Email: [contracts@completecoach.com](mailto:contracts@completecoach.com)

Any notice of default or data breach must be sent by certified mail or other trackable written communication, and also by e-mail, with the sender using the receipt notice feature. Either Party may change the address to which notice is to be sent by giving written notice thereof to the other Party at least 10 Days prior to the effective date of such change. If email notification is used, the sender must specify a receipt notice.

### **11.2 Compliance with Laws Requiring Access for People with Disabilities**

**11.2.1** Contractor acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through a contractor, must be accessible to people with disabilities. Contractor shall provide the services specified in this Agreement in a manner that complies with the ADA and all other applicable federal, state and local disability rights legislation. Contractor agrees not to discriminate against people with disabilities in the provision of services, benefits or activities provided under this Agreement and further agrees that any violation of this prohibition on the part of Contractor, its employees, agents or assigns will constitute a material breach of this Agreement.

**11.3 Incorporation of Recitals.** The matters recited above are hereby incorporated into and made part of this Agreement.

**11.4 Sunshine Ordinance.** Contractor acknowledges that this Agreement and all records related to its formation, Contractor's performance of Services, and City's payment are subject to the California Public Records Act, (California Government Code §7920 et. seq.), and the San Francisco Sunshine Ordinance, (San Francisco Administrative Code Chapter 67). Such records are subject to public inspection and copying unless exempt from disclosure under federal, state or local law.

**11.5 Modification of this Agreement.** This Agreement may not be modified, nor may compliance with any of its terms be waived, except as noted in Section 11.1 (Notices to Parties) regarding change in personnel or place, and except by written instrument executed and approved as required under City law and under the policy of the SFMTA Board of Directors. Contractor must submit the Contract Modification Form (CMD Form 10) along with the required supporting documentation to the CCO and obtain prior CCO approval for any amendment, modification, supplement or change order that would result in a cumulative increase of the original amount of this Agreement by more than 20%, and then for any subsequent amendment, modification, supplement, or change order that would result in a cumulative increase of the last CCO approved value by more than 20%.

**11.6 Authority of Project Manager; Claims; Disputes.** The Project Manager shall decide all questions that may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work; all questions, which may arise as to the acceptable fulfillment of the Contract on the part of the Contractor; and all questions as to compensation. In discharging the responsibilities outlined above, the Project Manager shall at all times act fairly and reasonably. Any appeal of the Project Manager's decisions shall be in accordance with the provisions of Section 11.6.3 of this Agreement. As with any claim, change, extra or additional work, Contractor shall be paid in accordance with the payment provisions set out in Section 3 of this Contract when the dispute is finally resolved.

Should any questions arise as to the meaning and intent of the Contract, the matter shall be referred to the Project Manager, who, in consultation with other City representatives, as applicable, and with input the Contractor, shall decide the true meaning and intent of the Contract. The Project Manager's decision in this regard shall be administratively final and conclusive.

#### **11.6.1 Claims for Additional Compensation**

(a) Contractor shall not be entitled to the payment of any additional compensation for any action, or failure to act, by the SFMTA, including failure or refusal to issue a Contract Modification or for the happening of any event, thing, occurrence, or other cause, unless Contractor shall have given the Project Manager due written notice of potential claim.

(b) The written notice of potential claim shall set forth the reasons for which Contractor believes additional compensation will or may be due, the nature of the costs involved, and insofar as possible, the amount of the potential claim. The said notice as above required must have been given to the Project Manager prior to the time that Contractor shall have performed the work giving rise to the potential claim for additional compensation, or in all other cases, within 30 Days after the happening of the event, thing, occurrence, or other cause giving rise to the potential claim.

(c) It is the intention of this Section 11.6.1 that differences between the Parties arising under and by virtue of the Contract be brought to the attention of the SFMTA at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly be taken. Contractor agrees that it shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing, or occurrence for which no written notice of potential claim as herein required was filed.

**11.6.2 Other Claims.** For any dispute involving a question of fact that does not involve a claim for additional compensation, the aggrieved party shall furnish the other party with a notice of dispute within 15 Days of the determination of the dispute. The party receiving a notice of dispute shall submit a written reply with 15 Days of delivery of the notice. The notice and response shall contain the following: (a) a statement of the party's position and a summary of the arguments supporting that position, and (b) any evidence supporting the party's position.

**11.6.3 Dispute Resolution Procedure.** Disputes arising in the performance of this Agreement that are not resolved by negotiation between the parties shall be decided in writing by the SFMTA Project Manager. The Project Manager's decision shall be administratively final and conclusive unless within 10 Working Days from the date of such decision, the Contractor mails or otherwise furnishes a written appeal to the Director of Transit, or his/her designee. In connection with such an appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the Director of Transit shall be administratively final and conclusive. This section applies to all disputes unless a specific provision of this Agreement provides that the Project Manager's decision as to a particular dispute is final.

**11.6.4 Alternative Dispute Resolution.** If agreed by both Parties in writing, disputes may be resolved by a mutually agreed-upon alternative dispute resolution process. If the parties do not mutually agree to an alternative dispute resolution process or such efforts do not resolve the dispute, then either Party may pursue any remedy available under California law. The status of any dispute or controversy notwithstanding, Contractor shall proceed diligently with the performance of its obligations under this Agreement in accordance with the Agreement and the written directions of the City. Neither Party will be entitled to legal fees or costs for matters resolved under this section.

**11.6.5 Disputes Among Contractor's Partners.** The resolution of any contractual disputes related to Contractor's Joint Venture or Association partners (if any) shall be the sole responsibility of the Contractor. Each party of the Joint Venture or Association shall resolve all such disputes within 30 calendar days of when the dispute first surfaced so as not to impact the performance of the contract with the City. Any such disputes which impact the Project and which are left unresolved for more than one month shall be cause for the City to withhold and/or reduce invoice payments to the Contractor's Joint Venture or Association firms until the dispute is resolved.

**11.6.6 Government Code Claim Requirement.** No suit for money or damages may be brought against the City until a written claim therefor has been presented to and rejected by the City in conformity with the provisions of San Francisco Administrative Code Chapter 10 and California Government Code Section 900, et seq. Nothing set forth in this Agreement shall operate to toll, waive or excuse Contractor's compliance with the California Government Code Claim requirements set forth in San Francisco Administrative Code Chapter 10 and California Government Code Section 900, et seq.

**11.7 Agreement Made in California; Venue.** The formation, interpretation and performance of this Agreement shall be governed by the laws of the State of California. Venue for all litigation relative to the formation, interpretation and performance of this Agreement shall be in San Francisco.

**11.8 Construction.** All paragraph captions are for reference only and shall not be considered in construing this Agreement.

**11.9 Entire Agreement.** This Contract sets forth the entire agreement between the Parties, and supersedes all other oral or written provisions. All appendices to this Agreement are incorporated by reference as though fully set forth. This Agreement may be modified only as provided in Section 11.5 (Modification of this Agreement).

**11.10 Compliance with Laws.** Contractor shall keep itself fully informed of the City's Charter, codes, ordinances and duly adopted rules and regulations of the City and of all state, and federal laws in any manner affecting the performance of this Agreement, and must at all times comply with such local codes, ordinances, and regulations and all applicable laws as they may be amended from time to time.

**11.11 Severability.** Should the application of any provision of this Agreement to any particular facts or circumstances be found by a court of competent jurisdiction to be invalid or unenforceable, then (a) the validity of other provisions of this Agreement shall not be affected or impaired thereby, and (b) such provision shall be enforced to the maximum extent possible so as to effect the intent of the Parties and shall be reformed without further action by the Parties to the extent necessary to make such provision valid and enforceable.

**11.12 Cooperative Drafting.** This Agreement has been drafted through a cooperative effort of City and Contractor, and both Parties have had an opportunity to have the Agreement reviewed and revised by legal counsel. No Party shall be considered the drafter of this Agreement, and no presumption or rule that an ambiguity shall be construed against the Party drafting the clause shall apply to the interpretation or enforcement of this Agreement.

**11.13 Order of Precedence.** The Parties agree that this Agreement, including all appendices, sets forth the Parties' complete agreement. Should there be a conflict of terms or conditions, this Agreement, and any amendments shall control over the RFP and the Contractor's proposal. If the Appendices to this Agreement include any standard printed terms from the Contractor, Contractor agrees that in the event of discrepancy, inconsistency, gap, ambiguity, or

conflicting language between the City’s terms and Contractor’s printed terms attached, the City’s terms in this Agreement shall take precedence, followed by the procurement issued by the department (if any), Contractor’s proposal, and Contractor’s printed terms, respectively. Any hyperlinked terms included in Contractor’s terms shall have no legal effect

**11.14 Notification of Legal Requests.** Contractor shall immediately notify City upon receipt of any subpoenas, service of process, litigation holds, discovery requests, and other legal requests (Legal Requests) related to any City Data under this Agreement, and in no event later than 24 hours after Contractor receives the request. Contractor shall not respond to Legal Requests related to City without first notifying City other than to notify the requestor that the information sought is potentially covered under a non-disclosure agreement. Contractor shall retain and preserve City Data in accordance with the City’s instruction and requests, including, without limitation, any retention schedules and/or litigation hold orders provided by the City to Contractor, independent of where the City Data is stored.

**11.15 Services Provided by Attorneys.** Any services to be provided by a law firm or attorney must be reviewed and approved in writing in advance by the City Attorney. No invoices for services provided by law firms or attorneys, including, without limitation, as subcontractors of Contractor, will be paid unless the provider received advance written approval from the City Attorney.

**11.16 Time of Essence.** Time is of the essence in this Agreement.

**11.17 Federal Requirements.** Contractor shall comply with all applicable federal contracting requirements, including but not limited to those set out in Appendix D to this Agreement, which are incorporated by reference as if fully set out here. If there is any conflict between any federal contracting requirement and any provision of this Equipment Contract, the federal requirement shall prevail. The SFMTA has not adopted the contract requirements of the Federal Acquisition Regulations (FAR). As a department of the City and County of San Francisco, exercising its home rule authority granted by the California constitution, the SFMTA shall not be bound by any provision of the FAR.

## **Article 12 SFMTA Specific Terms**

### **12.1 Large Vehicle Driver Safety Training Requirements**

**12.1.1** Contractor agrees that before any of its employees and Subcontractors drive large vehicles within the City and County of San Francisco, those employees and Subcontractors shall successfully complete either (a) the SFMTA’s Large Vehicle Urban Driving Safety training program or (b) a training program that meets the SFMTA’s approved standards for large vehicle urban driving safety. The SFMTA’s approved standards for large vehicle urban driving safety is available for download at [www.SFMTA.com/largevehicletestingstandards](http://www.SFMTA.com/largevehicletestingstandards). This requirement does not apply to drivers providing delivery services who are not employees or Subcontractors of the Contractor. For purposes of this section, “large vehicle” means any single

vehicle or combination of vehicle and trailer with an unladen weight of 10,000 pounds or more, or a van designed to carry 10 or more people.

**12.1.2** By entering into this Agreement, Contractor agrees that in the event the Contractor fails to comply with the Large Vehicle Driver Safety Training Requirements, the City will suffer actual damages that will be impractical or extremely difficult to determine; further, Contractor agrees that the sum of up to One Thousand Dollars (\$1,000) per employee or Subcontractor who is permitted to drive a large vehicle in violation of these requirements is not a penalty, but is a reasonable estimate of the loss that City will incur based on the Contractor's failure to comply with this requirement, established in light of the circumstances existing at the time this Contract was awarded. City may deduct a sum representing the liquidated damages from any money due to Contractor. Such deductions shall not be considered a penalty, but rather agreed monetary damages sustained by City because of Contractor's failure to comply.

## **Article 13 Data and Security**

### **13.1 Nondisclosure of Private, Proprietary or Confidential Information**

**13.1.1 Protection of Private Information .** If this Agreement requires City to disclose "Private Information" to Contractor within the meaning of San Francisco Administrative Code Chapter 12M, Contractor and Subcontractor shall use such information only in accordance with the restrictions stated in Chapter 12M and in this Agreement and only as necessary in performing the Services. Contractor is subject to the enforcement and penalty provisions in Chapter 12M.

**13.1.2 Confidential Information .** In the performance of Services, Contractor may have access to, or collect on City's behalf, City's proprietary or Confidential Information, the disclosure of which to third parties may damage City. If City discloses proprietary or Confidential Information to Contractor, or Contractor collects such information on City's behalf, such information must be held by Contractor in confidence and used only in performing the Agreement. Contractor shall exercise the same standard of care to protect such information as a reasonably prudent contractor would use to protect its own proprietary or Confidential Information.

### **13.2 Reserved. (Payment Card Industry (PCI) Requirements)**

### **13.3 Reserved. (Business Associate Agreement)**

### **13.4 Management of City Data and Confidential Information**

**13.4.1 Access to City Data.** City shall at all times have access to and control of City Data, and shall be able to retrieve it in a readable format, in electronic form and/or print, at any time, at no additional cost.

**13.4.2 Use of City Data and Confidential Information.** Contractor agrees to hold City Data received from, or collected on behalf of the City, in strictest confidence. Contractor shall not use or disclose City Data except as permitted or required by the Agreement

or as otherwise authorized in writing by the City. Any work by Contractor or its authorized subcontractors using, or sharing or storage of, City Data outside the United States is prohibited, absent prior written authorization by the City. Access to City Data must be strictly controlled and limited to Contractor's staff assigned to this project on a need-to-know basis only. City Data shall not be distributed, repurposed or shared across other applications, environments, or business units of Contractor. Contractor is provided a limited non-exclusive license to use the City Data solely for performing its obligations under the Agreement and not for Contractor's own purposes or later use. Nothing herein shall be construed to confer any license or right to the City Data, by implication, estoppel or otherwise, under copyright or other intellectual property rights, to any third-party. Unauthorized use of City Data by Contractor, Subcontractors, or other third parties is prohibited. For purpose of this requirement, the phrase "unauthorized use" means the data mining or processing of data and/or machine learning from the data, stored or transmitted by the service, for unrelated commercial purposes, advertising or advertising-related purposes, or for any purpose that is not explicitly authorized other than security or service delivery analysis.

**13.4.3 Disposition of Confidential Information.** Upon request of City or termination or expiration of this Agreement, Contractor shall promptly, but in no event later than 30 Days, return all Data given to or collected or created by Contractor on City's behalf, which includes all original media. Once Contractor has received written confirmation from City that the City Data has been successfully transferred to City, Contractor shall within 10 Days clear or purge all City Data from its servers, any hosted environment Contractor has used in performance of this Agreement, including its subcontractors' environment(s), work stations that were used to process the data or for production of the data, and any other work files stored by Contractor in whatever medium. Contractor shall provide City with written certification that such purge occurred within five Days of the purge. Secure disposal shall be accomplished by "clearing," "purging" or "physical destruction," in accordance with National Institute of Standards and Technology (NIST) Special Publication 800-88, or the most current industry standard.

**13.5 Ownership of City Data.** The Parties agree that as between them, all rights, including all intellectual property rights, in and to the City Data and any derivative works of the City Data is the exclusive property of the City.

**13.6 Loss or Unauthorized Access to City's Data; Security Breach Notification.** Contractor shall comply with all applicable laws that require the notification to individuals in the event of unauthorized release of PII, PHI, or other event requiring notification. Contractor shall notify City of any actual or potential exposure or misappropriation of City Data (any "Leak") within twenty-four (24) hours of the discovery of such, but within twelve (12) hours if the Data Leak involved PII or PHI. Contractor, at its own expense, will reasonably cooperate with City and law enforcement authorities to investigate any such Leak and to notify injured or potentially injured parties. Contractor shall pay for the provision to the affected individuals of twenty-four (24) months of free credit monitoring services, if the Leak involved information of a nature

reasonably necessitating such credit monitoring. The remedies and obligations set forth in this subsection are in addition to any other City may have. City shall conduct all media communications related to such Leak.

#### **Article 14 MacBride and Signature**

**14.1 MacBride Principles - Northern Ireland.** The provisions of San Francisco Administrative Code §12F are incorporated herein by this reference and made part of this Agreement. By signing this Agreement, Contractor confirms that Contractor has read and understood that the City urges companies doing business in Northern Ireland to resolve employment inequities and to abide by the MacBride Principles, and urges San Francisco companies to do business with corporations that abide by the MacBride Principles.

#### **Article 15 Included Appendices**

The documents listed below are attached to this Agreement as Appendices and are incorporated into this Agreement by reference.

- Appendix A: Technical Specifications
- Appendix B.1: Schedule of Prices
- Appendix B.2: Spare Parts List
- Appendix B.3: Special Tools List
- Appendix B.4: Project Delivery Schedule
- Appendix B.5: Payment Milestones
- Appendix C: Force Account Provisions
- Appendix D: Federal Contract Requirements
- Appendix E: SBE Requirements



IN WITNESS WHEREOF, the Parties hereto have executed this Agreement on the day first mentioned above.

<p><b>CITY</b></p> <p><b>San Francisco Municipal Transportation Agency</b></p> <hr/> <p>Julie B. Kirschbaum Director of Transportation</p> <p>Authorized By:</p> <p>Municipal Transportation Agency Board of Directors</p> <p>Resolution No: _____</p> <p>Adopted: _____</p> <p>Attest: _____ Secretary, to the Board</p> <p>Board of Supervisors</p> <p>Resolution No: _____</p> <p>Adopted: _____</p> <p>Attest: _____ Clerk of the Board</p> <p>Approved as to Form:</p> <p>David Chiu City Attorney</p> <p>By: _____ David F. Innis Deputy City Attorney</p>	<p><b>CONTRACTOR</b></p> <p><b>Complete Coach Works</b></p> <hr/> <p>Michael Dominici Chief Financial Officer 1863 Service Court Riverside, CA 92507</p> <p><u>Acknowledgement of Large Vehicle Driver Safety Training Requirements:</u></p> <p>By signing this Agreement, Contractor acknowledges that it has read and understands Section 13.1: Large Vehicle Driver Safety Training Requirements.</p> <p>City Supplier Number: 0000022435</p>
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**Appendix A**  
**Technical Specifications**

*Attached as a separate document.*

## Appendix B.1

### Schedule of Prices

City is exempt from federal excise taxes. State, local sales, and use taxes are not to be included in these prices.

No.	Qty.	Description	Unit Price	Total Price
1	54	SR-2043 – 40-ft Allison Hybrid with New ISL Engine	\$ 360,308.16	\$ 19,456,640.40
2	30	SR-2116 – 60-ft Allison Hybrid with New ISL engine and SFMTA Rebuilt Drive Unit	\$ 460,147.82	\$ 13,804,434.70
3	10	SR-2116 – 60-ft Allison Hybrid with SFMTA Rebuilt Engine and SFMTA Rebuilt Drive Unit	\$ 381,383.29	\$3,813,832.93
4	29	SR-2116 – 60-ft Allison Hybrid with New ISL engine, Rebuilt Drive Unit with Stator A replaced	\$ 532,007.89	\$ 15,428,228.91
5	68	SR-2117 – 40-ft BAE Hybrid with New ISL engine	\$ 389,559.04	\$ 26,490,014.98
6	30	SR-2118 – 40-ft BAE Hybrid	\$ 364,999.20	\$ 10,949,975.94
7	10	As-Built Drawings, Updated Schematics, and Parts Lists (SR-2043, SR-2116, SR-2117, SR-2118)	Included	Included
8	1	Special Tools	NA	\$ 250,000 (fixed allowance)
9	1	Spare Parts	NA	\$ 250,000 (fixed allowance)
10	1	Unforeseeable Work and Exterior Body Work	LS	\$ 5,000,000
<b>Basis of Award (Items 1 through 10)</b>			<b>Grand Total</b>	<b>\$ 95,443,127.86</b>

## **Appendix B.2**

### **Spare Parts List**

The contractor shall submit a recommended spare parts list with prices for SFMTA's approval. SFMTA reserves the right to add or remove items from the spare parts list.

## **Appendix B.3**

### **Special Tools List**

The contractor shall submit a recommended special tools list with prices for SFMTA's approval. SFMTA reserves the right to add or remove items from the special tools list.

## Appendix B.4

### Project Delivery Schedule

Item	Calendar Days after Notice to Proceed
Pre-Production Meeting	30
Pick Up of First Article Coach	180
Delivery of Completed First Article Coach	270
Conditional Acceptance and Approval of First Article Coach	285
Begin overhaul of remaining coaches	290
Delivery of the last coach	1095
Submittal of final As-Built Drawings, Updated Schematics, and Parts Lists	1155

Item	Calendar Days after Notice to Proceed
Submittal of draft recommended spare parts and special tools lists	365
Delivery of spare parts and special tools	1095

#### **Deliveries:**

**Note 1:** Actual item due dates will be determined after the First Article Coaches have been presented and changes to the scope of work have been finalized and negotiated.

**Note 2:** All deliveries to the SFMTA shall be to SFMTA's Marin facility during weekday working hours, Monday through Friday, 7 a.m. – 3 p.m., except SFMTA holidays, or as otherwise specified in writing by the SFMTA. Contractor shall provide at least 48 hours' notice to the SFMTA prior to delivery.

**Note 3:** Due to service demands, the SFMTA can only allow up to 16 Coaches at the Contractor's site at any one time. Contractor shall not deliver more than three Coaches to the SFMTA at any one time.

**Note 4:** The Coach will have to pass inspection and Acceptance testing by the SFMTA before being put back into revenue service. The SFMTA reserves the right to not release scheduled Coaches for rehabilitation if one or more rehabilitated Coaches fails to meet SFMTA requirements.

## Appendix B.5

### Payment Milestones

The City will make progress payments for the Buses upon satisfactory completion of each milestone in accordance with the percentage allocation below.

#### Item 1 – Rehabilitation of one First Article Coach for each SR\*

(a) Authorization by SFMTA to ship one First Article Coach for SR-2043	60% of Unit Price for Item 1 on Appendix B.1
(b) Authorization by SFMTA to ship one First Article Coach for SR-2116	60% of Unit Price for Item 2 on Appendix B.1
(c) Authorization by SFMTA to ship one First Article Coach for SR-2117	60% of Unit Price for Item 5 on Appendix B.1
(d) Authorization by SFMTA to ship one First Article Coach for SR-2118	60% of Unit Price for Item 6 on Appendix B.1

#### Item 2 – Conditional Acceptance of each First Article Coach for each SR\*

(a) Conditional Acceptance of one First Article Coach for SR-2043	35% of Unit Price for Item 1 on Appendix B.1
(b) Conditional Acceptance of one First Article Coach for SR-2116	35% of Unit Price for Item 2 on Appendix B.1
(c) Conditional Acceptance of one First Article Coach for SR-2117	35% of Unit Price for Item 5 on Appendix B.1
(d) Conditional Acceptance of one First Article Coach for SR-2118	35% of Unit Price for Item 6 on Appendix B.1

#### Item 3 – Rehabilitation of Coaches following the First Article Coach for each SR\*

(a) Authorization by SFMTA to ship each Coach for SR-2043	60% of Unit Price for Item 1 on Appendix B.1
(b) Authorization by SFMTA to ship each Coach for SR-2116	60% of Unit Price for Item 2, 3, and 4 on Appendix B.1
(c) Authorization by SFMTA to ship each Coach for SR-2117	60% of Unit Price for Item 5 on Appendix B.1
(d) Authorization by SFMTA to ship each Coach for SR-2118	60% of Unit Price for Item 6 on Appendix B.1

#### Item 4 – Conditional Acceptance of Coaches following the First Article Coach for each SR\*

(a) Conditional Acceptance of each Coach for SR-2043	35% of Unit Price for Item 1 on Appendix B.1
(b) Conditional Acceptance of each Coach for SR-2116	35% of Unit Price for Item 2, 3, and 4 on Appendix B.1
(c) Conditional Acceptance of each Coach for SR-2117	35% of Unit Price for Item 5 on Appendix B.1
(d) Conditional Acceptance of each Coach for SR-2118	35% of Unit Price for Item 6 on Appendix B.1

\* Includes any amounts under Item 10 on Appendix B.1

**Item 5 – Delivery of Special Tools, Spare Parts, and As-Built Drawings**

The City will pay 95% of the line item price for each Deliverable following Acceptance of each Deliverable.

**Item 6 – Final Acceptance of all Coaches**

Final Acceptance of all Coaches and Deliverables	5% of Total Price of all Items
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**Item 7 – Unforeseeable Work and Exterior Body Work**

The City will make payments for Unforeseeable Work and Exterior Body Work following the completion and Acceptance of the agreed-upon work by the SFMTA.



## Appendix C

### Force Account Provisions

- A. General: When Unforeseeable Work and Body Work are to be paid for on a Force Account basis, compensation will be determined as set forth herein.
1. The City will direct Contractor to proceed with the work on a Force Account basis, and the City will establish a "not to exceed" budget. To the extent feasible, the City and Contractor shall agree on the total number of hours to perform the Unforeseeable Work or Body Work.
  2. All requirements regarding direct costs and markup for overhead and profit provided below shall apply to Force Account Work. However, the City will pay only the actual necessary costs substantiated by the Contractor and verified by the City.
  3. Contractor shall be responsible for all costs related to the documentation, data preparation, and administration of Force Account Work.
- B. Direct Costs:
1. Labor: Labor rates shall be paid at \$150.00 an hour. This is a fully burdened rate (including fringe benefits, Federal Insurance Contributions Act payments, Federal and State Unemployment taxes, and net actual premium paid for public liability, worker's compensation, property damage, and other forms of insurance required by the City); and includes all costs for overhead and profit.
  2. Materials: The City will pay Contractor only for those materials furnished by Contractor and directly required for performing the Unforeseeable Work or Body Work. The cost of such materials shall be the direct cost, including sales tax, to the purchaser, and may include the cost of transportation, but delivery charges will not be allowed unless the delivery is specifically required for the Unforeseeable Work or Body Work. If a trade discount by an actual supplier is available to Contractor, it shall be credited to the City. If the materials are obtained from a supplier or source owned wholly or in part by Contractor, payment for the materials shall not exceed the current wholesale price for the materials as determined by the City. The term "trade discount" includes the concept of cash discounting.
- C. Contractor's Markup on Materials: The following limitations shall apply to Contractor's markup on all materials:
1. The total markup shall equal a maximum of 10 percent of Contractor's direct costs, as defined in B.2 above. No extra markup may be taken for the costs of subcontractors or suppliers.

2. Decreases in Work: For Unforeseeable Work or Body Work that results in a net decrease in direct costs for work performed by Contractor, the City shall receive a credit based on (a) the actual net decrease in labor costs and materials and (b) 10 percent of the direct cost credit amount attributable to materials.
  3. When both additions and credits are involved, Contractor's markup shall be computed on the basis of its direct costs and labor productivity for the net change in the quantity of the Unforeseeable Work or Body Work.
- D. Records: Contractor shall maintain detailed records of all Unforeseeable Work or Body Work done on a Force Account basis and supply a summary to City of all Force Account work performed on a weekly basis.

## Appendix D

### FEDERAL CONTRACT REQUIREMENTS

#### I. DEFINITIONS

- A. Approved Project Budget** means the most recent statement, approved by the FTA, of the costs of the Project, the maximum amount of Federal assistance for which the City is currently eligible, the specific tasks (including specified contingencies) covered, and the estimated cost of each task.
- B. Contractor** means the individual or entity awarded a third party contract financed in whole or in part with Federal assistance originally derived from FTA.
- C. Cooperative Agreement** means the instrument by which FTA awards Federal assistance to a specific Recipient to support a particular Project or Program, and in which FTA takes an active role or retains substantial control.
- D. Federal Transit Administration (FTA)** is an operating administration of the U.S. DOT.
- E. FTA Directive** includes any FTA circular, notice, order or guidance providing information about FTA's programs, application processing procedures, and Project management guidelines. In addition to FTA directives, certain U.S. DOT directives also apply to the Project.
- F. Grant Agreement** means the instrument by which FTA awards Federal assistance to a specific Recipient to support a particular Project, and in which FTA does not take an active role or retain substantial control, in accordance with 31 U.S.C. § 6304.
- G. Government** means the United States of America and any executive department or agency thereof.
- H. Project** means the task or set of tasks listed in the Approved Project Budget, and any modifications stated in the Conditions to the Grant Agreement or Cooperative Agreement applicable to the Project. In the case of the formula assistance program for urbanized areas, for elderly and persons with disabilities, and non-urbanized areas, 49 U.S.C. §§ 5307, 5310, and 5311, respectively, the term "Project" encompasses both "Program" and "each Project within the Program," as the context may require, to effectuate the requirements of the Grant Agreement or Cooperative Agreement.
- I. Recipient** means any entity that receives Federal assistance directly from FTA to accomplish the Project. The term "Recipient" includes each FTA "Grantee" as well as each FTA Recipient of a Cooperative Agreement. For the purpose of this Agreement, Recipient is the City.
- J. Secretary** means the U.S. DOT Secretary, including his or her duly authorized designee.
- K. Third Party Contract** means a contract or purchase order awarded by the Recipient to a vendor or contractor, financed in whole or in part with Federal assistance awarded by FTA.

**L. Third Party Subcontract** means a subcontract at any tier entered into by Contractor or third party subcontractor, financed in whole or in part with Federal assistance originally derived from FTA.

**M. U.S. DOT** is the acronym for the U.S. Department of Transportation, including its operating administrations.

## **II. FEDERAL CHANGES**

Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the City and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

## **III. ACCESS TO RECORDS**

**A.** The Contractor agrees to provide the City and County of San Francisco, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this Agreement for the purposes of making audits, examinations, excerpts and transcriptions.

**B.** The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

**C.** The Contractor agrees to maintain all books, records, accounts and reports required under this Agreement for a period of not less than three years after the date of termination or expiration of this Agreement, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case Contractor agrees to maintain same until the City, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. 49 CFR 18.36(i)(11).

## **IV. DEBARMENT AND SUSPENSION**

**A.** The Contractor shall comply and facilitate compliance with U.S. DOT regulations, "Nonprocurement Suspension and Debarment," 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 C.F.R. part 180. These provisions apply to each contract at any tier of \$25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

- a) Debarred from participation in any federally assisted Award;
- b) Suspended from participation in any federally assisted Award;
- c) Proposed for debarment from participation in any federally assisted Award;

- d) Declared ineligible to participate in any federally assisted Award;
- e) Voluntarily excluded from participation in any federally assisted Award; or
- f) Disqualified from participation in any federally assisted Award.

See RFP Appendix D, Certification Regarding Debarment, Suspension, and Other Responsibility Matters.

- B.** The Contractor agrees to include a provision in its lower-tier covered transactions requiring lower-tier participants to comply with the requirements of 2 CFR Part 180, Subpart C, and Part 1200, Subpart C.

## **V. NO FEDERAL GOVERNMENT OBLIGATIONS TO CONTRACTOR**

- A.** The City and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the City, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.
- B.** The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

## **VI. CIVIL RIGHTS**

- A. Nondiscrimination** – In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 41 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability.
- B.** Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
- C. Equal Employment Opportunity** - The following equal employment opportunity requirements apply to the underlying contract:
  - 1. Race, Color, Creed, National Origin, Sex** - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOT) regulations, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor,” 41 CFR Parts 60 et seq., (which implement Executive Order No. 11246, “Equal Employment Opportunity,” as amended by Executive Order No. 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” 42 U.S.C. § 2000e note), and with

any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

2. **Age** - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
  3. **Disabilities** - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, “Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act,” 29 CFR Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
- C. The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

## VII. DBE/SBE ASSURANCES

Pursuant to 49 C.F.R. Section 26.13, the Contractor is required to make the following assurance in its agreement with SFMTA and to include this assurance in any agreements it makes with subcontractors in the performance of this contract:

The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 C.F.R. Part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor or Subcontractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as SFMTA deems appropriate.

## VIII. PATENT RIGHTS *(applicable to contracts for experimental, research, or development projects financed by FTA)*

- A. **General.** If any invention, improvement, or discovery is conceived or first actually reduced to practice in the course of or under this Agreement, and that invention, improvement, or discovery is patentable under the laws of the United States of

America or any foreign country, the City and Contractor agree to take actions necessary to provide immediate notice and a detailed report to the FTA.

- B. Unless the Federal Government later makes a contrary determination in writing, irrespective of the Contractor's status (large business, small business, state government or instrumentality, local government, nonprofit organization, institution of higher education, individual), the City and Contractor agree to take the necessary actions to provide, through FTA, those rights in that invention due the Federal Government described in U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 CFR Part 401.
- C. The Contractor also agrees to include the requirements of this clause in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FTA.

**IX. RIGHTS IN DATA AND COPYRIGHTS** (*Applicable to contracts for planning, research, or development financed by FTA*)

- A. **Definition.** The term "subject data" used in this section means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under this Agreement. The term includes graphic or pictorial delineation in media such as drawings or photographs; text in specifications or related performance or design-type documents; machine forms such as punched cards, magnetic tape, or computer memory printouts; and information retained in computer memory. Examples include, but are not limited to, computer software, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identifications, and related information. The term "subject data" does not include financial reports, cost analyses, and similar information incidental to contract administration.
- B. **Federal Restrictions.** The following restrictions apply to all subject data first produced in the performance of this Agreement.
  - 1. **Publication of Data.** Except for its own internal use in conjunction with the Agreement, Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may Contractor authorize others to do so, without the written consent of the Federal Government, until such time as the Federal Government may have either released or approved the release of such data to the public; this restriction on publication, however, does not apply to any contract with an academic institution.
  - 2. **Federal License.** The Federal Government reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, "for Federal Government purposes," any subject data or copyright described below. As used in the previous sentence, "for Federal Government purposes" means use only for the direct purposes of the Federal Government. Without the copyright owner's consent, the Federal Government may not extend its Federal license to any other party:

- a. Any subject data developed under this Agreement, whether or not a copyright has been obtained; and
  - b. Any rights of copyright purchased by City or Contractor using Federal assistance in whole or in part provided by FTA.
3. **FTA Intention.** When FTA awards Federal assistance for an experimental, research or developmental work, it is FTA's general intention to increase transportation knowledge available to the public, rather than to restrict the benefits resulting from the work to participants in the work. Therefore, unless FTA determines otherwise, the Contractor performing experimental, research, or developmental work required by the underlying Agreement agrees to permit FTA to make available to the public, either FTA's license in the copyright to any subject data developed in the course of the Agreement, or a copy of the subject data first produced under the Agreement for which a copyright has not been obtained. If the experimental, research, or developmental work which is the subject of this Agreement is not completed for any reason whatsoever, all data developed under this Agreement shall become subject data as defined in Subsection a. above and shall be delivered as the Federal Government may direct. This subsection does not apply to adaptations of automatic data processing equipment or programs for the City's use the costs of which are financed with Federal transportation funds for capital projects.
4. **Hold Harmless.** Unless prohibited by state law, upon request by the Federal Government, the Contractor agrees to indemnify, save, and hold harmless the Federal Government, its officers, agents, and employees acting within the scope of their official duties, against any liability, including costs and expenses, resulting from any willful or intentional violation by the Contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use, or disposition of any data furnished under this Agreement. The Contractor shall not be required to indemnify the Federal Government for any such liability arising out of the wrongful acts of employees or agents of the Federal Government.
5. **Restrictions on Access to Patent Rights.** Nothing contained in this section on rights in data shall imply a license to the Federal Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Federal Government under any patent.
6. **Application to Data Incorporated into Work.** The requirements of Subsections (2), (3) and (4) of this Section do not apply to data developed by the City or Contractor and incorporated into the work carried out under this Agreement, provided that the City or Contractor identifies the data in writing at the time of delivery of the work.
7. **Application to Subcontractors.** Unless FTA determines otherwise, the Contractor agrees to include these requirements in each subcontract for



experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FTA.

**C. Flow Down.** The Contractor also agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FTA.

**D. Provision of Rights to Government.** Unless the Federal Government later makes a contrary determination in writing, irrespective of the Contractor's status (large business, small business, state government or instrumentality, local government, nonprofit organization, institution of higher education, individual, etc.), the City and Contractor agree to take the necessary actions to provide, through FTA, those rights in that invention due the Federal Government described in U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 CFR Part 401.

**X. CONTRACT WORK HOURS AND SAFETY STANDARDS** (*applicable to nonconstruction contracts in excess of \$100,000 that employ laborers or mechanics on a public work*)

**A. Overtime requirements** – No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

**B. Violation; liability for unpaid wages; liquidated damages** – In the event of any violation of the clause set forth in paragraph A of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph A of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph A of this section.

**C. Withholding for unpaid wages and liquidated damages** – The City and County of San Francisco shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or

subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

- D. Subcontracts** – The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs A through D of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs A through D of this section.

## **XI. ENERGY CONSERVATION REQUIREMENTS**

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

## **XII. CLEAN WATER REQUIREMENTS** (*applicable to all contracts in excess of \$100,000*)

- A.** The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251 et seq. Contractor agrees to report each violation of these requirements to the City and understands and agrees that the City will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA regional office.
- B.** The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

## **XIII. CLEAN AIR** (*applicable to all contracts and subcontracts in excess of \$100,000, including indefinite quantities where the amount is expected to exceed \$100,000 in any yea.*)

- A.** Contractor agrees to comply with applicable standards, orders, or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to the City and understands and agrees that the City will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.
- B.** The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

## **XIV. PRIVACY**

If Contractor or its employees administer any system of records on behalf of the Federal Government, Contractor and its employees agree to comply with the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. § 552a (the Privacy Act). Specifically, Contractor agrees to obtain the express consent of the Federal Government before the Contractor or its employees operate a system of records on behalf of the Government. Contractor acknowledges that the requirements of the Privacy Act, including the civil and criminal penalties for violations of the Privacy Act, apply to those individuals involved, and that failure to comply with the terms of the

Privacy Act may result in termination of this Agreement. The Contractor also agrees to include these requirements in each subcontract to administer any system of records on behalf of the Federal Government financed in whole or in part with Federal assistance provided by FTA.

**XV. DRUG AND ALCOHOL TESTING**

To the extent Contractor, its subcontractors or their employees perform a safety-sensitive function under the Agreement, Contractor agrees to comply with, and assure compliance of its subcontractors, and their employees, with 49 U.S.C. § 5331, and FTA regulations, "Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations," 49 CFR Part 655.

**XVI. TERMINATION FOR CONVENIENCE OF CITY** *(required for all contracts in excess of \$10,000)*

See Agreement Terms and Conditions.

**XVII. TERMINATION FOR DEFAULT** *(required for all contracts in excess of \$10,000)*

See Agreement Terms and Conditions.

**XVIII. BUY AMERICA**

The Contractor agrees to comply with 49 U.S.C. 5323(j) and 49 CFR Part 661, which provide that Federal funds may not be obligated unless steel, iron, manufactured products, and construction materials (*excluding* cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives) used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. "Construction materials" include an article, material, or supply that is or consists primarily of:

- Non-ferrous metals;
- Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall.

General waivers are listed in 49 CFR 661.7, and include microcomputer equipment, software, and small purchases (\$150,000 or less) made with capital, operating, or planning funds. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 CFR 661.11. Rolling stock not subject to a general waiver must be manufactured in the United States and have a domestic content in accordance with Section 3011 of the FAST Act (49 U.S.C 5323(j)(2)(C)) and FTA policy.

**XIX. PROHIBITION AGAINST USE OF CONTRACT FUNDS FOR COVERED TELECOMMUNICATIONS EQUIPMENT**

Under 2 CFR Section 216, Contractors and Subcontractors are prohibited from using Contract funds to:

- A. Procure or obtain;
- B. Extend or renew a contract to procure or obtain; or
- C. Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Section 889 of Public Law 115-232, covered telecommunications equipment is:
  - 1. Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
  - 2. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
  - 3. Telecommunications or video surveillance services provided by such entities or using such equipment.
  - 4. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

**XX. CARGO PREFERENCE - USE OF UNITED STATES FLAG VESSELS**

The Contractor agrees: (a) to use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying Agreement to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels; (b) to furnish within 20 Working Days following the date of loading for shipments originating within the United States or within 30 Working Days following the date of leading for shipments originating outside the United States, a legible copy of a rated, “on-board” commercial ocean bill-of-lading in English for each shipment of cargo described above to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the Contractor in the case of a subcontractor’s bill-of-lading.); and (c) to include these requirements in all subcontracts issued pursuant to this Agreement when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

## **XXI. RECYCLED PRODUCTS**

The Contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including, but not limited to, the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

## **XXII. PRE-AWARD AND POST-DELIVERY AUDIT REQUIREMENTS** (*applies to contracts for rolling stock*)

To the extent applicable, Contractor agrees to comply with the requirements of 49 U.S.C. § 5323(l) and FTA implementing regulations at 49 CFR Part 663, and to submit the following certifications:

- A. Buy America Requirements:** The Contractor shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Bidder/Offeror certifies compliance with Buy America, it shall submit documentation which lists (1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and (2) the location of the final assembly point for the rolling stock, including a description of the activities that are planned to take place and actually took place at the final assembly point and the cost of final assembly.
- B. Solicitation Specification Requirements:** The Contractor shall submit evidence that it will be capable of meeting the bid specifications and provide information and access to Recipient and its agents to enable them to conduct post-award and post-delivery audits.
- C. Federal Motor Vehicle Safety Standards (FMVSS):** The Contractor shall submit (1) manufacturer's FMVSS self-certification sticker **information** that the vehicle complies with relevant FMVSS or (2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

## **XXIII. FALSE OR FRAUDULENT STATEMENTS AND CLAIMS**

- A.** The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. §§ 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 CFR Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying Agreement, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA-assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.
- B.** The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal

Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

- C. The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

#### **XXIV. FLY AMERICA**

The Contractor agrees to comply with 49 U.S.C. 40118 (the “Fly America” Act) in accordance with the General Services Administration’s regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S. Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

#### **XXV. INCORPORATION OF FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS**

The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1F, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any (name of grantee) requests which would cause (name of grantee) to be in violation of the FTA terms and conditions.

#### **XXVI. TRANSIT EMPLOYEE PROTECTIVE AGREEMENTS** *(applicable to each contract for transit operations performed by employees of a Contractor recognized by FTA to be a transit operator)*

- A. The Contractor agrees to the comply with applicable transit employee protective requirements as follows:
  - 1. **General Transit Employee Protective Requirements** - To the extent that FTA determines that transit operations are involved, the Contractor agrees to carry out the transit operations work on the underlying contract in compliance with terms and conditions determined by the U.S. Secretary of Labor to be fair and equitable to protect the interests of employees employed under this

contract and to meet the employee protective requirements of 49 U.S.C. A 5333(b), and U.S. DOL guidelines at 29 C.F.R. Part 215, and any amendments thereto. These terms and conditions are identified in the letter of certification from the U.S. DOL to FTA applicable to the FTA Recipient's project from which Federal assistance is provided to support work on the underlying contract. The Contractor agrees to carry out that work in compliance with the conditions stated in that U.S. DOL letter. The requirements of this subsection A, however, do not apply to any contract financed with Federal assistance provided by FTA either for projects for elderly individuals and individuals with disabilities authorized by 49 U.S.C. § 5310(a)(2), or for projects for nonurbanized areas authorized by 49 U.S.C. § 5311. Alternate provisions for those projects are set forth in subsections (2) and (3) of this clause.

**2. Transit Employee Protective Requirements for Projects Authorized by 49 U.S.C. § 5310(a)(2) for Elderly Individuals and Individuals with Disabilities**

– If the contract involves transit operations financed in whole or in part with Federal assistance authorized by 49 U.S.C. § 5310(a)(2), and if the U.S. Secretary of Transportation has determined or determines in the future that the employee protective requirements of 49 U.S.C. § 5333(b) are necessary or appropriate for the state and the public body subrecipient for which work is performed on the underlying contract, the Contractor agrees to carry out the Project in compliance with the terms and conditions determined by the U.S. Secretary of Labor to meet the requirements of 49 U.S.C. § 5333(b), U.S. DOL guidelines at 29 C.F.R. Part 215, and any amendments thereto. These terms and conditions are identified in the U.S. DOL's letter of certification to FTA, the date of which is set forth Grant Agreement or Cooperative Agreement with the state. The Contractor agrees to perform transit operations in connection with the underlying contract in compliance with the conditions stated in that U.S. DOL letter.

**3. Transit Employee Protective Requirements for Projects Authorized by 49 U.S.C. § 5311 in Nonurbanized Areas**

– If the contract involves transit operations financed in whole or in part with Federal assistance authorized by 49 U.S.C. § 5311, the Contractor agrees to comply with the terms and conditions of the Special Warranty for the Nonurbanized Area Program agreed to by the U.S. Secretaries of Transportation and Labor, dated May 31, 1979, and the procedures implemented by U.S. DOL or any revision thereto.

- B.** The Contractor also agrees to include the any applicable requirements in each subcontract involving transit operations financed in whole or in part with Federal assistance provided by FTA.

**XXVII. NATIONAL ITS ARCHITECTURE POLICY** (*Applicable to contracts for ITS projects*)

If providing Intelligent Transportation Systems (ITS) property or services, Contactor shall comply with the National ITS Architecture and standards to the extent required by 23 U.S.C. § 512, FTA Notice, "FTA National ITS Architecture Policy on Transit

Projects," 66 FR 1455, et seq., January 8, 2001, and later published policies or implementing directives FTA may issue.

**XXVIII. TEXTING WHILE DRIVING; DISTRACTED DRIVING**

Consistent with Executive Order 13513 "Federal Leadership on Reducing Text Messaging While Driving", Oct. 1, 2009 (available at <http://edocket.access.gpo.gov/2009/E9-24203.htm> ) and DOT Order 3902.10 "Text Messaging While Driving", Dec. 30, 2009, SFMTA encourages Contractor to promote policies and initiatives for employees and other personnel that adopt and promote safety policies to decrease crashes by distracted drivers, including policies to ban text messaging while driving, and to include this provision in each third party subcontract involving the project.

**XXIX. SEAT BELT USE**

In compliance with Executive Order 13043 "Increasing Seat Belt Use in the United States," April 16, 1997, 23 U.S.C. Section 402 note, the SFMTA encourages Contractor to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company owned, rented, or personally operated vehicles, and to include this provision in each third party subcontract involving the project.

**XXX. LOBBYING** (*To be submitted with each bid or offer exceeding \$100,000*)

See RFP Appendix E, Certification Regarding Lobbying.

**XXXI. PROMPT PAYMENT**

- A.** In accordance with SFMTA's SBE/DBE Program, no later than three days from the date of Contractor's receipt of progress payments by SFMTA, the Contractor shall pay any subcontractors for work that has been satisfactorily performed by said subconsultants. Unless the prime consultant notifies the CCO Director in writing within 10 Working Days prior to receiving payment from the City that there is a bona fide dispute between the prime consultant and the subconsultant. Within five Working Days of such payment, Consultant shall provide City with a declaration under penalty of perjury that it has promptly paid such subconsultants for the work they have performed. Failure to provide such evidence shall be cause for City to suspend future progress payments to Consultants.
- B.** Consultant may withhold retention from subconsultants if City withholds retention from Consultant. Should retention be withheld from Consultant, within 30 days of City's payment of retention to Consultant for satisfactory completion of all work required of a subconsultant, Contractor shall release any retention withheld to the subconsultant. Satisfactory completion shall mean when all the tasks called for in the subcontract with subconsultant have been accomplished and documented as required by City. If the Consultant does not pay its subconsultant as required under the above paragraph, it shall pay interest to the subconsultant at the legal rate set forth in subdivision (a) of Section 685.010 of the California Code of Civil Procedure.



**XXXII. VETERANS EMPLOYMENT** (*applicable to Capital Projects*)

As provided by 49 U.S.C. § 5325(k):

A. To the extent practicable, Contractor agrees that it:

1. Will give a hiring preference to veterans (as defined in 5 U.S.C. § 2108), who have the skills and abilities required to perform construction work required under a third party contract in connection with a capital project supported with funds made available or appropriated for 49 U.S.C. chapter 53, and
2. Will not require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee, and

B. Contractor also assures that its subcontractor will:

1. Will give a hiring preference to veterans (as defined in 5 U.S.C. § 2108), who have the skills and abilities required to perform construction work required under a third party contract in connection with a capital project supported with funds made available or appropriated for 49 U.S.C. chapter 53, to the extent practicable, and
2. Will not require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

## Appendix E

### SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY

#### SBE/DBE REQUIREMENTS

##### Architects, Engineers, Planners, and Environmental Scientists and Other Professional Services

### I. POLICY

The San Francisco Municipal Transportation Agency (SFMTA), recipient of federal financial assistance from the Federal Transit Administration (FTA), is committed to and has adopted, a Small Business Enterprise (SBE) and Disadvantaged Business Enterprise (DBE) Program to implement the Disadvantaged Business Enterprise regulations in 49 C.F.R. Part 26 (the "Regulations"), issued by the Department of Transportation (DOT).

It is the policy of the SFMTA to ensure nondiscrimination in the award and administration of DOT-assisted contracts and to create a level playing field on which SBEs and DBEs can compete fairly for contracts and subcontracts relating to SFMTA's construction, procurement and professional services activities. To this end, SFMTA has developed procedures to remove barriers to SBE and DBE participation in the bidding and award process and to assist SBEs and DBEs to develop and compete successfully outside of the SBE/DBE program. In connection with the performance of this contract, the Contractor will cooperate with SFMTA in meeting these commitments and objectives.

Pursuant to 49 C.F.R. Section 26.13, the Contractor is required to make the following assurance in its agreement with SFMTA and to include this assurance in any agreements it makes with subcontractors in the performance of this contract:

The Contractor or Subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 C.F.R. Part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor or Subcontractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as SFMTA deems appropriate.

#### A. Applicability

Under 49 CFR Sections 26.3 and 26.51, and in response to the Federal Transit Administration's (FTA) March 23, 2006, publication of the Department of Transportation's (DOT) guidance concerning the federal DBE program that applies to grant recipients within the Ninth Circuit, the SFMTA, a recipient of federal financial assistance from the FTA, is required to implement race-neutral means of facilitating DBE participation in instances where the SFMTA lacks evidence of discrimination or its effects on DBEs. Per DOT requirements, the SFMTA

conducted a disparity study to determine if substantial disparities exist in the utilization of DBEs in the SFMTA's federally existed contracts. The results of the study concluded that for the SFMTA's professional services contracts, DBEs owned by women are underutilized, and DOT has authorized the SFMTA to establish contract goals for women-owned DBEs. The Regulations are incorporated into this Program as though fully set forth herein. This Program applies to all SFMTA contracts that are funded, in whole or in part, by DOT federal financial assistance.

## **B. Objectives**

The objectives of this program are to:

1. Remove barriers to SBE and DBE participation in the bidding, award and administration of SFMTA contracts;
2. Assist SBEs and DBEs to develop and compete successfully outside of the Program;
3. Ensure that the Program is narrowly tailored in accordance with 49 C.F.R. Part 26;
4. Ensure that only SBEs and DBEs meeting the eligibility requirements are allowed to participate as SBEs and DBEs;
5. Identify business enterprises that are qualified as SBEs and DBEs and are qualified to provide SFMTA with required materials, equipment, supplies and services; and to develop a good rapport with the owners, managers and sales representatives of those enterprises;
6. Develop communications programs and procedures which will acquaint prospective SBEs and DBEs with SFMTA's contract procedures, activities and requirements and allow SBEs and DBEs to provide SFMTA with feedback on existing barriers to participation and effective procedures to eliminate those barriers; and
7. Administer the Program in close coordination with the various divisions within SFMTA so as to facilitate the successful implementation of this Program.

## **C. Administration of Program**

The Director of Transportation is responsible for adherence to this policy. The DBE Liaison Officer (DBELO) shall be responsible for the development, implementation and monitoring of this program. It is the expectation of the Municipal Transportation Board of Directors and the Director of Transportation that all SFMTA personnel shall adhere to the provisions and the spirit of this program.

## **D. Prohibited Discrimination**

SFMTA shall not exclude persons from participation in, deny benefits to, or otherwise discriminate against any persons in connection with the award and performance of any contract governed by the Regulations on the basis of race, color, sex or national origin. The City and County of San Francisco also prohibits discrimination on the basis of (the fact or perception of a

person's) race, color, creed, religion, national origin, ancestry, age, sex, sexual orientation, gender identity, domestic partner status, marital status, disability or Acquired Immune Deficiency Syndrome or HIV status (AIDS/HIV status).

**E.** SFMTA shall not directly or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the objectives of this program with respect to individuals in the groups or categories or having the characteristics listed above.

**F.** SFMTA has signed the federal assurances regarding nondiscrimination required under 49 C.F.R. Section 26.13. See III.D (Contract Assurances) for requirements of Contractor and Subconsultants.

## **II. DEFINITIONS**

Any terms used in SFMTA's SBE/DBE Program that are defined in 49 C.F.R. Section 26.5 or elsewhere in the Regulations shall have the meaning set forth in the Regulations.

**A. Disadvantaged Business Enterprise (DBE):** A DBE is a for-profit, small business concern (1) that is at least 51% owned by one or more individuals who are both socially and economically disadvantaged, or, in the case of a corporation, in which 51% of the stock is owned by one or more socially and economically disadvantaged individuals; (2) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it; and (3) that is certified under the California Unified Certification Program.

**B. Small Business Enterprise (SBE):** An SBE is a for-profit, small business concern with a three-year average gross revenue not exceeding current SBA size standards appropriate for its type of work and is either verified eligible by the SFMTA or the State of California's Small Business Program with the Department of General Services, the California Unified Certification Program with a U.S. Department of Transportation recipient, or the City and County of San Francisco's LBE program with the Contract Monitoring Division.

To be eligible to participate as a DBE or SBE on this contract, the total average gross revenue thresholds for the past five years must not exceed the current SBA business size standard appropriate to the type(s) of work the firm seeks to perform. Even if it meets the appropriate SBA size standard, a firm is not eligible if it (including its affiliates) has had average annual gross receipts over the firm's previous three fiscal years, in excess of \$30.40 million. These figures may be updated periodically by the DBE/SBE program.

## **III. SBE/DBE PARTICIPATION AND SUBCONTRACTING REQUIREMENTS**

### **SBE and DBE Participation Goals**

Contractor has committed to achieving 10 percent SBE participation for this contract.

## **B. Determining the Amount of SBE and DBE Participation**

The SFMTA strongly encourages the prime contractor to make every good faith effort to include SBEs and DBEs to perform meaningful work in all aspects of the projects. To accomplish this goal, the following guidance is provided:

### **1. SBE and DBE Participation**

SBE and DBE participation includes contracts (other than employee contracts) with SBEs and DBEs for any goods or services specifically required for the completion of the work under the Agreement. An SBE or DBE may participate as a prime contractor/consultant, subcontractor/consultant, joint venture partner with a prime or consultant, vendor of material or supplies incorporated or expended in the work, or a supplier of other services such as shipping, transportation, testing, equipment rental, insurance services and other support services necessary to fulfill the requirements of the Agreement.

### **2. Function**

SBEs and DBEs must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of work and must carry out its responsibility by actually performing, managing and supervising the work. However, an SBE or DBE may contract out a portion of the work if it is considered to be a normal industry practice. If an SBE or DBE contractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of normal industry practices, the SBE or DBE shall be presumed not to be performing a commercially useful function.

### **3. Determining the amount of SBE and DBE Participation**

SBE and DBE participation includes that portion of the contract work actually performed by a certified SBE or DBE with its own forces. An SBE or DBE may participate as a prime contractor, subcontractor, joint venture partner, or vendor or supplier of materials or services required by the contract.

An SBE's or DBE's participation can only be counted if it is performing a commercially useful function. An SBE or DBE is performing a commercially useful function when it actually performs, manages and supervises a portion of the work involved. There is a rebuttable presumption that if the SBE or DBE is not responsible for at least 30 percent of the work with its own forces, or subcontracts a greater portion of the work than the normal industry standard, it is not performing a commercially useful function.

The Contractor shall determine the amount of SBE and DBE participation for each SBE and DBE performing work on the contract in terms of both the total value of the work in dollars and the percentage of the total contract bid price. The Contractor shall also determine the total amount of SBE and DBE participation for the entire contract. The Contractor shall count SBE and DBE participation according to the following guidelines:

**SBE or DBE Prime Contractor**

Count the entire dollar amount of the work performed or services provided by the SBE's or DBE's own forces, including the cost of materials and supplies obtained for the work and the reasonable fees and commissions charged for the services. Do not count any work subcontracted to another firm as SBE or DBE participation by the SBE or DBE Prime Contractor.

**SBE or DBE Subcontractor**

Count the entire amount of the work performed or services provided by the SBE's or DBE's own forces, including the cost of materials and supplies obtained for the work (except for materials and supplies purchased or leased from the Prime Contractor) and reasonable fees and commissions charged for the services. Do not count any work subcontracted by an SBE or DBE subcontractor to another firm as SBE or DBE participation by said SBE or DBE subcontractor. If the work has been subcontracted to another SBE or DBE, it will be counted as SBE or DBE participation by that other SBE or DBE.

**SBE or DBE Joint Venture Partner**

Count the portion of the work that is performed solely by the SBE's or DBE's forces or if the work is not clearly delineated between the SBE or DBE and the joint venture partner, count the portion of the work equal to the SBE's or DBE's percentage of ownership interest in the joint venture.

**SBE or DBE Regular Dealer**

Count 60 percent of the costs of materials and supplies obtained from an SBE or DBE regular dealer that owns, operates or maintains a store or warehouse in which the materials and supplies are regularly bought, kept in stock and sold or leased to the public in the usual course of business (except regular dealers of bulk items such as petroleum, cement and gravel who own and operate distribution equipment in lieu of maintaining a place of business). This applies whether an SBE or DBE is a prime contractor or subcontractor.

**Other SBEs or DBEs**

Count the entire amount of fees or commissions charged for assistance in procuring or delivering materials and supplies when purchased from an SBE or DBE that is not a manufacturer or regular dealer. Do not count the cost of the materials and supplies.

**C. Submission of Certification for SBEs and DBEs**

All firms wishing to receive credit for participation under the SFMTA's SBE/DBE Program must be certified as bona fide SBEs or DBEs with the SFMTA. This requires either submission of: (1) the completed certification applications for either SBEs, DBEs, or LBEs, or (2) submission of the SFMTA's small business verification application. For

information regarding where to obtain applications for these certifications, please contact the SFMTA Contract Compliance Office at:

San Francisco Municipal Transportation Agency  
Contract Compliance Office  
One South Van Ness Avenue, 6th floor  
San Francisco, California 94103  
[todd.senigar@sfmta.com](mailto:todd.senigar@sfmta.com)

**D. Contract Assurances**

The Contractor and its subcontractors shall not discriminate on the basis of race, color, national origin, or sex in the performance of the contract. The Contractor and its subcontractors shall carry out applicable requirements of 49 C.F.R. Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to: (1) withholding monthly progress payments; (2) assessing sanctions; (3) liquidated damages; and/or (4) disqualifying the contractor from future bidding as non-responsible.

**E. Use of SBE and DBE Firms**

The Consultant shall use the specific SBEs and DBEs listed to perform the work and supply the materials for which each is listed unless the Consultant obtains CCO's prior written consent. Unless prior written consent by CCO is provided, the Consultant shall not be entitled to any payment for work or material unless it is performed or supplied by the listed SBE or DBE.

**F. Substitution of Subconsultants and Suppliers**

The Consultant shall not terminate an SBE or DBE subconsultant or supplier for convenience and then perform the work with its own forces. Before requesting the termination and/or substitution of an SBE or DBE subconsultant, the Consultant must give notice in writing to the SBE or DBE subconsultant, with a copy to CCO, of its intent to request to terminate and/or substitute, and the reason for the request. The Consultant must give the SBE or DBE five days to respond to the notice and advise CCO and the Consultant of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Consultant's request should not be approved. CCO must approve the request in writing in order for the substitution to be valid. The substitution may also have to be approved by the SFMTA Board of Directors.

When an SBE or DBE subconsultant is terminated as provided in this section, or fails to complete its work on the contract for any reason, the Consultant shall make good faith efforts to find another SBE or DBE subconsultant to substitute for the original SBE or DBE. These good faith efforts shall be directed at finding another SBE or DBE to perform at least the same amount of work under the contract as the SBE or DBE that was terminated, to the extent needed to meet the established SBE or DBE contract goal.

**G. Addition of Subconsultants and Suppliers**

The Consultant shall notify CCO prior to any addition of an SBE/DBE or non-SBE/non-DBE subconsultant or supplier to the project. Submit SBE/DBE SFMTA Form No. 4 for each new SBE or DBE subconsultant or supplier. Any new SBE or DBE subconsultant or supplier approved by CCO also must submit SFMTA SBE/DBE Form No. 5.

#### **H. Prompt Payment to Subcontractors**

In accordance with SFMTA's SBE/DBE Program, no later than three days from the date of Contractor's receipt of progress payments by SFMTA, the Contractor shall pay any subcontractors for work that has been satisfactorily performed by said subconsultants. Unless the prime consultant notifies the CCO Director in writing within 10 working days prior to receiving payment from the City that there is a bona fide dispute between the prime consultant and the subconsultant. Within five working days of such payment, Consultant shall provide City with a declaration under penalty of perjury that it has promptly paid such subconsultants for the work they have performed. Failure to provide such evidence shall be cause for City to suspend future progress payments to Consultants.

**The CCO has implemented an online contract compliance monitoring system, B2GNow. If this contract is awarded after implementation of B2GNow, rather than completing and submitting SBE/DBE Form No. 7, the Consultant shall enter its subconsultant payment information into the B2GNow system. Subconsultants are then required to acknowledge payment from the Consultant online using the B2GNow system. B2GNow system training will be made available to the Consultant and its subconsultants.**

Consultant may withhold retention from subconsultants if City withholds retention from Consultant. Should retention be withheld from Consultant, within 30 days of City's payment of retention to Consultant for satisfactory completion of all work required of a subconsultant, Contractor shall release any retention withheld to the subconsultant. Satisfactory completion shall mean when all the tasks called for in the subcontract with subconsultant have been accomplished and documented as required by City.

If the Consultant does not pay its subconsultant as required under the above paragraph, it shall pay interest to the subconsultant at the legal rate set forth in subdivision (a) of Section 685.010 of the California Code of Civil Procedure.

### **IV. MONITORING AND COMPLIANCE**

#### **A. SBE and DBE Records; Reporting Requirements**

The Contractor shall maintain records of all SBE and DBE participation in the performance of the contract including subcontracts entered into with certified SBEs and DBEs and all materials purchased from certified SBEs and DBEs.

The Contractor shall submit SBE and DBE participation reports to SFMTA on a monthly basis, or as otherwise directed by the CCO. The reports shall identify the name and address of each SBE and DBE performing work on the project, and show the total dollar amount requested for payment and the total dollar amount actually paid to each SBE and DBE. Within



thirty (30) days of completion of the contract, or as otherwise directed by the CCO, the Contractor shall submit a final summary SBE/DBE report to the CCO.

**B. Noncompliance; Administrative Remedies**

SFMTA will implement appropriate mechanisms to ensure that its prime contractors and subcontractors comply with SBE/DBE Program regulatory requirements. SFMTA will apply legal and contractual remedies available under federal, state and local law.

SFMTA will also include a monitoring and enforcement mechanism to verify that the work committed to SBEs and DBEs at contract award is actually performed by the SBEs and DBEs. This mechanism will provide for a running tally of actual SBE and DBE attainments and include a provision ensuring that SBE and DBE participation is credited toward overall or contract goals only when payments are actually made to SBE and DBE firms.

**CITY AND COUNTY OF SAN FRANCISCO  
SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY**

**VOLUME 2**

**TECHNICAL SPECIFICATIONS**

**FOR**

**Mid-Life Overhaul of the 40' & 60' Hybrid Electric Coaches**

**CONTRACT PROPOSAL NO. SFMTA-2024-74-FTA**

**Revision 0**

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# 1 OVERALL REQUIREMENTS

## 1.1 SCOPE OF WORK

These specifications detail the technical requirements for the mid-life rehabilitation of 221 New Flyer Hybrid Coaches of the San Francisco Municipal Transportation Agency (SFMTA). The New Flyer Coaches are comprised of 40-foot and 60-foot low-floor Coaches with a stainless-steel structure and hybrid propulsion. The designated Coaches shall be Overhauled in accordance with the requirements detailed in this Technical Specifications. The New Flyer Coaches to be overhauled are from Sales Release (SR) numbers 2043, 2116, 2117, and 2118 for a total of 221 coaches (see table below).

Bus #	Sales Release Number #	Type	QTY	Propulsion	Arrival Date
8848 - 8901	SR-2043	40-ft	54	Allison	October 2016
6629 - 6697	SR-2116	60-ft	69	Allison	May 2017
8902 - 8969	SR-2117	40-ft	68	BAE	June 2018
8751 - 8780	SR-2118	40-ft	30	BAE	June 2017
<b>Total</b>			<b>221</b>		

The Contractor shall be responsible for all transportation costs, materials, and labor, unless specifically noted. The scope of work includes the following areas and systems of the Buses:

- Interior/Flooring
- Operator’s Area
- Heating, Ventilation, and Air Conditioning (HVAC)
- Electronic Equipment (destination signs, surveillance cameras)
- Suspension System
- Pneumatic System
- Fuel System
- Lines and Piping
- Propulsion System
  - Traction Motor
  - Hybrid Drive System
  - Engine System
  - Energy Storage System (ESS)
- Cooling System
- Electrical (batteries/alternator/roof traction container/roof auxiliary container)
- Wheelchair Ramp

The SFMTA's Inspection Team will perform a pre-departure inspection of all Coaches prior to being picked-up by the Contractor for rehabilitation. The Contractor will be responsible for confirming and verifying the Coaches condition against the Pre-Departure Inspection Report. Any damages incurred during transportation shall be the responsibility of the Contractor and shall be repaired at the Contractor's expense.

Prior to delivery of the Coaches back to the SFMTA, the Contractor shall ensure that the engine oil, transmission oil, wheelchair ramp fluid, power steering fluid, and engine coolant are topped-off to the correct amount. The Contractor shall use the same grade/rating of fluids that the SFMTA currently uses on the shop floor. The Contractor shall verify fluid compatibility with SFMTA Maintenance during the design review.

### 1.1.1 DEFINITIONS

The following are definitions of special terms used in the Technical Specifications:

ADA - The Americans with Disabilities Act of 1990 and its implementing regulations, including 49 CFR Part 38.

Coach - One of the New Flyer hybrid coaches to be repaired under this Agreement. The terms Bus, Coach and Vehicle are used interchangeably.

Day - A calendar day.

Defect(s) - Patent or latent malfunctions or failure in manufacture or design of any component or subsystem.

Design Review - This is a series of meetings between SFMTA and the Contractor to review any technical or contractual clarifications required to assure that the completed Vehicles will comply with SFMTA specifications. These meetings will also allow the SFMTA and the Contractor to exchange existing documents and specification data to further clarify the designs.

First Article Coach - The first Coach for each SR completed the rehabilitation process and used to verify that the work completed by the Contractor is in compliance with the contractual requirements.

First Article Inspection - A detailed inspection by SFMTA personnel or representatives on the First Article Coach to ensure that the Coach is compliant with the contractual requirements.

Gross Load - 150 pounds for every designed passenger seating position, for the operator, and for each 1.5 square feet of free floor space.

GVW (Gross Vehicle Weight) - Curb Weight plus gross load.

GVWR (Gross Vehicle Weight Rated) - The maximum total weight, as determined by the Vehicle manufacturer, at which the Vehicle can be safely and reliably operated for its intended purpose. The GVWR shall be greater than or equal to GVW.

HVAC (Heating, Ventilation and Air Conditioning) - The on-board system that provides the operator and passenger's temperature comfort within the Coach.

Maintenance Personnel Skill Levels - Definitions of maintenance personnel skill levels are listed below:

- a) 5M: Specialist Mechanic or Class A Mechanic Leader
- b) 4M: Journeyman or Class A Mechanic



- c) 3M: Service Mechanic or Class B Servicer
- d) 2M: Mechanic Helper or Coach Servicer
- e) 1M: Cleaner, Fueller, Oiler, Hostler, or Shifter
- f) 3E: Assistant Supervising Electronics Maintenance Technician
- g) 2E: Electronics Maintenance Technician
- h) 1E: Assistant Electronics Maintenance Technician

Propulsion System - System that provides propulsion for the Vehicle in an amount proportional to what the driver commands.

Related Defect(s) - Damages inflicted on any component or subsystem as a direct result of a Defect.

Remove and Replace - This phrase as used in these Specifications requires the Contractor to clean, paint, lubricate and in general refurbish components that are required to be Removed and Replaced. Damaged parts shall be replaced with new parts per Unforeseeable Work. Wear and tear, and consumable items shall be replaced with new parts.

SR - Sales Release. New Flyer assigns an SR identifying number to each order of Buses. Seated Load - 150 pounds for every designed passenger seating position and for the operator.

Standee Line - A line marked across the Coach aisle in line with the front curbside modesty panel to designate the forward area, which passengers may not occupy when the Coach is moving.

Unforeseeable Work - Latent conditions in the Coach that differ materially from the Scope of Work as identified in the Technical Provisions and that are generally recognized as inherent in work of the character provided for under this Contract.

Wheelchair - Mobility aid belonging to any class of three- or four-wheel devices, usable indoors, designed for and used by individuals with mobility impairments, whether operated manually or powered.

Working Day - All 24-hour periods beginning and ending at midnight, Monday through Friday inclusive.

### 1.1.2 ABBREVIATIONS

The following is a list of abbreviations used in the Technical Specifications:

<u>ANSI</u>	American National Standards Institute
<u>ASTM</u>	American Society for Testing and Materials
<u>ATG</u>	Autotechnik GmbH
<u>AWS</u>	American Welding Society
<u>CAC</u>	Charge Air Cooler
<u>CARB</u>	California Air Resources Board
<u>EPA</u>	Environmental Protection Agency
<u>ESS</u>	Energy Storage System
<u>FMVSS</u>	Federal Motor Vehicle Safety Standards

<u>HVAC</u>	Heating, Ventilation and Air Conditioning
<u>JIC</u>	Joint Industrial Council
<u>LED</u>	Light Emitting Diode
<u>MSDS</u>	Material Safety Data Sheets
<u>NF</u>	New Flyer
<u>OCU</u>	Operator Control Unit
<u>OEM</u>	Original Equipment Manufacturer
<u>PCB</u>	Polychlorinated Biphenyls
<u>P/N</u>	Part Number
<u>PSI</u>	Pounds per Square Inch
<u>PVC</u>	Polyvinyl Chloride
<u>SAE</u>	Society of Automotive Engineers
<u>SDS</u>	Secure Diagnostics Station
<u>SFMTA</u>	San Francisco Municipal Transportation Agency
<u>TOLE</u>	Transit-Only Lane Enforcement
<u>VOC</u>	Volatile Organic Compounds

### **1.1.3 LEGAL REQUIREMENTS**

The Coaches and equipment must comply with all applicable FMVSS, federal, state, and local regulations. Local regulations are defined as those below the state level. In the event of any conflict between the requirements of these specifications and any applicable legal requirement, the legal requirement shall prevail.

### **1.2 CONTRACT MEETINGS AND DELIVERABLES**

The Contractor shall participate in one pre-production meeting, for the purpose of resolving design issues and a three-stage Design Review, which consists of an initial Design Review, a follow-up Design Review, and a final Design Review. At these meetings, the Contractor shall provide sufficient information to define the proposed remanufacturing processes and procedures, present qualifications for proposed subcontractors and present design proposals for the new systems specified. All materials to be reviewed at each pre-production meeting must be provided to the SFMTA for review a minimum of three working days prior to the meeting. The process shall result in the production of a First Article Coach, which will undergo a First Article Inspection (FAI) to ensure full compliance with the Technical Specifications and drawings. Once the SFMTA approves the First Article Coach, it will serve as the baseline design configuration for production Coaches. Each SR shall have a dedicated FAI prior to serial production.

### **1.3 DIMENSIONS REQUIREMENTS**

The Contractor shall not alter the exterior dimensions without the SFMTA's approval. The Contractor shall refer to the original Technical Worksheet submittal from the manufacturer when the Coach was purchased (Reference, ATTACHMENT 1: ORIGINAL OEM SPECIFICATIONS ).

### **1.4 MATERIALS**

All materials used in construction of the Coach and all its parts shall conform in all respects to American Society of Testing Materials (ASTM), Society of Automotive Engineers (SAE), and industry recognized standards. Materials used shall be of the same manufacturer and model on each Coach. All removed materials shall be disposed of in compliance with the federal, state and local regulations.

### **1.5 WORKMANSHIP**

The Coaches shall be repaired with new parts and components meeting or exceeding OEM specifications. Workmanship and construction shall be of the best grade and shall conform in all respects to the best practices in the industry. Welding procedures, welding materials, and qualifications of welding operators shall be in accordance with the standards of the ASTM and the AWS.

The Contractor shall provide certifications from subsystem manufacturers that the Contractor is certified/authorized to perform such installations.

### **1.6 UNFORESEEABLE WORK**

Due to the nature of the work, it is extremely difficult to predict and budget the total amount of replacement work for damage that may not be visible. The Coaches being overhauled in this program may require repairs beyond the scope of this Technical Specification. To the greatest extent practical, repairs to be tagged as Unforeseeable Work shall be identified at the Departure Inspection prior to transferring the Coach to the Contractor. It is the responsibility of the Contractor to inform the SFMTA of any work that they consider to be Unforeseeable Work during the Receiving Inspection or during the overhaul of the vehicle at the Contractor's facility. Unforeseeable Work shall be negotiated according to the provisions of Section 3.3 (Compensation) of the Sample Agreement. The Contractor shall obtain approval from the SFMTA before proceeding with the repair of Unforeseeable Work on each Vehicle. Photo documentation is required prior to repairs being performed on all Unforeseeable Work; Contractor must have email attachment capability.

The SFMTA reserves the right to supply the Contractor with any replacement components for any repairs negotiated as Unforeseeable Work.

## 2 BODY

### 2.1 RESERVED

### 2.2 ROTARY MASTER DOOR CONTROLLER

The handle for the existing 5-positioned rotary master door controller shall be Removed and Replaced with an extended door handle (NF P/N 106847). The Contractor shall Remove and Replace the snap action switches (NF P/N 6304386, NF P/N 6305089) in the door controller assembly.

### 2.3 BIKE RACK

The bike rack at the front bumper shall be Removed and Replaced with a 3-position Byk-Rak bicycle rack with extra heavy-duty spring lift assist pivot bracket (Byk-Rack P/N B0053DSBAD). The rack hardware shall be torqued appropriately and installed along with durable rubber stops to mitigate rattle noise in both the deployed and stowed positions. The installation shall include a deployment kit to provide the operator with a visual indicator on the vehicle dash panel when the bike rack is deployed. The front bumper will need to be modified and/or replaced with a new bumper in order to accommodate the 3-position Byk-Rak. The Contractor shall propose a methodology for the SFMTA's approval to either modify the front bumper or replace with a new bumper.

### 2.4 WINDOWS

All windshield and window frame seals and interior rubber seals must be inspected for cracks and damage. The seals must be flexible, in good condition and free of leaks. The window channels shall be cleaned. The windows shall be inspected for damage and replaced as necessary. The seals shall be lubricated and reinstalled according to New Flyer service manual specifications. The sliding windows shall be tested for proper functionality. All replacement work shall be documented as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

Any replaced windows shall be safety glass of minimum 1/4-inch-thick and conform to the requirements of ANSI Z26.1 Standard for Type AS-3. All passenger windows and door glass shall be 55 percent luminous transmittance. The Operator's side window shall be safety glass of minimum of 1/4-inch thick and conform to the requirements of ANSI Z26.1-1983 Standard for Type AS-2 shall be 76 percent luminous transmittance. Windows over the side destination signs shall not be tinted.

The Contractor shall inspect the windshield for damage. Any replacement work shall be documented as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). The windshield shall be laminated safety glass of minimum of 1/4-inch-thick and shall conform to the requirements of ANSI Z26.1-1983 Standard for Type AS-1. The windshield shall be easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshields shall not be used. The glazing material shall have single-density tint. The upper portion of the windshield above the operator's field of view shall have a dark, shaded band with a minimum luminous transmittance of 6 percent when tested according to ASTM D-1003. See

ATTACHMENT 4: MATERIALS, COLORS, FINISHES for specifications regarding windows.

## **2.5 ARTICULATED JOINTS**

All 60-foot Coaches shall have their articulated joints and mounting chassis structural member thoroughly inspected using die penetrant for cracks, corrosion, structural deficiencies, and any other damage. The Contractor shall perform all inspection procedures outlined in the ATG and New Flyer service manual. All structural deficiencies shall be corrected using best industry practices or replaced with new parts. All damaged, cracked or corroded parts shall be replaced with new parts.

All wear parts, including but not limited to, wear plates, articulation bellows, and flexible hoses run through the articulation section shall be Removed and Replaced. The turntable shall be rebuilt with new bearings and seals. The proportioning valves shall be Removed and Replaced. The hydraulic cylinders shall be Removed and Replaced with rebuilt hydraulic cylinders. The limit switch shall be replaced, and all hoses shall be replaced between bulkhead termination points. The cooling hose passing through the articulated joint shall be covered with protective sleeving wrap. The protective sleeving wrap shall be approved by the SFMTA.

## **2.6 ROOF**

The Contractor shall remove any excessive old sealant from all roof penetrations and apply new sealant to ensure proper water tightness. The locations and new sealant shall be approved by the SFMTA.

### **3 INTERIOR**

The interior trim shall be inspected for damage and repaired or replaced as necessary through Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). See ATTACHMENT 4: MATERIALS, COLORS, FINISHES for material specification on interior trim.

#### **3.1 FLOOR COVERING**

The Contractor shall inspect the floor covering thoroughly on all Coaches as well as the flooring material on the engine access hatch. Replace damaged sections as necessary through Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). All floor covering shall remain effective in all weather conditions and complies with all ADA requirements. The floor covering, as well as the transition of flooring material to the center aisle and to the entrance/exit areas, shall be smooth and present no tripping hazards (Reference ATTACHMENT 4: MATERIALS, COLORS, FINISHES).

The front standee line shall be removed and relocated behind the turn of the corner at the rear of the wheel well. Final location shall be approved by the SFMTA. The standee line shall be the same yellow color as the existing standee line, at least two inches wide, and shall extend across the Coach aisle. The color shall be consistent throughout the floor covering. The Contractor shall add one "DO NOT STAND" floor inlay centered between the two front wheel wells. The final location shall be approved by the SFMTA.

The contractor shall remove and replace the edge of the vestibule floor tread with the 2 inch wide Altro TFM2729 "Safety Yellow" Speckled Material or approved equal.

The Contractor shall clean the floor as required to remove any odor or slippery coating prior to Bus delivery.

##### **3.1.1 STEPS AND STEPWELLS**

The Contractor shall reapply the Safety Yellow anti-slip coating flooring to the stepwell of all buses.

Due to the frequency of maintenance in the stepwell area, the Contractor shall use stainless screws at the lip of the last step instead of rivets.

#### **3.2 RESERVED**

#### **3.3 PASSENGER SEATING**

The Contractor shall propose a design for adding a horizontal stanchion to the modesty panel in front of the double forward facing seats on the upper deck of SR-2118. The goal for the design is to assist passengers getting in and out of the seat. The design shall be submitted to the SFMTA for approval during the design review meeting.

### **3.3.1 RESERVED**

## **3.4 OPERATOR'S AREA AND CONTROL**

The operator's seat shall be Removed and Replaced with a USSC Group 9100ALX or approved equal. The operator's seat upholstery shall be black vinyl and no cloth. The seat shall be supplied with an orange lap belt assembly. The seat belt retractor shall match the original location. The seat shall be easily removable from the Coach for service or repair. A height adjustable headrest shall be supplied and shall not be able to be removed by Operators. However, it shall be easily removed and installed by a mechanic with proper tools.

The Contractor shall Remove and Replace the adjustable brake & accelerator pedal assembly with a new assembly. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches and P/N's.

The shift selector shall be Removed and Replaced with a new shift selector. All Allison hybrid Coaches shall be replaced with an ALLISON TRANSMISSION 29551556 Shift selector. All BAE coaches shall be replaced with an Arens Controls SBW-PB2-656 shift selector. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches.

The front dash shall be thoroughly cleaned and inspected for damage. Repair work shall be document and negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

The Contractor shall inspect the Operator's microphone for proper function and securement. Repair or replacement work shall be document and negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

The Contractor shall inspect the operator barrier for damage and repair as necessary through Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

### **3.4.1 EMERGENCY ALARM / SILENT ALARM SWITCH (EA SWITCH)**

The Contractor shall Remove and Replace the Emergency Alarm switch on the Operator side console with a new EA switch (NF P/N 651002).

## **3.5 RESERVED**

## **3.6 MIRRORS**

### **3.6.1 RESERVED**

### **3.6.2 INTERIOR (AS APPLICABLE)**

The Contractor shall add a Front Stepwell mirror (NF P/N 268393) onto the ceiling panel of all hybrid coaches. See ATTACHMENT 14: ENTRANCE DOOR MIRROR for install location.

## **3.7 HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)**

The Contractor shall clean the HVAC system condenser and evaporator and inspect the heating system on all hybrid Coaches for functionality and reliability. The Contractor shall clean the battery pack cooling condenser for all Allison hybrid Coaches. If Contractor believes that any repairs are warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

The Contractor shall replace the polyester air filter on the upper air intake. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches.

The Contractor shall Remove and Replace the liquid line sight glass for the refrigerant fluid gauge.

The Contractor shall replace all flexible hoses attached to the ESS Cooler with hoses that meet or exceed OEM specifications and are compatible with the SFMTA fluids. Hard pipes shall be inspected for damage and replaced under Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). In addition, reference Section 5.6, LINES AND PIPING for other flexible (soft) lines replacement requirements.

The Contractor shall replace all hardware, panel seal and filter for the defroster unit. The defroster booster pump shall be inspected for proper functionality. If the Contractor believes that any repairs are warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

Since the heating and ventilation system condition varies from Coach to Coach, it is the Contractor's responsibility to document any repair or replacement of the EPROM and extra blower motors as Unforeseeable Work. All other component repairs or replacements not mentioned in this subsection shall be documented and negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). The HVAC system on the Coaches shall be in proper working condition at the time of delivery to the SFMTA.

### **3.8 WHEELCHAIR RAMP**

The Contractor shall clean and test the functionality of the wheelchair ramp. Any damages found shall be repaired. If the condition of the wheelchair ramp is beyond repairable, the contractor shall Remove and Replace the wheelchair ramp with a new Lift-U LU-18 ramp. The replacement wheelchair ramp shall be approved by the SFMTA. All repair or replacement shall be documented and negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

### **3.9 RESERVED**

### **3.10 SECURE DIAGNOSTICS STATION (SDS) CABINET**

The Contractor shall clean the dust and debris out of the SDS cabinet. The Contractor shall also inspect and replace any damaged cables or components. Any damaged cables or components shall be documented and negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

### **3.11 RESERVED**

### **3.12 RESERVED**

### **3.13 REAR PANEL**

The Contractor shall Remove and Replace the carpeted upper rear panel with material and color that is the same as the sidewall panels.



## 4 FURNISHINGS

The Contractor shall revise existing wiring diagrams, clearly showing the interfacing Coach schematic wiring diagrams for the Destination Signs and Video Surveillance Camera. The SFMTA will provide existing documentation during the design review.

### 4.1 DESTINATION SIGNS

The Contractor shall inspect the front head sign glass sealant ensure that it is water tight. The seals shall prevent water intrusion as outlined in Section 11.6.1.2 WATER TEST. If Contractor believes that any repairs are warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

The Contractor shall test all LED signs in the interior of the Coach for proper functionality before returning it to the SFMTA.

### 4.2 VIDEO SURVEILLANCE CAMERA SYSTEM

The aisle camera (CAM 4) shall be replaced with a new 2.8mm IP camera with a built-in mic on all Coaches by Hanwha (P/N RCMXNV-6012) or approved equal. CAM 4 is mounted in the same location on both 40-foot and 60-foot Coaches.

The Contractor shall inspect the exterior streetside and curbside cameras and replace the camera if the seal is not properly preventing water intrusion. This shall be determined during the departure inspection and shall be included in Unforeseeable Work. If the exterior camera required to be Removed and Replaced, it shall be Hanwha (P/N RCMXNV-6013M with a 6 inch pigtail M12 to RJ45) or approved equal.

The Contractor shall paint the white TOLE (Transit-Only Lane Enforcement) camera housing black to reduce glare.

The Contractor shall update the DVR software to support the new cameras. The new cameras must be programmed to match the IP addressing, frame rate, bitrate and any audio controls required for the camera that is being changed. Any software update and Commissioning must be completed by OEM certified personnel.

The Contractor shall install an uninterrupted power supply (UPS) by Power Stream (P/N PST-DC-UPS-1212-10A with 12v LION BAT) or approved equal capable of powering the DVR for at least 30 minutes to mitigate hard drive failure.

Note: It is the responsibility of the Contractor to complete the rehabilitation without damaging the DriveCam system.

### 4.3 MOBILE RADIO

The Coach is equipped with a mobile radio system. The Contractor and the SFMTA shall verify the radio system's functionality during the Departure Inspection. The Contractor is responsible for ensuring that the radio system remains fully functional before delivering the Coach back to the SFMTA after the overhaul is complete.

#### **4.4 FARE COLLECTION**

The Coach is equipped with a farebox and the SFMTA farebox shop will remove the system's hardware before the Contractor picks up the Vehicle from the SFMTA. The SFMTA will leave the farebox system cables on the Coach. The farebox system cables shall be fully functional when the Contractor delivers the Coaches back to the SFMTA.

#### **4.5 SIGN REQUIREMENTS**

The internal display sign shall display coordinating text for next stop and other audio announcements. The sign shall meet all ADA requirements for internal signage. The sign shall be a Twin Vision Smart Series 3 Light Emitting Diode (LED) type sign with amber LEDs and no wider than 37.4-inch. Messages can be shown streaming or by any of three single frame modes with automatic centering. Speed, delays, and looping shall be programmable. Busy/ready status shall be poll-able. Forced reset capability shall exist.

The internal LED display sign shall be used to display the words "Stop Requested" and shall be visible to passengers. When the passenger chime is activated, it shall remain on until the front or rear door is opened. The internal LED display sign shall also be used to display "Ramp Requested" when the Wheelchair passenger chime is activated.

The interior information sign shall also function as a Stop Requested sign. This stop requested sign message should be automatically mixed with other active messages when applicable. The stop requested message shall be cleared when any of the passenger doors are opened.

The electronic display sign shall function simultaneously with the analog passenger stop request display located on the front sign compartment door.

The Contractor shall relocate the two rear interior speakers currently located at the rear bulkhead panel above the rear bench seat on each side to the light panel approximately 6ft forward for SR-2116 and SR-2118. The final location shall be approved by SFMTA. The existing holes for the speaker shall be covered with similar rear bulkhead panel material and color. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches.

**4.6 RESERVED**

**4.7 RESERVED**

**4.8 RESERVED**

## 5 CHASSIS

### 5.1 SUSPENSION AND AXLES

The existing axles on the Coaches are in fair/good condition, and the SFMTA anticipates that a small number of damaged axles will be found. Each Coach requires a proper realignment as part of the Vehicle record requirements in Section 9, VEHICLE RECORDS.

#### 5.1.1 AXLES

The Contractor shall Remove and Replace all bearings, bushings, bearing seals, control valves, kingpins including bushings and seals, and radius rods bushings as appropriate on all axles (Reference, Section 1.6, UNFORESEEABLE WORK). The Contractor shall Remove and Replace all leveling valves with new.

All axles (control arms, housings, stabilizers, etc.) on each Coach shall be thoroughly cleaned of paint and rust and examined and inspected for cracks and damage using magnetic particle testing. If the damage/wear exceeds the OEM tolerance, the damaged component shall be replaced. The axles will then be repainted with an appropriate paint for service under the coaches. The axle replacement work shall be documented and negotiated as Unforeseeable Work under Section 1.6, UNFORESEEABLE WORK.

All sway bar bushings shall be Removed and Replaced with new sway bar bushings.

All axle bump stops shall be replaced. All axles that have been replaced shall have a minimum load rating sufficient for the Coach to be loaded to GVWR (Reference, ATTACHMENT 1: ORIGINAL OEM SPECIFICATIONS).

#### 5.1.2 AIR BAGS AND SHOCK ABSORBERS

All active member of the suspension system (air bellows and shock absorbers) shall be replaced with Firestone air bellows (Firestone Model # 1T15L-4), Koni shock absorbers (Koni Model # 90-2517 for front wheels, Koni Model # 90-2518 for center (if applicable) and rear wheels) or approved equal.

The Contractor shall verify that the suspension kneels evenly on both sides in compliance with the OEM standards listed in ATTACHMENT 1: ORIGINAL OEM SPECIFICATIONS, when kneeling is activated.

### 5.2 STEERING

The Contractor shall perform a full vehicle alignment on the Coaches to OEM standards. The Contractor shall provide SFMTA an alignment procedure for review and an alignment print out for each bus shall be included in the Coach History Book. The outside body cornering radius shall not exceed 528 inches with the Coach at seated load weight, applicable to both 40- and 60-foot length Coaches.

### **5.2.1 POWER STEERING PUMP, GEAR BOX AND LINKAGE**

The Contractor shall Remove and Replace the power steering pump and the steering miter box (NF P/N 200640). The power steering gearbox shall be removed and replaced with a new steering gearbox. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches. Any other replacement work shall be documented and negotiated as Unforeseeable Work, under Section 1.6, UNFORESEEABLE WORK.

### **5.2.2 STEERING COLUMN AND STEERING WHEEL**

The Contractor shall Remove and Replace the existing steering wheel with a new steering wheel including horn contact plate and button (NF P/N 064449) on all Coaches.

The steering column and steering shaft U-Joints, bearings & bushings shall be Removed and Replaced according to OEM specifications. In addition, the Contractor shall verify the functionality of the horn button, condition of the horn contact, steering column, steering wheel, and connections to the steering gear. Any other replacement work shall be documented and negotiated as Unforeseeable Work, under Section 1.6, UNFORESEEABLE WORK.

### **5.2.3 STEERING EFFORTS**

The Contractor shall develop a QA procedure/process to ensure that all Coaches have a consistent turning effort. The Contractor shall determine the average steering torque value of the existing New Flyer fleet and this value should be used as a baseline for all Vehicles during Vehicle inspection.

### **5.2.4 STEERING LINKAGE**

The Contractor shall remove and replace all steering linkages including tie rod, drag link, and steering damper.

## **5.3 BRAKES**

### **5.3.1 AIR LINES, VALVES AND AIR TANKS**

The brake airlines and tanks shall be pressure tested and replaced if found to not meet OEM Specifications. This work shall be documented and negotiated as Unforeseeable Work under Section 1.6, UNFORESEEABLE WORK and Section 5.4.2, AIR LINES AND FITTINGS and Section 5.4.3, AIR TANKS.

## **5.4 AIR SYSTEM**

The air system shall provide air to the braking system, door system and other pneumatic accessories with reserve capacity. The Contractor shall ensure that all pipes and hoses are not rubbing/chafing other components. The Contractor shall perform a pneumatic system leak down test after final installation.

### **5.4.1 RESERVED**

### **5.4.2 AIR LINES AND FITTINGS**

All air lines and fittings shall be cleaned, inspected and examined for any damages or leaks. Splices are not allowed in air lines, and any splices found during overhaul shall be removed. All damage work shall be documented and negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). Any repair work shall follow the practices below.

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard brass flared or ball-sleeve fittings, or SAE Standard J844 for nylon tubing. The routing shall preclude the nylon tubing from being subjected to temperatures over 200°F. Air lines shall be cleaned and blown out before installation and shall be installed to minimize air leaks. All air lines shall be sloped toward a reservoir and routed to prevent water traps. Nylon tubing shall be installed in accordance with the following standard color-coding:

<b>GREEN</b>	Rear Service Brakes and Supply
<b>RED</b>	Front Service Brakes
<b>BROWN</b>	Parking Brake
<b>YELLOW</b>	Compressor and Governor
<b>BLACK</b>	Accessories
<b>BLUE</b>	Suspension

All replacement parts shall be replaced with OEM parts and shall be positioned in compliance with the OEM installation. Nylon lines may be grouped and shall be continuously supported at two-foot intervals or less, and prevented from any movement, flexing, tension strain, and vibration.

Copper lines shall be supported by looms at intervals of no more than five feet to prevent movement, flexing, tension strain, and vibration. Copper lines shall be prevented from touching one another or any component in the Coach. To the extent practicable and before installation, the copper lines shall be pre-formed on a fixture that prevents tube flattening or excessive local strain. Copper lines shall be bent only once at any point, including pre-bending and installation, to avoid fatigue of the tubing.

Flexible hoses shall be as short as practicable and individually supported. They shall not touch one another or any part of the Coach except for the supporting grommets. Flexible lines shall be supported at two-foot intervals or less. Grommets of bulkhead fittings shall protect the air lines at all points where they pass through under structure components.

### **5.4.3 AIR TANKS**

Air tanks shall be cleaned with solvent and drained while left in place on the chassis. Air tanks shall be visually inspected for corrosion, pressure tested, and replaced when negotiated as Unforeseeable Work. Relief valves and relief valve O-rings shall be replaced if found to be leaking. Any repair/replacement work shall be documented and negotiated as Unforeseeable Work. (Reference, Section 1.6, UNFORESEEABLE WORK).

### **5.5 FUEL TANK (AS APPLICABLE)**

The Contractor shall Remove and Replace all primary and secondary fuel filters (Allison: NF P/N 63567854, 6410207) (BAE: NF P/N 6470056, 6410207).. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches.

## **5.6 LINES AND PIPING**

All flexible (soft) or non-metal fluid lines excluding nylon air lines but including hydraulic, fuel, air, air conditioning and coolant shall be Removed and Replaced along with their securement clamps for the entire Vehicle from undercarriage to rooftop. Reference Section 5.4.2, AIR LINES AND FITTINGS, 5.6.1, FLUID LINES, 5.6.2, HYDRAULIC LINES and 5.6.3, PIPING AND HOSE for installation guidelines and specifications.

All hard (rigid) metal piping and tubing such as exhaust pipes, air intake pipes, coolant and fuel piping shall be thoroughly inspected for damages or leaks. Leaks that can be corrected by torquing the leaking fitting shall be addressed by the Contractor as part of the scope of work. All damaged, rusted, corroded or badly dented hard rigid piping shall be documented and the repair/replacement work shall be negotiated as Unforeseeable Work unless specified otherwise by SFMTA, reference Section 3.7 HEATING, VENTILATION. Reference Section 5.4.2 AIR LINES AND FITTINGS, 5.6.1 FLUID LINES, 5.6.2 HYDRAULIC LINES and 5.6.3 PIPING AND HOSE for installation guidelines and specifications. To ensure proper mounting, the Contractor shall furnish and install clamps and support as deemed necessary.

Also reference Section 3.7, HEATING, VENTILATION and Section 6.1.1, ENGINE for additional areas.

### **5.6.1 FLUID LINES**

All flexible fuel and oil lines within the engine compartment shall be Removed and Replaced by the Contractor. Specifications for new fluid lines should meet or exceed OEM hose quality specifications. All fuel and oil lines shall be rigidly and independently supported with properly insulated clamps and standoffs. All routing, clamps and standoffs shall be installed in such a way as to eliminate any chafing or rubbing. All fuel and oil lines shall be routed or shielded so that failure of a line will not allow fuel or oil to spray or drain onto any component operable above the flash point of the fluid. The existing check valve for the fuel suction line shall be replaced with new check valve. The new check valve shall be installed and tested after fuel filter changes.

Flexible lines shall be Teflon hoses with braided stainless-steel jackets, except in applications where premium hoses are required, and shall have standard SAE or JIC brass or steel reusable swivel end fittings. High-pressure hydraulic lines shall be Aeroquip FC395, Aeroquip FC300, or approved equal.

### **5.6.2 HYDRAULIC LINES**

Hydraulic lines shall be individually and rigidly supported to prevent chafing damage, fatigue failures, and tension strain on the lines and fittings. Specifications for new fluid lines should meet or exceed OEM hose quality specifications. The flexible hydraulic lines in the engine compartment shall be Aeroquip 2807 except where the radii of the lines exceed the performance of the Aeroquip 2807 line. In those instances, Aeroquip FC 350 with replaceable ends will be permitted. Lines of the same size and fittings as those on other piping systems of the Coach, but interchangeable, shall be tagged or marked for use on the hydraulic systems only. It shall not be possible to connect the input lines to the output lines.

The underbody stainless steel lines shall be inspected for proper mounting; they should be rigidly mounted and routed separately from all other lines per the original OEM configuration. Any broken or loose mounting, as well as any damaged or worn stainless steel lines shall be documented and such work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). The routing and mounting of all replacement lines shall be the same as the existing lines.

The Contractor shall inspect the two coolant lines from the CAC and Radiator. Any rubber lines found shall be replaced with braided stainless steel lines and documented and quoted as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

### **5.6.3 PIPING AND HOSE**

All flexible (soft) hoses, in the engine compartment, such as all cooling system hoses, heater hoses, transmission cooler hoses, air intake hoses including pump hoses and metal reinforced hoses for the CAC hoses shall be replaced. The cooling system hoses shall be premium silicone-rubber type and shall be secured with heavy-duty constant torque clamps. Hoses with an outside diameter of one inch or more shall be secured with heavy-duty constant torque clamps as per OEM specification and appropriately tightened.

Stainless steel piping in the cooling system, exhaust system (as applicable) and aluminized steel piping used in the air intake charger system shall be thoroughly inspected for damages, corrosion or rust. All replacement works shall be documented and quoted as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

The Contractor shall inspect the two plastic doser fittings (one straight and one 90 degrees) for any damage or wear. Replacements shall be documented and quoted as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

## **5.7 FIRE SAFETY**

Fire suppression systems shall be inspected for proper functionality. All bottles onboard shall be recertified in accordance with the OEM's 6-year recertification specifications and procedures with appropriate decals and a tag that shall be easily visible without removing the bottle from the coach. The fire suppression nozzles shall be thoroughly cleaned. The agent dispersal system shall be blown out. The nozzles shall be fitted with new dust caps. The backup battery and thermostats will be replaced with new, manufactured within one year of installation in the system, and verify their function. The electric actuator on fire suppression systems shall be Removed and Replaced. The Contractor shall test the fire suppression system and include the test results with system certifications in the coach history book. The Amerex fire suppression line in the engine compartment shall be standardized to six feet in length for all buses. Replacement work shall be documented and quotes as unforeseeable work (Reference, Section 1.6, UNFORESEEABLE WORK).

## **5.8 DEF TANK**

The Contractor shall clean the exterior of the DEF tank and inspect tank for leakage. Any defects shall be documented and submitted to SFMTA for review. The Contractor shall inspect the DEF strainer screen for damage and replace if necessary, otherwise clean the strainer per OEM service instruction. All replacement works shall be documented and quoted as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

The Contractor shall inspect the existing DEF level sender assembly for proper function. The cap, O-ring and filter shall be replaced. Any replacement shall be documented and quoted as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). See ATTACHMENT 11: COACH OVERHAUL MATRIX on all hybrid Coaches.

The Contractor shall inspect the SCR pump closeout insulation for any damage or deterioration. Replacements shall be documented and quoted as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).



## 6 PROPULSION SYSTEM

### 6.1 PROPULSION SYSTEM COMPONENTS

The Contractor shall follow the latest OEM recommended propulsion system overhaul procedures for Allison, and BAE. The Contractor shall provide rebuilt Drive Units with Stator A Replaced and Stator B Tested for the 54 SR-2043 units and 29 SR-2116 units. The remaining 40 Drive Units for SR-2116 shall be removed and returned to SFMTA to be overhauled. The Contractor is responsible for the costs and logistics of transporting the Drive Units. Any work that require OEM certifications including but not limited to software update and Commissioning must be completed by OEM certified personnel.

#### 6.1.1 ENGINE (AS APPLICABLE)

The first 10 Cummins ISL engines for SR-2116 shall be removed and returned to SFMTA to be rebuilt. The Contractor is responsible for the costs and logistics of transporting the engines. The remaining 59 ISL engines for SR-2116 shall be Removed and Replaced with new Cummins ISL engines of the same engine model year.

The ISL engines SR-2043 and SR-2117 Coaches shall be Removed and Replaced with new Cummins ISL engines of the same engine model year.

The ISB engines on SR-2118 Coaches do not need to be replaced. The engine shall be removed and reinstalled onto the same Coach.

New engines shall include emission sensors, wiring harnesses, and a starter assembly. They shall comply with all applicable CARB, ARB and EPA regulations.. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches.

The engine motor mounts shall be Removed and Replaced. The part numbers are front (NF P/N, 499546), and rear (NF P/N 492756). See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches.

The Contractor shall Remove and Replace with new exhaust flex pipe and clamps. The Contractor shall utilize the Flex Connector Alignment Tool (NF P/N 6360381) to align the exhaust tubes from the turbo outlet and to the muffler inlet. The Contractor shall also Remove and Replace with new coolant hoses and valves in the engine compartment. Additional requirements for replacing flexible (soft) lines are in Section 5.6, LINES AND PIPING.

#### 6.1.2 RESERVED

#### 6.1.3 RESERVED

#### 6.1.4 ENERGY STORAGE SYSTEM (ESS)

The ESS on SR-2043, SR-2116, and SR-2118 Coaches are to be Removed and Replaced with a refreshed ESS according to the most recent recommendations from Allison and BAE. All battery parts shall be OEM parts. All Hybrid Coaches shall have their high voltage cables replaced with new cables. See ATTACHMENT 11: COACH OVERHAUL MATRIX for applicable Coaches.

The Contractor shall clean and inspect the ESS cooling condenser, expansion valve and fans. The ESS cooler filter shall be replaced with new.

### **6.1.5 EXHAUST AFTERTREATMENT SYSTEM (AS APPLICABLE)**

The Contractor shall inspect the exhaust aftertreatment system. If Contractor believes that any repairs are warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

### **6.1.6 ENGINE COMPARTMENT**

All gauges in the engine compartment shall be fully tested and functional at the time of Bus delivery. The gauges include transmission oil, engine oil (as applicable), air and coolant (as applicable). The Contractor shall inspect the engine exhaust blanket for any deterioration or damage and replacement shall be documented and negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

The Contractor shall install a hitch pin with a retention cable to secure the engine guard door.

### **6.1.7 DIFFERENTIAL**

The Contractor shall inspect the differential for functionality and reliability and inform the SFMTA of any defects found. If Contractor believes that any repairs or replacements are warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). The Contractor shall Remove and Replace the differential assemblies according to the OEM procedures. SFMTA will furnish differential assemblies for the program.

## **6.2 COOLING SYSTEM**

The Contractor shall inspect the existing cooling system for functionality and reliability and inform the SFMTA of any defects found. If Contractor believes that any repairs are warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). The Contractor shall Remove and Replace all coolant system pressure relief fill caps with new coolant system pressure relief fill caps.

There are also additional roof mounting cooling systems (Hybrid Cooling System and Thermo King condenser unit for Allison hybrids and Electronic Cooling Package (ECP) for BAE hybrids) for the propulsion systems. The Contractor shall inspect all propulsion system cooling unit components for function, perform recommended maintenance from the system manufacturer, and clear any debris from the units. Any damage found outside the scope of the overhaul recommendations shall be addressed as Unforeseeable Work.. The Contractor shall inspect all WEG pump in the cooling system for any leakage and functionality test. Contractor shall document and replace any defective WEG pump and the repaired work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

Based on Maintenance experience, there are certain areas where Contractor shall replace the hoses/pipes. Besides these coolant hoses and valves recommended by the OEM service manual, also reference Section 5.6, LINES AND PIPING for all flexible (soft) lines replacement requirements.

### **6.3 DRIVE SHAFT**

The Contractor shall Remove and Replace the drive shaft bolts, bearing strap, locking plates, and universal joints at each end. Refer to the New Flyer OEM service manual for instructions on Removing, Replacing, and inspecting the drive shaft.

The Contractor shall inspect the drive shaft and the drive shaft guard plate for damage. If the Contractor believes that any repair or replacement is warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

## **7 ELECTRICAL**

### **7.1 BATTERIES**

All Hybrid Coaches shall have their batteries Removed and Replaced with two new 8D AGM/Deka 1450CCA maintenance free batteries from East Penn Batteries. The connections shall be 3/8-inch for the positive post and 3/8-inch for the negative post. Battery cables shall be Removed and Replaced with new cables matching the gauge of the existing cables. The battery cables shall have red heat shrink on the 24-volt positive cable end and light blue heat shrink on the 12-volt positive cable end. Cables shall not lie on top of the batteries and shall be sheathed and wrapped to prevent corrosion. Batteries shall be installed at the end of production for maximum battery life.

The Contractor shall inspect the battery tray's rubber mounts, rollers (on both the battery tray and support tray), pivot mechanism, and rubber/water dust ejector for damage. If the Contractor believes that any repair or replacement is warranted, the condition shall be documented and the repair work shall be negotiated as Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK).

### **7.2 ALTERNATOR / CHARGING SYSTEM**

The Contractor shall inspect all alternator and static converters per manufacturer recommendations, and any damage addressed under Unforeseeable Work (Reference, Section 1.6, UNFORESEEABLE WORK). See ATTACHMENT 11: COACH OVERHAUL MATRIX for information on alternator replacement.

### **7.3 PROGRAMMABLE LOGIC CONTROL (PLC)**

Each built of the buses has its own unique version of Vansco PLC program. The contractor shall verify with the bus OEM to ensure the latest and greatest version of the PLC program are used to make modification that are required by the scope of this contract. The Contractor shall document all the modification of the changes to the PLC program and ensure that the modification will not affect other functionality of the bus. The contractor shall test all functionality prior to presenting the bus to SFMTA for inspection. The functionality test shall be comprehensive for all features and functions of the bus, not only the functions that were modified. The Contractor shall provide OEM certification that the Contractor's firm is capable and qualified to make modification changes to the PLC program.

## 8 MATERIALS AND OVERALL WORK QUALITY

### 8.1 MATERIALS

All materials used in the construction of the Coach and all its parts shall be in accordance with the stated specification or description unless written approval for substitution is obtained from the SFMTA. All materials shall comply with the standards established by ASTM, SAE, or other relevant association standards. Materials used shall be equivalent in manufacture, design, and construction on each Coach and shall have a manufacturer label affixed to the part.

Whenever under the Contract Documents it is provided that the Contractor shall furnish materials or manufactured components or shall do work for which no detailed specifications are set forth, the work performed shall be in accordance with the best standards of manufacture.

Foreign matter such as shavings, chips, etc., shall be completely removed from all parts of the Coach whether hidden or exposed.

- I. All lumber shall be thoroughly kiln dried, free from knots and shall be of clear, straight grain, dressed on all sides.
- II. All painted aluminum sheets shall be thoroughly cleaned and coated on the inside and outside with zinc- chromate protective paint prior to assembly in Coach.
- III. All joints shall be protected by application of a zinc-chromate metallic compound at assembly.
- IV. In the event plywood is used for the flooring, the sub floor material shall be no less than 3/4-inch-thick, 7-ply, marine grade with no voids. The floor shall be waterproof, non-hygroscopic, resistant to wet and dry rot, resistant to mold growth, and impervious to insects.
- V. All bolts, nuts, washers and exposed linkage shall be stainless steel or zinc plated (where applicable) to prevent corrosion. Contractor shall submit a certification that all bolts furnished on the Coaches will meet OEM standards, including, but not limited to, SAE J429.

#### 8.1.1 HAZARDOUS MATERIALS

It shall be the design objective to eliminate from the Coaches all materials that are or may become hazardous to passengers, operators, or maintenance personnel. Of particular concern are materials that produce toxic smoke or gases when heated, possibly due to an accidental fire when bodywork using welding equipment or cutting torches are used. No parts on the Coach shall contain asbestos or PCBs. The Contractor shall provide, for SFMTA approval, the material safety data sheets (MSDS) of any non-OEM materials or fluids that will be used in the construction, operation or maintenance of the Vehicle. SFMTA has the option to reject the use of any hazardous materials proposed for use on the Vehicles during Design Reviews.

## **8.2 OVERALL WORK QUALITY**

Overall work quality shall be of the best grade and shall conform in all respects to the best practice in the industry such as ISO 9001. The fit and finish of the exterior and interior components shall be to the best of the industry standards of the automotive trade.

Unless otherwise specified, all materials and equipment shall be new. Mechanical, electrical and electronic equipment and components shall be the products of manufacturers regularly engaged in the fabrication of such equipment and components for use in transit vehicles.

The work shall be executed in conformity with the best-accepted industry standard practice of the trade so as to contribute to maximum efficiency of operation, accessibility, pleasing appearance and minimum cost of maintenance.

The Contractor shall provide a summary of fastener sizes and torque values for critical areas on the Vehicle, based on OEM specifications. SFMTA requires that the Contractor include this attachment as part of the Vehicle record book, Reference Section 9, VEHICLE RECORDS. This attachment is developed for reference only; it is the Contractor's responsibility to verify the accuracy against the OEM manuals.

### **8.2.1 WELDING**

Welding procedures, welding materials, and qualifications of welding personnel shall be in accordance with the current standards of the ASTM and AWS. Where metal is welded to metal, the contact surfaces shall be free of scale, grease, and paint and prepared according to AWS procedures. The Contractor shall provide documentation of their welding procedures, set up sheets, and processes to SFMTA as part of the design review process. The Contractor shall not perform any welding on SFMTA buses until the above documentation has been submitted and approved by SFMTA.

### **8.2.2 MECHANICAL FASTENING**

No protruding screws, mounting bolts, or similar items shall be permitted in the interior or the exterior of the Coach. Fasteners not exposed to passengers on the inside of the Coach shall be stainless steel or zinc-plated steel. Zinc plating shall conform to the latest revision of ASTM B633, TYPE II, SC3 or SC4 or ASTM F1941 Fe/Zn 12C. All fasteners used in the Vehicle body exterior, even if not exposed to passengers, shall be of stainless steel except where mechanical requirements impose graded steel fasteners, or to minimize galvanic corrosion. These fasteners shall be zinc-plated with treatments to prevent hydrogen embrittlement if required. Where non-anodized metal is riveted or bolted to metal, contact surfaces shall be thoroughly cleaned and properly primed.

#### **8.2.2.1 RIVETS**

All rivets shall meet or exceed the OEM standards and shall completely fill the holes. External rivet heads shall be concentric with the body of the rivets and free from rings, pits, burrs and fins. Surfaces exposed to passengers, operator, or maintenance personnel shall be smooth and free of burrs, fins, sharp edges, and dangerous protrusions.

### **8.2.2.2 SCREWS**

On the Coach interior, all screws exposed to passengers shall be stainless steel with a flat or oval head. Exposed screws shall be of an approved tamper-proof type with the exception of the glazing mounting screws. Self-tapping screws shall not be used in areas requiring dismantling for servicing. At least 1-1/2 screw threads shall be visible beyond all nuts.

### **8.2.2.3 BOLTS**

All bolts or rods passing through wood or exposed to the elements shall be an approved grade stainless steel or, with SFMTA's pre-approval, zinc-plated. All nuts and bolts exposed to passengers shall be an approved grade stainless steel unless otherwise specified. The design strengths for Grade 2 bolts and Class A nuts shall be used in sizing the mounting and attachment bolts for under floor mounted equipment, support structures, or brackets. However, all structural or load-carrying bolts shall be domestic manufacture, SAE grade 8 or better. Bolts or screws used for structural connections shall have full-size bodies in areas subjected to bearing and/or shear loads. For bolted joints subject to steady vibration, UNC bolts with appropriate locking arrangement shall be used. Nuts shall be a regular height, nylon insert, and self-locking type. Bolts smaller than 1/4 inch shall not project more than 1-1/2 threads plus 1/4 inch. Bolts 1/4 inch or larger shall not project more than eight threads. All hardware is to be installed and torqued per ANSI guidelines. Any conflict between OEM and ANSI guidelines shall be installed per OEM guidelines.

### **8.2.3 FINISHING**

Special care shall be taken with the outside sheathing; roof, roof bonnets, and interior finish so that all kinks and buckles are removed before assembly to present a true and smooth finish. This shall be accomplished without excessive grinding, which may weaken the structure material. All painted surfaces shall have a true and smooth surface that will not show sanding or grinding marks after painting. Where wood is placed against wood, both surfaces shall be coated with an approved sealing compound. All steel and aluminum body parts that are to be painted shall be thoroughly cleaned and treated before priming with a primer compatible with the paint system.

### **8.2.4 ELECTRICAL**

All electrical connections shall be of the locking type. All electrical wiring harnesses shall be clamped, tie-wrapped and supported at regular intervals in compliance with the OEM installation. When wires, cables, hoses or tubes go through walls or panels, the bulkhead holes shall have protective grommets/molding and the wires, cables, hoses or tubes shall be clamped on both sides of the bulkhead hole. A 1/4-inch minimum clearance to the protective grommet/molding is required. All electrical wires shall be installed to as not to have any chafing or rubbing with other components.

## **8.3 PROOF OF COMPLIANCE WITH CONTRACT**

In order that SFMTA may determine whether the Contractor has complied with the requirements of the Contract Documents not readily determinable through inspection and test of equipment, components or materials used in the Work, the Contractor shall, at any time when requested, submit to SFMTA properly authenticated test results, design documents or other satisfactory proof as to its compliance with such requirements.

## 9 VEHICLE RECORDS

The Contractor shall provide a Coach History Book to be included in each Coach upon its arrival at the SFMTA. Vehicle record books must include the following information as to new or reworked/refurbished equipment/systems:

- 1) Subcomponent description
- 2) Subcomponent serial numbers
- 3) Test records
- 4) Inspection records
- 5) Shipping and Acceptance dates.
- 6) Parts List for all new component added or reworked.
- 7) Description of modifications and dates of completion
- 8) Updated schematics for all subsystems added or overhauled.
- 9) List of defects
- 10) List of serial-numbered components (Existing and new equipment)
- 11) Documentation of Unforeseeable Work performed on the coach
- 12) Shipping documents
- 13) Shipping exceptions and unresolved / open issues
- 14) Summary detail of each test performed on the coach or any part of the coach
- 15) Safety Critical torquing locations and values

Each book shall be indelibly marked with the serial number of the Vehicle it accompanies.

Upon delivery of the final coach to the SFMTA, a master list of any parts reworked or added to all coaches for each SR shall be delivered to SFMTA in Excel format. At the SFMTA's discretion, additional documentation may be added to the requirements of the Coach History Book.



## 10 WARRANTY

### 10.1 WARRANTY REQUIREMENTS

Warranties in this document are in addition to any statutory remedies or warranties imposed on the Contractor. Consistent with this requirement, the Contractor shall warrant and guarantee to the SFMTA each Coach and specific subsystems and components according to the following provisions:

The Contractor shall ensure that the warranty requirements of this Contract are enforceable through and against the Contractor's suppliers, vendors, and subcontractors. Any inconsistency or difference between the warranties extended to the SFMTA by the Contractor and those extended to the Contractor by its suppliers, vendors, and subcontractors, shall be at the risk and expense of the Contractor. Such inconsistency or difference will not excuse the Contractor's full compliance with its obligations under the Contract Documents.

Upon request of the SFMTA, the Contractor shall promptly provide complete copies of written warranties or guarantees of documentation of any other arrangement relating to such warranties or guarantees extended by the Contractor's suppliers, sub-suppliers, vendors, and subcontractors covering parts, components, and systems utilized in the Coach. If any vendor/supplier to the Contractor offers a warranty on a component that is longer or more comprehensive than the requirement in Section 10.2 COMPLETE COACH, the Contractor shall provide this information to the SFMTA in their bid documents and pass it through to SFMTA at no additional cost to the SFMTA.

The Contractor shall ensure that such suppliers, sub-suppliers, vendors, and subcontractors satisfactorily perform warranty-related work.

The Contractor shall provide ten Microsoft Surface Pro (latest generation) tablets to the SFMTA for warranty administration purposes. The tablet configuration and hardware shall be approved by the SFMTA. The warranty equipment shall be provided to the SFMTA at least 30 Working Days prior to the First Article delivery. The Contractor shall install all necessary warranty parameters and warranty claim forms onto the laptop computers. Reference Schedule 1B – Special Tools List of the Sample Agreement.

### 10.2 COMPLETE COACH

Contractor warrants and guarantees that the work performed, and new equipment installed by the Contractor shall be free from Defects and Related Defects for one year or 50,000 miles, whichever comes first, beginning on the date of the Acceptance of each Coach.

#### 10.2.1 VOIDING OF WARRANTY

The warranty shall not apply to any part or component of the Coach that has failed as a direct result of misuse, negligence, or accident, or that has been repaired or altered in any way so as to affect adversely its performance or reliability, except insofar as such repairs were in accordance with the Contractor's maintenance manuals and the workmanship was in accordance with recognized standards of the industry.

The warranty on any part or component of the Coach shall also be void if the SFMTA fails to conduct normal inspections and scheduled preventive maintenance procedures on the same part or component substantially as recommended in the Contractor's maintenance manuals, and such failure by the SFMTA is the sole cause of the part or component failure.

### **10.2.2 CONTRACTOR'S SERVICE MANAGER / REPRESENTATIVE**

The Contractor's service manager / representative shall be available during the acceptance and commissioning per SR for rehabilitated Vehicles to assist the SFMTA in the solution of engineering or design problems that are within the scope of the Technical Specifications and that may arise. The service manager / representative will also be available to the SFMTA on request during the Coach warranty period. Maintenance or repair instructions or suggestions from these representatives affecting warranty shall be in writing and directed to the SFMTA. The Contractor's service manager / representative shall have the authority to accept and approve warranty claims and make timely decisions affecting the repair of Defects.

The SFMTA will work with the Contractor's service manager / representative as much as possible to minimize the costs and time involved in conducting warranty repairs; however, due to space constraints and labor agreements, the SFMTA cannot guarantee that any Contractor work will be performed on SFMTA property.

### **10.3 DETECTION OF DEFECTS**

If the SFMTA finds Defects within the warranty period defined in Section 10.2, COMPLETE COACH, it shall notify the Contractor's representative in writing. Within five Working Days after receipt of notification, the Contractor's representative shall either agree that the Defect is in fact covered by warranty, or reserve judgment until the subsystem or component is inspected by the Contractor's representative or is removed and examined at the SFMTA property or at the Contractor's plant. At that time the status of warranty coverage on the subsystem or component shall be mutually resolved between the SFMTA and the Contractor. Work necessary to commence the inspection or repairs, under the provisions of Section 10.5, REPAIR PROCEDURES shall proceed immediately after receipt of notification by the Contractor

If within 10 Working Days of notification to contractor, the SFMTA and Contractor are unable to agree whether a Defect is covered by warranty provisions, SFMTA reserves the right to commence repairs and seek reimbursement through Section 10.5, REPAIR PROCEDURES.

### **10.4 FLEET DEFECTS**

A Fleet Defect is defined as cumulative failures of any kind in the same new systems or components in the same or similar application where such items are covered by the warranty and such failures occur within the warranty period in at least 10 percent of Vehicles delivered under this contract. The SFMTA shall have final approval of corrections or changes under these conditions, which may include requesting Failure Analysis Report (see Section 10.5.6) for the failed system.

#### **10.4.1 CORRECTION OF FLEET DEFECTS**

The Contractor shall provide a corrective action plan within ten Days of receipt of notification of a Fleet Defect under the procedures specified in this subsection. Unless the SFMTA grants an extension, the Contractor shall provide the SFMTA with a retrofit work plan, a Field Service Repair Procedure and schedule, to be reviewed and approved by the SFMTA. The schedule shall specify how and when all Coaches with Defects shall be corrected.

Any proposed changes to an approved Fleet Defect work plan or program must be submitted to the SFMTA for review and approval.

If Contractor does not provide a plan for correction within ten Days (or as extended by SFMTA); or a specific declared Fleet Defect is not fully corrected within the time specified in the agreed upon schedule; or the remainder of the Coaches are not corrected in accordance with the Contractor's work plan; then the SFMTA will assess liquidated damages in the amount of \$200/Coach per Day.

The warranty on parts, components or subsystems replaced as a result of a Fleet Defect shall be assigned a new warranty period equal to the original manufacturers or contract part warranty (whichever is longer), effective the replacement date. Any extended warranties shall commence at the conclusion of the new warranty period.

#### **10.4.2 FLEET DEFECT REPAIRS**

When the SFMTA requires the Contractor to perform warranty-covered repairs under the Fleet Defect corrections, the Contractor's representative must begin work necessary to effect repairs in a proper and timely manner, within five Working Days after the approval of the retrofit plan/schedule. Whenever the Contractor makes warranty repairs, new parts, subcomponents and subsystems shall be used, unless the repair of original parts is authorized in writing by the SFMTA. The SFMTA shall make the Coach available to complete repairs timely with the Contractor's repair schedule.

The Contractor shall provide, at its own expense, all spare parts, labor, tools and space required to complete repairs. The Contractor shall reimburse the SFMTA for all expenses incurred, including labor for driving Coaches, or towing charges for Coaches transported, between the SFMTA's facilities and Contractor's service center or the facilities of its subcontractors or suppliers.

#### **10.4.3 CONTRACTOR SUPPLIED PARTS**

The Contractor shall furnish parts for all warranty work performed by the Contractor.

#### **10.4.4 VOIDING OF WARRANTY PROVISIONS**

The Fleet Defect provisions shall not apply to Coach Defects solely caused by non-compliance with the Contractor's recommended preventive maintenance practices and procedures or caused solely by abuse of the equipment.

### **10.5 REPAIR PROCEDURES**

The Contractor shall reimburse the SFMTA for labor, parts and administrative costs for warranty claims performed by SFMTA personnel or by any contractor(s) hired by SFMTA to perform warranty work.

Contractor shall reimburse the SFMTA for warranty claims within 30 Days after each warranty claim has been submitted by SFMTA. If SFMTA does not receive payment within 30 Days, the SFMTA will deduct the amount of the claim, which includes labor, parts, administrative overhead and towing costs, from payments due to Contractor or will deduct the amount of the claim from the Retention.

### **10.5.1 PARTS USED**

The SFMTA shall use new parts, subcomponents and subsystems that Contractor shall provide specifically for these repairs. All parts shall be stamped or permanently marked with the OEM part number, and serial number if applicable. Warranties on parts used shall begin once the Vehicle has been repaired. The warranty on parts, components or subsystems replaced as a result of a standard warranty repair shall be assigned a new warranty period equal to the original manufacturers or contract part warranty, whichever is longer, effective the replacement date. Any extended warranties shall commence at the conclusion of the new warranty period.

The SFMTA shall use parts or components available from its own stock only on an emergency basis. Monthly reports, or reports at intervals mutually agreed upon, of all repairs covered by warranty will be submitted by the SFMTA to the Contractor for reimbursement or replacement of parts or components. The Contractor shall provide forms for these reports.

### **10.5.2 DEFECTIVE PARTS RETURN**

The Contractor may request that Defective parts or components covered by warranty be returned to the Contractor. The Contractor is responsible for all costs associated with material return. Material will be returned in accordance with the Contractor's instructions. Contractor shall provide such instructions to the SFMTA at the beginning of the project. The Contractor's representative shall meet with an SFMTA representative on an as-required basis to determine which parts need to be returned to the manufacturer for evaluation, or which parts may be discarded.

### **10.5.3 REIMBURSEMENT FOR LABOR**

The Contractor shall reimburse the SFMTA for all warranty labor incurred by SFMTA. The amount shall be determined by multiplying the number of person-hours required to correct the Defect by the current top mechanic's hourly overtime wage rate. The wage rate, and therefore, the warranty labor rate, is subject to adjustment each year. As of February 2024, the warranty labor rate shall be based on the mechanic's wage rate of \$177/hour, which includes labor, fringe benefits, and overhead.

In the event the SFMTA deems it necessary to contract out for warranty repairs, the Contractor shall reimburse the SFMTA for the actual cost of the repair, including charges for any warrantable parts, consequential parts or damages, labor, and towing or transportation. A 15 percent handling fee will be included on all outside invoices for warranty related services submitted to the Contractor.

#### **10.5.4 REIMBURSEMENT FOR PARTS, TOWING**

In the event the SFMTA uses its own parts for warranty repairs, the Contractor shall reimburse the SFMTA for those parts, including all Defective parts, components, and consequential parts supporting the warranty repair. The reimbursement shall be at the invoice cost of the parts or components at the time of repair and shall include applicable taxes plus a 15 percent handling fee.

The warranty will include the cost of towing the Coach or a Coach change if either was necessary because of the failure of a warranted part. Towing costs consist of the SFMTA's established contracted tow truck charge including applicable taxes, any parts utilized in the transfer of the Coach, any SFMTA labor expended, plus a 15 percent handling fee. The cost of a Coach change will consist of the actual time spent at the established warranty labor rate.

Contractor shall reimburse the SFMTA for warranty claims within 30 Days after each warranty claim has been approved by the Contractor. If the SFMTA does not receive payment within 30 Days, the SFMTA may deduct the amount of the claim from payments due to Contractor.

#### **10.5.5 WARRANTY AFTER REPLACEMENT OR REPAIRS**

The warranty on parts, components or subsystems replaced as a result of a standard warranty repair shall be assigned a new warranty period equal to the original manufacturer's or contract part warranty, whichever is longer, effective the replacement date. Any extended warranties shall commence at the conclusion of the new warranty period.

#### **10.5.6 FAILURE ANALYSIS**

At the SFMTA's request, the Contractor, at its cost, shall conduct a failure analysis of a failed part involved in a Fleet Defect or that is safety-related or a major component that could affect fleet operation that has been removed from Coaches under the terms of the warranty. The analysis shall commence with the approved corrective action plan and be documented and compiled into a report. Failure Analysis Reports shall be delivered to the SFMTA within 60 Days of the receipt of failed parts.

## 11 QUALITY ASSURANCE

In order to closely monitor the First Article and production progress, the SFMTA requires having Quality Assurance meetings with the Contractor on a regular basis. During the conference call, the Contractor shall prepare to discuss project schedule, production issues, material issues and other items associated with the Project.

All special tools shall be provided to the SFMTA at least 30 Working Days prior to the First Article delivery. Reference Schedule 1B – Special Tools List of the Sample Agreement.

### 11.1 CONTRACTOR QUALITY ASSURANCE

The Contractor shall assign an in-plant Quality Assurance Inspector (QAI) to exercise quality control over all phases of production from initiation of design through manufacture and preparation for delivery. The QAI shall have the authority and responsibility for reliability, quality control, inspection planning, establishment of the quality control system, and Acceptance/rejection of materials and manufactured articles in the overhaul of the transit coaches.

The QAI shall conduct all required inspections and testing and maintain records and data for review by the SFMTA Resident Inspector. The QAI shall detect and assure corrections of any defective coaches.

### 11.2 DEPARTURE INSPECTION

A Departure Inspection shall be led by the SFMTA and the Contractor's Representative on each of the SFMTA's Coaches prior to transferring the Vehicles to the Contractor's plant. The Departure Inspection shall be held at any of the SFMTA's Coach yards in San Francisco. To the greatest extent practical, all items to be considered as Unforeseeable Work shall be identified on each Bus prior to transfer of the Vehicle to the Contractor (Reference, Section 1.6, UNFORESEEABLE WORK).

### 11.3 RESIDENT INSPECTOR

The SFMTA shall be represented at the Contractor's plant by Resident Inspector(s), who shall monitor the re-manufacturing of the transit coaches. The Resident Inspector shall be authorized to approve the pre-delivery Acceptance tests and release the Coach for delivery. The presence of these Resident Inspectors in the plant shall not relieve the Contractor of its responsibility to meet all of the requirements of this procurement. Upon request to the quality assurance supervisors, the Resident Inspectors shall have access to the Contractor's quality assurance files related to this procurement. These files shall include but not be limited to drawings, assembly procedures, material standards, parts lists, inspection processing and reports, and records of defects.

The Contractor's gauges and other measuring and testing devices shall be made available for use by the Resident Inspectors to verify that the Coaches conform to all specification requirements. If necessary, the Contractor's personnel shall be made available to operate the devices and to verify their condition and accuracy.

## **11.4 COMPLIANCE DEMONSTRATION**

Upon written request of the SFMTA, the Contractor shall demonstrate compliance with any requirement of these specifications in accordance with the testing requirements outlined in Section 11.6 TESTING. Requests shall normally be made such that the demonstration can be scheduled in advance of the First Article Coach. Other demonstrations shall be requested after delivery, should the SFMTA suspect that the production Coaches are not in conformance to these specifications.

The demonstrations shall consist of formal tests conducted on the First Article and/or production Coaches and witnessed by the SFMTA authorized personnel. In lieu of conducting tests of a destructive nature, the demonstration requirement may be satisfied by a comprehensive analysis of sufficient scope and quality to show specification compliance.

The burden of demonstrating compliance rests on the Contractor, but is subject to approval by the SFMTA. The Contractor shall be responsible for associated costs, including traveling and lodging for SFMTA personnel, to demonstrate compliance and any work required to correct any non-compliance conditions.

## **11.5 FIRST ARTICLE INSPECTION (FAI) COACH**

The Contractor shall present a First Article Inspection (FAI) Coach for each SR to be overhauled, which shall undergo a detailed inspection by SFMTA personnel or representatives. The FAI involves the physical examination, internal / independent testing of, and Acceptance by SFMTA of an initial part, major assembly, subassembly, system, subsystem, apparatus or material, manufactured or assembled by either the Contractor or Subcontractors. The purpose of this inspection is to ensure that the First Article Coach has been built to approved engineering standards and that all contract work has been incorporated into the First Article. The configuration established for the First Article shall be the benchmark for all remaining production Coaches. The SFMTA Project Manager may approve the design that is revealed at the FAI or may require changes in order that the component can meet the requirements of the Contract.

### **11.5.1 FIRST ARTICLE CERTIFICATIONS SUBMITTALS**

During the FAI, the Contractor shall present the certifications to the SFMTA, as specified in Section 1.5, WORKMANSHIP.

## **11.6 TESTING**

### **11.6.1 PRE-DELIVERY TESTS**

The Contractor shall conduct pre-delivery testing at its plant on each Coach before delivery to the SFMTA. These pre-delivery tests shall include visual and measured inspections, as well as testing of the total Coach operation. The tests shall be conducted and documented in accordance with written test procedures to ensure that the completed Coaches have attained the desired quality and have met the requirements of these Technical Specifications. All tests shall be witnessed and approved by the SFMTA's Resident Inspector.

### **11.6.1.1 VISUAL AND MEASURED INSPECTION**

The visual and measured inspections shall be conducted to verify if overhauled components and repairs have been executed in accordance to the Technical Specifications, Unforeseeable Work, and Industry Standard practices.

### **11.6.1.2 WATER TEST**

Each Bus must undergo a water test approved by SFMTA. The water test shall replicate the direction and pressure of water flow in an SFMTA yard bus wash. The underside of the Bus shall be sprayed with water to simulate tire splash and heavy rain conditions. The water test shall ensure that water does not enter the interior of the bus or any exterior compartments through the floor, body, windows, signs, lights, or any other openings. The seals on the destination signs and windows shall prohibit condensation on the glass. Any Coach that fails water testing shall be repaired by the Contractor and retested until they pass.

### **11.6.1.3 AIR LEAK DOWN TEST**

Each Coach shall have its air system fully charged and monitored per NFI ECO Bulletin #098857, dated January 15, 2018.

### **11.6.1.4 STEERING ALIGNMENT AND TURN RADIUS**

The Contractor shall perform an axle alignment on each Coach to OEM specifications. The Contractor shall also verify that the Coach's turning radius is in accordance with OEM specifications. The alignment and the turn radius test shall be documented in the Coach History Book for each Vehicle (Reference, Section 9, VEHICLE RECORDS).

### **11.6.1.5 BRAKE TEST**

The Contractor shall ensure that the Coach's brake system performs to the standards outlined by the FMVSS and the state of California. The first Coach in each SR shall have their braking system tested to be capable of stopping a Vehicle traveling at 20 mph in under 25 feet on a dry, level road. The parking brake shall be able to hold the Coach loaded to GVWR in both forward and rearward directions on a 23 percent grade. The "Parking Brake Applied" indicator shall be functioning when the parking brake is engaged. The interior audible warning alarm and blinking warning lights shall be activated when the Master Run Switch is set to the "Off" position and the parking brake is not engaged.

### **11.6.1.6 TOTAL COACH OPERATION**

The operation of the Coach shall be verified by conducting road tests. These tests shall simulate the functionality of the subsystems onboard the Coach that are operated while in revenue service. Any Defects or excessive noise should be recorded and investigated by the Contractor. If the Coach fails to operate to the satisfaction of the Resident Inspector, the Coach shall be repaired and retested until it passes.

### **11.6.1.7 VERIFICATION OF CRITICAL TORQUES**

The Contractor shall clearly apply torque marks to identify fasteners are properly torqued. A torquing procedure for all safety critical items repaired in the scope of this Technical Specification shall be submitted for the SFMTA review. The torque locations and values shall be recorded in the Coach History Book (Reference, Section 9, VEHICLE RECORDS).



### **11.6.1.8 OTHER TESTS**

The Resident Inspector shall ensure compliance of the specification requirements by performing additional tests on each Coach. The tests include and are not limited to:

- Electrical Systems
- Brake System
- Fire Suppression System
- Torque Verification
- Weld Inspections

### **11.6.2 POST-DELIVERY TESTS**

The SFMTA will conduct post-delivery tests (Acceptance testing), which shall include, but not be limited to, visual inspection, functional testing of all systems that were replaced or rehabilitated, and a road test on each delivered Coach, including the First Article Coach. Coaches that fail to pass the post-delivery tests will not be Accepted, and the next Coach scheduled for rehabilitation will not be released until all Defects are corrected and the Coach is Accepted by the SFMTA's inspection team.

The SFMTA will record details of all Defects on the appropriate inspection forms which shall be submitted to the Contractor for immediate corrective action.

Each delivered Coach shall be delivered with the Vehicle traveler document, (Reference, Section 9, VEHICLE RECORDS), at the time of delivery.

### **11.6.3 SERVICEABILITY TEST**

Prior to Acceptance, and at the SFMTA's discretion, the SFMTA may operate each Vehicle for a minimum of 50 miles. Any Defects will be recorded on the appropriate test form which shall be submitted to the Contractor for immediate corrective action.

## **11.7 PRODUCTION COACHES**

The Contractor shall not proceed to the following Coaches of the SR group until the First Article Coach is signed off by SFMTA. The following Coaches shall have the same configuration as the approved First Article. At SFMTA's discretion, the Contractor shall comply with the requirement in Section 11.3, RESIDENT INSPECTOR.

## **11.8 STANDARDS**

The Contractor shall ensure quality standards and facilities. Each Bus shall be Overhauled according to the drawings, procedures, and other documentation that completely describe the overhaul activities. The Contractor shall provide the SFMTA with all appropriate Safety Practices and General Workshop Procedures which will be in effect throughout this program. All production tooling (jig, fixtures, templates, tooling masters, etc.) shall be verified for accuracy and adjusted as required, throughout the inspection process.

## **11.9 PURCHASING AND MANUFACTURING CONTROL**

The Contractor shall ensure that all basic production operations, as well as all other processing and fabricating, are performed under controlled conditions. Establishment of these controlled conditions shall be based on formally documented work instructions, adequate production equipment, and (if necessary) special working environments. Manufacturing control shall include but is not limited to completed items for final inspection, control of transferred materials (moved from one Vehicle to another, if new or refurbished materials not available) and non-conforming materials. The Contractor shall maintain quality control of purchases including supplier control, purchasing data and SFMTA-supplied materials.

## 12 DELIVERY SCHEDULE

### 12.1 PREFERRED DELIVERY SCHEDULE

Completion of items as indicated below shall occur before the time periods listed have elapsed. Liquidated Damages applies to all items. Refer to Section 4.8 of the Agreement.

Item	Calendar Days after Notice-to-Proceed
Pre-Production Meeting	30
Pick Up of First Article Coach	180
Delivery of Completed First Article Coach	270
Conditional Acceptance and Approval of First Article Coach	285
Begin overhaul of remaining coaches	290
Delivery of the last coach	1095
Submittal of final As-Built Drawings and Updated Schematics	1155

Item	Calendar Days after Notice-to-Proceed
Submittal of draft recommended spare parts and special tools lists	365
Delivery of spare parts and special tools	1095

### **Deliveries:**

**Note 1:** Actual item due dates will be determined after the First Article Coaches have been presented and changes to the scope of work have been finalized and negotiated.

**Note 2:** All deliveries to the SFMTA shall be to the SFMTA facility during weekday working hours, Monday through Friday, 7 a.m. – 3 p.m., except SFMTA holidays, or as otherwise specified in writing by the SFMTA. Contractor shall provide at least 48 hours-notice to SFMTA prior to delivery.

**Note 3:** Due to service demands, the SFMTA can only allow up to 12 Coaches at the Contractor's site at any one time. Contractor shall not deliver more than three Coaches to the SFMTA at any one time.

**Note 4:** The coach will have to pass inspection and Acceptance testing by SFMTA before being put back into revenue service. The SFMTA reserves the right to not release scheduled coaches for rehabilitation if one or more rehabilitated coaches fails to meet the SFMTA's requirements.

### **12.2 PROPOSED DELIVERY SCHEDULE**

Delivery schedules proposed (See Delivery Schedule Worksheets in Volume 1, Appendix L) will be compared with the SFMTA's preferred delivery schedules and the proposed delivery schedules will be rated accordingly.

### **12.3 COACH DELIVERY**

Coaches shall be delivered at a rate not to exceed three Coaches per week.

## 13 ATTACHMENTS

### 13.1 ATTACHMENT 1: ORIGINAL OEM SPECIFICATIONS

#### 13.1.1 SR – 2043

Option#	Description	Value Description (blank means unset)
100-002	XCELSIOR COACH LENGTH	Xcelsior - 40' coach.
100-003	STRUCTURAL MATERIAL	(B),Structural material - carbon steel/ferritic sst.
100-004	FUEL/PROPULSION SYSTEM	Propulsion system - Allison hybrid with ISL diesel engine.
100-004a	FUEL TYPE	(B),Fuel type - diesel, compatible up to 20% biodiesel.
100-006	DOCKET 90 SPEC	(A),Docket 90 spec - for interior of coach (as per spec).
100-008	ARB STANDARD	(A),Air Resources Board (ARB) Standard - required.
201-005	BUMPERS	(B),Bumpers - Romeo Rim, three piece, front and rear bumpers. Rear has anti-ride feature.
201-015	TOWING PROVISIONS	(B),Front tow eyes - basic set-up, incorporated in front chassis. Tow adapters are required.
203-005	FRONT AXLE	(B),Front axle - M.A.N. VOK-07-F, GAWR 15,873 lbs. With disc brakes. Hub mount, Knorr cylinders, Ferodo lining.
203-005b	SECUREMENT OF BRAKE LININGS	(S),Securement of brake linings - bonded.
203-005f	ELECTRONIC BRAKE STROKE MONITOR	(A),Electronic brake stroke monitor - MGM E-stroke system.
203-011	SHOCK ABSORBERS	(S),Shock absorbers - Koni.
203-014	FRONT STABILIZER BAR	(C),Front stabilizer bar provided - SR specific application is approved by NF Engineering.
203-050	FRT AXLE AND WHEEL SPLASH APRONS	(A),Front axle and wheel splash aprons - full width, fore of axle and wheels. Also, two additional aprons aft of the wheels.
204-005	REAR AXLE	(B),Rear axle - M.A.N. 4.56:1. Model HY-1350-F. GAWR 28,660. With disc brakes, hub mount, Knorr cylinder, Ferodo lining.
204-005d	REAR AXLE GEAR OIL	(B),Rear axle gear oil - petroleum based.
204-070	REAR AXLE DRAIN PLUGS	(B),Rear axle drain plug - magnetic external hex head.
204-140	REAR AXLE AND WHEEL SPLASH APRONS	(B),Rear axle and wheel splash aprons - one piece behind axle and two behind rr wheels.
205-005	TIRES	(B),Tires - 305/70R/22.5, customer supplied Michelin X InCity Z (65 mph).
205-005a	TIRE BRANDING	(A),Tire branding - required as per spec.
205-010b	WHEELS	(A),Wheels - Alcoa 22.5" x 8.25" aluminum. Polished Durabright finish both sides.
209-005	POWER STEERING PUMP	(B),Power steering pump - Ixetic (Luk) power steering pump powered off engine accessory drive.
209-005a	POWER STEERING HOSES	(S),Power steering hoses - NFIL (Manuli) Equator 2 and GH100 hose at steering box and NFIL (Manuli) Equator 2 in engine compartment.
209-005b	POWER STEERING DIAGNOSTIC FTGS	(A),Power steering diagnostic fittings - at steering box.

Option#	Description	Value Description (blank means unset)
209-008	POWER STEERING RESERVOIR	(S),Power steering reservoir - required.
209-008d	POWER STEERING DRAIN PLUG	(B),Power steering drain plug - magnetic plug.
209-010	POWER STEERING UNIT	(S),Steering box - Sheppard M110, power assisted, frame mounted.
209-060	POWER STEERING SYSTEM FLUID	(B),Power steering system fluid - Dexron III, mineral based.
219-001a	ENGINE,HP,TORQUE,TYPE	(B),Engine - Cummins ISL 2016 diesel (hybrid), 330 horsepower with 1050 LB FT torque (Engine output is controlled by Hybrid drive). Uses a heat exchanger for the isolated cabin heating loop.
219-005a	ENGINE AIR COMPRESSOR	(B),Air compressor - Wabco HD 30.4, twin cylinder, turbo aspirated.
219-005da	ALTERNATOR ISL HYBRIDS	(A),Alternator - HBA (Hybrid beltless alternator).
219-005e	CUMMINS DIESEL FUEL FILTERS	(B),Cummins diesel fuel filters - for ISL's, Cummins primary and secondary fuel filter system.
219-005f	CUMMINS DIPSTICK,LOCATION	(S),Cummins dipstick, location - static oil level indicator, on streetside of engine.
219-005g	ENGINE & TRANS FLUID FILL TAGS	(S),Fluid fill ID tags - for engine and transmission dipsticks.
219-005h	ROAD SPEED	(C),Road speed - top road speed is governed. Set at 63 MPH (101 KPH).
219-010	TRANSMISSION/HYBRID DRIVE	(S),Hybrid drive - Allison H50EP
219-010a	TRANSMISSION SHIFTING	(S),Transmission shifting - foot on brake enables shift when in neutral.
219-010f	ALLISON TRANS FLUID LEVEL DISPLAY	(B),Allison transmission fluid level display - display provided.
219-010p	FLUID,HYBRID DRIVES	(S),Transmission fluid - Transynd synthetic.
219-025	AIR CLEANER	(A),Air cleaner - Donaldson. Reusable housing with disposable cartridge/filter.
219-025a	AIR RESTRICTION INDICATOR	(B),Air restriction indicator - mounted directly on air intake tube.
219-035	EXHAUST SYSTEM	(S),SST Exhaust system - Cummins diesel particulate filter (DPF).
219-035a	EXHAUST TAIL PIPE ORIENTATION	(B),Exhaust tail pipe orientation - curved pipe set to 45 degrees to streetside.
219-035b	EXHAUST BLANKETS FOR CUMMINS DIESEL OR CNG	(B),Cummins Diesel / CNG exhaust blankets - provided for the exhaust tubes.
219-045	ENGINE SWITCH BOX	(B),Engine switch box - basic configuration with run control, start and engine compartment light switches. Located at curbside of center rear in engine compartment.
219-045b	ENGINE SPEED CONTROL AT SW BOX	(A),Engine speed control at engine switch box - Morse throttle (controls engine RPM).
219-050	ENGINE COMPT GAUGES,BASIC	(S),Engine compartment gauges - CAN communicator programmable to multiple functions. Located at engine switchbox.
219-090	P-CLIPS,ENGINE COMPT & HVAC	(B),Engine compartment and HVAC system p-clips - UMPCO 775 SST with high temperature boxed silicon cushion provided to secure air and fluid lines to structure.
219-175	BELT GUARD	(B),Belt guard - the engine pulley guard is provided with hinges.
219-175a	BELT GUARD LATCHING	(B),Belt guard latching - rubber hood latch.
219-195	OIL SAMPLING	(C),Oil sampling - required for engine, using easy access probalizer fittings.

Option#	Description	Value Description (blank means unset)
219-810	DEF(DIESEL EXH FLUID) TANK	(B),DEF (diesel exhaust fluid) tank - manual fill is set in the lower curbside fusebox access door with NFIL fill cap.
231-005	RADIATOR	(B),Radiator - EMP MH4 GEN4 with full diagnostic capabilities. 4 x 15" fans.
231-005d	RADIATOR DRAIN VALVES	(A),Radiator drain valve - brass hex head plug.
231-010a	ENGINE COMPARTMENT & HVAC HOSES	(S),Engine compartment and HVAC hoses - a combination NFIL (Manuli) Equator 1, Equator 2, Nozone and GH100 hose for fluid and air system hoses.
231-020	SURGE TANK	(B),Surge tank - Dual cylindrical SST tanks with isolated cabin heating loop.
231-020a	LOW COOLANT INDICATION / SENSORS	(S),Low coolant indication / sensors - an early warning sensor at the surge tank signals the instrument panel Low Coolant telltale. A lower sensor signals engine shutdown and the Check Engine and Low Coolant telltales.
231-020b	SURGE TANK PRESSURE TEST PORT	(B),Surge tank pressure test port - provided.
231-020d	SURGE TANK PRESSURE RELIEF VALVE	(B),Surge tank pressure relief valve - Radiator cap (LEV-R VENT), built into surge tank cap.
231-020e	SURGE TANK SIGHT GLASS	(S),Surge tank sight glass - graduated sight glass (glass material).
231-040	COOLANT TUBES	(S),Coolant tubes - SST.
231-075	COOLANT FLUID/ANTIFREEZE	(B),Coolant fluid / antifreeze - 50/50 pre-mixed distilled water with ethylene glycol with anti-corrosion additive and bittering agent. Pink fluid.
231-085	TRANSMISSION/HYBRID DRIVE OIL COOLER	(S),Hybrid drive oil cooler - EMP for Allison hybrid drives for ISL engine.
231-085a	TRANSMISSION/HYBRID OIL COOLER HOSES	(S),Transmission / hybrid drive oil cooler hoses - NFIL (Manuli) Equator 1.
231-120	COOLANT RECOVERY TANK	(S),Coolant Recovery tank - required.
234-005	WATER FILTER	(B),Water filter - not required.
241-005	DIESEL FUEL TANK MATERIAL	(B),Diesel fuel tank material - cross-linked polyethylene.
241-005a	DIESEL TANK CAPACITY AND FILL TYPE	(B),Diesel fuel tank capacity and fill type - 100 useable US gallons. Pressure filled.
241-005b	DIESEL FILLER CAP	(B),Diesel fuel fill cap - posi-snap flip type.
241-005c	DIESEL FUEL SENDER	(S),Diesel fuel sender - required.
241-005d	DIESEL FUEL LEVEL INDICATION	(B),Diesel fuel level indication - not required.
241-010	DIESEL FUEL HOSES,ENGINE COMPT	(S),Diesel fuel hoses in engine compartment - GH100.
241-010a	DIESEL FUEL LINES,TANK TO BULKHEAD	(S),Diesel fuel lines from fuel tank to bulkhead - orange, fuel grade nylon tubing.
246-001	AIR COMPRESSOR DISCHARGE LINE	(S),Air compressor discharge line - Teflon 2807 SST braided hose.
246-005	AIR TANKS	(B),Air tanks - two dual compartment ceiling mounted tanks combining wet tank and rear brake tanks, accessories tank and kneeling tank and a single front brake tank .
246-005b	AIR TANK DRAIN VALVES	(B),Air tank drain valves - manual.
246-015	KNEELING	(S),Kneeling - full front kneeling with rapid recovery.
246-015b	LEVELING VALVES	(S),Leveling valves - Barksdale.

Option#	Description	Value Description (blank means unset)
246-020	ENTR/EXIT DOOR INTERLOCK	(C),Door interlock - Brake valve actuator on treadle valve, applied to entrance and exit doors. Foot on brake to release interlock, applied via multiplex system programming.
246-040	DRIVER'S PARK BRAKE ALARM	(A),Driver's park brake alarm - a switch in the driver's seat cushion triggers alarm to alert the driver that the park brake is not set. A light at the instrument panel is also activated.
246-040a	PARK BRAKE PRESSURE SETTING	(S),Park brake pressure setting - 40 psi auto-apply park brake valve. 60 psi pressure switch for park brake light activation.
246-060	AIR DRYER	(C),Air dryer - Graham White, "SludgeBreaker", QBA60NX5, w/ 24V heater, 12/24V purge control, dryer boost protection, high performance air dryer.
246-060a	AIR DRYER LOCATION	(S),Air dryer location - behind the rear streetside wheelhouse, on the bulkhead.
246-060d	AIR DRYER VOLTAGE	(B),Air dryer voltage - 24 volt.
246-065	PARK BRAKE ACTUATION	(B),Park brake actuation - Pull To Apply.
246-065a	PARK/EMERG BRAKE LOCATION	(S),Park brake control location - on side console panel.
246-105a	REAR AIR CHARGE FITTING LOCATION	(S),Rear air charge fitting location - routed to curbside of engine.
246-105b	REAR AIR CHARGE CONNECTOR	(C),Rear air charge connector type - male 1/4" Amflo CP1 fitting.
246-105f	MUFFLER TANK,REMOTE DRAIN	(B),Muffler tank remote drain valve - required.
246-120	FRONT TOW CONNECTOR	(C),Front tow connector fitting - 1/4" male Amflo CP1 fitting with tag.
246-120a	FRONT AIR CONNECTOR ARRANGEMENT	(B),Front air connector arrangement - located below the bumper, streetside.
246-125	FRONT AIR CHARGE CONNECTOR	(C),Front air charge connector - 1/4" male Amflo CP1 fitting with tag.
246-130	FLEXIBLE AIR LINES	(S),Flexible air lines - Synflex colour coded. Green: rear service brakes and supplies. Red: front service brakes. Brown: parking brake. Black: accessories and brake hose. Yellow: compressor and governor. Blue: suspension.
246-225	ABS	(S),ABS braking system - Wabco.
246-230	TRACTION CONTROL	(B),Automatic traction control - Wabco system, to reduce drive wheel overspin.
246-NEW	INCLINE RAISE FEATURE	(C),Incline raise feature - air suspension steep incline feature required per Muni specifications.
260-002	BATTERY MANAGEMENT	(A),Battery Management - Vanner equalizer w/Low Voltage Disconnect, temperature and current sensors to optimize battery life.
260-005a	TWO BATTERIES,TYPE / MFR	(C),Batteries - two 8D AGM/Deka 1450CCA maintenance free batteries (mfr East Penn Batteries). Post connection 3/8" positive X 3/8" negative.
260-005d	BATTERY CABLES	(S),Battery cables - red heat shrink on 24 volt positive cable end and light blue heat shrink on 12 volt positive cable end.
260-010	BATTERY TRAY	(S),Battery tray - slide out battery acid resistant polyethylene enclosure with SST sub frame, SST bearings and rubber isolation mounts. Located aft of the curbside rear wheelhouse. Note: battery access door opens to the side.
260-025	POSITIVE BATTERY DISCONNECT SW	(A),Positive battery disconnect switch - required with quick access through flip-open door. Uses a micro-switch for engine shutdown.
260-030	BATTERY VOLTAGE EQUALIZER	(B),Battery voltage equalizer - Vanner 80 amp with monitor, J1939 and battery State-of-Health monitor.
260-035	JUMP START MANUFACTURER	(C),Jumpstart - Anderson model 6322 G1 connector.
260-035a	JUMP START LOCATION	(A),Jump start location - near the battery disconnect switch at the fusebox. Accessible via the flip-open door.



Option#	Description	Value Description (blank means unset)
260-700	ALLISON HYBR OIL CLR FAN FAULT INDICATION	(S),Allison hybrid oil cooling system fan fault indication - provided at instrument panel LCD indicator. Also, there is an indication lamp at the engine switchbox.
260-820	ROOF FAIRING / SKIRTS ENCLOSURE	(S),Roof fairing / skirt enclosure - fairing with full length skirts for XDE's.
269-002	P.A. AMPLIFIER MFR / TYPE	(A),P.A. amplifier manufacturer / type - included with AVA or AVL system.
269-005	INTERIOR SPEAKER MFR	(B),Interior speaker manufacturer - TCB.
269-005b	PRIMARY INTERIOR SPEAKERS,QTY FOR 40'	(B),Primary interior speakers, quantity - six: four to light panels, two above rear bench.
269-010	EXTERIOR SPEAKERS,LOCATION	(B),Exterior speaker, location - at basic location above entrance. Includes baffled cover.
269-010a	EXTERIOR SPEAKER MFR	(B),Exterior speaker manufacturer - Shekonic.
273-005	HEADLIGHTS	(S),Headlights - NFIL Xcelsior LED low beam and halogen high beam headlights.
273-005a	DAY RUN HEADLIGHTS	(B),Day run headlights - required.
273-005b	FRONT TURN SIGNALS	(S),Front turn signals - NFIL amber LED. Integrated with headlight assembly.
273-010	TAIL LIGHTS QTY PER SIDE	(B),Tail lights quantity per side - four.
273-010ab	FOUR TAIL LIGHT ARRANGEMENT	(B),Four tail light arrangement (top to bottom) - amber, red, red, white.
273-010b	TAIL LIGHTS MFR	(B),Red / amber tail light manufacturer - 4" Dialight LED.
273-010d	WHITE BACK-UP LIGHT MFR	(S),White back-up light manufacturer - 4" Dialight LED.
273-010e	STOP LIGHTS ON WITH RTRDR/REGEN BRAKE	(B),Stop light activation by transmission retarder / regenerative braking - required.
273-010f	STOP LIGHTS ON WITH PARK BRAKE OR INTERLOCK	(S),Stop light activation - when park brake or interlock are engaged.
273-015	CENTER STOP / DECELERATION LIGHTS	(A),Center stop lights (red) - two Dialight 18" X 1" LED above the engine door.
273-020	SIDE TURN SIGNALS,TYPE / QTY PER SIDE	(B),Side turn signals, type and quantity per side - 2 amber Dialight LED with guards. Lamps are at fore of all wheelhouses except curbside front which is aft. For non-60' coaches.
273-025	KNEELING/RAMP LIGHT AT ENTRANCE	(S),Kneeling / ramp deployment warning light at entrance - 2.5" Dialight LED.
273-025b	SIDE TURN SIGNAL FUNCTIONALITY	(C),Side turn signal functionality - Sonalert/beeper at curbside exterior exit door area to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartment.
273-035	MARKER / CLEARANCE LIGHTS	(S),Marker and clearance lights - Dialight LED all around.
273-040	REFLECTORS	(S),Reflectors - self-adhesive decals installed at NFIL basic positions.
273-045	REAR LICENCE PLATE LIGHT	(B),Rear licence plate light - LED.
273-050a	TIMED SHUT-OFF,ENTR AREA LIGHTS	(B),Timed shut-off of entrance area lights (interior and/or exterior) - the program is set to shut the lights off when the door closes.
273-055a	TIMED SHUT-OFF,EXIT AREA LIGHTS	(C),Timed shut-off of exit area lights (interior and/or exterior) - the program is set to shut the lights off three seconds after the door closes.
273-112	CURBSIDE CORNERING LIGHT	(C),Curbside cornering lights - one curbside lamp located behind exit door.
277-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 277 group equipment.

Option#	Description	Value Description (blank means unset)
277-005	INTERIOR PASSENGER LIGHTING	(B),Interior passenger lighting - TCB LED, 24 VDC.
277-005f	INTERIOR LED LIGHT FUNCTIONALITY	(B),Interior LED light functionality-first bank of light on each side turn on when entrance door is opened and off when door is closed.
277-010a	TINTED LED PASSENGER LIGHT COVERS	(B),Tinted LED passenger light covers - white for all lights.
277-015	FAREBOX LIGHT	(B),Farebox light - one swivel light with a replaceable LED bulb.
277-020	DRIVER'S LIGHT	(B),Driver's light - one sealed 2.5" white high output LED light.
277-030	ENGINE COMPARTMENT LIGHTS	(B),Engine compartment lights - four 1.38" LED lights.
277-035	REAR DECK STEP LIGHT	(S),Rear deck step light - LED.
277-040	INTERIOR DOOR HEADER LIGHTS	(B),Interior door header lights - one LED strip light (approx 18" long) provided above exit (if applicable) and entrance doors. With anti-glare shield.
277-070a	REAR PLC AND FUSEBOX SERVICE LIGHTS	(S),Rear PLC compartment and fusebox lights - provided, LED.
280-001	PASSENGER SIGNAL CHIMES, FOR NON-60'	(B),Passenger signal chimes - one basic electronic chime above driver. Chime has single tone which sounds once for regular activation, twice for wheelchair positions.
280-002	PASSENGER SIGNAL PULLCORDS	(B),Passenger pullcords - yellow cords are required.
280-002a	PASSENGER PULLCORD HARDWARE	(B),Passenger pullcord hardware - Phillips.
280-003	HORIZONTAL PASSENGER SIGNAL PULLCORDS	(B),Horizontal passenger signal pullcords - set at NFIL designated basic height.
280-005	LWR DECK VERT PULLCORDS, FOR 40'	(A),Lower deck vertical passenger pullcords - three: two at first and second streetside pillars and one at first curbside pillar forward of the face of the upper deck.
280-005e	SECUREMENT OF VERTICAL PULLCORDS	(B),Securement of vertical pullcords to horizontals - looped or clamped to the horizontal depending on the location.
280-010	FRONT STOP REQUEST SIGN TYPE/POSITION	(C),Front stop request sign type / position - Smartrend LED installed in the destination sign door.
280-010a	FRONT STOP REQUEST SIGN TEXT	(B),Front stop request sign text - Stop Requested.
280-010b	FRONT STOP REQUEST SIGN LETTERING	(B),Front stop request sign lettering - upper case.
280-012	STOP REQUEST SIGN COLOURS	(B),Stop request sign colours - white letters on a red background.
280-015	PASS SIGNAL @ WHEELCHAIR POSITIONS	(C),Passenger signals at wheelchair positions - Muni specific push button mounted to flip-up seat.
280-025	PUSH BUTTON SIGNAL AT EXIT AREA	(C),Push button signal at exit - LFR style switches mounted facing aisle on stanchion fore of exit.
280-025a	PUSH BUTTONS,VERT & SEAT STANCHI	(C),Push button passenger signals on vertical seat stanchions - LFR style buttons at specified vertical stanchions.
280-025b	PUSH BUTTON SIGNALS,FRT W/HOUSE STANCH	(C),Push button signals, front wheelhouse stanchions - one each on the c/s and s/s stanchions aft of the wheelhouse, 46.5" from the floor to bottom of switches. LFR style switches.
284-001	ELECTRONIC CONTROL SYSTEM	(S),Electronic control system - Vansco.
284-001a	SYSTEM VOLTAGE	(S),System voltage - 24 VDC primary, 12 VDC secondary.
284-001b	SWITCHES	(S),Switches - water resistant.
284-001d	SPARE INPUT/OUTPUT PORTS	(S),Spare I/O (Input/Output) ports for multiplex system modules - minimum 10% input and 10% output.

Option#	Description	Value Description (blank means unset)
284-005g	HAZARD WARNING LIGHTS	(S),Hazard warning lights - front, side and rear lights flash for hazard warning.
286-001	INSTRUMENT PANEL	(C),Instrument panel - acrylic material with luminescent lighting, with Vansco Instrument Panel Cluster module including LCD touch display screen.
286-001a	SHIFT SELECTOR LOCATION	(S),Shift selector - located on instrument panel.
286-001b	EXTERIOR LAMP TEST	(S),Exterior lamp test - simultaneously depress both turn signals.
286-010a	SPEEDOMETER	(S),Speedometer - part of Vansco instrument panel cluster. Set to display miles. With odometer (the display can be toggled to show Trip1, Trip 2, engine hours).
286-010b	AUDIBLE SOUND,TURN SIGNALS/HAZARDS	(B),Turn signal and hazard warning audible sound - using click sound for turn signal and for hazard warning.
286-010e	BRK/ACCEL INTERLOCK DEACTIV WRNG	(A),Brake accelerator interlock deactivated warning - provided by audible alarm and separate red warning lamp on instrument panel. (Must have in California.)
286-055	DOOR MASTER SWITCH LOCATION	(B),Door master switch location - in sawtooth panel above driver.
286-055b	HYBRID REGEN SWITCH LOCATION	(B),Regenerative braking switch location - in sawtooth panel above driver.
286-065	SILENT ALARM	(C),Silent alarm - Motorola switch per specification required.
286-065a	SILENT ALARM SW LOCATION	(A),Silent alarm switch location - at side console.
286-070	DIAGNOSTICS PLUG LOCATIONS	(C),Diagnostic plug locations -at forward face of the SDS barrier (above driver) and at the engine switch box. 500K Baud diagnostic connector under the front dash ,forward face of the SDS barrier and at the engine switch box.
286-070a	ACCESSORY POWER PLUG	(A),Accessory power plug - at forward face of the SDS barrier (above driver).
289-001	SECUREMENT OF HARNESSSES	(B),Securement of harnessses - hellerman tyton clamps, with Panduit releasable cable ties.
296-001	WIRING DECAL,REAR PLC AND FUSEBOX	(S),Wiring decal, rear PLC and fusebox - provided, laminated.
296-001a	WIRING DECAL,SIDE CONSOLE	(B),Wiring decal, side console - laminated, shipped loose.
304-001a	EXTERIOR PAINT TYPE	(S),Exterior paint type - Axalta Imron Elite high solids polyurethane.
304-001aa	EXTERIOR PAINT CLEARCOAT	(A),Exterior paint clearcoat - required.
304-010	CORROSION PROTECTION	(B),Corrosion protection - grit blasted frame, moisture cure zinc-rich primer (applied for 12 year warranty protection), anti-chip undercoating, corrosion preventive coating sprayed inside frame tubes up to roof line.
304-015	EXTERIOR LOGOS,NFIL	(B),Exterior logos, NFIL - required.
304-015b	EXT DECALS,CUSTOMER SPECIFIC	(C),Exterior decals, customer-specific - as per spec/MRL.
304-020	NFIL SAFETY AND MAINTENANCE DECALS	(B),New Flyer safety and maintenance related decal package - English.
304-020a	INTERIOR DECALS, CUSTOMER SPECIFIC	(A),Customer specific interior decals - required.
304-020b	INTERIOR PASSENGER RELATED DECALS,LANGUAGE	(C),Interior passenger related decals, language - Combination of English and English/Spanish/Chinese.
304-020d	INTERIOR FLEET NUMBER DECALS	(B),Interior fleet number decals - required.
304-025	KNEELING / RAMP DECALS	(C),Kneeling / ramp decals - None provided per SFMTA Specification.

Option#	Description	Value Description (blank means unset)
304-030	AIR TANK DECALS	(B),Air tank decals - NFIL basic.
304-035	EXT FLEET NUMBERS, NON-ROOF	(B),Exterior fleet numbers, non-roof - required (reflective or non-reflective as per spec).
304-035a	EXTERIOR FLEET NUMBERS, ROOF	(A),Exterior fleet numbers, roof - required (reflective or non-reflective as per spec).
304-700	HYBRID SAFETY DECALS	(B),Hybrid safety decals - required.
306-005	FIRE EXTINGUISHERS	(B),Fire extinguisher - 5 lb ABC class. With gauge, hose and mounting bracket. UL compliant for US customers.
306-005a	FIRE EXTINGUISHER LOCATION	(A),Fire extinguisher location - inside the curbside equipment box.
306-010	SAFETY TRIANGLES	(B),Safety triangles - triangle reflector.
306-010a	SAFETY TRIANGLE LOCATION	(A),Safety triangle location - in equipment box on curbside luggage rack.
350-001	DRIVER'S PEDALS, POSITION / TYPE	(A),Driver's pedals positions / type - adjustable pedal assembly.
350-002b	ADJUSTABLE PEDAL BRAKE/THROTTLE ANGLE	(B),Brake / Throttle pedal angle - brake set at 45 degrees, throttle at 45 degrees from pedal to floor.
350-005	BRAKE VALVES	(S),Brake valve - E6.
350-015	TURN SIGNAL SWITCHES	(B),Turn signal switches - basic switches, floor mounted.
350-015a	DIMMER SWITCH	(B),Dimmer switch - basic foot switch.
350-015b	P.A. SYSTEM SWITCH	(A),P.A. system switch - foot switch.
350-015d	HAZARD WARNING LIGHT SW LOCATION	(B),Hazard warning light switch location - on side console.
350-030	STEERING COLUMN	(B),Steering column - Douglas Autotech with tilt and telescopic features.
350-030a	STEERING WHEEL	(B),Steering wheel - 2 spoke, 18" diameter hard padded.
350-035	DUAL HORN	(S),Dual horn - provided with splash shield.
400-001a	JACKING / LIFTING PADS	(B),Jacking / lifting pads - 4" diameter pads at front and rear chassis.
420-005	DEFROSTER ACCESS DOOR	(B),Defroster access door - top hinged with two gas struts, quarter turn 5/16" square key quad latches.
420-010	EXTERIOR SIDE PANELS	(S),Exterior lower side panels - fiberglass.
420-035a	CURB & STREET ENG,S/CONS DOORS,STRUTS	(B),Struts for curb and street side engine compartment, side console access doors - supported by gas struts.
420-035d	CURB SIDE ENGINE COMPT DOOR	(C),Curb side engine compartment door - includes battery disconnect switch access door (using a gas strut) and a DEF manual fill access door. MUNI specific door with 1" additional clearance at bottom edge.
420-035e	BATTERY COMPARTMENT DOOR	(B),Battery compartment door - solid door located aft of the curb side rear wheel, separate from the engine compartment.
420-035f	STREET SIDE ENGINE COMPT DOOR	(B),Streetside engine (radiator) access door - with wavy screen.
420-040	DIESEL FUEL FILL DOOR	(B),Diesel fuel fill door - basic hinged door located forward of the curbside rear wheelhouse.
420-040a	SURGE TANK DOOR	(B),Surge tank door - basic hinged door.

Option#	Description	Value Description (blank means unset)
420-045	SIDE CONSOLE DOOR LATCHES	(B),Side console door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050	ENGINE DOOR	(B),Engine door - solid door with built-in handle.
420-050a	ENGINE DOOR STRUTS	(B),Engine door struts - two, the streetside strut has a locking mechanism.
420-050b	ENGINE DOOR LATCHES	(B),Engine door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050e	REAR LICENSE PLATE RETENTION	(B),Rear license plate retention - centered with bottom retainer and two upper inserts.
420-060	RAIN GUTTER	(S),Rain gutter - .44" cross section bonded.
420-065	ROOF HATCHES / VENTS	(A),Roof hatches / vents - two basic hatches, 24" X 24".
420-065a	ROOF HATCH INSTRUCTION LANGUAGE	(B),Roof hatch instruction language - English.
420-070	WIPERS	(B),Wipers - Sprague motors 24 volt electric with Smartrend wet arm wipers. Intermittent.
420-075	WINDSHIELD WASHER BOTTLE	(B),Washer bottle - 5 US gallon with electric powered pump.
420-075a	WINDSHIELD WASHER FILL LOCATION	(S),Windshield washer fill location - accessed via a flip-out door built into the exterior side console access door.
420-080	LOWER DRIVER'S VENT	(B),Lower driver's vent - provided.
420-120	FENDERS	(B),Fenders - molded polyurethane.
420-120b	S1 WHEEL GUARDS	(C),S1 Wheel guard - required, forward of rear wheels
420-125	EXTERIOR UPPER REAR	(B),Exterior upper rear - fiberglass panel with no door and no window.
420-135	LOCATION,FRONT LICENSE PLATE	(C),Front license plate location - at streetside of defroster door.
420-135a	FRONT LICENSE PLATE RETENTION	(B),Front license plate retention - four inserts.
421-010	INSULATION,SIDEWALL AND ROOF	(S),Insulation, sidewall and roof - polyisocyanurate foam. meets Docket 90 spec.
421-020	INSULATION,EXHAUST CAVITY	(S),Exhaust cavity insulation - Heat-resistant fiberglass mat.
421-030	ENGINE COMPARTMENT INSULATION	(S),Engine compartment insulation - noise reduction acoustical foam, retained by perforated aluminum panels.
422-001	DOCKET 90 SPEC	(A),Docket 90 spec - review for 422 group components.
422-005	CEILING PNLS AFT OF FRT W/HS INCL RR PLC	(B),Ceiling panels aft of the front wheelhouses (including rear PLC) - Antique white plastic, SST trim.
422-005a	CEILING / HVAC COVER PANELS ABOVE FRT W/HS	(B),Ceiling / HVAC cover panels above front wheelhouses - Antique White fiberglass.
422-006	ENTRANCE/DRIVER'S AREA PANELS	(C),Entrance/driver's area panels colour - black. Includes dash, dest sign c/out, ent. mech. box, driver's o/head panels. and if used, ent. floor heat duct, frt. RH harness cover is painted flat black.
422-006b	DRIVER'S CEILING PANEL MATERIAL	(B),Driver's ceiling panel material - melamine.
422-009	INTERIOR PIER PANEL MATERIAL	(B),Interior pier panel material - thermoplastic.
422-010	PIER PANEL COLOUR	(B),Pier panel colour - Antique white, thermoplastic.

Option#	Description	Value Description (blank means unset)
422-015b	INTERIOR SIDEWALL MELAMINE	(B),Interior sidewall melamine colour - Charcoal Grey Gloss.
422-025	INTERIOR ENGINE COMPT ACCESS PANEL	(S),Interior engine compartment access panel - there is a single hinged panel under the rear seat.
422-035	INTERIOR UPPER REAR PANEL	(A),Interior upper rear panel - bulkhead panel covered with carpet / fabric material. With large central access door.
422-035a	CARPET / FABRIC,UPR REAR INT PANEL	(B),Upper rear interior carpeted / fabric panel - Charcoal Grey carpet with 1/2" plywood backing.
422-035e	C/S,S/S RR BULKHEAD ACCESS PANELS	(B),Curb and street side rear bulkhead access panels - carpeted DB plywood.
422-050a	HRNS/AIR LINE COVERS AT UPPER DECK	(B),Harness / air line covers at upper deck - painted flat black.
422-060	FRT DEST SIGN DOOR LATCHES	(B),Front destination sign door latches - short wing quad latches.
422-061	DRIVER'S OVERHEAD PANEL	(S),Driver's overhead panel - with locker.
422-061a	DRIVER'S LOCKER LATCH	(C), Driver's locker latch - short wing quard latch with pull tab.
422-065	DRIVER'S COAT HOOK AND STRAP	(B),Driver's coat hook and strap - located on the forward face of the harness cover behind the driver.
422-070	SECURE DIAGNOSTIC STATION	(B),Secure diagnostic station - above street side front wheelhouse. Incorporates driver's barrier. With four Take One pockets. Quantity of trays as per customer and / or as per electronic equipment within compartment.
422-070a	SDS ENCLOSURE COLOUR	(B),SDS enclosure colour - Flat Black with Cashmere Black melamine panel.
422-070b	SDS ENCLOSURE DOOR LATCHES	(C),SDS enclosure door latches - Two 5/16" square key quad latch and paddle latch with CH751 key.
422-085	FRONT SUNVISOR / ROLLERBLINDS	(A),Front sunvisor - black padded.
422-085a	SIDE SUNVISOR / ROLLERBLIND	(C),Side sunvisor - black padded visor for high mount mirror.
422-090	SQUARE KEY T-HANDLE	(B),Square key t-handle - located at lower left of driver.
422-105	ENTRANCE MECHANISM BOX DOOR LATCH	(S),Entrance mechanism box door latches - two short wing quad latches.
422-160	GRAB HANDLE NEAR FRONT ROOF HATCH	(B),Grab handle near front roof hatch - required.
422-NEW	NEW OPTION,422 GROUP	(C), Rear PLC and bulkhead access doors with tamperproof latches.
423-010	AD FRAMES,SDS ENCLOSURE	(C),Interior Ad Frame - TWO 17" x 11" clear holder's. One located on rear face of SDS enlosure, and One located on front door of SDS.
450-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 450 group equipment.
450-010	FLOORING	(B),Flooring - lower deck uses pressure treated NT ACQ plywood. Upper deck uses composite for step and floor to the rear wheelhouses and NT DB ACQ plywood to the rear.
450-013	DRIVESHAFT / TRANSMISSION ACCESS PANELS	(A),Driveshaft / transmission access panels - two panels set in the floor, one to access the driveshaft and the other to access the transmission.
450-025a	ALTRO FLOOR COVERING	(C),Altro floor covering - Rocket TFFG 2704F (2.7 mm / 0.11" thick), for aisle and underseats. With warning Inlays at exit vestibules.
450-025e	STEP TO UPPER REAR	(C),Step to upper deck - yellow anti-slip coating is applied to the edges and vertical faces of the step. Yellow/black caution stripe decals at each step.
450-025f	STANDEE LINE	(C),Standee line - yellow. In customer specific location 18" further rearward from standard location.
450-025g	ENTRANCE NOSING	(B),Entrance nosing - nosing is 2" wide yellow anti-skid applied to the ramp.

Option#	Description	Value Description (blank means unset)
450-025h	EXIT NOSING	(C),Exit nosing - 2.5" yellow nosing and 2.0" yellow standee line in vestibule area at edge of exit door opening/sweep. Altro / Tarabus flooring.
450-025j	REAR SEAT RISER COVERING MATERIAL	(B),Rear seat riser covering material - same material and colour as used for the flooring.
450-030	DRIVER'S PLATFORM FLOORING	(A),Driver's platform flooring - Altro.
450-030a	DRIVER'S PLATFORM TRIM	(B),Driver's platform trim - SST.
450-045	OUTER WHEELHOUSES	(B),Outer wheelhouses - SST front and rear.
450-055	INTERIOR FRONT W/HOUSE (LUGG RACK) COLOURS	(C),Interior front wheelhouse (luggage rack) colours - Matte black, painted stipple. An LED aisle light with glare shield is provided on the streetside. Also, SST scuff guards are provided.
460-005	WINDSHIELDS	(B),Windshield - 72% light transmittance green laminated. With blue shade band for street and curb sides.
460-005a	WINDSHIELD PROTECTIVE FILM	(B),Windshield protective film - required for coach delivery beyond a 500 mile radius of Final Assembly.
460-010	PASS / DRVR'S WINDOWS MANUFACTURER	(B),Passenger and driver's windows, manufacturer - Arow Global (Stormtite) non-flush mounted.
460-010b	NON-FLUSH PASSENGER WINDOWs	(C),Non-flush passenger windows - bottom is fixed, top slider.
460-010e	NON-FLUSH WINDOW GLAZING	(C),Non-flush window glazing - grey, 55% light transmittance, laminated.
460-010h	WINDOW FRAME COLOUR	(C),Window frame colour - all window frames are clear anodized.
460-010j	WINDOW EMERGENCY EGRESS	(S),Emergency egress windows - minimum quantity based on FMVSS requirements or the customer spec, whichever is the greater of the two.
460-010k	SIDE DESTINATION SIGN WINDOWS	(C),Destination sign window - curb and street sides. Fixed clear top and fixed bottom. Bottom matches passenger window glazing. (review 470 for side sign details).
460-010n	WINDOW GLAZING REPLACEMENT	(A),Window glazing replacement for servicing - rapid replacement.
460-010p	PASS WINDOW LINERS AND COATINGS	(C),Window liners and coatings - .12" acrylic liners on all windows.
460-010s	PASS WINDOW THICKNESS	(B),Passenger window thickness - 6 mm.
460-011a	DRIVER'S WINDOW, NON-FLUSH	(B),Driver's window, non-flush mounted - with fore and aft sliding sashes. The forward sash has exterior and interior handles. Non-egress.
460-011b	AFT SASH, NON-FLUSH DRIVER'S WINDOW	(B),Aft sash, non-flush driver's window - with interior handle and latch.
460-011d	DRIVER'S WINDOW GLAZING	(B),Driver's window glazing - laminated with minimum 70% light transmittance.
460-011e	DRIVER'S WINDOW SHADE BAND	(B),Driver's window shade band - not required.
470-001	DESTINATION SIGNS MFR	(A),Destination sign mfr - Twin Vision Smart Series, LED display system.
470-001a	DEST SIGN CONTROL UNIT LOCATION	(B),Destination sign control unit location - under driver's overhead panel.
470-005a	TWIN VISION FRT.DEST.SIGNS	(A),Twin Vision front destination sign - LED Chroma I, 16 X 156, 4 amber matrix boards and 1 colour board with a single LED. Will be programmed with white test pattern, customer to reprogram sign in color after acceptance.
470-010	FRONT DESTINATION SIGN GLASS	(A),Front destination sign glass - heated and laminated.
470-025	CURB SIDE DESTINATION SIGN LOCATION	(A),Curbside destination sign location - at the second window, aft of the entrance door.
470-025b	TWIN VISION CURBSIDE DEST.SIGNS	(A),Twin Vision curbside destination sign - LED, amber, 8 x 96 (37.4" wide display).

Option#	Description	Value Description (blank means unset)
470-026	STREET SIDE DEST SIGN	(C),Street side dest/route sign - required at #3 streetside window (first window rear of SDS compartment).
470-030	FRONT ROUTE SIGN	(C),Front route sign - Twin Vision LED, 14 x 40, addressable.
470-035	REAR ROUTE SIGN,LOCATION	(B),Rear route sign location - at the upper curb side. For non-CNG coaches.
470-035b	TWIN VISION REAR ROUTE SIGNS	(A),Twin Vision rear route sign - LED, amber 16 X 48.
470-060b	CLEVER DEVICES (DIGITAL RECORDER) AVA SYSTEM	(A),Clever Devices (Digital Recorder) AVA system - full system installed by NFIL, including antenna(s), cabling, ground plates and all required system components as per customer spec.
470-060f	ACS (ORBITAL/TMS) AVA SYSTEM	(C),ACS (Orbital / TMS) AVL system - provisions. Includes installation of antenna(s), cabling and ground plates as per customer spec.
470-060k	AVA/AVL LED SIGN & LOCATION	(C),AVA/AVL LED sign and location - required on the front HVAC overhead enclosure and at the exit door area.
470-061	AUTO VEHICLE MONITORING SYSTEM (AVM)	(A),Automatic Vehicle Monitoring (AVM) system - Fleetwatch required as per spec/MRL.
470-075	NEW FLYER CONNECT-DIAGNOSTIC & MONITORING SYSTEM	(A),New Flyer Connect-Diagnostic & Monitoring - required with driver maneuver awareness system (DMAS).
470-NEW	NEXTBUS SYSTEM	(C),Nextbus system - Installation of complete system including antenna.
480-005	STREET SIDE MIRROR MANUFACTURER	(B),Street side mirror manufacturer - Hadley.
480-005a	HADLEY STREET SIDE MIRROR	(B),Hadley street side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-005b	STREET SIDE MIRROR POWER OPTIONS	(A),Street side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-005e	STREET / CURB SIDE MIRROR W/TURN SIGNAL	(A),Street and curb side mirror with turn signal - LED, in mirror glass.
480-005f	STREET SIDE MIRROR ARM	(A),Street side mirror arm - mirror arm springs back to its previously set position after deflection.
480-005g	STREET SIDE MIRROR MOUNT	(A),Street side mirror mount - high mount.
480-005h	STREET / CURB SIDE MIRROR VOLTAGE	(B),Exterior mirror voltage - 12 volt.
480-006	CURB SIDE MIRROR MANUFACTURER	(B),Curb side mirror manufacturer - Hadley.
480-006a	HADLEY CURB SIDE MIRROR	(B),Hadley curb side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-006b	CURB SIDE MIRROR POWER OPTIONS	(B),Curb side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-006e	CURB SIDE MIRROR ARM	(B),Curb side mirror arm - basic, pull-back. Mirror arm is manually returned to its previously set position after deflection. Mirror can be folded forward or backward for bus wash.
480-010	INTERIOR MIRRORS,MANUFACTURER	(A),Interior mirrors, manufacturer - Hadley.
480-010a	DRIVER'S REAR VIEW MIRROR	(A),Driver's rear view mirror - 8" x 15", black, flat.
480-010b	SPOT MIRROR	(B),Spot mirror - 6" diameter flat mirror, located at curb side front.
480-010d	EXIT DOOR MIRROR	(B),Exit door mirror - convex, 12" diameter.
490-001	ENT DOOR DRIVE SYS	(A),Entrance door drive system - Electric
490-005	ENTRANCE DOOR	(B),Entrance door - Vapor slide glide.



Option#	Description	Value Description (blank means unset)
490-005a	ENTR DOOR LIMIT SWITCH SET-UP	(A),Entrance door limit switch - solid state proximity switch.
490-005d	ENTRANCE DOOR MAGNETIC DUMP VALVE	(B),Entrance door magnetic dump valve - required, located at baseplate.
490-005f	ENTR/EXIT FRANG COVER LANGUAGE	(C),Entrance / exit door frangible cover instructions (for emergency release), language - English. Additional scoring required on exit door frangible cover.
490-006	ENTRANCE DOOR HANDLES	(B),Entrance door handles - yellow powder coated.
490-015	ENTRANCE DOOR CONTROLLER	(A),Entrance door controller - extended with 5 position settings.
490-015a	DOOR CONTROLLER HANDLE	(B),Entrance door control handle - non-removable.
490-030	ENTRANCE DOOR GLAZING	(S),Entrance door glass - full length single piece, 72% green.
491-001	EXIT DOOR DRIVE SYS	(A),Exit door drive system - Electric with pneumatic emergency release.
491-005	EXIT DOOR	(A),Exit door - wide Ameriview Vapor Slide Glide, 45.2" between panels.
491-005a	SLIDE GLIDE EXIT LIMIT SWITCH	(A),Exit door limit switch - solid state proximity switch.
491-005b	EXIT DOOR CONTROL	(A),Exit door control - Vapor Class Acoustic Sensing System. Activates door opening and detects obstruction on closing.
491-005ba	CLASS SYSTEM DOOR DECAL	(C),Class system door decal - English, Spanish, Tagalog, and Chinese, text and characters as per customer requirement.
491-005d	EXIT DOOR SENSITIVE EDGE	(B),Exit door sensitive edge - sensor on the vertical edge provided with all exit doors.
491-005g	EXIT FRANGIBLE COVER SECUREMENT	(C),Exit frangible cover securement - Torx screw.
491-005j	EXIT BASEPLATE / ELEC PNL ACCESS	(B),Exit baseplate access- at each exit door, Tcb set-up, through removable ad frame.
491-006	EXIT DOOR ASSIST HANDLES	(B),Exit door assists - yellow powdercoated.
491-020	EXIT DOOR GREEN LIGHT	(B),Exit door green light - LED green light indicates that the exit door is set to open.
491-035	EXIT DOOR GLASS SIZE	(B),Exit door glass size - full length.
491-035a	EXIT DOOR GLAZING	(B),Exit door glazing - 6 mm.
491-NEW	EXIT DOOR EXTERNAL BUTTONS	(C),Exit door external buttons - Two flush mounted "Elevator Style" external switches mounted on either side of the exit doors to permit passenger loading/entry from exit.
526-001	40' PASSENGER SEAT QTY	(C),40' passenger seat quantity - 31.
526-005	PASSENGER SEAT MANUFACTURER	(B),Passenger seat manufacturer - American Seating.
526-005b	AMERICAN SEATING SEATS	(A),American Seating passenger seats - Vision stainless seat. Details as per customer spec.
526-005ba	AMERICAN SEATING D90 SPEC	(B),American Seating passenger seats D90 spec - not required.
526-005d	REAR BENCH SEAT	(S),Rear bench seat - 1-3-1 hinged seat.
526-005e	PASSENGER SEAT MOUNTING	(B),Passenger seat mounting - cantilever.
526-005f	SEAT MOUNTED GRABRAIL	(A),Seat mounted grabrails - stainless steel.

Option#	Description	Value Description (blank means unset)
526-005h	FIRST SEAT,CURBSIDE UPPER REAR	(B),First seat at curbside upper rear - forward facing.
526-005i	PASSENGER SEATING BARRIER	(B),Passenger seating barrier - pedestal mounted barrier.
526-005j	SEAT POSITION,FORWARD OF REAR EXIT	(A),Seat position, forward of rear exit - aisle facing.
526-006	DRIVER'S SEAT MANUFACTURER	(A),Driver's seat manufacturer - USSC.
526-006a	USSC DRIVER'S SEAT MODEL	(A),USSC driver's seat model - 9100 ALX. The fore / aft seat travel is 11.8". Has 2 point seat belt. Has air suspension and lumbar.
526-006f	DRIVER'S SEAT MATERIAL	(B),Driver's seat material - all vinyl.
526-006g	DRIVER'S SEAT BELT	(A),Driver's seat belt - lap belt with retractor on left hand side.
526-006ga	DRIVER'S SEAT BELT ALARM	(A),Driver's seat belt alarm - required to warn driver that seat belt is not connected.
526-006gb	DRIVER'S SEAT BELT COLOR	(A),Driver's seat belt color - Orange.
526-006j	DRIVER'S SEAT,DOCKET 90 SPEC	(B),Driver's seat D90 spec - Not required.
526-006k	DRIVER'S SEAT BASE RISER	(A),Driver's seat base (riser) - SST.
526-006m	DRIVER'S SEAT PARK BRAKE ALARM	(A),Driver's seat park brake alarm - switch is required in seat cushion to trigger driver's park brake alarm (ref. option 246-040).
526-006s	DRVR'S SEAT HEADREST	(B),Driver's seat headrest - required.
526-007	WHEELCHAIR POSITIONS,QUANTITY	(C),Wheelchair positions - two. One fwd of the exit door curbside and one aft of the streetside front wheelhouses.
526-007a	W/CHAIR POSITIONS,RESTRAINT SYSTEM	(A),Wheelchair restraint system - padded barrier/restraint system for rearward facing w/chr position(s) and restraint system for forward facing w/chr position(s). Mfr, position, mat'l color/type and details as per customer spec.
526-007e	SHOULDER HARNESS,W/CHR RESTRAINT	(C),Shoulder harness for wheelchair restraints - secured to structure (pier panel), one on streetside only (for rear facing wheelchair position).
526-010	STANCHION / GRABRAIL STYLE	(B),Stanchion / grabrail style - curved style vertical stanchions. Using cast SST fittings for vertical and horizontal stanchions.
526-010a	OVERHEAD HORIZONTAL GRABRAILS	(A),Overhead horizontal grabrails - yellow SST.
526-010aa	OVERHEAD HANDSTRAPS,TYPE	(C),Handhold straps on overhead grabrails - flexible grey PVC straps in yellow Bentech mounts, secured to horizontal stanchions, locations as per customer spec.
526-010ab	OVERHEAD GRABRAIL HANDHOLD STRAPS,QUANTITY	(A),Overhead grabrail handhold straps, quantity - twenty-four.
526-010b	COLOR - STANCHIONS AT EXITS & RR RISER STEP	(B),Color - stanchions at exits and rear riser steps - yellow SST.
526-010d	VERT FORE OF S/S FRT W/HOUSE	(C),Vertical stanchion fore of streetside front wheelhouse - black SST (part of drivers door).
526-010da	VERT AFT OF S/S FRT W/HOUSE	(B),Vertical stanchion aft of streetside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010e	VERT FORE OF C/S FRT W/HOUSE	(A),Vertical stanchion fore of curbside front wheelhouse - black SST.
526-010ea	VERT AFT OF C/S FRT W/HOUSE	(B),Vertical stanchion aft of curbside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010f	COLOR - VERTICAL STANCHIONS AT SEATS	(A),Color - vertical stanchions at seats - yellow SST.
526-010k	FRONT CURBSIDE LUGGAGE RACK	(A),Front curbside luggage rack - horizontal yellow tube wraps around aft, aisle and fore sides, SST.

Option#	Description	Value Description (blank means unset)
526-010m	FAREBOX GRABRAIL	(A),Farebox wrap-around stanchion - black SST. Requires known farebox location.
526-015	MODESTY PANEL MATERIAL	(B),Modesty panel material - melamine.
526-015a	MODESTY PANEL MELAMINE COLOR	(B),Modesty panel melamine color - charcoal gloss (-209).
526-015b	C/SIDE FORE UPR DECK MOD PNL, GAP	(S),Gap at bottom of curbside fore of upper deck modesty panels - approximately 2" diagonally.
526-015e	UPPER PANEL AFT OF EXIT(S)	(A),Upper panel aft of exit(s) - 0.5" clear polycarbonate, basic width.
526-016	BARRIER AT STREET SIDE REAR RISER	(B),Barrier at street side rear riser - Modesty panel (material and color per 526-015/526-015a).
526-018	BARRIER REAR BENCH SEATS	(C),Barrier at rear bench seats - double stanchion bar.
526-022	DRIVER'S DRAFT SHIELD	(C),Driver's enclosure - clear AS-2 Lexan and black powdercoated steel bi-fold enclosure.
526-035	BARRIER FWD OF EXIT(S)	(A),Fore of exit(s), barriers and grabrails - upper panel, 0.5" clear polycarbonate, wide width panel.
526-055	EMERGENCY INSTRUCTIONS	(C),Emergency instructions - decals. English, Spanish, and Chinese and Tagalog.
549-001a	NON-60' HVAC SYSTEM	(B),HVAC system manufacturer and type - Thermo King RLF rooftop A/C unit for XDE. Safe-T-Walk is provided for rooftop units.
549-002a	HVAC UNIT MOTOR TYPE	(S),HVAC motor type - brushless motor for primary heating & cooling system.
549-002b	REFRIGERANT	(A),Refrigerant - R-407C freon.
549-002d	HVAC AIR INTAKE	(B),HVAC air intake - recirculated air only.
549-002e	HVAC RETURN AIR FILTER	(B),HVAC return air filter - polyester filter for RLF unit.
549-002g	HVAC SYSTEM VALVES	(S),HVAC system valves - brass ball valves with basic handles.
549-002h	A/C AND HEATER LINE CLAMPS	(S),A/C and heater line clamps - Ideal.
549-003	A/C COMPRESSOR	(A),A/C compressor - Thermo King S391 screw type compressor.
549-003d	A/C BELT AUTO TENSIONER	(A), A/C belt auto tensioner - required.
549-004	HVAC ELECTRONICS	(B),HVAC electronics - Thermo King Intelligaire 3, valid for A/C or heater units. With limited diagnostic capabilities.
549-004a	HVAC CONTROL PANELS	(B),HVAC control panel - Thermo King, installed at the HVAC unit.
549-004b	HVAC PROGRAM SETTINGS	(B),HVAC program settings - APTA standard
549-020	BOOSTER PUMP	(B),Booster pump - Rotron.
549-025	DEFROSTER	(B),Defroster - 3 speed brushless motor, electrically controlled damper.
549-100	AUXILIARY HEATER	(B),Auxiliary heater - not required.
580-005	WHEELCHAIR RAMP	(C),Wheelchair ramp -LIFT-U LU11-15 ramp at front door.
580-005a	FRONT RAMP CONTROL	(S),Front ramp control - ramp switch at driver's instrument panel.

Option#	Description	Value Description (blank means unset)
580-005d	WHEELCHAIR RAMP SURFACE	(C),Wheelchair ramp surfaces - covered with Rocket TFFG 2704F Altro flooring
580-070	WHEELCHAIR RAMP TOOL	(C),WheelChair Ramp Tool - Required as per spec/MRL.
600-025	BACK-UP ALARM	(B),Backup alarm - basic alarm located on curbside.
600-065	SDS TRAY QUANTITY	(A),SDS tray quantity - four trays total.
600-075	FAREBOX PEDESTAL	(C),Farebox pedestal - SST, 7.0" high with Muni specific mounting plate.
600-076	FAREBOX	(B),Farebox - not required.
600-077	FARECARD READER	(C),Farecard reader - Provisions/Harnesses for Muni specific Clipper system.
600-078	TRANSFER CUTTER	(C),Transfer cutters - one Globe model 303 (two notchers). Installed as per customer specific details.
600-100	CURBSIDE FRONT EQUIPMENT BOX	(A),Curbside front equipment box - black, aluminum with paddle latch, no lock.
600-101	DRIVER'S STORAGE BOX BEHIND SEAT	(A),Driver's storage box behind seat - basic box with paddle latch, no key. The box is to include a chamfer to allow for driver's seat clearance.
600-125	TAKE ONE HOLDERS	(A),Take one holders - required. Type(s) and location(s) specified by customer.
600-125e	TAKE ONES,PASSENGER AREA	(A),Take one holders - in the passenger area, installed on various window pillars.
600-152	TRASH CONTAINERS	(A),Trash container - type and location as per customer spec.
600-175	RADIO,COMMUNICATION SYSTEM	(C),Radio, communication system - full Harris radio system installed by NFIL per Muni requirements, additional conduit/provision for future radio system.
600-177	AUTOMATIC PASSENGER COUNTER	(A),Automatic passenger counter system - IRMA matrix
600-178	TRAFFIC SIGNAL CONTROL SYSTEM	(C),Traffic signal control system required. Opticom 2101/ASM 2807 GPS controlled system.
600-225	VIDEO SURVEILLANCE SYSTEM	(A),Video surveillance system - interior and exterior cameras, quantity, details and location as per customer spec and installation / approval drawing.
600-225a	VIDEO SURVEILLANCE SYSTEM,MFR	(A),Video surveillance system - DTI-Loronix system, equipment as per customer spec.
600-225b	CAMERA COLOUR TYPE	(A),Camera colour type - cameras are a combination of colour and colour with infrared capabilities.
600-268	TURN ANNUNCIATOR SYSTEM	(C),Turn annunciator system - Mallory Sonalert SC628JR beepers at curbside exterior center and rear exit door areas to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartmen.
600-276	FIRE SUPPRESSION	(C),Fire suppression - Amerex Safety Net System. With one 25 lb dry chemical agent tank and one 13 lb dry chemical tank.
600-276b	AMEREX FIRE DETECTION SENSORS	(C), Amerex fire detection sensors - linear wire in engine compartment.fire or smoke conditions in the battery compartment shall actuate a visual and audible alarm at the operator?s control panel.
600-300	BICYCLE RACK,MFR/MODEL	(A),Bicycle rack, manufacturer / model - Sportworks, DL2-WP (wide profile), front mounted.
600-300a	SPORTWORKS BICYCLE RACK MOUNTING	(A),Sportworks bicycle rack mounting - TSB (ten second bracket) quick release slide-in standoff with incorporated pivot.
600-300b	SPORTWORKS BICYCLE RACK REMOVAL	(A),Sportworks bicycle rack removal - quick release rack.
600-300d	SPORTWORKS BICYCLE RK MATL/COLOR	(A),Sportworks bicycle rack material/colour - SST, black powdercoated.
600-300e	BIKE RACK DEPLOY INDICATOR LIGHT	(A),Bike rack deployment indicator light - required.

Option#	Description	Value Description (blank means unset)
600-300f	BICYCLE RACK MFR LOGO	(A),Bicycle rack manufacturer logo - provided.
600-300g	BICYCLE RACK INSTRUCTIONS	(A),Bicycle rack instructions - English.
600-NEW	DRIVECAM SYSTEM	(C),Drivecam system - Full Install for Drivecam system.

**13.1.2 SR – 2116**

Option#	Description	Value Description SR-2116
100-002	XCELSIOR COACH LENGTH	Xcelsior - 60' coach.
100-003	STRUCTURAL MATERIAL	(B),Structural material - carbon steel/ferritic sst.
100-004	FUEL/PROPULSION SYSTEM	Propulsion system - Allison hybrid with ISL diesel engine.
100-004a	FUEL TYPE	(B),Fuel type - diesel, compatible up to 20% biodiesel.
100-006	DOCKET 90 SPEC	(A),Docket 90 spec - for interior of coach (as per spec).
100-008	ARB STANDARD	(A),Air Resources Board (ARB) Standard - required.
201-005	BUMPERS	(B),Bumpers - Romeo Rim, three piece, front and rear bumpers. Rear has anti-ride feature.
201-015	TOWING PROVISIONS	(B),Front tow eyes - basic set-up, incorporated in front chassis. Tow adapters are required.
203-005	FRONT AXLE	(B),Front axle - M.A.N. VOK-07-F, GAWR 15,873 lbs. With disc brakes. Hub mount, Knorr cylinders, Ferodo lining.
203-005b	SECUREMENT OF BRAKE LININGS	(S),Securement of brake linings - bonded.
203-005f	ELECTRONIC BRAKE STROKE MONITOR	(A),Electronic brake stroke monitor - MGM E-stroke system.
203-011	SHOCK ABSORBERS	(S),Shock absorbers - Koni.
203-014	FRONT STABILIZER BAR	(C),Front stabilizer bar provided - SR specific application is approved by NF Engineering.
203-050	FRT AXLE AND WHEEL SPLASH APRONS	(A),Front axle and wheel splash aprons - full width, fore of axle and wheels. Also, two additional aprons aft of the wheels.
204-005	REAR AXLE	(B),Rear axle - M.A.N. 4.56:1. Model HY-1350-F. GAWR 28,660. With disc brakes, hub mount, Knorr cylinder, Ferodo lining.
204-005b	CENTER AXLE	(B),Center axle - ZF model AVN132-NF1, GAWR 25,350. With disc brakes, hub mount, Knorr cylinder, Ferodo lining.
204-005d	REAR AXLE GEAR OIL	(B),Rear axle gear oil - petroleum based.
204-070	REAR AXLE DRAIN PLUGS	(B),Rear axle drain plug - magnetic external hex head.
204-140	REAR AXLE AND WHEEL SPLASH APRONS	(S),Rear axle and wheel splash aprons - one piece behind RR axle, two behind RR wheels and two pieces behind centre wheels.
205-005	TIRES	(B),Tires - 305/70R/22.5, customer supplied Michelin X InCity Z (65 mph).
205-005a	TIRE BRANDING	(A),Tire branding - required as per spec.
205-010b	WHEELS	(A),Wheels - Alcoa 22.5" x 8.25" aluminum. Polished Durabright finish both sides.
209-005	POWER STEERING PUMP	(B),Power steering pump - Ixetic (Luk) power steering pump powered off engine accessory drive.
209-005a	POWER STEERING HOSES	(S),Power steering hoses - NFIL (Manuli) Equator 2 and GH100 hose at steering box and NFIL (Manuli) Equator 2 in engine compartment.
209-005b	POWER STEERING DIAGNOSTIC FTGS	(A),Power steering diagnostic fittings - at steering box.
209-008	POWER STEERING RESERVOIR	(S),Power steering reservoir - required.
209-008d	POWER STEERING DRAIN PLUG	(B),Power steering drain plug - magnetic plug.
209-010	POWER STEERING UNIT	(S),Steering box - Sheppard M110, power assisted, frame mounted.
209-060	POWER STEERING SYSTEM FLUID	(B),Power steering system fluid - Dexron III, mineral based.
219-001a	ENGINE,HP,TORQUE,TYPE	(B),Engine - Cummins ISL 2017 diesel (hybrid), 330 horsepower with 1050 LB FT torque (Engine output is controlled by Hybrid drive). Uses a heat exchanger for the isolated cabin heating loop.
219-005a	ENGINE AIR COMPRESSOR	(B),Air compressor - Wabco HD 30.4, twin cylinder, turbo aspirated.
219-005da	ALTERNATOR ISL HYBRIDS	(A),Alternator - Niehoff C803, 28 volt, 500 amp, belt driven. Used with Niehoff regulator with data logging feature.
219-005e	CUMMINS DIESEL FUEL FILTERS	(B),Cummins diesel fuel filters - for ISL's, Cummins primary and secondary fuel filter system.
219-005f	CUMMINS DIPSTICK,LOCATION	(S),Cummins dipstick, location - static oil level indicator, on streetside of engine.

Option#	Description	Value Description SR-2116
219-005g	ENGINE & TRANS FLUID FILL TAGS	(S),Fluid fill ID tags - for engine and transmission dipsticks.
219-005h	ROAD SPEED	(C),Road speed - top road speed is governed. Set at 63 MPH (101 KPH).
219-010	TRANSMISSION/HYBRID DRIVE	(S),Hybrid drive - Allison H50EP
219-010a	TRANSMISSION SHIFTING	(S),Transmission shifting - foot on brake enables shift when in neutral.
219-010f	ALLISON TRANS FLUID LEVEL DISPLAY	(B),Allison transmission fluid level display - display provided.
219-010p	FLUID,HYBRID DRIVES	(S),Transmission fluid - Transynd synthetic.
219-025	AIR CLEANER	(A),Air cleaner - Donaldson. Reusable housing with disposable cartridge/filter.
219-025a	AIR RESTRICTION INDICATOR	(B),Air restriction indicator - mounted directly on air intake tube.
219-035	EXHAUST SYSTEM	(S),SST Exhaust system - Cummins diesel particulate filter (DPF).
219-035a	EXHAUST TAIL PIPE ORIENTATION	(B),Exhaust tail pipe orientation - curved pipe set to 45 degrees to streetside.
219-035b	EXHAUST BLANKETS FOR CUMMINS DIESEL OR CNG	(B),Cummins Diesel / CNG exhaust blankets - provided for the exhaust tubes.
219-045	ENGINE SWITCH BOX	(B),Engine switch box - basic configuration with run control, start and engine compartment light switches. Located at curbside of center rear in engine compartment.
219-045b	ENGINE SPEED CONTROL AT SW BOX	(A),Engine speed control at engine switch box - Morse throttle (controls engine RPM).
219-050	ENGINE COMPT GAUGES,BASIC	(S),Engine compartment gauges - CAN communicator programmable to multiple functions. Located at engine switchbox.
219-090	P-CLIPS,ENGINE COMPT & HVAC	(B),Engine compartment and HVAC system p-clips - UMPCO 775 SST with high temperature boxed silicon cushion provided to secure air and fluid lines to structure.
219-175	BELT GUARD	(B),Belt guard - the engine pulley guard is provided with hinges.
219-175a	BELT GUARD LATCHING	(B),Belt guard latching - rubber hood latch.
219-195	OIL SAMPLING	(C),Oil sampling - required for engine, using easy access probalizer fittings.
219-810	DEF(DIESEL EXH FLUID) TANK	(B),DEF (diesel exhaust fluid) tank - manual fill is set in the lower curbside fusebox access door with NFIL fill cap.
231-005	RADIATOR	(B),Radiator - EMP MH4 GEN4 with full diagnostic capabilities. 4 x 15" fans.
231-005d	RADIATOR DRAIN VALVES	(A),Radiator drain valve - brass hex head plug.
231-010a	ENGINE COMPARTMENT & HVAC HOSES	(S),Engine compartment and HVAC hoses - a combination NFIL (Manuli) Equator 1, Equator 2, Nozone and GH100 hose for fluid and air system hoses.
231-020	SURGE TANK	(B),Surge tank - Dual cylindrical SST tanks with isolated cabin heating loop.
231-020a	LOW COOLANT INDICATION / SENSORS	(S),Low coolant indication / sensors - an early warning sensor at the surge tank signals the instrument panel Low Coolant telltale. A lower sensor signals engine shutdown and the Check Engine and Low Coolant telltales.
231-020b	SURGE TANK PRESSURE TEST PORT	(B),Surge tank pressure test port - provided.
231-020d	SURGE TANK PRESSURE RELIEF VALVE	(B),Surge tank pressure relief valve - Radiator cap (LEV-R VENT), built into surge tank cap.
231-020e	SURGE TANK SIGHT GLASS	(S),Surge tank sight glass - graduated sight glass (glass material).
231-040	COOLANT TUBES	(S),Coolant tubes - SST.
231-075	COOLANT FLUID/ANTIFREEZE	(B),Coolant fluid / antifreeze - 50/50 pre-mixed distilled water with ethylene glycol with anti-corrosion additive and bittering agent. Pink fluid.
231-085	TRANSMISSION/HYBRID DRIVE OIL COOLER	(S),Hybrid drive oil cooler - EMP for Allison hybrid drives for ISL engine.
231-085a	TRANSMISSION/HYBRID OIL COOLER HOSES	(S),Transmission / hybrid drive oil cooler hoses - NFIL (Manuli) Equator 1.
231-120	COOLANT RECOVERY TANK	(S),Coolant Recovery tank - required.
234-005	WATER FILTER	(B),Water filter - not required.
241-005	DIESEL FUEL TANK MATERIAL	(B),Diesel fuel tank material - cross-linked polyethylene.
241-005a	DIESEL TANK CAPACITY AND FILL TYPE	(B),Diesel fuel tank capacity and fill type - 125 useable US gallons. Pressure fill.
241-005b	DIESEL FILLER CAP	(B),Diesel fuel fill cap - posi-snap flip type.

Option#	Description	Value Description SR-2116
241-005c	DIESEL FUEL SENDER	(S),Diesel fuel sender - required.
241-005d	DIESEL FUEL LEVEL INDICATION	(B),Diesel fuel level indication - not required.
241-010	DIESEL FUEL HOSES,ENGINE COMPT	(S),Diesel fuel hoses in engine compartment - GH100.
241-010a	DIESEL FUEL LINES,TANK TO BULKHEAD	(S),Diesel fuel lines from fuel tank to bulkhead - orange, fuel grade nylon tubing.
246-001	AIR COMPRESSOR DISCHARGE LINE	(S),Air compressor discharge line - Teflon 2807 SST braided hose.
246-005	AIR TANKS	(C),Air tanks - three dual compartment ceiling-mounted tanks combining wet and rear brake tanks, front accessory and kneeling tanks, rear accessory and kneeling and three single tanks for front brake, center brake and center kneeling tanks.
246-005b	AIR TANK DRAIN VALVES	(B),Air tank drain valves - manual.
246-015	KNEELING	(S),Kneeling - full front kneeling with rapid recovery.
246-015b	LEVELING VALVES	(S),Leveling valves - Barksdale.
246-020	ENTR/EXIT DOOR INTERLOCK	(C),Door interlock - Brake valve actuator on treadle valve, applied to entrance and exit doors. Foot on brake to release interlock, applied via multiplex system programming.
246-040	DRIVER'S PARK BRAKE ALARM	(A),Driver's park brake alarm - a switch in the driver's seat cushion triggers alarm to alert the driver that the park brake is not set. A light at the instrument panel is also activated.
246-040a	PARK BRAKE PRESSURE SETTING	(S),Park brake pressure setting - 40 psi auto-apply park brake valve. 60 psi pressure switch for park brake light activation.
246-060	AIR DRYER	(C),Air dryer - Graham White, "SludgeBreaker", QBA60NX5, w/ 24V heater, 12/24V purge control, dryer boost protection, high performance air dryer.
246-060a	AIR DRYER LOCATION	(S),Air dryer location - behind the rear streetside wheelhouse, on the bulkhead.
246-060d	AIR DRYER VOLTAGE	(B),Air dryer voltage - 24 volt.
246-065	PARK BRAKE ACTUATION	(B),Park brake actuation - Pull To Apply.
246-065a	PARK/EMERG BRAKE LOCATION	(S),Park brake control location - on side console panel.
246-105a	REAR AIR CHARGE FITTING LOCATION	(S),Rear air charge fitting location - routed to curbside of engine.
246-105b	REAR AIR CHARGE CONNECTOR TYPE	(C),Rear air charge connector type - male 1/4" Amflo CP1 fitting.
246-105f	MUFFLER TANK,REMOTE DRAIN	(B),Muffler tank remote drain valve - required.
246-120	FRONT TOW CONNECTOR	(C),Front tow connector fitting - 1/4" male Amflo CP1 fitting with tag.
246-120a	FRONT AIR CONNECTOR ARRANGEMENT	(B),Front air connector arrangement - located below the bumper, streetside.
246-125	FRONT AIR CHARGE CONNECTOR	(C),Front air charge connector - 1/4" male Amflo CP1 fitting with tag.
246-130	FLEXIBLE AIR LINES	(S),Flexible air lines - Synflex colour coded. Green: rear service brakes and supplies. Red: front service brakes. Brown: parking brake. Black: accessories and brake hose. Yellow: compressor and governor. Blue: suspension.
246-225	ABS	(S),ABS braking system - Wabco.
246-230	TRACTION CONTROL	(B),Automatic traction control - Wabco system, to reduce drive wheel overspin.
246-NEW	INCLINE RAISE FEATURE	(C),Incline raise feature - air suspension steep incline feature required per Muni specifications.
260-002	BATTERY MANAGEMENT	(A),Battery Management - Vanner equalizer w/Low Voltage Disconnect, temperature and current sensors to optimize battery life.
260-003	BATTERY VOLTAGE REGULATOR	(A),Battery voltage regulator - Niehoff w/J1939 and data logging
260-003a	BATTERY VOLTAGE REGULATOR LOCATION	(A),Battery voltage regulator location - Mounted on Alternator
260-005a	TWO BATTERIES, TYPE / MFR	(C),Batteries - two 8D AGM/Deka 1450CCA maintenance free batteries (mfr East Penn Batteries). Post connection 3/8" positive X 3/8" negative.
260-005d	BATTERY CABLES	(S),Battery cables - red heat shrink on 24 volt positive cable end and light blue heat shrink on 12 volt positive cable end.
260-010	BATTERY TRAY	(S),Battery tray - slide out battery acid resistant polyethylene enclosure with SST sub frame, SST bearings and rubber isolation mounts. Located aft of the curbside rear wheelhouse. Note: battery access door opens to the side.
260-025	POSITIVE BATTERY DISCONNECT SW	(A),Positive battery disconnect switch - required with quick access through flip-open door. Uses a micro-switch for engine shutdown.



Option#	Description	Value Description SR-2116
260-030	BATTERY VOLTAGE EQUALIZER	(B),Battery voltage equalizer - Vanner 80 amp with monitor, J1939 and battery State-of-Health monitor.
260-035	JUMP START MANUFACTURER	(C),Jumpstart - Anderson model 6322 G1 connector.
260-035a	JUMP START LOCATION	(A),Jump start location - near the battery disconnect switch at the fusebox. Accessible via the flip-open door.
260-700	ALLISON HYBR OIL CLR FAN FAULT INDICATION	(S),Allison hybrid oil cooling system fan fault indication - provided at instrument panel LCD indicator. Also, there is an indication lamp at the engine switchbox.
260-820	ROOF FAIRING / SKIRTS ENCLOSURE	(S),Roof fairing / skirt enclosure - fairing with full length skirts for XDE's.
269-002	P.A. AMPLIFIER MFR / TYPE	(A),P.A. amplifier manufacturer / type - included with AVA or AVL system.
269-005	INTERIOR SPEAKER MFR	(B),Interior speaker manufacturer - TCB.
269-005bb	PRIMARY INTERIOR SPEAKERS,QTY FOR 60'	(B),Primary interior speakers, quantity - eight: six to light panels, two above rear bench.
269-010	EXTERIOR SPEAKERS,LOCATION	(B),Exterior speaker, location - at basic location above entrance. Includes baffled cover.
269-010a	EXTERIOR SPEAKER MFR	(B),Exterior speaker manufacturer - Shekonic.
273-005	HEADLIGHTS	(S),Headlights - NFIL Xcelsior LED low beam and halogen high beam headlights.
273-005a	DAY RUN HEADLIGHTS	(B),Day run headlights - required.
273-005b	FRONT TURN SIGNALS	(S),Front turn signals - NFIL amber LED. Integrated with headlight assembly.
273-010	TAIL LIGHTS QTY PER SIDE	(B),Tail lights quantity per side - four.
273-010ab	FOUR TAIL LIGHT ARRANGEMENT	(B),Four tail light arrangement (top to bottom) - amber, red, red, white.
273-010b	TAIL LIGHTS MFR	(B),Red / amber tail light manufacturer - 4" Dialight LED.
273-010d	WHITE BACK-UP LIGHT MFR	(S),White back-up light manufacturer - 4" Dialight LED.
273-010e	STOP LIGHTS ON WITH RTRDR/REGEN BRAKE	(B),Stop light activation by transmission retarder / regenerative braking - required.
273-010f	STOP LIGHTS ON WITH PARK BRAKE OR INTERLOCK	(S),Stop light activation - when park brake or interlock are engaged.
273-015	CENTER STOP / DECELERATION LIGHTS	(A),Center stop lights (red) - two Dialight 18" X 1" LED above the engine door.
273-020a	SIDE TURN SIGNALS,TYPE / QTY PER SIDE	(B),Side turn signals, type and quantity per side - 3 amber Dialight LED with guards. Lamps are at fore of all wheelhouses except curbside front which is aft. For 60' coaches.
273-025	KNEELING/RAMP LIGHT AT ENTRANCE	(S),Kneeling / ramp deployment warning light at entrance - 2.5" Dialight LED.
273-025b	SIDE TURN SIGNAL FUNCTIONALITY	(C),Side turn signal functionality - Sonalert/beeper at curbside exterior center and rear exit door areas to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartament.
273-035	MARKER / CLEARANCE LIGHTS	(S),Marker and clearance lights - Dialight LED all around.
273-040	REFLECTORS	(S),Reflectors - self-adhesive decals installed at NFIL basic positions.
273-045	REAR LICENCE PLATE LIGHT	(B),Rear licence plate light - LED.
273-050a	TIMED SHUT-OFF,ENTR AREA LIGHTS	(B),Timed shut-off of entrance area lights (interior and/or exterior) - the program is set to shut the lights off when the door closes.
273-055a	TIMED SHUT-OFF,EXIT AREA LIGHTS	(C),Timed shut-off of exit area lights (interior and/or exterior) - the program is set to shut the lights off three seconds after the door closes.
273-112	CURBSIDE CORNERING LIGHT	(C),Curbside cornering lights - two, one curbside lamp located behind each exit door.
277-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 277 group equipment.
277-005	INTERIOR PASSENGER LIGHTING	(B),Interior passenger lighting - TCB LED, 24 VDC.
277-005f	INTERIOR LED LIGHT FUNCTIONALITY	(B),Interior LED light functionality-first bank of light on each side turn on when entrance door is opened and off when door is closed.
277-010a	TINTED LED PASSENGER LIGHT COVERS	(B),Tinted LED passenger light covers - white for all lights.
277-015	FAREBOX LIGHT	(B),Farebox light - one swivel light with a replaceable LED bulb.
277-020	DRIVER'S LIGHT	(B),Driver's light - one sealed 2.5" white high output LED light.

Option#	Description	Value Description SR-2116
277-030	ENGINE COMPARTMENT LIGHTS	(B),Engine compartment lights - four 1.38" LED lights.
277-035	REAR DECK STEP LIGHT	(S),Rear deck step light - LED.
277-040	INTERIOR DOOR HEADER LIGHTS	(B),Interior door header lights - one LED strip light (approx 18" long) provided above exit (if applicable) and entrance doors. With anti-glare shield.
277-070a	REAR PLC AND FUSEBOX SERVICE LIGHTS	(S),Rear PLC compartment and fusebox lights - provided, LED.
277-080	ARTIC JOINT AREA LIGHTS	(B),Articulated joint area lights - TCB LED lights, two aft facing.
280-001a	PASSENGER SIGNAL CHIMES, FOR 60'	(B),Passenger signal chimes - for 60' coach with two exits. Two basic electronic chimes, one above driver and one at rear exit. Chimes have a single tone which sounds once for regular activation, twice for wheelchair positions.
280-002	PASSENGER SIGNAL PULLCORDS	(B),Passenger pullcords - yellow cords are required.
280-002a	PASSENGER PULLCORD HARDWARE	(B),Passenger pullcord hardware - Phillips.
280-003	HORIZONTAL PASSENGER SIGNAL PULLCORDS	(B),Horizontal passenger signal pullcords - set at NFIL designated basic height.
280-005a	60' FRT UNIT VERT PULLCORDS	(C),Front unit vertical pullcords - Six, three at first, second, and third streetside pillars and three at first, third, and fourth curbside pillars forward of the joint.
280-005b	RR UNIT LWR DECK VERT PULLCORDS, FOR 60'	(B),Rear unit vertical pullcords - two: at first street and curbside pillars forward of the face of the upper deck.
280-005e	SECUREMENT OF VERTICAL PULLCORDS	(B),Securement of vertical pullcords to horizontals - looped or clamped to the horizontal depending on the location.
280-010	FRONT STOP REQUEST SIGN TYPE/POSITION	(C),Front stop request sign type / position - Smartrend LED installed in the destination sign door.
280-010a	FRONT STOP REQUEST SIGN TEXT	(B),Front stop request sign text - Stop Requested.
280-010b	FRONT STOP REQUEST SIGN LETTERING	(B),Front stop request sign lettering - upper case.
280-012	STOP REQUEST SIGN COLOURS	(B),Stop request sign colours - white letters on a red background.
280-015	PASS SIGNAL @ WHEELCHAIR POSITIONS	(C),Passenger signals at wheelchair positions - Muni specific push button mounted to flip-up seat.
280-025	PUSH BUTTON SIGNAL AT EXIT AREA	(C),Push button signal at exit - LFR style switches mounted facing aisle on stanchions fore of each exit.
280-025a	PUSH BUTTONS, VERT & SEAT STANCHI	(C),Push button passenger signals on vertical seat stanchions - LFR style buttons at specified vertical stanchions.
284-001	ELECTRONIC CONTROL SYSTEM	(S),Electronic control system - Vansco.
284-001a	SYSTEM VOLTAGE	(S),System voltage - 24 VDC primary, 12 VDC secondary.
284-001b	SWITCHES	(S),Switches - water resistant.
284-001d	SPARE INPUT/OUTPUT PORTS	(S),Spare I/O (Input/Output) ports for multiplex system modules - minimum 10% input and 10% output.
284-005g	HAZARD WARNING LIGHTS	(S),Hazard warning lights - front, side and rear lights flash for hazard warning.
286-001	INSTRUMENT PANEL	(C),Instrument panel - acrylic material with luminescent lighting, with Vansco Instrument Panel Cluster module including LCD touch display screen.
286-001a	SHIFT SELECTOR LOCATION	(S),Shift selector - located on instrument panel.
286-001b	EXTERIOR LAMP TEST	(S),Exterior lamp test - simultaneously depress both turn signals.
286-010a	SPEEDOMETER	(S),Speedometer - part of Vansco instrument panel cluster. Set to display miles. With odometer (the display can be toggled to show Trip1, Trip 2, engine hours).
286-010b	AUDIBLE SOUND, TURN SIGNALS/HAZARDS	(B),Turn signal and hazard warning audible sound - using click sound for turn signal and for hazard warning.
286-010e	BRK/ACCEL INTERLOCK DEACTIV WRNG	(A),Brake accelerator interlock deactivated warning - provided by audible alarm and separate red warning lamp on instrument panel. (Must have in California.)
286-055	DOOR MASTER SWITCH LOCATION	(B),Door master switch location - in sawtooth panel above driver.
286-055b	HYBRID REGEN SWITCH LOCATION	(B),Regenerative braking switch location - in sawtooth panel above driver.
286-065	SILENT ALARM	(C),Silent alarm - white lensed Allen Bradley momentary switch.
286-065a	SILENT ALARM SW LOCATION	(A),Silent alarm switch location - at side console.

Option#	Description	Value Description SR-2116
286-070	DIAGNOSTICS PLUG LOCATIONS	(C),Diagnostic plug locations -at forward face of the SDS barrier (above driver) and at the engine switch box. 500K Baud diagnostic connector under the front dash ,forward face of the SDS barrier and at the engine switch box.
286-070a	ACCESSORY POWER PLUG	(A),Accessory power plug - at forward face of the SDS barrier (above driver).
289-001	SECUREMENT OF HARNESSSES	(B),Securement of harnesses - hellerman tyton clamps, with Panduit releasable cable ties.
296-001	WIRING DECAL,REAR PLC AND FUSEBOX	(S),Wiring decal, rear PLC and fusebox - provided, laminated.
296-001a	WIRING DECAL,SIDE CONSOLE	(B),Wiring decal, side console - laminated, shipped loose.
304-001a	EXTERIOR PAINT TYPE	(S),Exterior paint type - Axalta Imron Elite high solids polyurethane.
304-001aa	EXTERIOR PAINT CLEARCOAT	(A),Exterior paint clearcoat - required.
304-010	CORROSION PROTECTION	(B),Corrosion protection - grit blasted frame, moisture cure zinc-rich primer (applied for 12 year warranty protection), anti-chip undercoating, corrosion preventive coating sprayed inside frame tubes up to roof line.
304-015	EXTERIOR LOGOS,NFIL	(B),Exterior logos, NFIL - required.
304-015b	EXT DECALS,CUSTOMER SPECIFIC	(C),Exterior decals, customer-specific - as per spec/MRL.
304-020	NFIL SAFETY AND MAINTENANCE DECALS	(B),New Flyer safety and maintenance related decal package - English.
304-020a	INTERIOR DECALS, CUSTOMER SPECIFIC	(A),Customer specific interior decals - required.
304-020b	INTERIOR PASSENGER RELATED DECALS,LANGUAGE	(C),Interior passenger related decals, language - Combination of English and English/Spanish/Chinese.
304-020d	INTERIOR FLEET NUMBER DECALS	(B),Interior fleet number decals - required.
304-025	KNEELING / RAMP DECALS	(C),Kneeling / ramp decals - None provided per SFMTA Specification.
304-030	AIR TANK DECALS	(B),Air tank decals - NFIL basic.
304-035	EXT FLEET NUMBERS,NON-ROOF	(B),Exterior fleet numbers, non-roof - required (reflective or non-reflective as per spec).
304-035a	EXTERIOR FLEET NUMBERS,ROOF	(A),Exterior fleet numbers, roof - required (reflective or non-reflective as per spec).
304-700	HYBRID SAFETY DECALS	(B),Hybrid safety decals - required.
306-005	FIRE EXTINGUISHERS	(B),Fire extinguisher - 5 lb ABC class. With gauge, hose and mounting bracket. UL compliant for US customers.
306-005a	FIRE EXTINGUISHER LOCATION	(A),Fire extinguisher location - inside the curbside equipment box.
306-010	SAFETY TRIANGLES	(B),Safety triangles - triangle reflector.
306-010a	SAFETY TRIANGLE LOCATION	(A),Safety triangle location - in equipment box on curbside luggage rack.
350-001	DRIVER'S PEDALS, POSITION / TYPE	(A),Driver's pedals positions / type - adjustable pedal assembly.
350-002b	ADJUSTABLE PEDAL BRAKE/THROTTLE ANGLE	(B),Brake / Throttle pedal angle - brake set at 45 degrees, throttle at 45 degrees from pedal to floor.
350-005	BRAKE VALVES	(S),Brake valve - E6.
350-015	TURN SIGNAL SWITCHES	(B),Turn signal switches - basic switches, floor mounted.
350-015a	DIMMER SWITCH	(B),Dimmer switch - basic foot switch.
350-015b	P.A. SYSTEM SWITCH	(A),P.A. system switch - foot switch.
350-015d	HAZARD WARNING LIGHT SW LOCATION	(B),Hazard warning light switch location - on side console.
350-030	STEERING COLUMN	(B),Steering column - Douglas Autotech with tilt and telescopic features.
350-030a	STEERING WHEEL	(B),Steering wheel - 2 spoke, 18" diameter hard padded.
350-035	DUAL HORN	(S),Dual horn - provided with splash shield.
400-001a	JACKING / LIFTING PADS	(B),Jacking / lifting pads - 4" diameter pads at front and rear chassis.
405-001	ARTICULATED JOINT	(A),Articulated joint - ATG, grey Hubner bellows

Option#	Description	Value Description SR-2116
420-005	DEFROSTER ACCESS DOOR	(B),Defroster access door - top hinged with two gas struts, quarter turn 5/16" square key quad latches.
420-010	EXTERIOR SIDE PANELS	(S),Exterior lower side panels - fiberglass.
420-035a	CURB & STREET ENG,S/CONS DOORS,STRUTS	(B),Struts for curb and street side engine compartment, side console access doors - supported by gas struts.
420-035d	CURB SIDE ENGINE COMPT DOOR	(C),Curb side engine compartment door - includes battery disconnect switch access door (using a gas strut) and a DEF manual fill access door. MUNI specific door with 1" additional clearance at bottom edge.
420-035e	BATTERY COMPARTMENT DOOR	(B),Battery compartment door - solid door located aft of the curb side rear wheel, separate from the engine compartment.
420-035f	STREET SIDE ENGINE COMPT DOOR	(B),Streetside engine (radiator) access door - with wavy screen.
420-040	DIESEL FUEL FILL DOOR	(B),Diesel fuel fill door - basic hinged door located forward of the curbside rear wheelhouse.
420-040a	SURGE TANK DOOR	(B),Surge tank door - basic hinged door.
420-045	SIDE CONSOLE DOOR LATCHES	(B),Side console door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050	ENGINE DOOR	(B),Engine door - solid door with built-in handle.
420-050a	ENGINE DOOR STRUTS	(B),Engine door struts - two, the streetside strut has a locking mechanism.
420-050b	ENGINE DOOR LATCHES	(B),Engine door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050e	REAR LICENSE PLATE RETENTION	(B),Rear license plate retention - centered with bottom retainer and two upper inserts.
420-060	RAIN GUTTER	(S),Rain gutter - .44" cross section bonded.
420-065	ROOF HATCHES / VENTS	(B),Roof hatches / vents - two basic hatches at front and rear, 24" X 24".
420-065a	ROOF HATCH INSTRUCTION LANGUAGE	(B),Roof hatch instruction language - English.
420-070	WIPERS	(B),Wipers - wet arm Sprague 24 volt electric. Intermittent.
420-075	WINDSHIELD WASHER BOTTLE	(B),Washer bottle - 5 US gallon with electric powered pump.
420-075a	WINDSHIELD WASHER FILL LOCATION	(S),Windshield washer fill location - accessed via a flip-out door built into the exterior side console access door.
420-080	LOWER DRIVER'S VENT	(B),Lower driver's vent - provided.
420-120	FENDERS	(B),Fenders - molded polyurethane.
420-121	S1 WHEEL GUARDS	(C),S1 wheel guard - required, forward of center and rear wheels - curbside.
420-125	EXTERIOR UPPER REAR	(B),Exterior upper rear - fiberglass panel with no door and no window.
420-135	LOCATION,FRONT LICENSE PLATE	(C),Front license plate location - at streetside of defroster door.
420-135a	FRONT LICENSE PLATE RETENTION	(B),Front license plate retention - four inserts.
421-010	INSULATION,SIDEWALL AND ROOF	(S),Insulation, sidewall and roof - polyisocyanurate foam. meets Docket 90 spec.
421-020	INSULATION,EXHAUST CAVITY	(S),Exhaust cavity insulation - Heat-resistant fiberglass mat.
421-030	ENGINE COMPARTMENT INSULATION	(S),Engine compartment insulation - noise reduction acoustical foam, retained by perforated aluminum panels.
422-001	DOCKET 90 SPEC	(A),Docket 90 spec - review for 422 group components.
422-005	CEILING PNLS AFT OF FRT W/HS INCL RR PLC	(B),Ceiling panels aft of the front wheelhouses (including rear PLC) - Antique white plastic, SST trim.
422-005a	CEILING / HVAC COVER PANELS ABOVE FRT W/HS	(B),Ceiling / HVAC cover panels above front wheelhouses - Antique White fiberglass.
422-006	ENTRANCE/DRIVER'S AREA PANELS	(C),Entrance/driver's area panels colour - black. Includes dash, dest sign c/out, ent. mech. box, driver's o/head panels. and if used, ent. floor heat duct, frt. RH harness cover is painted flat black.
422-006b	DRIVER'S CEILING PANEL MATERIAL	(B),Driver's ceiling panel material - melamine.
422-009	INTERIOR PIER PANEL MATERIAL	(B),Interior pier panel material - thermoplastic.
422-010	PIER PANEL COLOUR	(B),Pier panel colour - Antique white, thermoplastic.

Option#	Description	Value Description SR-2116
422-015b	INTERIOR SIDEWALL MELAMINE	(B),Interior sidewall melamine colour - Charcoal Grey Gloss.
422-025	INTERIOR ENGINE COMPT ACCESS PANEL	(S),Interior engine compartment access panel - there is a single hinged panel under the rear seat.
422-035	INTERIOR UPPER REAR PANEL	(A),Interior upper rear panel - bulkhead panel covered with carpet / fabric material. With large central access door.
422-035a	CARPET / FABRIC,UPR REAR INT PANEL	(B),Upper rear interior carpeted / fabric panel - Charcoal Grey carpet with 1/2" plywood backing.
422-035e	C/S,S/S RR BULKHEAD ACCESS PANELS	(B),Curb and street side rear bulkhead access panels - carpeted DB plywood.
422-050a	HRNS/AIR LINE COVERS AT UPPER DECK	(B),Harness / air line covers at upper deck - painted flat black.
422-060	FRT DEST SIGN DOOR LATCHES	(B),Front destination sign door latches - short wing quad latches.
422-061	DRIVER'S OVERHEAD PANEL	(S),Driver's overhead panel - with locker.
422-061a	DRIVER'S LOCKER LATCH	(C), Driver's locker latch - short wing quad latch with pull tab.
422-065	DRIVER'S COAT HOOK AND STRAP	(B),Driver's coat hook and strap - located on the forward face of the harness cover behind the driver.
422-070	SECURE DIAGNOSTIC STATION	(B),Secure diagnostic station - above street side front wheelhouse. Incorporates driver's barrier. With four Take One pockets. Quantity of trays as per customer and / or as per electronic equipment within compartment.
422-070a	SDS ENCLOSURE COLOUR	(B),SDS enclosure colour - Flat Black with Cashmere Black melamine panel.
422-070b	SDS ENCLOSURE DOOR LATCHES	(C),SDS enclosure door latches - Two 5/16" square key quad latch and paddle latch with CH751 key.
422-085	FRONT SUNVISOR / ROLLERBLINDS	(A),Front sunvisor - black padded.
422-085a	SIDE SUNVISOR / ROLLERBLIND	(C),Side sunvisor - black padded visor for high mount mirror.
422-090	SQUARE KEY T-HANDLE	(B),Square key t-handle - located at lower left of driver.
422-105	ENTRANCE MECHANISM BOX DOOR LATCH	(S),Entrance mechanism box door latches - two short wing quad latches.
422-160	GRAB HANDLE NEAR FRONT ROOF HATCH	(B),Grab handle near front roof hatch - required.
422-210	ARTICULATED JOINT CLOSEOUTS	(A),Articulated joint closeouts - Pewter Grey.
422-NEW	NEW OPTION,422 GROUP	(C),Rear PLC and bulkhead access doors with tamperproof latches.
423-010	AD FRAMES,SDS ENCLOSURE	(C),Interior Ad Frame - Two 17" x 11" clear holder's. One located on rear face of SDS enclosure, and One located on front door of SDS.
450-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 450 group equipment.
450-010	FLOORING	(B),Flooring - lower deck uses pressure treated NT ACQ plywood. Upper deck uses composite for step and floor to the rear wheelhouses and NT DB ACQ plywood to the rear.
450-013	DRIVESHAFT / TRANSMISSION ACCESS PANELS	(A),Driveshaft / transmission access panels - two panels set in the floor, one to access the driveshaft and the other to access the transmission.
450-025a	ALTRO FLOOR COVERING	(C),Altro floor covering - Rocket TFFG 2704F (2.7 mm / 0.11" thick), for aisle and underseats. With warning Inlays at exit vestibules.
450-025e	STEP TO UPPER REAR	(C),Step to upper deck - yellow anti-slip coating is applied to the edges and vertical faces of the step. Yellow/black caution stripe decals at each step.
450-025f	STANDEE LINE	(C),Standee line - yellow. In customer specific location 18" further rearward from standard location.
450-025g	ENTRANCE NOSING	(B),Entrance nosing - nosing is 2" wide yellow anti-skid applied to the ramp.
450-025h	EXIT NOSING	(C),Exit nosing - 2.5" yellow nosing and 2.0" yellow standee line in vestibule area at edge of exit door opening/sweep. Altro / Tarabus flooring.
450-025j	REAR SEAT RISER COVERING MATERIAL	(B),Rear seat riser covering material - same material and colour as used for the flooring.
450-025k	GRIT FLOORING AT ARTIC JOINT	(B),Grit flooring at articulated joint - black non-aggregate anti-slip coating.
450-030	DRIVER'S PLATFORM FLOORING	(A),Driver's platform flooring - Altro.
450-030a	DRIVER'S PLATFORM TRIM	(B),Driver's platform trim - SST.
450-045	OUTER WHEELHOUSES	(B),Outer wheelhouses - SST front and rear.

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450-055	INTERIOR FRONT W/HOUSE (LUGG RACK) COLOURS	(C),Interior front wheelhouse (luggage rack) colours - Matte black, painted stipple. An LED aisle light with glare shield is provided on the streetside. Also, SST scuff guards are provided.
460-005	WINDSHIELDS	(B),Windshield - 72% light transmittance green laminated. With blue shade band for street and curb sides.
460-005a	WINDSHIELD PROTECTIVE FILM	(B),Windshield protective film - required for coach delivery beyond a 500 mile radius of Final Assembly.
460-010	PASS / DRVR'S WINDOWS MANUFACTURER	(B),Passenger and driver's windows, manufacturer - Arow Global (Stormtite) non-flush mounted.
460-010b	NON-FLUSH PASSENGER WINDOWS	(C),Non-flush passenger windows - bottom is fixed, top slider.
460-010e	NON-FLUSH WINDOW GLAZING	(C),Non-flush window glazing - grey, 55% light transmittance, laminated.
460-010h	WINDOW FRAME COLOUR	(C),Window frame colour - all window frames are clear anodized.
460-010j	WINDOW EMERGENCY EGRESS	(S),Emergency egress windows - minimum quantity based on FMVSS requirements or the customer spec, whichever is the greater of the two.
460-010k	SIDE DESTINATION SIGN WINDOWS	(C),Destination sign window - curb and street sides. Fixed clear top and fixed bottom. Bottom matches passenger window glazing. (review 470 for side sign details).
460-010n	WINDOW GLAZING REPLACEMENT	(A),Window glazing replacement for servicing - rapid replacement.
460-010p	PASS WINDOW LINERS AND COATINGS	(C),Window liners and coatings - .12" acrylic liners on all windows.
460-010s	PASS WINDOW THICKNESS	(B),Passenger window thickness - 6 mm.
460-011a	DRIVER'S WINDOW,NON-FLUSH	(B),Driver's window, non-flush mounted - with fore and aft sliding sashes. The forward sash has exterior and interior handles. Non-egress.
460-011b	AFT SASH,NON-FLUSH DRIVER'S WINDOW	(B),Aft sash, non-flush driver's window - with interior handle and latch.
460-011d	DRIVER'S WINDOW GLAZING	(B),Driver's window glazing - laminated with minimum 70% light transmittance.
460-011e	DRIVER'S WINDOW SHADE BAND	(B),Driver's window shade band - not required.
470-001	DESTINATION SIGNS MFR	(A),Destination sign mfr - Twin Vision Smart Series, LED display system.
470-001a	DEST SIGN CONTROL UNIT LOCATION	(B),Destination sign control unit location - under driver's overhead panel.
470-005	LUMINATOR FRT.DEST.SIGNS	(C),Luminator front destination sign - Spectrum Gen 4 full color LED, 24 rows x 200 columns.
470-010	FRONT DESTINATION SIGN GLASS	(A),Front destination sign glass - heated and laminated.
470-025	CURB SIDE DESTINATION SIGN LOCATION	(A),Curbside destination sign location - at the second window, aft of the entrance door.
470-025b	TWIN VISION CURBSIDE DEST.SIGNS	(A),Twin Vision curbside destination sign - LED, amber, 8 x 96 (37.4" wide display).
470-026	STREET SIDE DEST SIGN	(C),Street side dest/route sign - required at #3 streetside window (first window rear of SDS compartment).
470-030	FRONT ROUTE SIGN	(C),Front route sign - Twin Vision Smart Series 3, LED, Amber, 12 x 40, addressable.
470-035	REAR ROUTE SIGN,LOCATION	(B),Rear route sign location - at the upper curb side. For non-CNG coaches.
470-035b	TWIN VISION REAR ROUTE SIGNS	(A),Twin Vision rear route sign - LED, amber 16 X 48.
470-060b	CLEVER DEVICES (DIGITAL RECORDER) AVA SYSTEM	(A),Clever Devices,(DRI,Digital Recorder) AVA system - full system installed by NFIL, including antenna(s), cabling, ground plates and all required system components as per customer spec.
470-060f	ACS (ORBITAL/TMS) AVA SYSTEM	(C),ACS (Orbital / TMS) AVL system - provisions. Includes installation of antenna(s), cabling and ground plates as per customer spec.
470-060k	AVA/AVL LED SIGN & LOCATION	(C),AVA/AVL LED sign and location - required on both the front and rear HVAC overhead enclosures and at the center exit door area.
470-061	AUTO VEHICLE MONITORING SYSTEM (AVM)	(A),Automatic Vehicle Monitoring (AVM) system - Fleetwatch required as per spec/MRL.
470-075	NEW FLYER CONNECT-DIAGNOSTIC & MONITORING SYSTEM	(A),New Flyer Connect-Diagnostic & Monitoring - required with driver maneuver awareness system (DMAS).
470-NEW	NEXTBUS SYSTEM	(C),Nextbus system - Installation of complete system including antenna.
480-005	STREET SIDE MIRROR MANUFACTURER	(B),Street side mirror manufacturer - Hadley.

Option#	Description	Value Description SR-2116
480-005a	HADLEY STREET SIDE MIRROR	(B),Hadley street side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-005b	STREET SIDE MIRROR POWER OPTIONS	(A),Street side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-005e	STREET / CURB SIDE MIRROR W/TURN SIGNAL	(A),Street and curb side mirror with turn signal - LED, in mirror glass.
480-005f	STREET SIDE MIRROR ARM	(A),Street side mirror arm - mirror arm springs back to its previously set position after deflection.
480-005g	STREET SIDE MIRROR MOUNT	(A),Street side mirror mount - high mount.
480-005h	STREET / CURB SIDE MIRROR VOLTAGE	(B),Exterior mirror voltage - 12 volt.
480-006	CURB SIDE MIRROR MANUFACTURER	(B),Curb side mirror manufacturer - Hadley.
480-006a	HADLEY CURB SIDE MIRROR	(B),Hadley curb side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-006b	CURB SIDE MIRROR POWER OPTIONS	(B),Curb side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-006e	CURB SIDE MIRROR ARM	(B),Curb side mirror arm - basic, pull-back. Mirror arm is manually returned to its previously set position after deflection. Mirror can be folded forward or backward for bus wash.
480-010	INTERIOR MIRRORS.MANUFACTURER	(A),Interior mirrors, manufacturer - Hadley.
480-010a	DRIVER'S REAR VIEW MIRROR	(A),Driver's rear view mirror - 8" x 15", black, flat.
480-010b	SPOT MIRROR	(B),Spot mirror - 6" diameter flat mirror, located at curb side front.
480-010d	EXIT DOOR MIRROR	(B),Exit door mirror - convex, 12" diameter.
490-001	ENT DOOR DRIVE SYS	(A),Entrance door drive system - Electric
490-005	ENTRANCE DOOR	(B),Entrance door - Vapor slide glide.
490-005a	ENTR DOOR LIMIT SWITCH SET-UP	(A),Entrance door limit switch - solid state proximity switch.
490-005d	ENTRANCE DOOR MAGNETIC DUMP VALVE	(B),Entrance door magnetic dump valve - required, located at baseplate.
490-005f	ENTR/EXIT FRANG COVER LANGUAGE	(C),Entrance / exit door frangible cover instructions (for emergency release), language - English. Additional scoring required on exit door frangible cover.
490-006	ENTRANCE DOOR HANDLES	(B),Entrance door handles - yellow powder coated.
490-015	ENTRANCE DOOR CONTROLLER	(A),Entrance door controller - extended with 5 position settings.
490-015a	DOOR CONTROLLER HANDLE	(B),Entrance door control handle - non-removable.
490-030	ENTRANCE DOOR GLAZING	(S),Entrance door glass - full length single piece, 72% green.
491-001	EXIT DOOR DRIVE SYS	(A),Exit door drive system - Electric with pneumatic emergency release.
491-005	EXIT DOOR	(B),Exit door - wide Ameriview Vapor Slide Glide, 45.2" between panels. 60' coach with two exits, one at front and one at rear unit.
491-005a	SLIDE GLIDE EXIT LIMIT SWITCH	(A),Exit door limit switch - solid state proximity switch.
491-005b	EXIT DOOR CONTROL	(A),Exit door control - Vapor Class Acoustic Sensing System. Activates door opening and detects obstruction on closing.
491-005ba	CLASS SYSTEM DOOR DECAL	(C),Class system door decal - English, Spanish, Tagalog, and Chinese, text and characters as per customer requirement.
491-005bb	CLASS SYSTEM VOICE ANNUNCIATION	(A),Class system voice annunciation - female voice. English and Spanish instructions programmed as per customer requirement.
491-005d	EXIT DOOR SENSITIVE EDGE	(B),Exit door sensitive edge - sensor on the vertical edge provided with all exit doors.
491-005g	EXIT FRANGIBLE COVER SECUREMENT	(C),Exit frangible cover securement - Torx screw.
491-005j	EXIT BASEPLATE / ELEC PNL ACCESS	(B),Exit baseplate access- at each exit door, Tcb set-up, through removable ad frame.
491-006	EXIT DOOR ASSIST HANDLES	(B),Exit door assists - yellow powdercoated.
491-020	EXIT DOOR GREEN LIGHT	(B),Exit door green light - LED green light indicates that the exit door is set to open.
491-035	EXIT DOOR GLASS SIZE	(B),Exit door glass size - full length.

Option#	Description	Value Description SR-2116
491-035a	EXIT DOOR GLAZING	(B),Exit door glazing - 6 mm.
491-NEW	EXIT DOOR EXTERNAL BUTTONS	(C),Exit door external buttons - Two flush mounted "Elevator Style" external switches mounted on either side of the exit doors to permit passenger loading/entry from exit.
526-001b	60' PASSENGER SEAT QTY	(C),60' passenger seat quantity - 44.
526-005	PASSENGER SEAT MANUFACTURER	(B),Passenger seat manufacturer - American Seating.
526-005b	AMERICAN SEATING SEATS	(A),American Seating passenger seats - Vision stainless seat. Details as per customer spec.
526-005ba	AMERICAN SEATING D90 SPEC	(B),American Seating passenger seats D90 spec - not required.
526-005d	REAR BENCH SEAT	(S),Rear bench seat - 1-3-1 hinged seat.
526-005e	PASSENGER SEAT MOUNTING	(B),Passenger seat mounting - cantilever.
526-005f	SEAT MOUNTED GRABRAIL	(A),Seat mounted grabrails - stainless steel.
526-005h	FIRST SEAT,CURBSIDE UPPER REAR	(B),First seat at curbside upper rear - forward facing.
526-005i	PASSENGER SEATING BARRIER	(B),Passenger seating barrier - pedestal mounted barrier.
526-005j	SEAT POSITION, FORWARD OF REAR EXIT	(B),Seat position, forward of rear exit - forward facing.
526-005k	ARTICULATED JOINT SEATS	(B),Articulated joint seats -not required.
526-005l	SEAT FWD OF ARTIC JOINT AREA	(A),Seat forward of artic joint - two rearward facing on each side.
526-005n	SEAT AFT OF ARTIC JOINT AREA	(C),Seat aft of artic joint area - one forward facing seat on curbside and one aisle facing seat on streetside.
526-006	DRIVER'S SEAT MANUFACTURER	(A),Driver's seat manufacturer - USSC.
526-006a	USSC DRIVER'S SEAT MODEL	(A),USSC driver's seat model - 9100 ALX. The fore / aft seat travel is 11.8". Has 2 point seat belt. Has air suspension and lumbar.
526-006f	DRIVER'S SEAT MATERIAL	(B),Driver's seat material - all vinyl.
526-006g	DRIVER'S SEAT BELT	(C),Driver's seat belt - orange colored lap belt with retractor on right hand side.
526-006ga	DRIVER'S SEAT BELT ALARM	(A),Driver's seat belt alarm - required to warn driver that seat belt is not connected.
526-006j	DRIVER'S SEAT,DOCKET 90 SPEC	(B),Driver's seat D90 spec - Not required.
526-006k	DRIVER'S SEAT BASE RISER	(A),Driver's seat base (riser) - SST.
526-006m	DRIVER'S SEAT PARK BRAKE ALARM	(A),Driver's seat park brake alarm - switch is required in seat cushion to trigger driver's park brake alarm (ref. option 246-040).
526-006s	DRVR'S SEAT HEADREST	(B),Driver's seat headrest - required.
526-007	WHEELCHAIR POSITIONS, QUANTITY	(C),Wheelchair positions - Three. One fwd of the exit door curbside and TWO aft of the streetside front wheelhouses. (Only two, Qpod)
526-007a	W/CHAIR POSITIONS, RESTRAINT SYSTEM	(A),Wheelchair restraint system - padded barrier/restraint system for rearward facing w/chr position(s) and restraint system for forward facing w/chr position(s). Mfr, position, mat'l color/type and details as per customer spec.
526-007e	SHOULDER HARNESS, W/CHR RESTRAINT	(C),Shoulder harness for wheelchair restraints - secured to structure (pier panel), one on streetside only (for rear facing wheelchair position).
526-010	STANCHION / GRABRAIL STYLE	(B),Stanchion / grabrail style - curved style vertical stanchions. Using cast SST fittings for vertical and horizontal stanchions.
526-010a	OVERHEAD HORIZONTAL GRABRAILS	(A),Overhead horizontal grabrails - yellow SST.
526-010aa	OVERHEAD HANDSTRAPS, TYPE	(C),Handhold straps on overhead grabrails - flexible grey PVC straps in yellow Bentech mounts, secured to horizontal stanchions, locations as per customer spec.
526-010ab	OVERHEAD GRABRAIL HANDHOLD STRAPS, QUANTITY	(A),Overhead grabrail handhold straps, quantity - twenty-four.
526-010b	VERT STANCH AT EXITS & RR RISER STEP	(B),Vertical stanchions at exits and rear riser steps - yellow SST.
526-010d	VERT FORE OF S/S FRT W/HOUSE	(C),Vertical stanchion fore of streetside front wheelhouse - black SST (part of drivers door).



Option#	Description	Value Description SR-2116
526-010da	VERT AFT OF S/S FRT W/HOUSE	(B),Vertical stanchion aft of streetside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010e	VERT FORE OF C/S FRT W/HOUSE	(A),Vertical stanchion fore of curbside front wheelhouse - black SST.
526-010ea	VERT AFT OF C/S FRT W/HOUSE	(B),Vertical stanchion aft of curbside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010f	VERTICAL STANCHIONS AT SEATS	(A),Vertical stanchions at seats - yellow SST.
526-010j	ARTIC JOINT HANDSTRAPS/GRABRAILS	(C),Articulated joint handholds or straps - Muni specific center hoop mounted grabrails with melamine panels..
526-010jb	ARTIC JOINT GRABRAIL COLOUR	(A),Articulated joint grabrail colour - yellow SST.
526-010k	FRONT CURBSIDE LUGGAGE RACK	(A),Front curbside luggage rack - horizontal yellow tube wraps around aft, aisle and fore sides, SST.
526-010m	FAREBOX GRABRAIL	(A),Farebox wrap-around stanchion - black SST. Requires known farebox location.
526-015	CURBSIDE MODESTY PANEL,FORE UPR DECK	(B),Curbside modesty panel, fore of upper deck - .375" thick melamine.
526-015a	FORE OF UPR DECK MELAMINE MODESTY PNLS	(B),Fore of upper deck melamine modesty panels - charcoal gloss.
526-015b	C/SIDE FORE UPR DECK MOD PNL, GAP	(S),Gap at bottom of curbside fore of upper deck modesty panels - approximately 2" diagonally.
526-015e	UPPER PANEL,C/SIDE FORE OF UPPER DECK	(A),Upper panel at curbside fore of upper deck - 0.5" clear polycarbonate,basic width.
526-015h	S/S BARRIER/MODESTY PANEL,FORE OF UPR DECK	(B),Streetside barrier/modesty panel,fore of upper deck - .375" thick melamine (colour as per option 526-015a).
526-017	BARRIER FWD OF JOINT	(A),Barrier - Modesty panels provided at forward artic joint closeouts. Stanchion color to match vertical stanchions at seats. (526-010f).
526-018	BARRIER REAR BENCH SEATS	(C),Barrier at rear bench seats - double stanchion bar.
526-022	DRIVER'S DRAFT SHIELD	(C),Driver's enclosure - clear AS-2 Lexan and black powdercoated steel bi-fold enclosure.
526-035	FORE OF EXIT(S),BARRIERS / GRABRAILS	(A),Fore of exit(s), barriers and grabrails - upper panel, 0.5" clear polycarbonate, wide width panel.
526-039	CENTER EXIT MODESTY PANEL	(B),Modesty panel aft of the center exit door - basic width (colour as per option 526-015a).
526-039e	UPPER PANEL,AFT OF CENTER EXIT	(A),Upper panel at center exit modesty panel - 0.5" clear polycarbonate,basic width.
526-048	BARRIER REAR OF JOINT	(C),Barrier - vertical stanchions without padding, yellow SST.
526-055	EMERGENCY INSTRUCTIONS	(C),Emergency instructions - decals. English, Spanish, and Chinese and Tagalog.
526-070	LUGG RACK AT CENTER AXLE PLATFORM	(A),Luggage rack at center axle platform - not required.
526-129	CTR AXLE BARRIER	(B),Barrier/modesty panel at center axle platform - .375" melamine (colour as per option 526-015a) both at curbside and streetside.
549-001b	60' HVAC SYSTEM	(B),HVAC system manufacturer and type - Thermo King RLF front and rear rooftop A/C units. Safe-T-Walk is provided for rooftop units.
549-002a	HVAC UNIT MOTOR TYPE	(S),HVAC motor type - brushless motor for primary heating & cooling system.
549-002b	REFRIGERANT	(A),Refrigerant - R-407C freon.
549-002d	HVAC AIR INTAKE	(B),HVAC air intake - recirculated air only.
549-002ea	HVAC RETURN AIR FILTER	(B),HVAC return air filter - polyester filters installed at the return air grille for RLF rooftop units.
549-002g	HVAC SYSTEM VALVES	(S),HVAC system valves - brass ball valves with basic handles.
549-002h	A/C AND HEATER LINE CLAMPS	(S),A/C and heater line clamps - Ideal.
549-003a	A/C COMPRESSOR	(A),A/C compressor - Thermo King S616 screw type compressor.
549-004a	HVAC CONTROL PANELS	(B),HVAC control panel - Thermo King, installed at the HVAC unit.
549-004b	HVAC PROGRAM SETTINGS	(B),HVAC program settings - APTA standard
549-020	BOOSTER PUMP	(C),Booster pump - Rotron.
549-025	DEFROSTER	(B),Defroster - 3 speed brushless motor, electrically controlled damper.

Option#	Description	Value Description SR-2116
549-100	AUXILIARY HEATER	(B),Auxiliary heater - not required.
580-005	WHEELCHAIR RAMP	(C),Wheelchair ramp -LIFT-U LU11-15 ramp at front door.
580-005a	FRONT RAMP CONTROL	(S),Front ramp control - ramp switch at driver's instrument panel.
580-005d	WHEELCHAIR RAMP,SURFACE	(C),Wheelchair ramp surfaces - covered with Rocket TFFG 2704F Altro flooring
580-070	RAMP RETRACTOR TOOL	(C),WheelChair Ramp Tool - Required as per spec/MRL.
600-025	BACK-UP ALARM	(B),Backup alarm - basic alarm located on curbside.
600-065	SDS TRAY QUANTITY	(A),SDS tray quantity - four trays total.
600-075	FAREBOX PEDESTAL	(C),Farebox pedestal - SST, 7.0" high with Muni specific mounting plate.
600-076	FAREBOX	(B),Farebox - not required.
600-077	FARECARD READER	(C),Farecard reader - Provisions/Harnesses for Muni specific Clipper system.
600-078	TRANSFER CUTTER	(C),Transfer cutters - one Globe model 303 (two notchers). Installed as per customer specific details.
600-100	CURBSIDE FRONT EQUIPMENT BOX	(A),Curbside front equipment box - black, aluminum with paddle latch, no lock.
600-101	DRIVER'S STORAGE BOX BEHIND SEAT	(A),Driver's storage box behind seat - basic box with paddle latch, no key. The box is to include a chamfer to allow for driver's seat clearance.
600-125	TAKE ONE HOLDERS	(A),Take one holders - required. Type(s) and location(s) specified by customer.
600-125e	TAKE ONES,PASSENGER AREA	(A),Take one holders - in the passenger area, installed on various window pillars.
600-152	TRASH CONTAINERS	(A),Trash container - type and location as per customer spec.
600-175	RADIO,COMMUNICATION SYSTEM	(C),Radio, communication system - full Harris radio system installed by NFIL per Muni requirements, additional conduit/provision for future radio system.
600-177	AUTOMATIC PASSENGER COUNTER	(A),Automatic passenger counter system - IRMA matrix
600-178	TRAFFIC SIGNAL CONTROL SYSTEM	(C),Traffic signal control system required. Opticom 2101/ASM 2807 GPS controlled system.
600-225	VIDEO SURVEILLANCE SYSTEM	(A),Video surveillance system - interior and exterior cameras, quantity, details and location as per customer spec and installation / approval drawing.
600-225a	VIDEO SURVEILLANCE SYSTEM,MFR	(A),Video surveillance system - DTI-Loronix system, equipment as per customer spec.
600-225b	CAMERA COLOUR TYPE	(A),Camera colour type - cameras are a combination of colour and colour with infrared capabilities.
600-268	TURN ANNUNCIATOR SYSTEM	(C),Turn annunciator system - Mallory Sonalert SC628JR beepers at curbside exterior center and rear exit door areas to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartment.
600-276	FIRE SUPPRESSION	(C),Fire suppression - Amerex Safety Net System. With one 25 lb dry chemical agent tank and one 13 lb dry chemical tank.
600-276b	AMEREX FIRE DETECTION SENSORS	(C), Amerex fire detection sensors - linear wire in engine compartment.fire or smoke conditions in the battery compartment shall actuate a visual and audible alarm at the operator's control panel.
600-300	BICYCLE RACK,MFR/MODEL	(A),Bicycle rack, manufacturer / model - Sportworks, DL2-WP (wide profile), front mounted.
600-300a	SPORTWORKS BICYCLE RACK MOUNTING	(A),Sportworks bicycle rack mounting - TSB (ten second bracket) quick release slide-in standoff with incorporated pivot.
600-300b	SPORTWORKS BICYCLE RACK REMOVAL	(A),Sportworks bicycle rack removal - quick release rack.
600-300d	SPORTWORKS BICYCLE RK MATL/COLOR	(A),Sportworks bicycle rack material/colour - SST, black powdercoated.
600-300e	BIKE RACK DEPLOY INDICATOR LIGHT	(A),Bike rack deployment indicator light - required.
600-300f	BICYCLE RACK MFR LOGO	(A),Bicycle rack manufacturer logo - provided.
600-300g	BICYCLE RACK INSTRUCTIONS	(A),Bicycle rack instructions - English.
600-NEW	DRIVECAM SYSTEM	(C),Drivecam system - Full Install for Drivecam system.

**13.1.3 SR – 2117**

Option#	Description	SR-2117 Value Description
100-002	XCELSIOR COACH LENGTH	Xcelsior - 40' coach.
100-003	STRUCTURAL MATERIAL	(B),Structural material - carbon steel/ferritic sst.
100-004	FUEL/PROPULSION SYSTEM	Propulsion system - BAE hybrid with ISL diesel engine.
100-004a	FUEL TYPE	(B),Fuel type - diesel, compatible up to 20% biodiesel.
100-004b	EPA CERT YEAR, FIRST COACH OF SR	EPA CERT YEAR, FIRST COACH OF SR - 2018
100-004ba	EPA CERT YEAR, FINAL COACH OF SR	EPA CERT YEAR, FINAL COACH OF SR - 2019
100-006	DOCKET 90 SPEC	(A),Docket 90 spec - for interior of coach (as per spec).
100-008	ARB STANDARD	(A),Air Resources Board (ARB) Standard - required.
100-009	POWERTRAIN CAN BAUD RATE	(B),Powertrain CAN Baud Rate - 500kbps.
201-005	BUMPERS	(B),Bumpers - Romeo Rim, three piece, front and rear bumpers. Rear has anti-ride feature.
201-015	TOWING PROVISIONS	(B),Front tow eyes - basic set-up, incorporated in front chassis. Tow adapters are required.
203-005	FRONT AXLE	(B),Front axle - M.A.N. VOK-07-F, GAWR 15,873 lbs. With disc brakes. Hub mount, Knorr cylinders, Ferodo lining.
203-005b	SECUREMENT OF BRAKE LININGS	(S),Securement of brake linings - bonded.
203-011	SHOCK ABSORBERS	(S),Shock absorbers - Koni.
203-014	FRONT STABILIZER BAR	(C),Front stabilizer bar provided - SR specific application is approved by NF Engineering.
203-050	FRT AXLE AND WHEEL SPLASH APRONS	(A),Front axle and wheel splash aprons - full width, fore of axle and wheels. Also, two additional aprons aft of the wheels.
204-005	REAR AXLE	(B),Rear axle - M.A.N. 4.56:1. Model HY-1350-F. GAWR 28,660. With disc brakes, hub mount, Knorr cylinder, Ferodo lining.
204-005d	REAR AXLE GEAR OIL	(B),Rear axle gear oil - petroleum based.
204-070	REAR AXLE DRAIN PLUGS	(B),Rear axle drain plug - magnetic external hex head.
204-140	REAR AXLE AND WHEEL SPLASH APRONS	(B),Rear axle and wheel splash aprons - one piece behind axle and two behind rr wheels.
205-005	TIRES	(B),Tires - 305/70R/22.5, customer supplied Michelin X InCity Z (65 mph).
205-005a	TIRE BRANDING	(A),Tire branding - required as per spec.
205-010b	WHEELS	(A),Wheels - Alcoa 22.5" x 8.25" aluminum. Polished Durabright finish both sides.
209-005	POWER STEERING PUMP	(A),Power steering pump - Ixetic (Luk) power steering pump powered by 24V Parker Motor mounted at the front street side.
209-005a	POWER STEERING HOSES	(S),Power steering hoses - NFIL (Manuli) Equator 2 and GH100 hose at steering box and NFIL (Manuli) Equator 2 in engine compartment.
209-005b	POWER STEERING DIAGNOSTIC FTGS	(A),Power steering diagnostic fittings - at steering box.
209-008	POWER STEERING RESERVOIR	(S),Power steering reservoir - required.
209-008a	POWER STEERING LOW LEVEL FLUID INDICATOR	(A),Power steering low level fluid indicator - required at instrument panel.
209-008d	POWER STEERING DRAIN PLUG	(B),Power steering drain plug - magnetic plug.
209-010	POWER STEERING UNIT	(S),Steering box - Sheppard M110, power assisted, frame mounted.
209-060	POWER STEERING SYSTEM FLUID	(B),Power steering system fluid - Dexron III, mineral based.
219-001a	ENGINE,HP,TORQUE,TYPE	(B),Engine - Cummins L9 2017 diesel (hybrid), 330 horsepower with 1050 LB FT torque (Engine output is controlled by Hybrid drive). Uses a heat exchanger for the isolated cabin heating loop.
219-005a	ENGINE AIR COMPRESSOR	(A),Air compressor - direct coupled air compressor powered by electric motor.
219-005db	ALTERNATOR BAE	(A),Alternator - BAE APS2 (Accessory Power System). Note: Replaces belt drive alternator, supports full electrification of accessories.

Option#	Description	SR-2117 Value Description
219-005e	CUMMINS DIESEL FUEL FILTERS	(B),Cummins diesel fuel filters - for ISL's, Cummins primary and secondary fuel filter system.
219-005f	CUMMINS DIPSTICK, LOCATION	(S),Cummins dipstick, location - static oil level indicator, on streetside of engine.
219-005g	ENGINE & TRANS FLUID FILL TAGS	(S),Fluid fill ID tags - for engine and transmission dipsticks.
219-005h	ROAD SPEED	(C),Road speed - top road speed is governed. Set at 63 MPH (101 KPH).
219-006	BAE DRIVE MODES	(A), BAE drive modes - Shuts off and restarts engine automatically to reduce idling at stops.
219-010	TRANSMISSION/HYBRID DRIVE	(C),Hybrid drive - as per BAE hybrid system, HDS300 generator with HDS200 motor.
219-010a	TRANSMISSION SHIFTING	(S),Transmission shifting - foot on brake enables shift when in neutral.
219-010p	FLUID, HYBRID DRIVES	(S),Transmission fluid - Transynd synthetic.
219-025	AIR CLEANER	(A),Air cleaner - Donaldson. Reusable housing with disposable cartridge/filter.
219-025a	AIR RESTRICTION INDICATOR	(B),Air restriction indicator - mounted directly on air intake tube.
219-035	EXHAUST SYSTEM	(S),SST Exhaust system - Cummins diesel particulate filter (DPF).
219-035a	EXHAUST TAIL PIPE ORIENTATION	(B),Exhaust tail pipe orientation - curved pipe set to 45 degrees to streetside.
219-035b	EXHAUST BLANKETS FOR CUMMINS DIESEL OR CNG	(B),Cummins Diesel / CNG exhaust blankets - provided for the exhaust tubes.
219-045	ENGINE SWITCH BOX	(B),Engine switch box - basic configuration with run control, start and engine compartment light switches. Located at curbside of center rear in engine compartment.
219-045b	ENGINE SPEED CONTROL AT SW BOX	(A),Engine speed control at engine switch box - Morse throttle (controls engine RPM).
219-050	ENGINE COMPT GAUGES, BASIC	(S),Engine compartment gauges - CAN communicator programmable to multiple functions. Located at engine switchbox.
219-090	P-CLIPS, ENGINE COMPT & HVAC	(B),Engine compartment and HVAC system p-clips - UMPCO 775 SST with high temperature boxed silicon cushion provided to secure air and fluid lines to structure.
219-175	BELT GUARD	(B),Belt guard - the engine pulley guard is provided with hinges. Yellow powdercoated.
219-175a	BELT GUARD LATCHING	(B),Belt guard latching - rubber hood latch.
219-195	OIL SAMPLING/PROBALIZER FTGS	(C),Oil sampling - required for engine, using easy access probalizer fittings.
219-810	DEF(DIESEL EXH FLUID) TANK	(B),DEF (diesel exhaust fluid) tank - manual fill is set in the lower curbside fusebox access door with NFIL fill cap.
231-005	RADIATOR, CAC, HYDR FLUID COOLER	(B),Radiator - EMP MH4 GEN4 with full diagnostic capabilities. 4 x 15" fans.
231-005d	RADIATOR DRAIN VALVES	(A),Radiator drain valve - brass hex head plug.
231-005g	RADIATOR REVERSE FAN SW & DIAG LAMP	(B),Radiator reverse fan switch & diagnostic lamp - located at engine switch box. For MH4 and MH5.
231-010a	ENGINE COMPARTMENT & HVAC HOSES	(S),Engine compartment and HVAC hoses - a combination NFIL (Manuli) Equator 1, Equator 2, Nozone and GH100 hose for fluid and air system hoses.
231-020	SURGE TANK	(C),Surge tank - Dual cylindrical SST tanks with isolated cabin heating loop. Veritech Sensors provided.
231-020a	LOW COOLANT INDICATION / SENSORS	(S),Low coolant indication / sensors - an early warning sensor at the surge tank signals the instrument panel Low Coolant telltale. A lower sensor signals engine shutdown and the Check Engine and Low Coolant telltales.
231-020b	SURGE TANK PRESSURE TEST PORT	(B),Surge tank pressure test port - provided.
231-020d	SURGE TANK PRESSURE RELIEF VALVE	(B),Surge tank pressure relief valve - Radiator cap (LEV-R VENT), built into surge tank cap.
231-020e	SURGE TANK SIGHT GLASS	(S),Surge tank sight glass - graduated sight glass (glass material).
231-040	COOLANT TUBES	(S),Coolant tubes - SST.
231-075	COOLANT FLUID/ANTIFREEZE	(B),Coolant fluid / antifreeze - 50/50 pre-mixed distilled water with ethylene glycol with anti-corrosion additive and bittering agent. Pink fluid.
231-085	TRANSMISSION/HYBRID DRIVE OIL COOLER	(C),Hybrid drive oil cooler - EMP for BAE hybrid drives for ISL engine, with Ametek pump
231-085a	TRANSMISSION/HYBRID OIL COOLER HOSES	(S),Transmission / hybrid drive oil cooler hoses - NFIL (Manuli) Equator 1.

Option#	Description	SR-2117 Value Description
231-120	COOLANT RECOVERY TANK	(S),Coolant Recovery tank - required.
234-005	WATER FILTER	(B),Water filter - not required.
241-005	DIESEL FUEL TANK MATERIAL	(B),Diesel fuel tank material - cross-linked polyethylene.
241-005a	DIESEL TANK CAPACITY AND FILL TYPE	(B),Diesel fuel tank capacity and fill type - 100 useable US gallons. Pressure filled.
241-005b	DIESEL FILLER CAP	(B),Diesel fuel fill cap - posi-snap flip type.
241-005c	DIESEL FUEL SENDER	(S),Diesel fuel sender - required.
241-005d	DIESEL FUEL LEVEL INDICATION	(B),Diesel fuel level indication - not required.
241-010	DIESEL FUEL HOSES,ENGINE COMPT	(S),Diesel fuel hoses in engine compartment - GH100.
241-010a	DIESEL FUEL LINES,TANK TO BULKHEAD	(S),Diesel fuel lines from fuel tank to bulkhead - orange, fuel grade nylon tubing.
246-001	AIR COMPRESSOR DISCHARGE LINE	(S),Air compressor discharge line - Teflon 2807 SST braided hose.
246-005	AIR TANKS	(B),Air tanks - two dual compartment ceiling mounted tanks combining wet tank and rear brake tanks, accessories tank and kneeling tank and a single front brake tank .
246-005b	AIR TANK DRAIN VALVES	(B),Air tank drain valves - manual.
246-015	KNEELING	(S),Kneeling - full front kneeling with rapid recovery.
246-015b	LEVELING VALVES	(S),Leveling valves - Barksdale.
246-020	ENTR/EXIT DOOR INTERLOCK	(C),Door interlock - Brake valve actuator on treadle valve, applied to entrance and exit doors. Foot on brake to release interlock, applied via multiplex system programming.
246-040	DRIVER'S PARK BRAKE ALARM	(A),Driver's park brake alarm - a switch in the driver's seat cushion triggers alarm to alert the driver that the park brake is not set. A light at the instrument panel is also activated.
246-040a	PARK BRAKE PRESSURE SETTING	(S),Park brake pressure setting - 40 psi auto-apply park brake valve. 60 psi pressure switch for park brake light activation.
246-060	AIR DRYER	(C),Air dryer - Graham White, "SludgeBreaker", QBA60NX5, w/ 24V heater, 12/24V purge control, dryer boost protection, high performance air dryer.
246-060a	AIR DRYER LOCATION	(S),Air dryer location - behind the rear streetside wheelhouse, on the bulkhead.
246-060d	AIR DRYER VOLTAGE	(B),Air dryer voltage - 24 volt.
246-065	PARK BRAKE ACTUATION	(B),Park brake actuation - Pull To Apply.
246-065a	PARK/EMERG BRAKE LOCATION	(S),Park brake control location - on side console panel.
246-105a	REAR AIR CHARGE FITTING LOCATION	(S),Rear air charge fitting location - routed to curbside of engine.
246-105b	REAR AIR CHARGE CONNECTOR	(C),Rear air charge connector type - male 1/4" Amflo CP1 fitting.
246-120	FRONT TOW CONNECTOR	(C),Front tow connector fitting - 1/4" male Amflo CP1 fitting with tag.
246-120a	FRONT AIR CONNECTOR ARRANGEMENT	(B),Front air connector arrangement - located below the bumper, streetside.
246-125	FRONT AIR CHARGE CONNECTOR	(C),Front air charge connector - 1/4" male Amflo CP1 fitting with tag.
246-130	FLEXIBLE AIR LINES	(S),Flexible air lines - Synflex colour coded. Green: rear service brakes and supplies. Red: front service brakes. Brown: parking brake. Black: accessories and brake hose. Yellow: compressor and governor. Blue: suspension.
246-225	ABS	(S),ABS braking system - Wabco.
246-230	TRACTION CONTROL	(B),Automatic traction control - Wabco system, to reduce drive wheel overspin.
246-NEW	INCLINE RAISE FEATURE	(C),Incline raise feature - air suspension steep incline feature required per Muni specifications.
260-002	BATTERY MANAGEMENT	(A),Battery Management - Transtech regulator w/Low Voltage Disconnect, temperature and current sensors to optimize battery life.
260-003	BATTERY VOLTAGE REGULATOR	(A),Battery voltage regulator - Transtech REG24C w/J1939 and data logging
260-003a	BATTERY VOLTAGE REGULATOR LOCATION	(B),Battery voltage regulator location - Mounted inside fuse box
260-005a	TWO BATTERIES,TYPE / MFR	(C),Batteries - two 8D AGM/Deka 1450CCA maintenance free batteries (mfr East Penn Batteries). Post connection 3/8" positive X 3/8" negative.

Option#	Description	SR-2117 Value Description
260-005d	BATTERY CABLES	(S),Battery cables - red heat shrink on 24 volt positive cable end and light blue heat shrink on 12 volt positive cable end.
260-010	BATTERY TRAY	(S),Battery tray - slide out battery acid resistant polyethylene enclosure with SST sub frame, SST bearings and rubber isolation mounts. Located aft of the curbside rear wheelhouse. Note: battery access door opens to the side.
260-025	POSITIVE BATTERY DISCONNECT SW	(A),Positive battery disconnect switch - required with quick access through flip-open door. Uses a micro-switch for engine shutdown.
260-030	BATTERY VOLTAGE EQUALIZER	(B),Battery voltage equalizer - Vanner 80 amp.
260-035	JUMP START MANUFACTURER	(C),Jumpstart - Anderson model 6322 G1 connector.
260-035a	JUMP START LOCATION	(A),Jump start location - near the battery disconnect switch at the fusebox. Accessible via the flip-open door.
260-700b	BAE ELECTRONIC COOLING PACKAGE (ECP)	(C),Electronic Cooling Package (ECP) - EMP cooler with Ametek pump for propulsion control and accessory power system.
260-700d	BAE ENERGY STORAGE SYSTEM (ESS)	(A),BAE Energy Storage System (ESS) - 3G-32K (Next Gen)
260-820	ROOF FAIRING / SKIRTS ENCLOSURE	(S),Roof fairing / skirt enclosure - fairing with full length skirts for XDE's.
269-002	P.A. AMPLIFIER MFR / TYPE	(A),P.A. amplifier manufacturer / type - included with AVA or AVL system.
269-005	INTERIOR SPEAKER MFR	(B),Interior speaker manufacturer - TCB.
269-005b	PRIMARY INTERIOR SPEAKERS,QTY FOR 40'	(C),Primary interior speakers, quantity - six: all six in light panels.
269-010	EXTERIOR SPEAKERS,LOCATION	(B),Exterior speaker, location - at basic location above entrance. Includes baffled cover.
269-010a	EXTERIOR SPEAKER MFR	(B),Exterior speaker manufacturer - Shekonic.
273-005	HEADLIGHTS	(B),Headlights - NFIL Xcelsior LED low beam and high beam headlights.
273-005a	DAY RUN HEADLIGHTS	(B),Day run headlights - required.
273-005b	FRONT TURN SIGNALS	(S),Front turn signals - NFIL amber LED. Integrated with headlight assembly.
273-010	TAIL LIGHTS QTY PER SIDE	(B),Tail lights quantity per side - four.
273-010ab	FOUR TAIL LIGHT ARRANGEMENT	(B),Four tail light arrangement (top to bottom) - amber, red, red, white.
273-010b	TAIL LIGHTS MFR	(B),Red / amber tail light manufacturer - 4" Dialight LED.
273-010d	WHITE BACK-UP LIGHT MFR	(S),White back-up light manufacturer - 4" Dialight LED.
273-010e	STOP LIGHTS ON WITH RTRDR/REGEN BRAKE	(B),Stop light activation by transmission retarder / regenerative braking - required.
273-010f	STOP LIGHTS ON WITH PARK BRAKE OR INTERLOCK	(S),Stop light activation - when park brake or interlock are engaged.
273-015	CENTER STOP / DECELERATION LIGHTS	(A),Center stop lights (red) - two Dialight 18" X 1" LED above the engine door.
273-020	SIDE TURN SIGNALS,TYPE / QTY PER SIDE	(B),Side turn signals, type and quantity per side - 2 amber Dialight LED with guards. Lamps are at fore of all wheelhouses except curbside front which is aft. For non-60' coaches.
273-025	KNEELING/RAMP LIGHT AT ENTRANCE	(S),Kneeling / ramp deployment warning light at entrance - 2.5" Dialight LED.
273-025b	SIDE TURN SIGNAL FUNCTIONALITY	(C),Side turn signal functionality - Sonalert/beeper at curbside exterior exit door area to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartments.
273-035	MARKER / CLEARANCE LIGHTS	(S),Marker and clearance lights - Dialight LED all around.
273-040	REFLECTORS	(S),Reflectors - self-adhesive decals installed at NFIL basic positions.
273-045	REAR LICENCE PLATE LIGHT	(B),Rear licence plate light - LED.
273-050a	TIMED SHUT-OFF,ENTR AREA LIGHTS	(B),Timed shut-off of entrance area lights (interior and/or exterior) - the program is set to shut the lights off when the door closes.
273-055a	TIMED SHUT-OFF,EXIT AREA LIGHTS	(C),Timed shut-off of exit area lights (interior and/or exterior) - the program is set to shut the lights off three seconds after the door closes.
273-112	CURBSIDE CORNERING LIGHT	(C),Curbside cornering lights - one curbside lamp located behind exit door.
277-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 277 group equipment.

Option#	Description	SR-2117 Value Description
277-005	INTERIOR PASSENGER LIGHTING	(B),Interior passenger lighting - TCB LED, 24 VDC.
277-005f	INTERIOR LED LIGHT FUNCTIONALITY	(B),Interior LED light functionality-first bank of light on each side turn on when entrance door is opened and off when door is closed.
277-010a	TINTED LED PASSENGER LIGHT COVERS	(B),Tinted LED passenger light covers - white for all lights.
277-015	FAREBOX LIGHT	(B),Farebox light - one fixed LED light.
277-020	DRIVER'S LIGHT	(B),Driver's light - one sealed 2.5" white high output LED light.
277-030	ENGINE COMPARTMENT LIGHTS	(B),Engine compartment lights - four 1.38" LED lights.
277-035	REAR DECK STEP LIGHT	(S),Rear deck step light - LED.
277-040	INTERIOR DOOR HEADER LIGHTS	(B),Interior door header lights - one LED strip light (approx 18" long) provided above exit (if applicable) and entrance doors. With anti-glare shield.
277-070a	REAR PLC AND FUSEBOX SERVICE LIGHTS	(S),Rear PLC compartment and fusebox lights - provided, LED.
280-001	PASSENGER SIGNAL CHIMES, FOR NON-60'	(B),Passenger signal chimes - one basic electronic chime above driver. Chime has single tone which sounds once for regular activation, twice for wheelchair positions.
280-002	PASSENGER SIGNAL PULLCORDS	(B),Passenger pullcords - yellow cords are required.
280-002a	PASSENGER PULLCORD HARDWARE	(B),Passenger pullcord hardware - Phillips.
280-003	HORIZONTAL PASSENGER SIGNAL PULLCORDS	(B),Horizontal passenger signal pullcords - set at NFIL designated basic height.
280-005	LWR DECK VERT PULLCORDS, FOR 40'	(A),Lower deck vertical passenger pullcords - three: two at first and second streetside pillars and one at second curbside pillar forward of the face of the upper deck.
280-005e	SECUREMENT OF VERTICAL PULLCORDS	(B),Securement of vertical pullcords to horizontals - looped or clamped to the horizontal depending on the location.
280-010	FRONT STOP REQUEST SIGN TYPE/POSITION	(C),Front stop request sign type / position - Smartrend LED installed in the destination sign door.
280-010a	FRONT STOP REQUEST SIGN TEXT	(B),Front stop request sign text - Stop Requested.
280-010b	FRONT STOP REQUEST SIGN LETTERING	(B),Front stop request sign lettering - upper case.
280-012	STOP REQUEST SIGN COLOURS	(B),Stop request sign colours - white letters on a red background.
280-015	PASS SIGNAL @ WHEELCHAIR POSITIONS	(C),Passenger signals at wheelchair positions - Muni specific push button mounted to flip-up seat.
280-025	PUSH BUTTON SIGNAL AT EXIT AREA	(C),Push button signal at exit - LFR style switches mounted facing aisle on stanchion fore of exit.
280-025a	PUSH BUTTONS,VERT & SEAT STANCHI	(C),Push button passenger signals on vertical seat stanchions - LFR style buttons at specified vertical stanchions.
280-025b	PUSH BUTTONS,FRT WHEELHOUSES	(C),Push button signals, front wheelhouse stanchions - one each on the c/s and s/s stanchions aft of the wheelhouse, 46.5" from the floor to bottom of switches. LFR style switches.
284-001	ELECTRONIC CONTROL SYSTEM	(S),Electronic control system - Vansco.
284-001a	SYSTEM VOLTAGE	(S),System voltage - 24 VDC primary, 12 VDC secondary.
284-001b	SWITCHES	(S),Switches - water resistant.
284-001d	SPARE INPUT/OUTPUT PORTS	(S),Spare I/O (Input/Output) ports for multiplex system modules - minimum 10% input and 10% output.
284-005g	HAZARD WARNING LIGHTS	(S),Hazard warning lights - front, side and rear lights flash for hazard warning.
286-001	INSTRUMENT PANEL	(C),Instrument panel - acrylic material with luminescent lighting, with Vansco Instrument Panel Cluster module including LCD touch display screen.
286-001a	SHIFT SELECTOR LOCATION	(S),Shift selector - located on instrument panel.
286-001b	EXTERIOR LAMP TEST	(S),Exterior lamp test - simultaneously depress both turn signals.
286-010a	SPEEDOMETER	(S),Speedometer - part of Vansco instrument panel cluster. Set to display miles. With odometer (the display can be toggled to show Trip1, Trip 2, engine hours).
286-010b	AUDIBLE SOUND,TURN SIGNALS/HAZARDS	(B),Turn signal and hazard warning audible sound - using click sound for turn signal and for hazard warning.
286-010e	BRK/ACCEL INTERLOCK DEACTIV WRNG	(A),Brake accelerator interlock deactivated warning - provided by audible alarm and separate red warning lamp on instrument panel. (Must have in California.)
286-055	DOOR MASTER SWITCH LOCATION	(B),Door master switch location - in sawtooth panel above driver.

Option#	Description	SR-2117 Value Description
286-055b	HYBRID REGEN SWITCH LOCATION	(B),Regenerative braking switch location - in sawtooth panel above driver.
286-065	SILENT ALARM	(C),Silent alarm - white lensed Allen Bradley momentary switch.
286-065a	SILENT ALARM SW LOCATION	(A),Silent alarm switch location - at side console.
286-070	DIAGNOSTIC PLUG-IN LOCATION	(S),Diagnostic plug locations - under the front dash (left of the steering column), at fwd face of the SDS barrier (above driver) and at the engine switch box and one BAE diagnostic connector at fwd face of the SDS.
286-070a	ACCESSORY POWER PLUG	(A),Accessory power plug - at forward face of the SDS barrier (above driver).
289-001	SECUREMENT OF HARNESSSES	(B),Securement of harnessses - hellerman tyton clamps, with Panduit releasable cable ties.
296-001	WIRING DECAL,REAR PLC AND FUSEBOX	(S),Wiring decal, rear PLC and fusebox - provided, laminated.
296-001a	WIRING DECAL,SIDE CONSOLE	(B),Wiring decal, side console - laminated, shipped loose.
304-001a	EXTERIOR PAINT TYPE	(S),Exterior paint type - Axalta Imron Elite high solids polyurethane.
304-001aa	EXTERIOR PAINT CLEARCOAT	(A),Exterior paint clearcoat - required.
304-010	CORROSION PROTECTION	(B),Corrosion protection - grit blasted frame, moisture cure zinc-rich primer (applied for 12 year warranty protection), anti-chip undercoating, corrosion preventive coating sprayed inside frame tubes up to roof line.
304-015	EXTERIOR LOGOS,NFIL	(B),Exterior logos, NFIL - required.
304-015b	EXT DECALS,CUSTOMER SPECIFIC	(C),Exterior decals, customer-specific - as per spec/MRL.
304-020	NFIL SAFETY AND MAINTENANCE DECALS	(B),New Flyer safety and maintenance related decal package - English.
304-020a	INTERIOR DECALS, CUSTOMER SPECIFIC	(A),Customer specific interior decals - required.
304-020b	INTERIOR PASSENGER RELATED DECALS,LANGUAGE	(C),Interior passenger related decals, language - Combination of English and English/Spanish/Chinese.
304-020d	INTERIOR FLEET NUMBER DECALS	(B),Interior fleet number decals - required.
304-025	KNEELING / RAMP DECALS	(C),Kneeling / ramp decals - None provided per SFMTA Specification.
304-030	AIR TANK DECALS	(B),Air tank decals - NFIL basic.
304-035	EXT FLEET NUMBERS,NON-ROOF	(B),Exterior fleet numbers, non-roof - required (reflective or non-reflective as per spec).
304-035a	EXTERIOR FLEET NUMBERS,ROOF	(A),Exterior fleet numbers, roof - required (reflective or non-reflective as per spec).
304-700	HYBRID SAFETY DECALS	(B),Hybrid safety decals - required.
306-005	FIRE EXTINGUISHERS	(B),Fire extinguisher - 5 lb ABC class. With gauge, hose and mounting bracket. UL compliant for US customers.
306-005a	FIRE EXTINGUISHER LOCATION	(A),Fire extinguisher location - inside the curbside equipment box.
306-010	SAFETY TRIANGLES	(B),Safety triangles - triangle reflector.
306-010a	SAFETY TRIANGLE LOCATION	(A),Safety triangle location - in equipment box on curbside luggage rack.
350-001	DRIVER'S PEDALS, POSITION / TYPE	(A),Driver's pedals positions / type - adjustable pedal assembly.
350-002b	ADJUSTABLE PEDAL BRAKE/THROTTLE ANGLE	(B),Brake / Throttle pedal angle - brake set at 45 degrees, throttle at 45 degrees from pedal to floor.
350-005	BRAKE VALVES	(S),Brake valve - E6.
350-015	TURN SIGNAL SWITCHES	(B),Turn signal switches - basic switches, floor mounted.
350-015a	DIMMER SWITCH	(B),Dimmer switch - basic foot switch.
350-015b	P.A. SYSTEM SWITCH	(A),P.A. system switch - foot switch.
350-015d	HAZARD WARNING LIGHT SW LOCATION	(B),Hazard warning light switch location - on side console.
350-030	STEERING COLUMN	(B),Steering column - Douglas Autotech with tilt and telescopic features.
350-030a	STEERING WHEEL	(B),Steering wheel - 2 spoke, 18" diameter hard padded.



Option#	Description	SR-2117 Value Description
350-035	DUAL HORN	(S),Dual horn - provided with splash shield.
400-001a	JACKING / LIFTING PADS	(B),Jacking / lifting pads - 4" diameter pads at front and rear chassis.
420-005	DEFROSTER ACCESS DOOR	(C),Defroster access door - top hinged with two gas struts, four quarter turn 5/16" square key quad latches.
420-010	EXTERIOR SIDE PANELS	(S),Exterior lower side panels - fiberglass.
420-035a	CURB & STREET ENG,S/CONS DOORS,STRUTS	(B),Struts for curb and street side engine compartment, side console access doors - supported by gas struts.
420-035b	CURB & STREET ENG COMPT, BATTERY DOORS,LATCHES	(B),Curb and street side engine compartment doors, latches - quarter turn chrome plated 5/16" square key latches. Also, used for the separate battery access door.
420-035d	CURB SIDE ENGINE COMPT DOOR	(C),Curb side engine compartment door - includes battery disconnect switch access door (using a gas strut) and a DEF manual fill access door. MUNI specific door with 1" additional clearance at bottom edge.
420-035e	BATTERY COMPARTMENT DOOR	(B),Battery compartment door - solid door located aft of the curb side rear wheel, separate from the engine compartment.
420-035f	STREET SIDE ENGINE COMPT DOOR	(B),Streetside engine (radiator) access door - with wavy screen.
420-040	DIESEL FUEL FILL DOOR	(B),Diesel fuel fill door - basic hinged door located forward of the curbside rear wheelhouse.
420-040a	SURGE TANK DOOR	(B),Surge tank door - basic hinged door.
420-045	SIDE CONSOLE DOOR LATCHES	(B),Side console door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050	ENGINE DOOR	(A),Engine door - screened door with built-in handle.
420-050a	ENGINE DOOR STRUTS	(B),Engine door struts - two, the streetside strut has a locking mechanism.
420-050b	ENGINE DOOR LATCHES	(B),Engine door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050e	REAR LICENSE PLATE RETENTION	(B),Rear license plate retention - centered with bottom retainer and two upper inserts.
420-060	RAIN GUTTER	(S),Rain gutter - .44" cross section bonded.
420-065	ROOF HATCHES / VENTS	(A),Roof hatches / vents - two basic hatches, 24" X 24".
420-065a	ROOF HATCH INSTRUCTION LANGUAGE	(B),Roof hatch instruction language - English.
420-070	WIPERS	(B),Wipers - Comotech motors 24 volt electric with Smartrend wet arm wipers. Intermittent.
420-075	WINDSHIELD WASHER BOTTLE	(B),Washer bottle - 5 US gallon with electric powered pump.
420-075a	WINDSHIELD WASHER FILL LOCATION	(S),Windshield washer fill location - accessed via a flip-out door built into the exterior side console access door.
420-080	LOWER DRIVER'S VENT	(B),Lower driver's vent - provided.
420-120	FENDERS	(B),Fenders - molded polyurethane.
420-120b	S1 WHEEL GUARDS	(C),S1 Wheel guard - required, forward of rear wheels
420-125	EXTERIOR UPPER REAR	(B),Exterior upper rear - fiberglass panel with no door and no window.
420-135	LOCATION,FRONT LICENSE PLATE	(C),Front license plate location - at streetside of defroster door.
420-135a	FRONT LICENSE PLATE RETENTION	(B),Front license plate retention - four inserts.
421-010	INSULATION,SIDEWALL AND ROOF	(S),Insulation, sidewall and roof - polyisocyanurate foam. meets Docket 90 spec.
421-020	INSULATION,EXHAUST CAVITY	(S),Exhaust cavity insulation - Heat-resistant fiberglass mat.
421-030	ENGINE COMPARTMENT INSULATION	(S),Engine compartment insulation - noise reduction acoustical foam, retained by perforated aluminum panels.
422-001	DOCKET 90 SPEC	(A),Docket 90 spec - review for 422 group components.
422-005	CEILING PNLS AFT OF FRT W/HS INCL RR PLC	(B),Ceiling panels aft of the front wheelhouses (including rear PLC) - Antique white plastic, SST trim.
422-005a	CEILING / HVAC COVER PANELS ABOVE FRT W/HS	(B),Ceiling / HVAC cover panels above front wheelhouses - Antique White fiberglass.
422-006	ENTRANCE/DRIVER'S AREA PANELS	(C),Entrance/driver's area panels colour - black. Includes dash, dest sign c/out, ent. mech. box, driver's o/head panels. and if used, ent. floor heat duct, frt. RH harness cover is painted flat black.

Option#	Description	SR-2117 Value Description
422-006b	DRIVER'S CEILING PANEL MATERIAL	(B),Driver's ceiling panel material - melamine.
422-009	INTERIOR PIER PANEL MATERIAL	(B),Interior pier panel material - thermoplastic.
422-010	PIER PANEL COLOUR	(B),Pier panel colour - Antique white, thermoplastic.
422-015b	INTERIOR SIDEWALL MELAMINE	(B),Interior sidewall melamine colour - Charcoal Grey Gloss.
422-025	INTERIOR ENGINE COMPT ACCESS PANEL	(S),Interior engine compartment access panel - there is a single hinged panel under the rear seat.
422-035	INTERIOR UPPER REAR PANEL	(A),Interior upper rear panel - bulkhead panel covered with melamine material. With large central access door.
422-035b	MELAMINE UPR REAR INT PANEL	(A),Upper rear interior melamine panel - Charcoal Grey Gloss.
422-035ba	TRIM,MELAMINE UPR RR INT PANEL	(B),Trim for melamine upper rear panel - painted steel to match panel.
422-035e	C/S,S/S RR BULKHEAD ACCESS PANELS	(A),Curb and street side rear bulkhead access panels - melamine covered DB plywood.
422-050a	HRNS/AIR LINE COVERS AT UPPER DECK	(B),Harness / air line covers at upper deck - painted flat black.
422-060	FRT DEST SIGN DOOR LATCHES	(B),Front destination sign door latches - short wing quad latches.
422-061	DRIVER'S OVERHEAD PANEL	(S),Driver's overhead panel - with locker.
422-061a	DRIVER'S LOCKER LATCH	(C), Driver's locker latch - short wing quard latch with pull tab.
422-065	DRIVER'S COAT HOOK AND STRAP	(B),Driver's coat hook and strap - located on the forward face of the harness cover behind the driver.
422-070	SECURE DIAGNOSTIC STATION	(B),Secure diagnostic station - above street side front wheelhouse. Incorporates driver's barrier. With four Take One pockets. Quantity of trays as per customer and / or as per electronic equipment within compartment.
422-070a	SDS ENCLOSURE COLOUR	(B),SDS enclosure colour - Flat Black with Cashmere Black melamine panel.
422-070b	SDS ENCLOSURE DOOR LATCHES	(C),SDS enclosure door latches - Two 5/16" square key quad latch and paddle latch with CH751 key.
422-085	FRONT SUNVISOR / ROLLERBLINDS	(B),Front rollerblind - black blind. Scissor type with 20" travel.
422-085a	SIDE SUNVISOR / ROLLERBLIND	(C),Side sunvisor - black padded visor for high mount mirror.
422-090	SQUARE KEY T-HANDLE	(B),Square key t-handle - located at lower left of driver.
422-105	ENTRANCE MECHANISM BOX DOOR LATCH	(S),Entrance mechanism box door latches - two short wing quad latches.
422-160	GRAB HANDLE NEAR FRONT ROOF HATCH	(B),Grab handle near front roof hatch - required.
422-NEW	NEW OPTION,422 GROUP	(C), Rear PLC and bulkhead access doors with tamperproof latches.
423-010	AD FRAMES,SDS ENCLOSURE	(C),Interior Ad Frame - Two 17" x 11" clear holder's. One located on rear face of SDS enclosure, and One located on front door of SDS.
450-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 450 group equipment.
450-010	FLOORING	(B),Flooring - lower deck uses pressure treated NT ACQ plywood. Upper deck uses composite for step and floor to the rear wheelhouses and NT DB ACQ plywood to the rear.
450-013	DRIVESHAFT / TRANSMISSION ACCESS PANELS	(A),Driveshaft / transmission access panels - two panels set in the floor, one to access the driveshaft and the other to access the transmission.
450-025a	ALTRO FLOOR COVERING	(C),Altro floor covering - Rocket TFFG 2704F (2.7 mm / 0.11" thick), for aisle and underseats. With warning Inlays at exit vestibules.
450-025e	STEP TO UPPER REAR	(C),Step to upper deck - yellow anti-slip coating is applied to the edges and vertical faces of the step. Yellow/black caution stripe decals at each step.
450-025f	STANDEE LINE	(C),Standee line - yellow. In customer specific location 18" further rearward from standard location.
450-025g	ENTRANCE NOSING	(B),Entrance nosing - nosing is 2" wide yellow anti-skid applied to the ramp.
450-025h	EXIT NOSING	(C),Exit nosing - 2.5" yellow nosing and 2.0" yellow standee line in vestibule area at edge of exit door opening/sweep. Altro / Tarabus flooring.
450-025j	REAR SEAT RISER COVERING MATERIAL	(B),Rear seat riser covering material - same material and colour as used for the flooring.
450-030	DRIVER'S PLATFORM FLOORING	(A),Driver's platform flooring - Altro.

Option#	Description	SR-2117 Value Description
450-030a	DRIVER'S PLATFORM TRIM	(B),Driver's platform trim - SST.
450-045	OUTER WHEELHOUSES	(B),Outer wheelhouses - SST front and rear.
450-055	INTERIOR FRONT W/HOUSE (LUGG RACK) COLOURS	(C),Interior front wheelhouse (luggage rack) colours - Matte black, painted stipple. An LED aisle light with glare shield is provided on the streetside. Also, SST scuff guards are provided.
460-005	WINDSHIELDS	(B),Windshield - 72% light transmittance green laminated. With blue shade band for street and curb sides.
460-005a	WINDSHIELD PROTECTIVE FILM	(B),Windshield protective film - required for coach delivery beyond a 500 mile radius of Final Assembly.
460-010	PASS / DRVR'S WINDOWS MANUFACTURER	(B),Passenger and driver's windows, manufacturer - Arow Global (Stormtite) non-flush mounted.
460-010b	NON-FLUSH PASSENGER WINDOWs	(C),Non-flush passenger windows - bottom is fixed, top slider.
460-010e	NON-FLUSH WINDOW GLAZING	(C),Non-flush window glazing - grey, 55% light transmittance, laminated.
460-010h	WINDOW FRAME COLOUR	(C),Window frame colour - all window frames are clear anodized.
460-010j	WINDOW EMERGENCY EGRESS	(S),Emergency egress windows - minimum quantity based on FMVSS requirements or the customer spec, whichever is the greater of the two.
460-010k	SIDE DESTINATION SIGN WINDOWS	(C),Destination sign window - curb and street sides. Fixed clear top and fixed bottom. Bottom matches passenger window glazing. (review 470 for side sign details).
460-010n	WINDOW GLAZING REPLACEMENT	(A),Window glazing replacement for servicing - rapid replacement.
460-010p	PASS WINDOW LINERS AND COATINGS	(C),Window liners and coatings - .12" acrylic liners on all windows.
460-010s	PASS WINDOW THICKNESS	(B),Passenger window thickness - 6 mm.
460-011a	DRIVER'S WINDOW, NON-FLUSH	(B),Driver's window, non-flush mounted - with fore and aft sliding sashes. The forward sash has exterior and interior handles. Non-egress.
460-011b	AFT SASH, NON-FLUSH DRIVER'S WINDOW	(B),Aft sash, non-flush driver's window - with interior handle and latch.
460-011d	DRIVER'S WINDOW GLAZING	(B),Driver's window glazing - laminated with minimum 70% light transmittance.
460-011e	DRIVER'S WINDOW SHADE BAND	(B),Driver's window shade band - not required.
460-NEW	WINDOW AT SDS	(C),Window at the SDS - Top-hinged and gas-strutted picture window at the SDS for easier access to streetside-facing SDS panel.
470-001	DESTINATION SIGNS MFR	(A),Destination sign mfr - Twin Vision Smart Series, LED display system.
470-001a	DEST SIGN CONTROL UNIT LOCATION	(B),Destination sign control unit location - under driver's overhead panel.
470-005	LUMINATOR FRT.DEST.SIGNS	(C),Luminator front destination sign - Spectrum Gen 4 full color LED, 24 rows x 200 columns.
470-010	FRONT DESTINATION SIGN GLASS	(A),Front destination sign glass - heated and laminated.
470-025	CURB SIDE DESTINATION SIGN LOCATION	(A),Curbside destination sign location - at the second window, aft of the entrance door.
470-025b	TWIN VISION CURBSIDE DEST.SIGNS	(A),Twin Vision curbside destination sign - Smart Series 3, LED, amber, 8 x 96 ( 37.4" wide display).
470-026	STREET SIDE DEST SIGN	(C),Street side dest/route sign - required at #3 streetside window (first window rear of SDS compartment).
470-030	FRONT ROUTE SIGN	(A),Front route sign - Twin Vision Smart Series 3, LED, Amber, 12 x 40, non-addressable. This is a front route sign which is controlled by direct input using the Operator's keypad.
470-035	REAR ROUTE SIGN, LOCATION	(B),Rear route sign location - at the upper curb side. For non-CNG coaches.
470-035b	TWIN VISION REAR ROUTE SIGNS	(A),Twin Vision rear route sign - Smart Series 3, LED, amber 16 X 48.
470-060f	ACS (ORBITAL/TMS) AVA SYSTEM	(A),ACS (Orbital / TMS) AVA system - full system installed by NFIL, including antenna(s), cabling, ground plates and all required system components as per customer spec.
470-060k	AVA/AVL LED SIGN & LOCATION	(C),AVA/AVL LED sign and location - required on the front HVAC overhead enclosure and at the exit door area.
470-061	AUTO VEHICLE MONITORING SYSTEM (AVM)	(A),Automatic Vehicle Monitoring (AVM) system - Fleetwatch required as per spec/MRL.
470-075	NEW FLYER CONNECT-DIAGNOSTIC & MONITORING SYSTEM	(A),New Flyer Connect-Diagnostic & Monitoring - required with driver maneuver awareness system (DMAS).

Option#	Description	SR-2117 Value Description
480-005	STREET SIDE MIRROR MANUFACTURER	(B),Street side mirror manufacturer - Hadley.
480-005a	HADLEY STREET SIDE MIRROR	(B),Hadley street side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-005b	STREET SIDE MIRROR POWER OPTIONS	(A),Street side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-005e	STREET / CURB SIDE MIRROR W/TURN SIGNAL	(A),Street and curb side mirror with turn signal - LED, in mirror glass.
480-005f	STREET SIDE MIRROR ARM	(A),Street side mirror arm - mirror arm springs back to its previously set position after deflection.
480-005g	STREET SIDE MIRROR MOUNT	(A),Street side mirror mount - high mount.
480-005h	STREET / CURB SIDE MIRROR VOLTAGE	(B),Exterior mirror voltage - 12 volt.
480-006	CURB SIDE MIRROR MANUFACTURER	(B),Curb side mirror manufacturer - Hadley.
480-006a	HADLEY CURB SIDE MIRROR	(B),Hadley curb side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-006b	CURB SIDE MIRROR POWER OPTIONS	(B),Curb side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-006e	CURB SIDE MIRROR ARM	(B),Curb side mirror arm - basic, pull-back. Mirror arm is manually returned to its previously set position after deflection. Mirror can be folded forward or backward for bus wash.
480-010	INTERIOR MIRRORS,MANUFACTURER	(A),Interior mirrors, manufacturer - Hadley.
480-010a	DRIVER'S REAR VIEW MIRROR	(A),Driver's rear view mirror - 8" x 15", black, flat.
480-010b	SPOT MIRROR	(B),Spot mirror - 6" diameter flat mirror, located at curb side front.
480-010d	EXIT DOOR MIRROR	(B),Exit door mirror - convex, 12" diameter.
490-001	ENT DOOR DRIVE SYS	(A),Entrance door drive system - Electric
490-005	ENTRANCE DOOR	(B),Entrance door - Vapor slide glide.
490-005a	ENTR DOOR LIMIT SWITCH SET-UP	(A),Entrance door limit switch - solid state proximity switch.
490-005d	ENTRANCE DOOR MAGNETIC DUMP VALVE	(B),Entrance door magnetic dump valve - required, located at baseplate.
490-005f	ENTR/EXIT FRANG COVER LANGUAGE	(C),Entrance / exit door frangible cover instructions (for emergency release), language - English. Additional scoring required on exit door frangible cover.
490-006	ENTRANCE DOOR HANDLES	(B),Entrance door handles - yellow powder coated.
490-015	ENTRANCE DOOR CONTROLLER	(A),Entrance door controller - extended with 5 position settings.
490-015a	DOOR CONTROLLER HANDLE	(B),Entrance door control handle - non-removable.
490-030	ENTRANCE DOOR GLAZING	(S),Entrance door glass - full length single piece, 72% green.
491-001	EXIT DOOR DRIVE SYS	(A),Exit door drive system - Electric with pneumatic emergency release.
491-005	EXIT DOOR	(A),Exit door - wide Ameriview Vapor Slide Glide, 45.2" between panels.
491-005a	SLIDE GLIDE EXIT LIMIT SWITCH	(A),Exit door limit switch - solid state proximity switch.
491-005b	EXIT DOOR CONTROL	(A),Exit door control - Vapor Class Acoustic Sensing System. Activates door opening and detects obstruction on closing.
491-005ba	CLASS SYSTEM DOOR DECAL	(C),Class system door decal - English, Spanish, Tagalog, and Chinese, text and characters as per customer requirement.
491-005bb	CLASS SYSTEM VOICE ANNUNCIATION	(A),Class system voice annunciation - female voice. English instructions programmed as per customer requirement.
491-005d	EXIT DOOR SENSITIVE EDGE	(B),Exit door sensitive edge - sensor on the vertical edge provided with all exit doors.
491-005g	EXIT FRANGIBLE COVER SECUREMENT	(C),Exit frangible cover securement - Torx screw.
491-005j	EXIT BASEPLATE / ELEC PNL ACCESS	(B),Exit baseplate access- at each exit door, Tcb set-up, through removable ad frame.
491-006	EXIT DOOR ASSIST HANDLES	(B),Exit door assists - yellow powdercoated.
491-020	EXIT DOOR GREEN LIGHT	(B),Exit door green light - LED green light indicates that the exit door is set to open.

Option#	Description	SR-2117 Value Description
491-035	EXIT DOOR GLASS SIZE	(B),Exit door glass size - full length.
491-035a	EXIT DOOR GLAZING	(B),Exit door glazing - 6 mm.
491-NEW	EXIT DOOR EXTERNAL BUTTONS	(C),Exit door external buttons - Two flush mounted "Elevator Style" external switches mounted on either side of the exit doors to permit passenger loading/entry from exit.
526-001	40' PASSENGER SEAT QTY	(C),40' passenger seat quantity - 32.
526-005	PASSENGER SEAT MANUFACTURER	(A),Passenger seat manufacturer - 4ONE.
526-005a	4ONE PASSENGER SEATS	(A),4ONE passenger seats - Aries 4MA SST seats. Details as per customer spec.
526-005aa	4ONE D90 SPEC	(B),4ONE passenger seat D90 spec - not required.
526-005d	REAR BENCH SEAT	(S),Rear bench seat - 1-3-1 hinged seat.
526-005e	PASSENGER SEAT MOUNTING	(B),Passenger seat mounting - cantilever.
526-005f	SEAT MOUNTED GRABRAIL	(A),Seat mounted grabrails - stainless steel.
526-005h	FIRST SEAT,CURBSIDE UPPER REAR	(B),First seat at curbside upper rear - forward facing.
526-005i	PASSENGER SEATING BARRIER	(A),Passenger seating barrier - integrated with restraint system.
526-005j	SEAT POSITION,FORWARD OF REAR EXIT	(A),Seat position, forward of rear exit - aisle facing.
526-006	DRIVER'S SEAT MANUFACTURER	(A),Driver's seat manufacturer - USSC.
526-006a	USSC DRIVER'S SEAT MODEL	(A),USSC driver's seat model - 9100 ALX. The fore / aft seat travel is 11.8". Has 2 point seat belt. Has air suspension and lumbar.
526-006f	DRIVER'S SEAT MATERIAL	(B),Driver's seat material - all vinyl.
526-006g	DRIVER'S SEAT BELT	(A),Driver's seat belt - lap belt with retractor on left hand side.
526-006ga	DRIVER'S SEAT BELT ALARM	(A),Driver's seat belt alarm - required to warn driver that seat belt is not connected.
526-006gb	DRIVER'S SEAT BELT COLOR	(A),Driver's seat belt color - Orange.
526-006j	DRIVER'S SEAT,DOCKET 90 SPEC	(B),Driver's seat D90 spec - Not required.
526-006k	DRIVER'S SEAT BASE RISER	(A),Driver's seat base (riser) - SST.
526-006m	DRIVER'S SEAT PARK BRAKE ALARM	(A),Driver's seat park brake alarm - switch is required in seat cushion to trigger driver's park brake alarm (ref. option 246-040).
526-006s	DRVR'S SEAT HEADREST	(B),Driver's seat headrest - required.
526-007	WHEELCHAIR POSITIONS,QUANTITY	(C),Wheelchair positions - two. One fwd of the exit door curbside and one aft of the streetside front wheelhouses.
526-007a	W/CHAIR POSITIONS,RESTRAINT SYSTEM	(B),Wheelchair restraint system - restraint system for forward facing wheelchair position(s). Manufacturer, position, material color / type and details as per customer spec.
526-007e	SHOULDER HARNESS,W/CHR RESTRAINTS	(A),Shoulder harness for wheelchair restraints - integrated with Q-Pod restraint system.
526-010	STANCHION / GRABRAIL STYLE	(B),Stanchion / grabrail style - curved style vertical stanchions. Using cast SST fittings for vertical and horizontal stanchions.
526-010a	OVERHEAD HORIZONTAL GRABRAILS	(A),Overhead horizontal grabrails - yellow SST.
526-010aa	OVERHEAD HANDSTRAPS,TYPE	(C),Handhold straps on overhead grabrails - flexible grey PVC straps in yellow Bentech mounts, secured to horizontal stanchions, locations as per customer spec.
526-010ab	OVERHEAD GRABRAIL HANDHOLD STRAPS,QUANTITY	(A),Overhead grabrail handhold straps, quantity - twenty-four.
526-010b	COLOR - STANCHIONS AT EXITS & RR RISER STEP	(B),Color - stanchions at exits and rear riser steps - yellow SST.
526-010d	VERT FORE OF S/S FRT W/HOUSE	(C),Vertical stanchion fore of streetside front wheelhouse - black SST (part of drivers door).
526-010da	VERT AFT OF S/S FRT W/HOUSE	(B),Vertical stanchion aft of streetside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010e	VERT FORE OF C/S FRT W/HOUSE	(A),Vertical stanchion fore of curbside front wheelhouse - black SST.

Option#	Description	SR-2117 Value Description
526-010ea	VERT AFT OF C/S FRT W/HOUSE	(B),Vertical stanchion aft of curbside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010f	COLOR - VERTICAL STANCHIONS AT SEATS	(A),Color - vertical stanchions at seats - yellow SST.
526-010k	FRONT CURBSIDE LUGGAGE RACK	(A),Front curbside luggage rack - horizontal yellow tube wraps around aft, aisle and fore sides, SST.
526-010m	FAREBOX GRABRAIL	(A),Farebox wrap-around stanchion - black SST. Requires known farebox location.
526-015	MODESTY PANEL MATERIAL	(B),Modesty panel material - melamine.
526-015a	MODESTY PANEL MELAMINE COLOR	(B),Modesty panel melamine color - charcoal gloss (-209).
526-015b	C/SIDE FORE UPR DECK MOD PNL, GAP	(S),Gap at bottom of curbside fore of upper deck modesty panels - approximately 2" diagonally.
526-015e	UPPER PANEL AFT OF EXIT(S)	(A),Upper panel aft of exit(s) - 0.5" clear polycarbonate, basic width.
526-016	BARRIER AT STREET SIDE REAR RISER	(B),Barrier at street side rear riser - Modesty panel (material and color per 526-015/526-015a).
526-018	BARRIER REAR BENCH SEATS	(C),Barrier at rear bench seats - double stanchion bar.
526-022	DRIVER'S DRAFT SHIELD	(C),Driver's enclosure - clear AS-2 Lexan and black powdercoated steel bi-fold enclosure.
526-035	BARRIER FWD OF EXIT(S)	(A),Fore of exit(s), barriers and grabrails - upper panel, 0.5" clear polycarbonate, wide width panel.
526-055	EMERGENCY INSTRUCTIONS	(C),Emergency instructions - decals. English, Spanish, and Chinese and Tagalog.
549-001a	NON-60' HVAC SYSTEM	(A),HVAC system manufacturer and type - Thermo King RLFE rooftop A/C unit for XDE, electric unit powered by BAE hybrid system.
549-002a	HVAC UNIT MOTOR TYPE	(S),HVAC motor type - brushless motor for primary heating & cooling system.
549-002b	REFRIGERANT	(A),Refrigerant - R-407C freon.
549-002d	HVAC AIR INTAKE	(B),HVAC air intake - recirculated air only.
549-002e	HVAC RETURN AIR FILTER	(B),HVAC return air filter - polyester filter for RLF unit.
549-002g	HVAC SYSTEM VALVES	(S),HVAC system valves - brass ball valves with basic handles.
549-002h	A/C AND HEATER LINE CLAMPS	(S),A/C and heater line clamps - Ideal.
549-004	HVAC ELECTRONICS	(B),HVAC electronics - Thermo King Intelligaire 3, valid for A/C or heater units. With limited diagnostic capabilities.
549-004a	HVAC CONTROL PANELS	(B),HVAC control panel - Thermo King, installed at the HVAC unit.
549-004b	HVAC PROGRAM SETTINGS	(C),Property-specific HVAC program settings.
549-020	BOOSTER PUMP	(B),Booster pump - Rotron.
549-025	DEFROSTER	(C),Defroster - 3 speed brushless motor, electrically controlled damper. MUNI specific non-derated.
549-100	AUXILIARY HEATER	(B),Auxiliary heater - not required.
580-005	WHEELCHAIR RAMP	(C),Wheelchair ramp -LIFT-U LU11-15 ramp at front door.
580-005a	FRONT RAMP CONTROL	(S),Front ramp control - ramp switch at driver's instrument panel.
580-005d	WHEELCHAIR RAMP SURFACE	(C),Wheelchair ramp surfaces - covered with Rocket TFFG 2704F Altro flooring
580-070	WHEELCHAIR RAMP TOOL	(C),WheelChair Ramp Tool - Required as per spec/MRL.
600-025	BACK-UP ALARM	(B),Backup alarm - basic alarm located on curbside.
600-065	SDS TRAY QUANTITY	(A),SDS tray quantity - four trays total.
600-075	FAREBOX PEDESTAL	(C),Farebox pedestal - SST, 7.0" high with Muni specific mounting plate.
600-076	FAREBOX	(B),Farebox - not required.
600-077	FARECARD READER	(C),Farecard reader - Provisions/Harnesses for Muni specific Clipper system.
600-100	CURBSIDE FRONT EQUIPMENT BOX	(A),Curbside front equipment box - black, aluminum with paddle latch, no lock.
600-101	DRIVER'S STORAGE BOX BEHIND SEAT	(A),Driver's storage box behind seat - basic box with paddle latch, no key. The box is to include a chamfer to allow for driver's seat clearance.

Option#	Description	SR-2117 Value Description
600-125	TAKE ONE HOLDERS	(A),Take one holders - required. Type(s) and location(s) specified by customer.
600-125e	TAKE ONES,PASSENGER AREA	(A),Take one holders - in the passenger area, installed on various window pillars.
600-152	TRASH CONTAINERS	(A),Trash container - type and location as per customer spec.
600-175	RADIO,COMMUNICATION SYSTEM	(C),Radio, communication system - full Harris radio system installed by NFIL per Muni requirements.
600-177	AUTOMATIC PASSENGER COUNTER	(A),Automatic passenger counter system - IRMA matrix
600-178	TRAFFIC SIGNAL CONTROL SYSTEM	(C),Traffic signal control system required. Opticom 2101/4010 computer GPS controlled system with WiFi antenna.
600-225	VIDEO SURVEILLANCE SYSTEM	(A),Video surveillance system - interior and exterior cameras, quantity, details and location as per customer spec and installation / approval drawing.
600-225a	VIDEO SURVEILLANCE SYSTEM,MFR	(A),Video surveillance system - DTI-Loronix system, equipment as per customer spec.
600-225b	CAMERA COLOUR TYPE	(A),Camera colour type - cameras are a combination of colour and colour with infrared capabilities.
600-268	TURN ANNUNCIATOR SYSTEM	(C),Turn annunciator system - Mallory Sonalert SC628JR beepers at curbside exterior rear exit door area to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartment.
600-276	FIRE SUPPRESSION	(C),Fire suppression - Amerex Safety Net System. With one 25 lb dry chemical agent tank and one 13 lb dry chemical tank.
600-276b	AMEREX FIRE DETECTION SENSORS	(C),Amerex fire detection sensors - linear wire in engine compartment. Fire or smoke conditions in the battery compartment shall actuate a visual and audible alarm at the operator's control panel.
600-300	BICYCLE RACK,MFR/MODEL	(A),Bicycle rack, manufacturer / model - Byk Rak, 3 position, front mounted.
600-300j	BYK RAK MOUNTING AND PIVOT	(A),Byk Rak mounting and pivot - bolted slide-in standoff with bolted pivot.
600-300k	BYK RAK BICYCLE RACK REMOVAL	(A),Byk Rak bicycle rack removal - bolted rack.
600-300m	BYK RAK BICYCLE RK MTL/COLOR	(A),Byk Rak bicycle rack material/colour - SST, satin anti glare finish.
600-300e	BIKE RACK DEPLOY INDICATOR LIGHT	(A),Bike rack deployment indicator light - required.
600-300f	BICYCLE RACK MFR LOGO	(A),Bicycle rack manufacturer logo - provided.
600-300g	BICYCLE RACK INSTRUCTIONS	(A),Bicycle rack instructions - English / Spanish.
600-NEW	DRIVECAM SYSTEM	(C),Drivecam system - Wiring provisions only for Drivecam system.

**13.1.4 SR – 2118**

Option#	Description	Value Description SR-2118
100-002	XCELSIOR COACH LENGTH	Xcelsior - 40' coach.
100-003	STRUCTURAL MATERIAL	(B),Structural material - carbon steel/ferritic sst.
100-004	FUEL/PROPULSION SYSTEM	Propulsion system - BAE hybrid with ISB diesel engine.
100-004a	FUEL TYPE	(B),Fuel type - diesel, compatible up to 20% biodiesel.
100-006	DOCKET 90 SPEC	(A),Docket 90 spec - for interior of coach (as per spec).
100-008	ARB STANDARD	(A),Air Resources Board (ARB) Standard - required.
201-005	BUMPERS	(B),Bumpers - Romeo Rim, three piece, front and rear bumpers. Rear has anti-ride feature.
201-015	TOWING PROVISIONS	(B),Front tow eyes - basic set-up, incorporated in front chassis. Tow adapters are required.
203-005	FRONT AXLE	(B),Front axle - M.A.N. VOK-07-F, GAWR 15,873 lbs. With disc brakes. Hub mount, Knorr cylinders, Ferodo lining.
203-005b	SECUREMENT OF BRAKE LININGS	(S),Securement of brake linings - bonded.
203-005f	ELECTRONIC BRAKE STROKE MONITOR	(A),Electronic brake stroke monitor - MGM E-stroke system.
203-011	SHOCK ABSORBERS	(S),Shock absorbers - Koni.
203-014	FRONT STABILIZER BAR	(C),Front stabilizer bar provided - SR specific application is approved by NF Engineering.
203-050	FRT AXLE AND WHEEL SPLASH APRONS	(A),Front axle and wheel splash aprons - full width, fore of axle and wheels. Also, two additional aprons aft of the wheels.
204-005	REAR AXLE	(B),Rear axle - M.A.N. 4.56:1. Model HY-1350-F. GAWR 28,660. With disc brakes, hub mount, Knorr cylinder, Ferodo lining.
204-005d	REAR AXLE GEAR OIL	(B),Rear axle gear oil - petroleum based.
204-070	REAR AXLE DRAIN PLUGS	(B),Rear axle drain plug - magnetic external hex head.
204-140	REAR AXLE AND WHEEL SPLASH APRONS	(B),Rear axle and wheel splash aprons - one piece behind axle and two behind rr wheels.
205-005	TIRES	(B),Tires - 305/70R/22.5, customer supplied Michelin X InCity Z (65 mph).
205-005a	TIRE BRANDING	(A),Tire branding - required as per spec.
205-010b	WHEELS	(A),Wheels - Alcoa 22.5" x 8.25" aluminum. Polished Durabright finish both sides.
209-005	POWER STEERING PUMP	(A),Power steering pump - Ixetic (Luk) power steering pump powered by 24V Parker Motor mounted at the front street side.
209-005a	POWER STEERING HOSES	(S),Power steering hoses - NFIL (Manuli) Equator 2 and GH100 hose at steering box and NFIL (Manuli) Equator 2 in engine compartment.



Option#	Description	Value Description SR-2118
209-005b	POWER STEERING DIAGNOSTIC FTGS	(A),Power steering diagnostic fittings - at steering box.
209-008	POWER STEERING RESERVOIR	(S),Power steering reservoir - required.
209-008d	POWER STEERING DRAIN PLUG	(B),Power steering drain plug - magnetic plug.
209-010	POWER STEERING UNIT	(S),Steering box - Sheppard M110, power assisted, frame mounted.
209-060	POWER STEERING SYSTEM FLUID	(B),Power steering system fluid - Dexron III, mineral based.
219-001a	ENGINE,HP,TORQUE,TYPE	(B),Engine - Cummins ISB 2017 engine, 280 horsepower (Engine output is controlled by Hybrid Drive)
219-005a	ENGINE AIR COMPRESSOR	(A),Air compressor - direct coupled air compressor powered by electric motor.
219-005db	ALTERNATOR BAE	(C),Alternator - BAE APS3 (Accessory Power System). Note: Replaces belt drive alternator, supports full electrification of accessories.
219-005e	CUMMINS DIESEL FUEL FILTERS	(B),Cummins diesel fuel filters - for ISB's, Cummins primary and secondary fuel filter system. the primary filter has a priming pump.
219-005f	CUMMINS DIPSTICK,LOCATION	(S),Cummins dipstick, location - static oil level indicator, on curbside of engine.
219-005g	ENGINE & TRANS FLUID FILL TAGS	(S),Fluid fill ID tags - for engine and transmission dipsticks.
219-005h	ROAD SPEED	(C),Road speed - top road speed is governed. Set at 63 MPH (101 KPH).
219-010	TRANSMISSION/HYBRID DRIVE	(C),Hybrid drive - as per BAE hybrid system, HDS200.
219-010a	TRANSMISSION SHIFTING	(S),Transmission shifting - foot on brake enables shift when in neutral.
219-010p	FLUID,HYBRID DRIVES	(S),Transmission fluid - Transynd synthetic.
219-025	AIR CLEANER	(A),Air cleaner - Donaldson. Reusable housing with disposable cartridge/filter.
219-025a	AIR RESTRICTION INDICATOR	(B),Air restriction indicator - mounted directly on air intake tube.
219-035	EXHAUST SYSTEM	(S),SST Exhaust system - Single module DPF/SCR combined.
219-035a	EXHAUST TAIL PIPE ORIENTATION	(B),Exhaust tail pipe orientation - curved pipe set to 45 degrees to streetside.
219-035b	EXHAUST BLANKETS FOR CUMMINS DIESEL OR CNG	(B),Cummins Diesel / CNG exhaust blankets - provided for the exhaust tubes.
219-045	ENGINE SWITCH BOX	(B),Engine switch box - basic configuration with run control, start and engine compartment light switches. Located at curbside of center rear in engine compartment.
219-045b	ENGINE SPEED CONTROL AT SW BOX	(A),Engine speed control at engine switch box - Morse throttle (controls engine RPM).
219-050	ENGINE COMPT GAUGES,BASIC	(S),Engine compartment gauges - CAN communicator programmable to multiple functions. Located at engine switchbox.
219-090	P-CLIPS,ENGINE COMPT & HVAC	(B),Engine compartment and HVAC system p-clips - UMPCO 775 SST with high temperature boxed silicon cushion provided to secure air and fluid lines to structure.
219-175	BELT GUARD	(B),Belt guard - the engine pulley guard is provided with hinges.

Option#	Description	Value Description SR-2118
219-175a	BELT GUARD LATCHING	(B),Belt guard latching - rubber hood latch.
219-195	OIL SAMPLING/PROBALIZER FTGS	(C),Oil sampling - required for engine, using easy access probalizer fittings.
219-810	DEF(DIESEL EXH FLUID) TANK	(B),DEF (diesel exhaust fluid) tank - manual fill is set in the lower curbside fusebox access door with NFIL fill cap.
231-005	RADIATOR,CAC,HYDR FLUID COOLER	(B),Radiator - EMP MH5 GEN4 with full diagnostic capabilities. 3 x 15" fans and 2 x 11" fans. Includes hybrid cooler.
231-005d	RADIATOR DRAIN VALVES	(A),Radiator drain valve - brass hex head plug.
231-010a	ENGINE COMPARTMENT & HVAC HOSES	(S),Engine compartment and HVAC hoses - a combination NFIL (Manuli) Equator 1, Equator 2, Nozone and GH100 hose for fluid and air system hoses.
231-020	SURGE TANK	(B),Surge tank - 5 gallon cylindrical SST tank.
231-020a	LOW COOLANT INDICATION / SENSORS	(S),Low coolant indication / sensors - an early warning sensor at the surge tank signals the instrument panel Low Coolant telltale. A lower sensor signals engine shutdown and the Check Engine and Low Coolant telltales.
231-020b	SURGE TANK PRESSURE TEST PORT	(B),Surge tank pressure test port - provided.
231-020d	SURGE TANK PRESSURE RELIEF VALVE	(B),Surge tank pressure relief valve - Radiator cap (LEV-R VENT), built into surge tank cap.
231-020e	SURGE TANK SIGHT GLASS	(S),Surge tank sight glass - graduated sight glass (glass material).
231-040	COOLANT TUBES	(S),Coolant tubes - SST.
231-075	COOLANT FLUID/ANTIFREEZE	(B),Coolant fluid / antifreeze - 50/50 pre-mixed distilled water with ethylene glycol with anti-corrosion additive and bittering agent. Pink fluid.
231-085	TRANSMISSION/HYBRID DRIVE OIL COOLER	(S),Hybrid drive oil cooler - built into rad for BAE hybrids.
231-085a	TRANSMISSION/HYBRID OIL COOLER HOSES	(S),Transmission / hybrid drive oil cooler hoses - NFIL (Manuli) Equator 1.
231-120	COOLANT RECOVERY TANK	(S),Coolant Recovery tank - required.
234-005	WATER FILTER	(B),Water filter - not required.
241-005	DIESEL FUEL TANK MATERIAL	(B),Diesel fuel tank material - cross-linked polyethylene.
241-005a	DIESEL TANK CAPACITY AND FILL TYPE	(B),Diesel fuel tank capacity and fill type - 100 useable US gallons. Pressure filled.
241-005b	DIESEL FILLER CAP	(B),Diesel fuel fill cap - posi-snap flip type.
241-005c	DIESEL FUEL SENDER	(S),Diesel fuel sender - required.
241-005d	DIESEL FUEL LEVEL INDICATION	(B),Diesel fuel level indication - not required.
241-010	DIESEL FUEL HOSES,ENGINE COMPT	(S),Diesel fuel hoses in engine compartment - GH100.
241-010a	DIESEL FUEL LINES,TANK TO BULKHEAD	(S),Diesel fuel lines from fuel tank to bulkhead - orange, fuel grade nylon tubing.

Option#	Description	Value Description SR-2118
246-001	AIR COMPRESSOR DISCHARGE LINE	(S),Air compressor discharge line - Teflon 2807 SST braided hose.
246-005	AIR TANKS	(B),Air tanks - two dual compartment ceiling mounted tanks combining wet tank and rear brake tanks, accessories tank and kneeling tank and a single front brake tank .
246-005b	AIR TANK DRAIN VALVES	(B),Air tank drain valves - manual.
246-015	KNEELING	(S),Kneeling - full front kneeling with rapid recovery.
246-015b	LEVELING VALVES	(S),Leveling valves - Barksdale.
246-020	ENTR/EXIT DOOR INTERLOCK	(C),Door interlock - Brake valve actuator on treadle valve, applied to entrance and exit doors. Foot on brake to release interlock, applied via multiplex system programming.
246-040	DRIVER'S PARK BRAKE ALARM	(A),Driver's park brake alarm - a switch in the driver's seat cushion triggers alarm to alert the driver that the park brake is not set. A light at the instrument panel is also activated.
246-040a	PARK BRAKE PRESSURE SETTING	(S),Park brake pressure setting - 40 psi auto-apply park brake valve. 60 psi pressure switch for park brake light activation.
246-060	AIR DRYER	(C),Air dryer - Graham White, "SludgeBreaker", QBA60NX5, w/ 24V heater, 12/24V purge control, dryer boost protection, high performance air dryer.
246-060a	AIR DRYER LOCATION	(S),Air dryer location - behind the rear streetside wheelhouse, on the bulkhead.
246-060d	AIR DRYER VOLTAGE	(B),Air dryer voltage - 24 volt.
246-065	PARK BRAKE ACTUATION	(B),Park brake actuation - Pull To Apply.
246-065a	PARK/EMERG BRAKE LOCATION	(S),Park brake control location - on side console panel.
246-105a	REAR AIR CHARGE FITTING LOCATION	(S),Rear air charge fitting location - routed to curbside of engine.
246-105b	REAR AIR CHARGE CONNECTOR	(C),Rear air charge connector type - male 1/4" Amflo CP1 fitting.
246-120	FRONT TOW CONNECTOR	(C),Front tow connector fitting - 1/4" male Amflo CP1 fitting with tag.
246-120a	FRONT AIR CONNECTOR ARRANGEMENT	(B),Front air connector arrangement - located below the bumper, streetside.
246-125	FRONT AIR CHARGE CONNECTOR	(C),Front air charge connector - 1/4" male Amflo CP1 fitting with tag.
246-130	FLEXIBLE AIR LINES	(S),Flexible air lines - Synflex colour coded. Green: rear service brakes and supplies. Red: front service brakes. Brown: parking brake. Black: accessories and brake hose. Yellow: compressor and governor. Blue: suspension.
246-225	ABS	(S),ABS braking system - Wabco.
246-230	TRACTION CONTROL	(B),Automatic traction control - Wabco system, to reduce drive wheel overspin.
246-NEW	INCLINE RAISE FEATURE	(C),Incline raise feature - air suspension steep incline feature required per Muni specifications.
260-002	BATTERY MANAGEMENT	(A),Battery Management - Vanner equalizer w/Low Voltage Disconnect, temperature and current sensors to optimize battery life.

Option#	Description	Value Description SR-2118
260-005a	TWO BATTERIES,TYPE / MFR	(C),Batteries - two 8D AGM/Deka 1450CCA maintenance free batteries (mfr East Penn Batteries). Post connection 3/8" positive X 3/8" negative.
260-005d	BATTERY CABLES	(S),Battery cables - red heat shrink on 24 volt positive cable end and light blue heat shrink on 12 volt positive cable end.
260-010	BATTERY TRAY	(S),Battery tray - slide out battery acid resistant polyethylene enclosure with SST sub frame, SST bearings and rubber isolation mounts. Located aft of the curbside rear wheelhouse. Note: battery access door opens to the side.
260-025	POSITIVE BATTERY DISCONNECT SW	(A),Positive battery disconnect switch - required with quick access through flip-open door. Uses a micro-switch for engine shutdown.
260-030	BATTERY VOLTAGE EQUALIZER	(B),Battery voltage equalizer - Vanner 80 amp with monitor, J1939 and battery State-of-Health monitor.
260-035	JUMP START MANUFACTURER	(C),Jumpstart - Anderson model 6322 G1 connector.
260-035a	JUMP START LOCATION	(A),Jump start location - near the battery disconnect switch at the fusebox. Accessible via the flip-open door.
260-820	ROOF FAIRING / SKIRTS ENCLOSURE	(S),Roof fairing / skirt enclosure - fairing with full length skirts for XDE's.
260-NEW	BAE HYBRID MODE	(C),BAE Hybrid Mode - Depot mode with switch on side console required. Also Start/Stop mode functionality.
269-002	P.A. AMPLIFIER MFR / TYPE	(A),P.A. amplifier manufacturer / type - included with AVA or AVL system.
269-005	INTERIOR SPEAKER MFR	(B),Interior speaker manufacturer - TCB.
269-005b	PRIMARY INTERIOR SPEAKERS,QTY FOR 40'	(B),Primary interior speakers, quantity - six: four to light panels, two above rear bench.
269-010	EXTERIOR SPEAKERS,LOCATION	(B),Exterior speaker, location - at basic location above entrance. Includes baffled cover.
269-010a	EXTERIOR SPEAKER MFR	(B),Exterior speaker manufacturer - Shekonic.
273-005	HEADLIGHTS	(S),Headlights - NFIL Xcelsior LED low beam and halogen high beam headlights.
273-005a	DAY RUN HEADLIGHTS	(B),Day run headlights - required.
273-005b	FRONT TURN SIGNALS	(S),Front turn signals - NFIL amber LED. Integrated with headlight assembly.
273-010	TAIL LIGHTS QTY PER SIDE	(B),Tail lights quantity per side - four.
273-010ab	FOUR TAIL LIGHT ARRANGEMENT	(B),Four tail light arrangement (top to bottom) - amber, red, red, white.
273-010b	TAIL LIGHTS MFR	(B),Red / amber tail light manufacturer - 4" Dialight LED.
273-010d	WHITE BACK-UP LIGHT MFR	(S),White back-up light manufacturer - 4" Dialight LED.
273-010e	STOP LIGHTS ON WITH RTRDR/REGEN BRAKE	(B),Stop light activation by transmission retarder / regenerative braking - required.
273-010f	STOP LIGHTS ON WITH PARK BRAKE OR INTERLOCK	(S),Stop light activation - when park brake or interlock are engaged.

Option#	Description	Value Description SR-2118
273-015	CENTER STOP / DECELERATION LIGHTS	(A),Center stop lights (red) - two Dialight 18" X 1" LED above the engine door.
273-020	SIDE TURN SIGNALS,TYPE / QTY PER SIDE	(B),Side turn signals, type and quantity per side - 2 amber Dialight LED with guards. Lamps are at fore of all wheelhouses except curbside front which is aft. For non-60' coaches.
273-025	KNEELING/RAMP LIGHT AT ENTRANCE	(S),Kneeling / ramp deployment warning light at entrance - 2.5" Dialight LED.
273-025b	SIDE TURN SIGNAL FUNCTIONALITY	(C),Side turn signal functionality - Sonalert/beeper at curbside exterior exit door area to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartment.
273-035	MARKER / CLEARANCE LIGHTS	(S),Marker and clearance lights - Dialight LED all around.
273-040	REFLECTORS	(S),Reflectors - self-adhesive decals installed at NFIL basic positions.
273-045	REAR LICENCE PLATE LIGHT	(B),Rear licence plate light - LED.
273-050a	TIMED SHUT-OFF,ENTR AREA LIGHTS	(B),Timed shut-off of entrance area lights (interior and/or exterior) - the program is set to shut the lights off when the door closes.
273-055a	TIMED SHUT-OFF,EXIT AREA LIGHTS	(C),Timed shut-off of exit area lights (interior and/or exterior) - the program is set to shut the lights off three seconds after the door closes.
273-112	CURBSIDE CORNERING LIGHT	(C),Curbside cornering lights - one curbside lamp located behind exit door.
277-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 277 group equipment.
277-005	INTERIOR PASSENGER LIGHTING	(B),Interior passenger lighting - TCB LED, 24 VDC.
277-005f	INTERIOR LED LIGHT FUNCTIONALITY	(B),Interior LED light functionality-first bank of light on each side turn on when entrance door is opened and off when door is closed.
277-010a	TINTED LED PASSENGER LIGHT COVERS	(B),Tinted LED passenger light covers - white for all lights.
277-015	FAREBOX LIGHT	(B),Farebox light - one swivel light with a replaceable LED bulb.
277-020	DRIVER'S LIGHT	(B),Driver's light - one sealed 2.5" white high output LED light.
277-030	ENGINE COMPARTMENT LIGHTS	(B),Engine compartment lights - four 1.38" LED lights.
277-035	REAR DECK STEP LIGHT	(S),Rear deck step light - LED.
277-040	INTERIOR DOOR HEADER LIGHTS	(B),Interior door header lights - one LED strip light (approx 18" long) provided above exit (if applicable) and entrance doors. With anti-glare shield.
277-070a	REAR PLC AND FUSEBOX SERVICE LIGHTS	(S),Rear PLC compartment and fusebox lights - provided, LED.
280-001	PASSENGER SIGNAL CHIMES, FOR NON-60'	(B),Passenger signal chimes - one basic electronic chime above driver. Chime has single tone which sounds once for regular activation, twice for wheelchair positions.
280-002	PASSENGER SIGNAL PULLCORDS	(B),Passenger pullcords - yellow cords are required.
280-002a	PASSENGER PULLCORD HARDWARE	(B),Passenger pullcord hardware - Phillips.

Option#	Description	Value Description SR-2118
280-003	HORIZONTAL PASSENGER SIGNAL PULLCORDS	(B),Horizontal passenger signal pullcords - set at NFIL designated basic height.
280-005	LWR DECK VERT PULLCORDS, FOR 40'	(A),Lower deck vertical passenger pullcords - three: two at first and second streetside pillars and one at first curbside pillar forward of the face of the upper deck.
280-005e	SECUREMENT OF VERTICAL PULLCORDS	(B),Securement of vertical pullcords to horizontals - looped or clamped to the horizontal depending on the location.
280-010	FRONT STOP REQUEST SIGN TYPE/POSITION	(C),Front stop request sign type / position - Smartrend LED installed in the destination sign door.
280-010a	FRONT STOP REQUEST SIGN TEXT	(B),Front stop request sign text - Stop Requested.
280-010b	FRONT STOP REQUEST SIGN LETTERING	(B),Front stop request sign lettering - upper case.
280-012	STOP REQUEST SIGN COLOURS	(B),Stop request sign colours - white letters on a red background.
280-015	PASS SIGNAL @ WHEELCHAIR POSITIONS	(C),Passenger signals at wheelchair positions - Muni specific push button mounted to flip-up seat.
280-025	PUSH BUTTON SIGNAL AT EXIT AREA	(C),Push button signal at exit - LFR style switches mounted facing aisle on stanchion fore of exit.
280-025a	PUSH BUTTONS,VERT & SEAT STANCHI	(C),Push button passenger signals on vertical seat stanchions - LFR style buttons at specified vertical stanchions.
280-025b	PUSH BUTTONS,FRT WHEELHOUSES	(C),Push button signals, front wheelhouse stanchions - one each on the c/s and s/s stanchions aft of the wheelhouse, 46.5" from the floor to bottom of switches. LFR style switches.
284-001	ELECTRONIC CONTROL SYSTEM	(S),Electronic control system - Vansco.
284-001a	SYSTEM VOLTAGE	(S),System voltage - 24 VDC primary, 12 VDC secondary.
284-001b	SWITCHES	(S),Switches - water resistant.
284-001d	SPARE INPUT/OUTPUT PORTS	(S),Spare I/O (Input/Output) ports for multiplex system modules - minimum 10% input and 10% output.
284-005g	HAZARD WARNING LIGHTS	(S),Hazard warning lights - front, side and rear lights flash for hazard warning.
286-001	INSTRUMENT PANEL	(C),Instrument panel - acrylic material with luminescent lighting, with Vansco Instrument Panel Cluster module including LCD touch display screen.
286-001a	SHIFT SELECTOR LOCATION	(S),Shift selector - located on instrument panel.
286-001b	EXTERIOR LAMP TEST	(S),Exterior lamp test - simultaneously depress both turn signals.
286-010a	SPEEDOMETER	(S),Speedometer - part of Vansco instrument panel cluster. Set to display miles. With odometer (the display can be toggled to show Trip1, Trip 2, engine hours).
286-010b	AUDIBLE SOUND,TURN SIGNALS/HAZARDS	(B),Turn signal and hazard warning audible sound - using click sound for turn signal and for hazard warning.
286-010e	BRK/ACCEL INTERLOCK DEACTIV WRNG	(A),Brake accelerator interlock deactivated warning - provided by audible alarm and separate red warning lamp on instrument panel. (Must have in California.)
286-055	DOOR MASTER SWITCH LOCATION	(B),Door master switch location - in sawtooth panel above driver.

Option#	Description	Value Description SR-2118
286-055b	HYBRID REGEN SWITCH LOCATION	(B),Regenerative braking switch location - in sawtooth panel above driver.
286-065	SILENT ALARM	(C),Silent alarm - white lensed Allen Bradley momentary switch.
286-065a	SILENT ALARM SW LOCATION	(A),Silent alarm switch location - at side console.
286-070	DIAGNOSTIC PLUG-IN LOCATION	(C),Diagnostic plugs at fwd face of SDS barrier and at engine switch box. 500K Baud diagnostic connector under front dash, fwd face of SDS barrier and at engine switch box. One BAE diagnostic connector at fwd face of SDS.
286-070a	ACCESSORY POWER PLUG	(A),Accessory power plug - at forward face of the SDS barrier (above driver).
289-001	SECUREMENT OF HARNESSSES	(B),Securement of harnesses - hellerman tyton clamps, with Panduit releasable cable ties.
296-001	WIRING DECAL,REAR PLC AND FUSEBOX	(S),Wiring decal, rear PLC and fusebox - provided, laminated.
296-001a	WIRING DECAL,SIDE CONSOLE	(B),Wiring decal, side console - laminated, shipped loose.
304-001a	EXTERIOR PAINT TYPE	(S),Exterior paint type - Axalta Imron Elite high solids polyurethane.
304-001aa	EXTERIOR PAINT CLEARCOAT	(A),Exterior paint clearcoat - required.
304-010	CORROSION PROTECTION	(B),Corrosion protection - grit blasted frame, moisture cure zinc-rich primer (applied for 12 year warranty protection), anti-chip undercoating, corrosion preventive coating sprayed inside frame tubes up to roof line.
304-015	EXTERIOR LOGOS,NFIL	(B),Exterior logos, NFIL - required.
304-015b	EXT DECALS,CUSTOMER SPECIFIC	(C),Exterior decals, customer-specific - as per spec/MRL.
304-020	NFIL SAFETY AND MAINTENANCE DECALS	(B),New Flyer safety and maintenance related decal package - English.
304-020a	INTERIOR DECALS, CUSTOMER SPECIFIC	(A),Customer specific interior decals - required.
304-020b	INTERIOR PASSENGER RELATED DECALS,LANGUAGE	(C),Interior passenger related decals, language - Combination of English and English/Spanish/Chinese.
304-020d	INTERIOR FLEET NUMBER DECALS	(B),Interior fleet number decals - required.
304-025	KNEELING / RAMP DECALS	(C),Kneeling / ramp decals - None provided per SFMTA Specification.
304-030	AIR TANK DECALS	(B),Air tank decals - NFIL basic.
304-035	EXT FLEET NUMBERS,NON-ROOF	(B),Exterior fleet numbers, non-roof - required (reflective or non-reflective as per spec).
304-035a	EXTERIOR FLEET NUMBERS,ROOF	(A),Exterior fleet numbers, roof - required (reflective or non-reflective as per spec).
304-700	HYBRID SAFETY DECALS	(B),Hybrid safety decals - required.
306-005	FIRE EXTINGUISHERS	(B),Fire extinguisher - 5 lb ABC class. With gauge, hose and mounting bracket. UL compliant for US customers.

Option#	Description	Value Description SR-2118
306-005a	FIRE EXTINGUISHER LOCATION	(A),Fire extinguisher location - inside the curbside equipment box.
306-010	SAFETY TRIANGLES	(B),Safety triangles - triangle reflector.
306-010a	SAFETY TRIANGLE LOCATION	(A),Safety triangle location - in equipment box on curbside luggage rack.
350-001	DRIVER'S PEDALS, POSITION / TYPE	(A),Driver's pedals positions / type - adjustable pedal assembly.
350-002b	ADJUSTABLE PEDAL BRAKE/THROTTLE ANGLE	(B),Brake / Throttle pedal angle - brake set at 45 degrees, throttle at 45 degrees from pedal to floor.
350-005	BRAKE VALVES	(S),Brake valve - E6.
350-015	TURN SIGNAL SWITCHES	(B),Turn signal switches - basic switches, floor mounted.
350-015a	DIMMER SWITCH	(B),Dimmer switch - basic foot switch.
350-015b	P.A. SYSTEM SWITCH	(A),P.A. system switch - foot switch.
350-015d	HAZARD WARNING LIGHT SW LOCATION	(B),Hazard warning light switch location - on side console.
350-030	STEERING COLUMN	(B),Steering column - Douglas Autotech with tilt and telescopic features.
350-030a	STEERING WHEEL	(B),Steering wheel - 2 spoke, 18" diameter hard padded.
350-035	DUAL HORN	(S),Dual horn - provided with splash shield.
400-001a	JACKING / LIFTING PADS	(B),Jacking / lifting pads - 4" diameter pads at front and rear chassis.
420-005	DEFROSTER ACCESS DOOR	(B),Defroster access door - top hinged with two gas struts, quarter turn 5/16" square key quad latches.
420-010	EXTERIOR SIDE PANELS	(S),Exterior lower side panels - fiberglass.
420-035a	CURB & STREET ENG,S/CONS DOORS,STRUTS	(B),Struts for curb and street side engine compartment, side console access doors - supported by gas struts.
420-035d	CURB SIDE ENGINE COMPT DOOR	(C),Curb side engine compartment door - includes battery disconnect switch access door (using a gas strut) and a DEF manual fill access door. MUNI specific door with 1" additional clearance at bottom edge.
420-035e	BATTERY COMPARTMENT DOOR	(B),Battery compartment door - solid door located aft of the curb side rear wheel, separate from the engine compartment.
420-035f	STREET SIDE ENGINE COMPT DOOR	(B),Streetside engine (radiator) access door - with wavy screen.
420-040	DIESEL FUEL FILL DOOR	(B),Diesel fuel fill door - basic hinged door located forward of the curbside rear wheelhouse.
420-040a	SURGE TANK DOOR	(B),Surge tank door - basic hinged door.
420-045	SIDE CONSOLE DOOR LATCHES	(B),Side console door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050	ENGINE DOOR	(B),Engine door - solid door with built-in handle.



Option#	Description	Value Description SR-2118
420-050a	ENGINE DOOR STRUTS	(B),Engine door struts - two, the streetside strut has a locking mechanism.
420-050b	ENGINE DOOR LATCHES	(B),Engine door latches - quarter turn chrome plated 5/16" square key quad latches.
420-050e	REAR LICENSE PLATE RETENTION	(B),Rear license plate retention - centered with bottom retainer and two upper inserts.
420-060	RAIN GUTTER	(S),Rain gutter - .44" cross section bonded.
420-065	ROOF HATCHES / VENTS	(A),Roof hatches / vents - two basic hatches, 24" X 24".
420-065a	ROOF HATCH INSTRUCTION LANGUAGE	(B),Roof hatch instruction language - English.
420-070	WIPERS	(B),Wipers - Sprague motors 24 volt electric with Smartrend wet arm wipers. Intermittent.
420-075	WINDSHIELD WASHER BOTTLE	(B),Washer bottle - 5 US gallon with electric powered pump.
420-075a	WINDSHIELD WASHER FILL LOCATION	(S),Windshield washer fill location - accessed via a flip-out door built into the exterior side console access door.
420-080	LOWER DRIVER'S VENT	(B),Lower driver's vent - provided.
420-120	FENDERS	(B),Fenders - molded polyurethane.
420-120b	S1 WHEEL GUARDS	(C),S1 Wheel guard - required, forward of rear wheels
420-125	EXTERIOR UPPER REAR	(B),Exterior upper rear - fiberglass panel with no door and no window.
420-135	LOCATION,FRONT LICENSE PLATE	(C),Front license plate location - at streetside of defroster door.
420-135a	FRONT LICENSE PLATE RETENTION	(B),Front license plate retention - four inserts.
421-010	INSULATION,SIDEWALL AND ROOF	(S),Insulation, sidewall and roof - polyisocyanurate foam. meets Docket 90 spec.
421-020	INSULATION,EXHAUST CAVITY	(S),Exhaust cavity insulation - Heat-resistant fiberglass mat.
421-030	ENGINE COMPARTMENT INSULATION	(S),Engine compartment insulation - noise reduction acoustical foam, retained by perforated aluminum panels.
422-001	DOCKET 90 SPEC	(A),Docket 90 spec - review for 422 group components.
422-005	CEILING PNLS AFT OF FRT W/HS INCL RR PLC	(B),Ceiling panels aft of the front wheelhouses (including rear PLC) - Antique white plastic, SST trim.
422-005a	CEILING / HVAC COVER PANELS ABOVE FRT W/HS	(B),Ceiling / HVAC cover panels above front wheelhouses - Antique White fiberglass.
422-006	ENTRANCE/DRIVER'S AREA PANELS	(C),Entrance/driver's area panels colour - black. Includes dash, dest sign c/out, ent. mech. box, driver's o/head panels. and if used, ent. floor heat duct, frt. RH harness cover is painted flat black.
422-006b	DRIVER'S CEILING PANEL MATERIAL	(B),Driver's ceiling panel material - melamine.
422-009	INTERIOR PIER PANEL MATERIAL	(B),Interior pier panel material - thermoplastic.
422-010	PIER PANEL COLOUR	(B),Pier panel colour - Antique white, thermoplastic.

Option#	Description	Value Description SR-2118
422-015b	INTERIOR SIDEWALL MELAMINE	(B),Interior sidewall melamine colour - Charcoal Grey Gloss.
422-025	INTERIOR ENGINE COMPT ACCESS PANEL	(S),Interior engine compartment access panel - there is a single hinged panel under the rear seat.
422-035	INTERIOR UPPER REAR PANEL	(A),Interior upper rear panel - bulkhead panel covered with carpet / fabric material. With large central access door.
422-035a	CARPET / FABRIC,UPR REAR INT PANEL	(B),Upper rear interior carpeted / fabric panel - Charcoal Grey carpet with 1/2" plywood backing.
422-035e	C/S,S/S RR BULKHEAD ACCESS PANELS	(B),Curb and street side rear bulkhead access panels - carpeted DB plywood.
422-050a	HRNS/AIR LINE COVERS AT UPPER DECK	(B),Harness / air line covers at upper deck - painted flat black.
422-060	FRT DEST SIGN DOOR LATCHES	(B),Front destination sign door latches - short wing quad latches.
422-061	DRIVER'S OVERHEAD PANEL	(S),Driver's overhead panel - with locker.
422-061a	DRIVER'S LOCKER LATCH	(C), Driver's locker latch - short wing quad latch with pull tab.
422-065	DRIVER'S COAT HOOK AND STRAP	(B),Driver's coat hook and strap - located on the forward face of the harness cover behind the driver.
422-070	SECURE DIAGNOSTIC STATION	(B),Secure diagnostic station - above street side front wheelhouse. Incorporates driver's barrier. With four Take One pockets. Quantity of trays as per customer and / or as per electronic equipment within compartment.
422-070a	SDS ENCLOSURE COLOUR	(B),SDS enclosure colour - Flat Black with Cashmere Black melamine panel.
422-070b	SDS ENCLOSURE DOOR LATCHES	(C),SDS enclosure door latches - Two 5/16" square key quad latch and paddle latch with CH751 key.
422-085	FRONT SUNVISOR / ROLLERBLINDS	(A),Front sunvisor - black padded.
422-085a	SIDE SUNVISOR / ROLLERBLIND	(C),Side sunvisor - black padded visor for high mount mirror.
422-090	SQUARE KEY T-HANDLE	(B),Square key t-handle - located at lower left of driver.
422-105	ENTRANCE MECHANISM BOX DOOR LATCH	(S),Entrance mechanism box door latches - two short wing quad latches.
422-160	GRAB HANDLE NEAR FRONT ROOF HATCH	(B),Grab handle near front roof hatch - required.
422-NEW	NEW OPTION,422 GROUP	(C), Rear PLC and bulkhead access doors with tamperproof latches.
423-010	AD FRAMES,SDS ENCLOSURE	(C),Interior Ad Frame - Two 17" x 11" clear holder's. One located on rear face of SDS enclosure, and One located on front door of SDS.
450-001	DOCKET 90 SPEC	(A),Docket 90 spec - Engineering is to review if applicable for any 450 group equipment.
450-010	FLOORING	(B),Flooring - lower deck uses pressure treated NT ACQ plywood. Upper deck uses composite for step and floor to the rear wheelhouses and NT DB ACQ plywood to the rear.
450-013	DRIVESHAFT / TRANSMISSION ACCESS PANELS	(A),Driveshaft / transmission access panels - two panels set in the floor, one to access the driveshaft and the other to access the transmission.

Option#	Description	Value Description SR-2118
450-025a	ALTRO FLOOR COVERING	(C),Altro floor covering - Rocket TFFG 2704F (2.7 mm / 0.11" thick), for aisle and underseats. With warning Inlays at exit vestibules.
450-025e	STEP TO UPPER REAR	(C),Step to upper deck - yellow anti-slip coating is applied to the edges and vertical faces of the step. Yellow/black caution stripe decals at each step.
450-025f	STANDEE LINE	(C),Standee line - yellow. In customer specific location 18" further rearward from standard location.
450-025g	ENTRANCE NOSING	(B),Entrance nosing - nosing is 2" wide yellow anti-skid applied to the ramp.
450-025h	EXIT NOSING	(C),Exit nosing - 2.5" yellow nosing and 2.0" yellow standee line in vestibule area at edge of exit door opening/sweep. Altro / Tarabus flooring.
450-025j	REAR SEAT RISER COVERING MATERIAL	(B),Rear seat riser covering material - same material and colour as used for the flooring.
450-030	DRIVER'S PLATFORM FLOORING	(A),Driver's platform flooring - Altro.
450-030a	DRIVER'S PLATFORM TRIM	(B),Driver's platform trim - SST.
450-045	OUTER WHEELHOUSES	(B),Outer wheelhouses - SST front and rear.
450-055	INTERIOR FRONT W/HOUSE (LUGG RACK) COLOURS	(C),Interior front wheelhouse (luggage rack) colours - Matte black, painted stipple. An LED aisle light with glare shield is provided on the streetside. Also, SST scuff guards are provided.
460-005	WINDSHIELDS	(B),Windshield - 72% light transmittance green laminated. With blue shade band for street and curb sides.
460-005a	WINDSHIELD PROTECTIVE FILM	(B),Windshield protective film - required for coach delivery beyond a 500 mile radius of Final Assembly.
460-010	PASS / DRVR'S WINDOWS MANUFACTURER	(B),Passenger and driver's windows, manufacturer - Arow Global (Stormtite) non-flush mounted.
460-010b	NON-FLUSH PASSENGER WINDOWS	(C),Non-flush passenger windows - bottom is fixed, top slider.
460-010e	NON-FLUSH WINDOW GLAZING	(C),Non-flush window glazing - grey, 55% light transmittance, laminated.
460-010h	WINDOW FRAME COLOUR	(C),Window frame colour - all window frames are clear anodized.
460-010j	WINDOW EMERGENCY EGRESS	(S),Emergency egress windows - minimum quantity based on FMVSS requirements or the customer spec, whichever is the greater of the two.
460-010k	SIDE DESTINATION SIGN WINDOWS	(C),Destination sign window - curb and street sides. Fixed clear top and fixed bottom. Bottom matches passenger window glazing. (review 470 for side sign details).
460-010n	WINDOW GLAZING REPLACEMENT	(A),Window glazing replacement for servicing - rapid replacement.
460-010p	PASS WINDOW LINERS AND COATINGS	(C),Window liners and coatings - .12" acrylic liners on all windows.
460-010s	PASS WINDOW THICKNESS	(B),Passenger window thickness - 6 mm.
460-011a	DRIVER'S WINDOW, NON-FLUSH	(B),Driver's window, non-flush mounted - with fore and aft sliding sashes. The forward sash has exterior and interior handles. Non-egress.
460-011b	AFT SASH, NON-FLUSH DRIVER'S WINDOW	(B),Aft sash, non-flush driver's window - with interior handle and latch.

Option#	Description	Value Description SR-2118
460-011d	DRIVER'S WINDOW GLAZING	(B),Driver's window glazing - laminated with minimum 70% light transmittance.
460-011e	DRIVER'S WINDOW SHADE BAND	(B),Driver's window shade band - not required.
470-001	DESTINATION SIGNS MFR	(A),Destination sign mfr - Twin Vision Smart Series, LED display system.
470-001a	DEST SIGN CONTROL UNIT LOCATION	(B),Destination sign control unit location - under driver's overhead panel.
470-005	LUMINATOR FRT.DEST.SIGNS	(C),Luminator front destination sign - Spectrum Gen 4 full color LED, 24 rows x 200 columns.
470-010	FRONT DESTINATION SIGN GLASS	(A),Front destination sign glass - heated and laminated.
470-025	CURB SIDE DESTINATION SIGN LOCATION	(A),Curbside destination sign location - at the second window, aft of the entrance door.
470-025b	TWIN VISION CURBSIDE DEST.SIGNS	(A),Twin Vision curbside destination sign - LED, amber, 8 x 96 (37.4" wide display).
470-026	STREET SIDE DEST SIGN	(C),Street side dest/route sign - required at #3 streetside window (first window rear of SDS compartment).
470-030	FRONT ROUTE SIGN	(C),Front route sign - Twin Vision Smart Series 3, LED, Amber, 12 x 40, addressable.
470-035	REAR ROUTE SIGN,LOCATION	(B),Rear route sign location - at the upper curb side. For non-CNG coaches.
470-035b	TWIN VISION REAR ROUTE SIGNS	(C),Twin Vision rear route sign - LED, amber 16 X 48.
470-060b	CLEVER DEVICES (DIGITAL RECORDER) AVA SYSTEM	(A),Clever Devices (Digital Recorder) AVA system - full system installed by NFIL, including antenna(s), cabling, ground plates and all required system components as per customer spec.
470-060f	ACS (ORBITAL/TMS) AVA SYSTEM	(C),ACS (Orbital / TMS) AVL system - provisions. Includes installation of antenna(s), cabling and ground plates as per customer spec.
470-060k	AVA/AVL LED SIGN & LOCATION	(C),AVA/AVL LED sign and location - required on the front HVAC overhead enclosure and at the exit door area.
470-061	AUTO VEHICLE MONITORING SYSTEM (AVM)	(A),Automatic Vehicle Monitoring (AVM) system - Fleetwatch required as per spec/MRL.
470-075	NEW FLYER CONNECT-DIAGNOSTIC & MONITORING SYSTEM	(A),New Flyer Connect-Diagnostic & Monitoring - required with driver maneuver awareness system (DMAS).
470-NEW	NEXTBUS SYSTEM	(C),Nextbus system - Installation of complete system including antenna.
480-005	STREET SIDE MIRROR MANUFACTURER	(B),Street side mirror manufacturer - Hadley.
480-005a	HADLEY STREET SIDE MIRROR	(B),Hadley street side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-005b	STREET SIDE MIRROR POWER OPTIONS	(A),Street side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-005e	STREET / CURB SIDE MIRROR W/TURN SIGNAL	(A),Street and curb side mirror with turn signal - LED, in mirror glass.
480-005f	STREET SIDE MIRROR ARM	(A),Street side mirror arm - mirror arm springs back to its previously set position after deflection.

Option#	Description	Value Description SR-2118
480-005g	STREET SIDE MIRROR MOUNT	(A),Street side mirror mount - high mount.
480-005h	STREET / CURB SIDE MIRROR VOLTAGE	(B),Exterior mirror voltage - 12 volt.
480-006	CURB SIDE MIRROR MANUFACTURER	(B),Curb side mirror manufacturer - Hadley.
480-006a	HADLEY CURB SIDE MIRROR	(B),Hadley curb side mirror - 8" x 15", 2/1 (upper portion is flat, smaller lower portion is convex).
480-006b	CURB SIDE MIRROR POWER OPTIONS	(B),Curb side mirror power options - dual remote control, not heated. (The upper and lower portions are remote controlled.)
480-006e	CURB SIDE MIRROR ARM	(B),Curb side mirror arm - basic, pull-back. Mirror arm is manually returned to its previously set position after deflection. Mirror can be folded forward or backward for bus wash.
480-010	INTERIOR MIRRORS,MANUFACTURER	(A),Interior mirrors, manufacturer - Hadley.
480-010a	DRIVER'S REAR VIEW MIRROR	(A),Driver's rear view mirror - 8" x 15", black, flat.
480-010b	SPOT MIRROR	(B),Spot mirror - 6" diameter flat mirror, located at curb side front.
480-010d	EXIT DOOR MIRROR	(B),Exit door mirror - convex, 12" diameter.
490-001	ENT DOOR DRIVE SYS	(A),Entrance door drive system - Electric
490-005	ENTRANCE DOOR	(B),Entrance door - Vapor slide glide.
490-005a	ENTR DOOR LIMIT SWITCH SET-UP	(A),Entrance door limit switch - solid state proximity switch.
490-005d	ENTRANCE DOOR MAGNETIC DUMP VALVE	(B),Entrance door magnetic dump valve - required, located at baseplate.
490-005f	ENTR/EXIT FRANG COVER LANGUAGE	(C),Entrance / exit door frangible cover instructions (for emergency release), language - English. Additional scoring required on exit door frangible cover.
490-006	ENTRANCE DOOR HANDLES	(B),Entrance door handles - yellow powder coated.
490-015	ENTRANCE DOOR CONTROLLER	(A),Entrance door controller - extended with 5 position settings.
490-015a	DOOR CONTROLLER HANDLE	(B),Entrance door control handle - non-removable.
490-030	ENTRANCE DOOR GLAZING	(S),Entrance door glass - full length single piece, 72% green.
491-001	EXIT DOOR DRIVE SYS	(A),Exit door drive system - Electric with pneumatic emergency release.
491-005	EXIT DOOR	(A),Exit door - wide Ameriview Vapor Slide Glide, 45.2" between panels.
491-005a	SLIDE GLIDE EXIT LIMIT SWITCH	(A),Exit door limit switch - solid state proximity switch.
491-005b	EXIT DOOR CONTROL	(A),Exit door control - Vapor Class Acoustic Sensing System. Activates door opening and detects obstruction on closing.
491-005ba	CLASS SYSTEM DOOR DECAL	(C),Class system door decal - English, Spanish, Tagalog, and Chinese, text and characters as per customer requirement.

Option#	Description	Value Description SR-2118
491-005bb	CLASS SYSTEM VOICE ANNUNCIATION	(A),Class system voice annunciation - female voice. English and Spanish instructions programmed as per customer requirement.
491-005d	EXIT DOOR SENSITIVE EDGE	(B),Exit door sensitive edge - sensor on the vertical edge provided with all exit doors.
491-005g	EXIT FRANGIBLE COVER SECUREMENT	(C),Exit frangible cover securement - Torx screw. (Already on SR-2044)
491-005j	EXIT BASEPLATE / ELEC PNL ACCESS	(B),Exit baseplate access- at each exit door, Tcb set-up, through removable ad frame.
491-006	EXIT DOOR ASSIST HANDLES	(B),Exit door assists - yellow powdercoated.
491-020	EXIT DOOR GREEN LIGHT	(B),Exit door green light - LED green light indicates that the exit door is set to open.
491-035	EXIT DOOR GLASS SIZE	(B),Exit door glass size - full length.
491-035a	EXIT DOOR GLAZING	(B),Exit door glazing - 6 mm.
491-NEW	EXIT DOOR EXTERNAL BUTTONS	(C),Exit door external buttons - Two flush mounted "Elevator Style" external switches mounted on either side of the exit doors to permit passenger loading/entry from exit.
526-001	40' PASSENGER SEAT QTY	(C),40' passenger seat quantity - 31.
526-005	PASSENGER SEAT MANUFACTURER	(B),Passenger seat manufacturer - American Seating.
526-005b	AMERICAN SEATING SEATS	(A),American Seating passenger seats - Vision stainless seat. Details as per customer spec.
526-005ba	AMERICAN SEATING D90 SPEC	(B),American Seating passenger seats D90 spec - not required.
526-005d	REAR BENCH SEAT	(S),Rear bench seat - 1-3-1 hinged seat.
526-005e	PASSENGER SEAT MOUNTING	(B),Passenger seat mounting - cantilever.
526-005f	SEAT MOUNTED GRABRAIL	(A),Seat mounted grabrails - stainless steel.
526-005h	FIRST SEAT,CURBSIDE UPPER REAR	(B),First seat at curbside upper rear - forward facing.
526-005i	PASSENGER SEATING BARRIER	(B),Passenger seating barrier - pedestal mounted barrier.
526-005j	SEAT POSITION, FORWARD OF REAR EXIT	(A),Seat position, forward of rear exit - aisle facing.
526-006	DRIVER'S SEAT MANUFACTURER	(A),Driver's seat manufacturer - USSC.
526-006a	USSC DRIVER'S SEAT MODEL	(A),USSC driver's seat model - 9100 ALX. The fore / aft seat travel is 11.8". Has 2 point seat belt. Has air suspension and lumbar.
526-006f	DRIVER'S SEAT MATERIAL	(B),Driver's seat material - all vinyl.
526-006g	DRIVER'S SEAT BELT	(A),Driver's seat belt - lap belt with retractor on left hand side.
526-006ga	DRIVER'S SEAT BELT ALARM	(A),Driver's seat belt alarm - required to warn driver that seat belt is not connected.

Option#	Description	Value Description SR-2118
526-006gb	DRIVER'S SEAT BELT COLOR	(A),Driver's seat belt color - Orange.
526-006j	DRIVER'S SEAT,DOCKET 90 SPEC	(B),Driver's seat D90 spec - Not required.
526-006k	DRIVER'S SEAT BASE RISER	(A),Driver's seat base (riser) - SST.
526-006m	DRIVER'S SEAT PARK BRAKE ALARM	(A),Driver's seat park brake alarm - switch is required in seat cushion to trigger driver's park brake alarm (ref. option 246-040).
526-006s	DRVR'S SEAT HEADREST	(B),Driver's seat headrest - required.
526-007	WHEELCHAIR POSITIONS,QUANTITY	(C),Wheelchair positions - two. One fwd of the exit door curbside and one aft of the streetside front wheelhouses. QPOD
526-007a	W/CHAIR POSITIONS,RESTRAINT SYSTEM	(A),Wheelchair restraint system - padded barrier/restraint system for rearward facing w/chr position(s) and restraint system for forward facing w/chr position(s). Mfr, position, mat'l color/type and details as per customer spec.
526-007e	SHOULDER HARNESS,W/CHR RESTRAINTS	(C),Shoulder harness for wheelchair restraints - secured to structure (pier panel), one on streetside only (for rear facing wheelchair position).
526-010	STANCHION / GRABRAIL STYLE	(B),Stanchion / grabrail style - curved style vertical stanchions. Using cast SST fittings for vertical and horizontal stanchions.
526-010a	OVERHEAD HORIZONTAL GRABRAILS	(A),Overhead horizontal grabrails - yellow SST.
526-010aa	OVERHEAD HANDSTRAPS,TYPE	(C),Handhold straps on overhead grabrails - flexible grey PVC straps in yellow Bentech mounts, secured to horizontal stanchions, locations as per customer spec.
526-010ab	OVERHEAD GRABRAIL HANDHOLD STRAPS,QUANTITY	(A),Overhead grabrail handhold straps, quantity - twenty-four.
526-010b	COLOR - STANCHIONS AT EXITS & RR RISER STEP	(B),Color - stanchions at exits and rear riser steps - yellow SST.
526-010d	VERT FORE OF S/S FRT W/HOUSE	(C),Vertical stanchion fore of streetside front wheelhouse - black SST (part of drivers door).
526-010da	VERT AFT OF S/S FRT W/HOUSE	(B),Vertical stanchion aft of streetside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010e	VERT FORE OF C/S FRT W/HOUSE	(A),Vertical stanchion fore of curbside front wheelhouse - black SST.
526-010ea	VERT AFT OF C/S FRT W/HOUSE	(B),Vertical stanchion aft of curbside front wheelhouse - to match colour of vertical seat stanchions (see option 526-010f).
526-010f	COLOR - VERTICAL STANCHIONS AT SEATS	(A),Color - vertical stanchions at seats - yellow SST.
526-010k	FRONT CURBSIDE LUGGAGE RACK	(A),Front curbside luggage rack - horizontal yellow tube wraps around aft, aisle and fore sides, SST.
526-010m	FAREBOX GRABRAIL	(A),Farebox wrap-around stanchion - black SST. Requires known farebox location.
526-015	MODESTY PANEL MATERIAL	(B),Modesty panel material - melamine.
526-015a	MODESTY PANEL MELAMINE COLOR	(B),Modesty panel melamine color - charcoal gloss (-209).

Option#	Description	Value Description SR-2118
526-015b	C/SIDE FORE UPR DECK MOD PNL, GAP	(S),Gap at bottom of curbside fore of upper deck modesty panels - approximately 2" diagonally.
526-015e	UPPER PANEL AFT OF EXIT(S)	(A),Upper panel aft of exit(s) - 0.5" clear polycarbonate, basic width.
526-016	BARRIER AT STREET SIDE REAR RISER	(B),Barrier at street side rear riser - Modesty panel (material and color per 526-015/526-015a).
526-018	BARRIER REAR BENCH SEATS	(C),Barrier at rear bench seats - double stanchion bar.
526-022	DRIVER'S DRAFT SHIELD	(C),Driver's enclosure - clear AS-2 Lexan and black powdercoated steel bi-fold enclosure.
526-035	BARRIER FWD OF EXIT(S)	(A),Fore of exit(s), barriers and grabrails - upper panel, 0.5" clear polycarbonate, wide width panel.
526-055	EMERGENCY INSTRUCTIONS	(C),Emergency instructions - decals. English, Spanish, and Chinese and Tagalog.
549-001a	NON-60' HVAC SYSTEM	(A),HVAC system manufacturer and type - Thermo King RLFE rooftop A/C unit for XDE, electric unit powered by BAE hybrid system.
549-002a	HVAC UNIT MOTOR TYPE	(S),HVAC motor type - brushless motor for primary heating & cooling system.
549-002b	REFRIGERANT	(A),Refrigerant - R-407C freon.
549-002d	HVAC AIR INTAKE	(B),HVAC air intake - recirculated air only.
549-002e	HVAC RETURN AIR FILTER	(B),HVAC return air filter - polyester filter for RLF unit.
549-002g	HVAC SYSTEM VALVES	(S),HVAC system valves - brass ball valves with basic handles.
549-002h	A/C AND HEATER LINE CLAMPS	(S),A/C and heater line clamps - Ideal.
549-004	HVAC ELECTRONICS	(B),HVAC electronics - Thermo King Intelligaire 3, valid for A/C or heater units. With limited diagnostic capabilities.
549-004a	HVAC CONTROL PANELS	(B),HVAC control panel - Thermo King, installed at the HVAC unit.
549-004b	HVAC PROGRAM SETTINGS	(B),HVAC program settings - APTA standard
549-020	BOOSTER PUMP	(B),Booster pump - Rotron.
549-025	DEFROSTER	(B),Defroster - 3 speed brushless motor, electrically controlled damper.
549-100	AUXILIARY HEATER	(B),Auxiliary heater - not required.
580-005	WHEELCHAIR RAMP	(C),Wheelchair ramp -LIFT-U LU11-15 ramp at front door.
580-005a	FRONT RAMP CONTROL	(S),Front ramp control - ramp switch at driver's instrument panel.
580-005d	WHEELCHAIR RAMP SURFACE	(C),Wheelchair ramp surfaces - covered with Rocket TFFG 2704F Altro flooring
580-070	WHEELCHAIR RAMP TOOL	(C),WheelChair Ramp Tool - Required as per spec/MRL.
600-025	BACK-UP ALARM	(B),Backup alarm - basic alarm located on curbside.
600-065	SDS TRAY QUANTITY	(A),SDS tray quantity - four trays total.



Option#	Description	Value Description SR-2118
600-075	FAREBOX PEDESTAL	(C),Farebox pedestal - SST, 7.0" high with Muni specific mounting plate.
600-076	FAREBOX	(B),Farebox - not required.
600-077	FARECARD READER	(C),Farecard reader - Provisions/Harnesses for Muni specific Clipper system.
600-078	TRANSFER CUTTER	(C),Transfer cutters - one Globe model 303 (two notchers). Installed as per customer specific details.
600-100	CURBSIDE FRONT EQUIPMENT BOX	(A),Curbside front equipment box - black, aluminum with paddle latch, no lock.
600-101	DRIVER'S STORAGE BOX BEHIND SEAT	(A),Driver's storage box behind seat - basic box with paddle latch, no key. The box is to include a chamfer to allow for driver's seat clearance.
600-125	TAKE ONE HOLDERS	(A),Take one holders - required. Type(s) and location(s) specified by customer.
600-125e	TAKE ONES,PASSENGER AREA	(A),Take one holders - in the passenger area, installed on various window pillars.
600-152	TRASH CONTAINERS	(A),Trash container - type and location as per customer spec.
600-175	RADIO,COMMUNICATION SYSTEM	(C),Radio, communication system - full Harris radio system installed by NFIL per Muni requirements, additional conduit/provision for future radio system.
600-177	AUTOMATIC PASSENGER COUNTER	(A),Automatic passenger counter system - IRMA matrix
600-178	TRAFFIC SIGNAL CONTROL SYSTEM	(C),Traffic signal control system required. Opticom 2101/ASM 2807 GPS controlled system.
600-225	VIDEO SURVEILLANCE SYSTEM	(A),Video surveillance system - interior and exterior cameras, quantity, details and location as per customer spec and installation / approval drawing.
600-225a	VIDEO SURVEILLANCE SYSTEM,MFR	(A),Video surveillance system - DTI-Loronix system, equipment as per customer spec.
600-225b	CAMERA COLOUR TYPE	(A),Camera colour type - cameras are a combination of colour and colour with infrared capabilities.
600-268	TURN ANNUNCIATOR SYSTEM	(C),Turn annunciator system - Mallory Sonalert SC628JR beepers at curbside exterior center and rear exit door areas to sound when turn signal switches depressed. Override switches to be located in SDS enclosure/compartament.
600-276	FIRE SUPPRESSION	(C),Fire suppression - Amerex Safety Net System. With one 25 lb dry chemical agent tank and one 13 lb dry chemical tank.
600-276b	AMEREX FIRE DETECTION SENSORS	(C), Amerex fire detection sensors - linear wire in engine compartment.fire or smoke conditions in the battery compartment shall actuate a visual and audible alarm at the operator?s control panel.
600-300	BICYCLE RACK,MFR/MODEL	(A),Bicycle rack, manufacturer / model - Sportworks, DL2-WP (wide profile), front mounted.
600-300a	SPORTWORKS BICYCLE RACK MOUNTING	(A),Sportworks bicycle rack mounting - TSB (ten second bracket) quick release slide-in standoff with incorporated pivot.
600-300b	SPORTWORKS BICYCLE RACK REMOVAL	(A),Sportworks bicycle rack removal - quick release rack.
600-300d	SPORTWORKS BICYCLE RK MATL/COLOR	(A),Sportworks bicycle rack material/colour - SST, black powdercoated.

Option#	Description	Value Description SR-2118
600-300e	BIKE RACK DEPLOY INDICATOR LIGHT	(A),Bike rack deployment indicator light - required.
600-300f	BICYCLE RACK MFR LOGO	(A),Bicycle rack manufacturer logo - provided.
600-300g	BICYCLE RACK INSTRUCTIONS	(A),Bicycle rack instructions - English.
600-NEW	DRIVECAM SYSTEM	(C),Drivecam system - Full Install for Drivecam system.

**13.2 ATTACHMENT 2: RESERVED**

**13.3 ATTACHMENT 3: RESERVED**

**13.4 ATTACHMENT 4: MATERIALS, COLORS, FINISHES**

NOTE: 1) All brand name call-outs are understood to include the phrase, 'or approved equal';  
2) Where stainless steel, aluminum or fiberglass is called for, natural finish/color is acceptable.

<b>BUMPERS</b> <b>Front and Rear Bumpers</b> Color:	Romeo Rim High Energy Level Polymer (HELP)  Black (colored throughout)
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<b>FINISH</b>	PPG Delta DBHS 2.7 VOC or approved equal
<b>Coach Exterior Primer</b>	PPG Deltron, NCP 280, Hardener NCX 285, Primer
<b>Coach Exterior Color</b>	PPG Delfleet, FBCH 37464, New Flyer Silver ALT-1 Base
<b>Coach Exterior Top Trim</b>	PPG Delfleet, FBCH 942608, New Flyer Red
<b>Coach Exterior Bottom Trim</b>	PPG Delfleet, FBCH 942608, New Flyer Red
<b>Coach Roof Fairing Color</b>	PPG Delfleet, FBCH 37464, New Flyer Silver ALT-1 Base
<b>Coach Clear Coating</b>	PPG Delfleet, Clear F3921, Hardener F3210
<b>Coach Interior Color</b>	Black N3472 (with flattener) For Operator area in front of Standee Line

<b>FLOOR COVERING</b>	Altro Transflor
<b>Aisle floor*</b>	Altro Transflor
Color:	Figura TFFG2704F "Rocket",
Reference:	Section 3.1 (Floor Covering)
•	
<b>Floor under seats</b>	Altro Transflor
Color:	TFFG2704F "Rocket",
Reference:	Section 3.1 (Floor Covering)
<b>Operator's Platform</b>	Altro Transflor
Color:	TFFG2704F "Rocket",
<b>Standee line</b>	Altro Transflor Two (2) inches wide
Color:	Altro TFM2729 "Safety Yellow" (colored throughout)
Reference:	Section 3.1 (Floor Covering)
<b>Step Nosing</b>	Altro Transflor Two (2) inches wide
Color:	Altro TFM2729 "Safety Yellow" (colored throughout)
Reference:	Section 3.1 (Floor Covering)
<b>Step Tread</b>	Altro Transflor
Color:	TFFG2704F "Rocket",
Reference:	Section 3.1 (Floor Covering)
<b>Exit Area Warning Decal</b>	Altro Transflor
Reference:	Section 3.1 (Floor Covering) & Attachment 12
<b>Stepwell Warning Decal</b>	Altro Transflor
Reference:	Section 3.1.1 (Steps & Stepwells) & Attachment 2

<b>Glazing</b>	
<b>Passenger Windows</b>	55 percent luminous transmittance.
Reference:	Section 2.4 (Windows)
<b>Operator's Side –Window</b>	76 percent luminous transmittance
Reference:	Section 2.4 (Windows)
<b>Door Glass</b>	55 percent luminous transmittance
Reference:	Section 2.4 (Windows)
<b>Windshield</b>	single-density tint
Reference:	Section 2.4 (Windows)

<b>INTERIOR TRIM</b>	Textured stainless steel or anodized aluminum
<b>Trim moldings</b>	
Reference:	Section 3 (Interior)

<b>PANELING</b>	Non-absorbing graffiti resistant material (final colors TBD with prototype)
<b>Divider panels</b> Color:	1/4 inch thick Grey
<b>Headlining</b> Color:	1/16 inch smooth and matte Grey
<b>Operator barrier</b> Color:	1/10 inch thick Grey
<b>Rear Bulkhead</b> Color:	1/16 inch thick Grey below the window / white above the window
<b>Side Wall</b> Color:	1/10 inch thick Grey

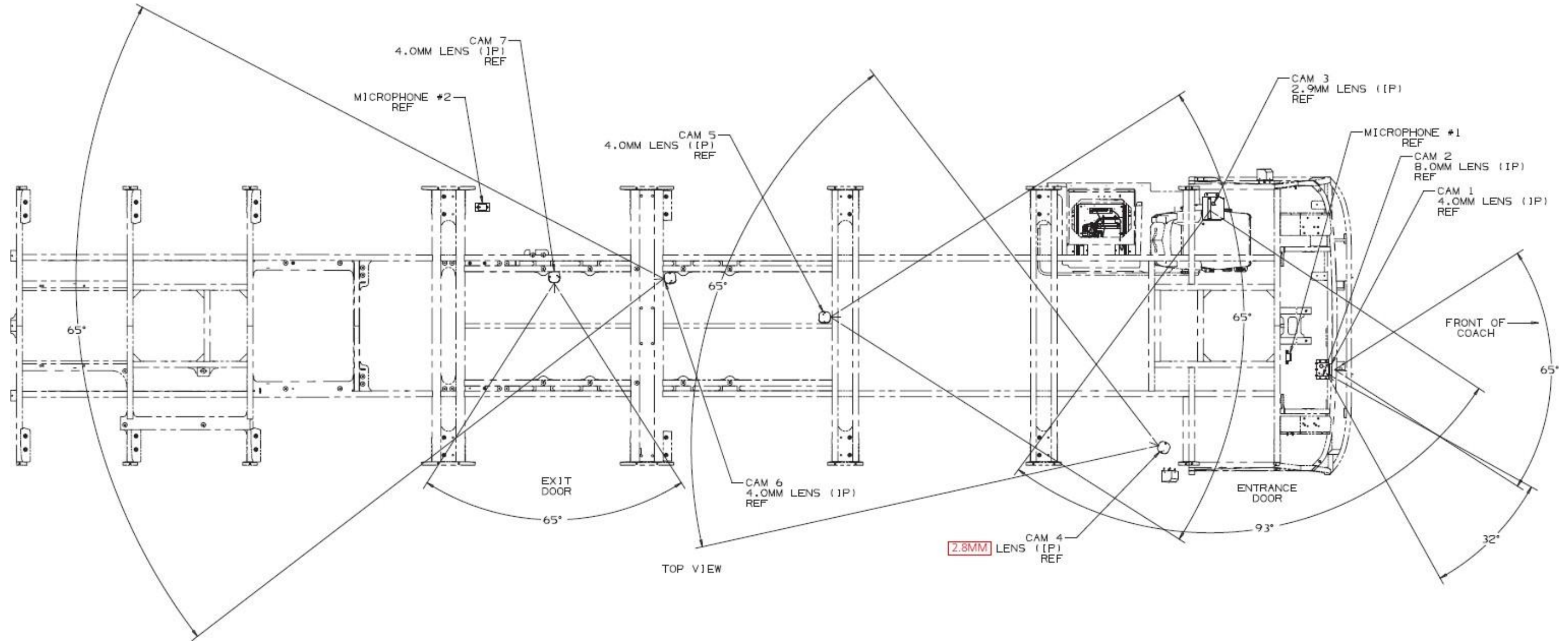
<b>Non-priority Passenger Seats</b> Color:	American Seating Vision E-512 Blue Fiberglass
<b>Priority Passenger Seats</b> Color:	American Seating Vision E-989 Blue Fiberglass with Priority Logo
<b>Stroller Passenger Seats</b> Color:	American Seating Vision E-989 Blue Fiberglass with Stroller Logo
<b>Seat Onsert</b>	Plastic
<b>Seat Handhold</b>	Stainless Steel
<b>Stanchions/Handholds</b> Color:	Stainless Steel with Yellow Powder Coating PPG Delfleet, FDGU 976044

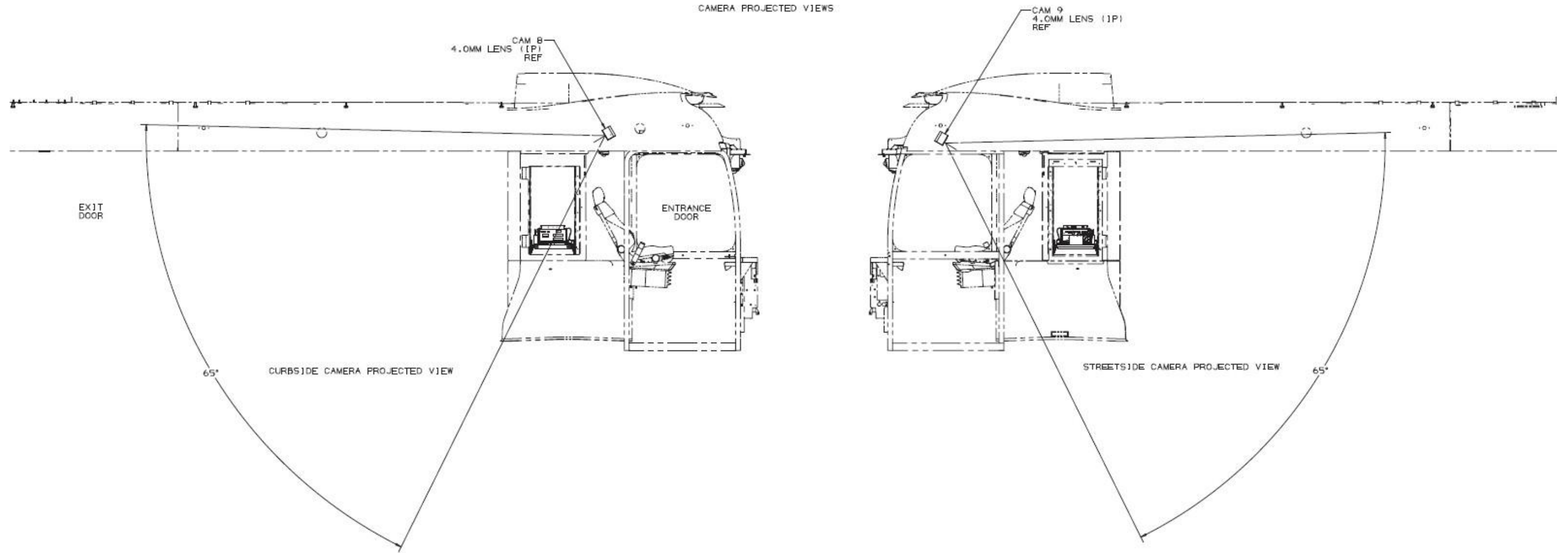
<b>Steering Wheel</b> Color: Reference:	Vehicle Improvement – NF P/N 064449 Black Section 5.2.2 (Steering Column and Steering Wheel)
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**13.5 ATTACHMENT 5: RESERVED**

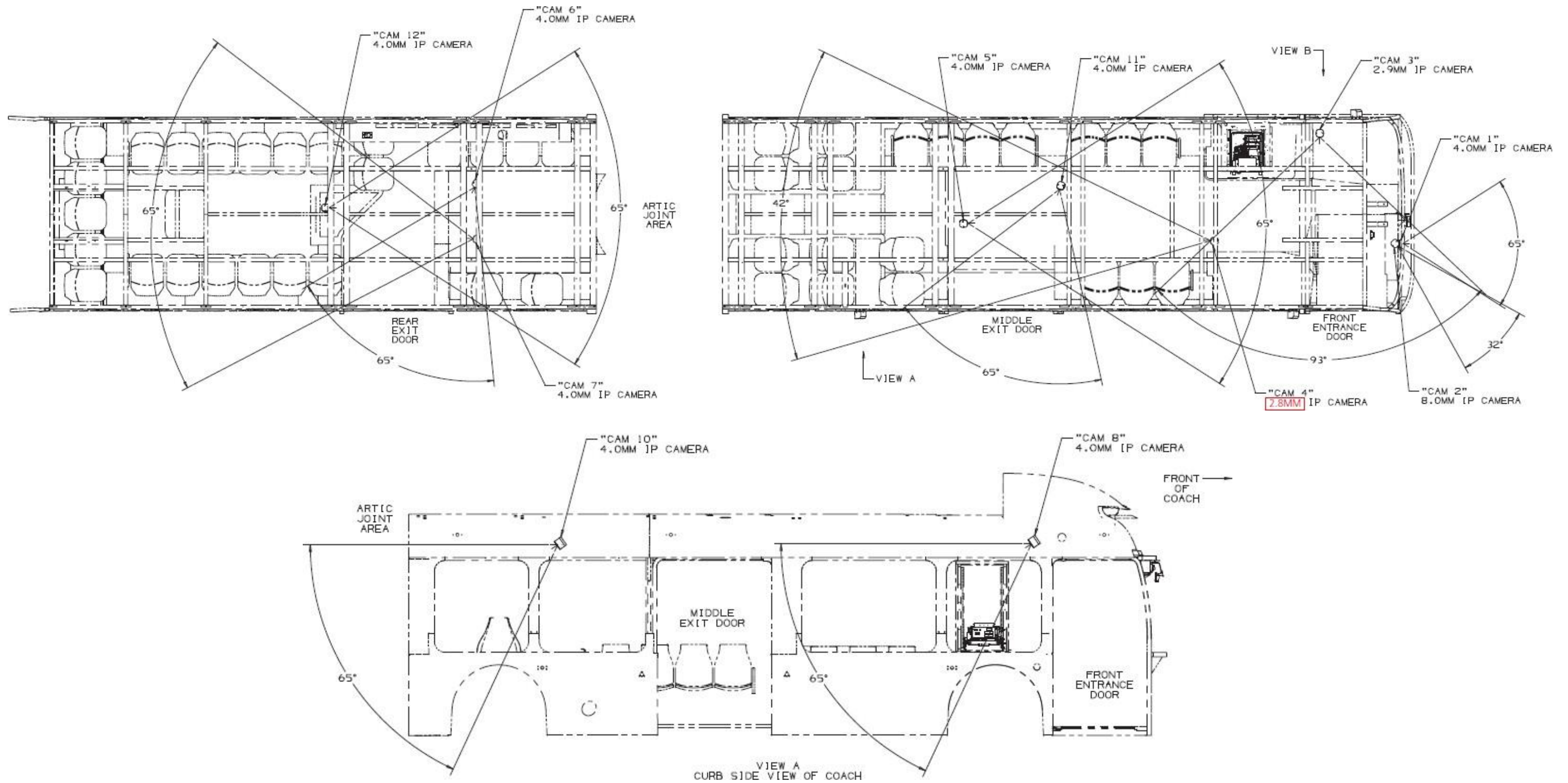
### 13.6 ATTACHMENT 6: CAMERA CONFIGURATION

Camera Layout for 40-ft Hybrid bus

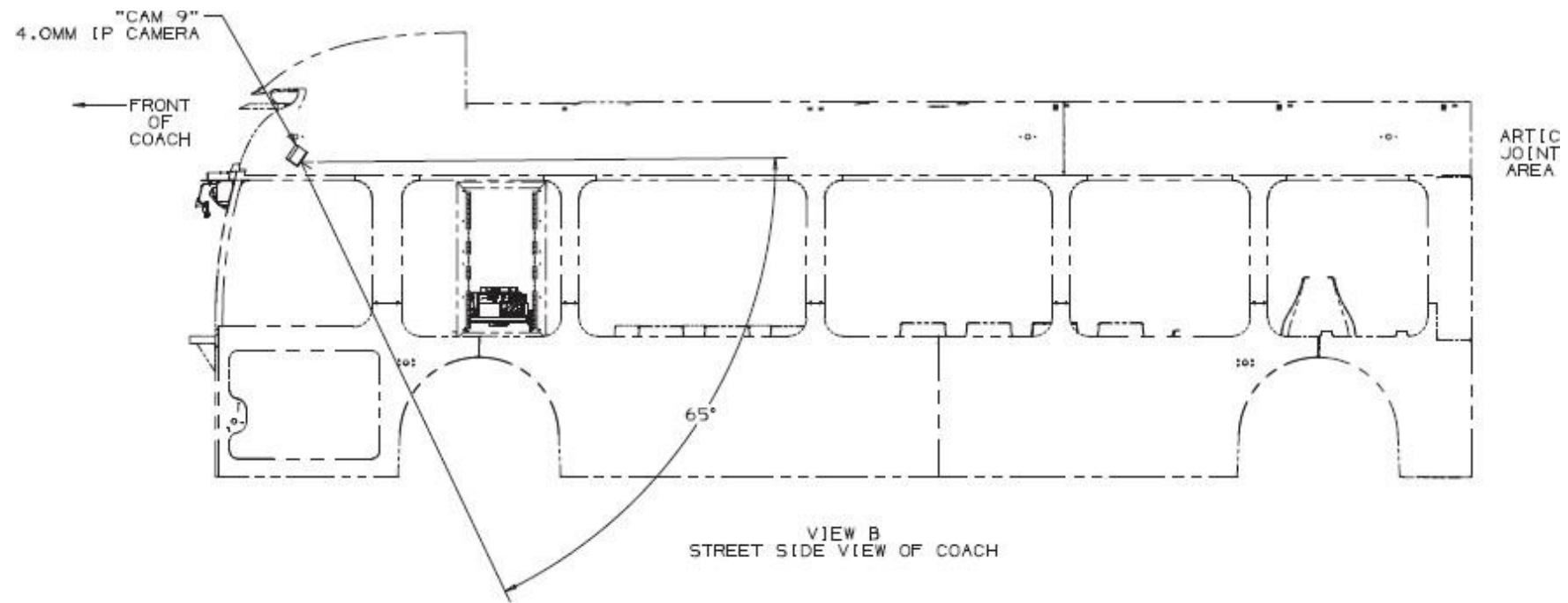




Camera Layout for 60-ft Hybrid bus







**13.7 ATTACHMENT 7: RESERVED**

**13.8 ATTACHMENT 8: RESERVED**

**13.9 ATTACHMENT 9: RESERVED**

**13.10 ATTACHMENT 10: RESERVED**

**13.11 ATTACHMENT 11: COACH OVERHAUL MATRIX**

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
<b>2.2</b>	<b>Rotary Master Door Controller</b>				
	Remove rotary master door switch handle and replace with an extended handle (P/N # 106847)		X	X	X
	Remove and replace snap action switches in the door controller assembly		X	X	X
<b>2.3</b>	<b>Bike Rack</b>				
	Upgrade to Byk Rak 3 with extra heavy-duty lift assist pivot bracket (Byk Rak P/N B0053DSBAD)		X		X
	Torque rack hardware		X	X	X
	Install durable rubber stop		X	X	X
	Install deployment kit to provide bike rack visual indicator on operator dash panel		X		X
	Propose methodology to either modify or replace bumper to mount the Byk Rak 3		X		X
<b>2.4</b>	<b>Windows</b>				
	Inspect windshield and window frame seals and rubber seals for deterioration, damage, and leaks. Replace AS NEEDED		X	X	X
	Clean window channels		X	X	X
	Inspect windows for damage. Make note of damage for replacement upon return to Division. Unsafe conditions shall be replaced AS NEEDED.		X	X	X
	Lubricate and reinstall seals according to OEM specifications		X	X	X
	Inspect the windshield for damage. Make note of damage for replacement upon return to Division. Unsafe conditions shall be replaced AS NEEDED.		X	X	X

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
<b>2.5</b>	<b>Articulated Joint</b>				
	Die penetrant testing for cracks, corrosion, structural deficiencies, and other damage. Repair or replace structural deficiencies		X		
	Remove and replace wear plates, artic bellows, and flexible hoses		X		
	Rebuild turntable with new bearings and seals		X		
	Remove and replace proportioning valves		X		
	Remove and replace hydraulic cylinders with rebuilt units		X		
	Replace limit switch and all hoses between bulkhead termination points		X		
	Cooling hose passing through the articulated joint to be covered with protective sleeving wrap.		X		
<b>2.6</b>	<b>Roof</b>				
	Remove any excessive old sealant from all roof penetrations and replace with new sealant		X	X	X
<b>3</b>	<b>Interior</b>				
	Inspect interior trim for damage and repair or replace - AS NEEDED		X	X	X
<b>3.1</b>	<b>Floor Covering</b>				
	Inspect and repair damaged sections of flooring - AS NEEDED (Altro Rocket TFFG 2704F 2.7mm)		X	X	X
	Relocate the front standee line behind the rear of the wheel well	X	X	X	X
	Add one "DO NOT STAND" floor inlay centered between the two front wheel wells	X	X	X	X
	Reapply safety yellow to the exit door edge of vestibule floor tread		X	X	X
	Clean floors to remove odor or slippery coating		X	X	X

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
	Inspect and replace flooring material on engine access hatch - AS NEEDED		X	X	X
<b>3.1.1</b>	<b>Steps and Stepwells</b>				
	Replace yellow-anti slip coating applied to the stepwell		X	X	X
<b>3.3</b>	<b>Passenger Seating</b>				
	Provide a design for adding a horizontal stanchion onto the modesty panel in front of the double forward facing seats on the upper deck				X
<b>3.4</b>	<b>Operator's Area and Control</b>				
	Remove and replace operator seat		X	X	X
	Remove and replace brake and accelerator assembly (NF P/N 377128)		X		
	Remove and replace brake and accelerator assembly (NF P/N 456440)			X	X
	Remove and replace brake and accelerator assembly (NF P/N 551852)				
	Remove and replace with most updated shift selector, P/N INTERSTATE DETROIT DIESEL 29551556 for Allison		X		
	Remove and replace with most updated shift selector, P/N Arens Controls SBW-PB2-656 for BAE			X	X
	Clean and inspect the front dash; repair as necessary		X	X	X
	Inspect the operator's barrier and repair as necessary		X	X	X
	Driver's microphone - replace AS NEEDED with gooseneck		X	X	X
<b>3.4.1</b>	<b>EMERGENCY ALARM / SILENT ALARM SWITCH (EA SWITCH)</b>				
	Remove and Replace Emergency Alarm switch with new Emergency Alarm switch, NF P/N 651002		X	X	X

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
<b>3.6.2</b>	<b>Interior Mirrors (As applicable)</b>				
	Add front stepwell mirror onto the ceiling panel		X	X	X
<b>3.7</b>	<b>Heating, Ventilation and Air Conditioning</b>				
	Inspect heating system for functionality and reliability		X	X	X
	Clean battery pack cooling condenser, expansion valve and fans. Change ESS cooler filter.		X		
	Clean and inspect HVAC system condenser and evaporator		X	X	X
	Replace polyester air filter		X	X	X
	Replace liquid line sight glass for refrigerant fluid gauge		X	X	X
	Replace flexible hoses attached to the ESS Cooler to match OEM specs		X	X	X
	Inspect hard pipes and replace AS NEEDED		X	X	X
	Screws/hardware, panel seal and filter for the defroster unit to be replaced		X	X	X
	Inspect the defroster booster pump. Replace AS NEEDED		X	X	X
<b>3.8</b>	<b>Wheelchair Ramp</b>				
	Test Functionality of the wheelchair ramp. Repair or replace AS NEEDED		X	X	X
<b>3.10</b>	<b>Secure Diagnostics Station (SDS) Cabinet</b>				
	Clean dust and debris out of the SDS cabinet		X	X	X
	Inspect and replace any damaged cables or components AS NEEDED		X	X	X
<b>3.13</b>	<b>Rear Panel</b>				
	Remove the existing carpeted upper rear panel and replace with material and color that is the same as the sidewall panel	X	X		X



Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
<b>4</b>	<b>Furnishings</b>				
	Revise existing wiring diagrams for the destination signs and video surveillance camera system.		X	X	X
<b>4.1</b>	<b>Destination Signs</b>				
	Inspect the front head sign glass seal for deterioration and leakage. Replace AS NEEDED		X	X	X
	Inspect and test all LED interior signs for proper functionality		X	X	X
<b>4.2</b>	<b>Video Surveillance Camera System</b>				
	Verify CAM4 (aisle camera) is a 2.8mm IP camera with a built in mic. Remove and replace AS NEEDED		X	X	X
	Inspect the seal on exterior cameras for deterioration and leaking, replace AS NEEDED		X	X	X
	Paint the white Transit-Only Lane Enforcement (TOLE) camera housing black		X	X	X
	Update DVR software to support new cameras and allow audio recording		X	X	X
	Add UPS (Uninterrupted Power Supply) capable of powering the DVR for at least 30 minutes		X	X	X
<b>4.3</b>	<b>Mobile Radio</b>				
	Verify radio system functionality		X	X	X
<b>4.4</b>	<b>Fare Collection</b>				
	Farebox system cables shall be fully functional upon Coach delivery		X	X	X
<b>4.5</b>	<b>Sign Requirements</b>				
	Internal display sign shall be Twin Vision Smart Series 3 LED sign with amer LEDs.		X	X	X

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
	Verify Sign functionality		X	X	X
	Relocate two rear interior speakers from the rear bulkhead panel to the light panel approximately 6ft forward.		X		X
	Cover existing rear interior speaker holes with similar rear bulkhead panel material and color.		X		X
<b>5.1.1</b>	<b>Axles</b>				
	Remove and replace bearings, bushings, bearing seals, leveling valves, control valves, kingpins, radius rods bushings on the front and rear axles (40' and 60')		X	X	X
	Remove and replace bearings, bushings, bearing seals, leveling valves, control valves, kingpins, radius rods bushings on the center axle (60')		X		
	Clean, Examine and inspect axles for cracks and damage using magnetic particle testing 40', then paint			X	X
	Clean, Examine and inspect axles for cracks and damage using magnetic particle testing 60', then paint		X		
	Replace damaged components, if damage/wear exceeds OEM tolerance		X	X	X
	Replace axle bump stops		X		
	Remove and Replace sway bar bushings with new		X	X	X
<b>5.1.2</b>	<b>Air Bags and Shock Absorbers</b>				
	Remove and replace Firestone air bellows and Koni shock absorbers 40'			X	X
	Remove and replace Firestone air bellows and Koni shock absorbers 60'		X		
	Verify coach kneeling is even on both sides in compliance with OEM specification		X	X	X

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
<b>5.2</b>	<b>Steering</b>				
	Perform front end alignment (all axles) 40'			X	X
	Perform front end alignment (all axles) 60'		X		
<b>5.2.1</b>	<b>Power Steering Pump, Gear Box and Linkage</b>				
	Remove and replace power steering pump (NF P/N 489605)		X		
	Remove and replace power steering pump (NF P/N 524775)			X	X
	Replace miter box (NF P/N 200640)		X	X	X
	Remove and replace power steering gearbox (NF P/N 497510)		X	X	X
<b>5.2.2</b>	<b>Steering Column and Steering Wheel</b>				
	Replace the steering wheel, horn contact plate, and button		X	X	X
	Remove and replace u-joints, bearings and bushings according to OEM specifications		X	X	X
	Verify functionality of horn, steering column, steering wheel and steering gear connections.		X	X	X
<b>5.2.3</b>	<b>Steering Efforts</b>				
	Develop QA procedure to ensure consistent turning effort and determine average steering torque value		X	X	X
<b>5.2.4</b>	<b>Steering Linkage</b>				
	Replace all steering linkages including tie rod, drag link, and steering damper		X	X	X
<b>5.3.1</b>	<b>Air Lines, Valves and Air Tanks</b>				
	Pressure test brake airlines - replace AS NEEDED		X	X	X
	Pressure test air tanks - replace AS NEEDED		X	X	X
<b>5.4</b>	<b>Air System</b>				
	Verify that pipes and hoses are not rubbing/chafing other components		X	X	X

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
	Perform a pneumatic system leak down test after final installation		X	X	X
<b>5.4.2</b>	<b>Air Lines and Fittings</b>				
	Clean, inspect and examine all air lines and fitting for damages or leaks. Repair or replace AS NEEDED		X	X	X
<b>5.4.3</b>	<b>Air Tanks</b>				
	Clean air tanks and drain on chassis		X	X	X
	Visually inspect air tanks for corrosion		X	X	X
	Replace relief valves and O-rings - AS NEEDED		X	X	X
<b>5.5</b>	<b>Fuel Tank (As Applicable)</b>				
	Remove and replace all primary and secondary fuel filters		X	X	X
<b>5.6</b>	<b>Line and Piping</b>				
	Remove and replace all flexible or non-metal fluid lines and securement clamps		X	X	X
	Inspect all hard (rigid) metal piping and tubes for damages or leaks (exhaust pipes, coolant and fuel piping); replace AS NEEDED		X	X	X
<b>5.6.1</b>	<b>Fluid Lines</b>				
	Remove and replace all fuel and oil lines within engine compartment		X	X	X
	Replace check valve with new and verify functionality		X	X	X
<b>5.6.2</b>	<b>Hydraulic Lines</b>				
	Inspect hydraulic lines for proper mounting, damage and leakage.		X	X	X

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
	Tag and mark hydraulic lines that are used in other piping systems of the Coach		X	X	X
	Inspect underbody stainless steel lines for proper mounting		X	X	X
	Inspect two coolant lines from CAC and radiator. Any rubber lines found to be changed to braided stainless steel lines AS NEEDED.		X	X	X
<b>5.6.3</b>	<b>Piping and Hose</b>				
	Replace all flexible (soft) hoses in the engine compartment (cooling system hoses, heater hoses, transmission cooler hoses, air intake hoses, hump hoses and metal reinforced hoses for the CAC hoses)		X	X	X
	Inspect piping in cooling system, exhaust system, and air intake charger system for damage and corrosion.		X	X	X
	Inspect and replace - AS NEEDED - the 2 plastic doser fitting (one straight one 90 degree)		X	X	X
<b>5.7</b>	<b>Fire Safety</b>				
	Inspect fire suppression systems for functionality		X	X	X
	Recertify all bottles		X	X	X
	Replace all temperature sensors, and nozzle caps		X	X	X
	Replace backup battery and thermostats with new		X	X	X
	Remove and replace electric actuator on suppression systems		X	X	X
	Amerex fire suppression line in engine compartment to be standardize to the 6-foot length on all buses.		X	X	X
<b>5.8</b>	<b>DEF Tanks</b>				

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
	Clean and inspect the exterior of the DEF tanks		X	X	X
	Inspect DEF strainer and replace as necessary		X	X	X
	Inspect the DEF level sender assembly for proper function. The cap, O-ring, and filter shall be replaced. Replace level sensor - AS NEEDED		X	X	X
	Inspect and replace SCR pump closeout insulation - AS NEEDED		X	X	X
<b>6.1</b>	<b>Propulsion System Components</b>				
	Remove 40 Drive Units and return to SFMTA for in-house rebuild. Install rebuilt Drive Units from SFMTA		X		
	Remove and replace 54 Drive Units with Stator A replaced and Stator B tested.	X			
	Remove and replace 29 Drive Units with Stator A replaced and Stator B tested.		X		
	Overhaul propulsion system to OEM recommendations			X	X
<b>6.1.1</b>	<b>Engine (As Applicable)</b>				
	Remove 10 ISL engines and ship back to SFMTA for in-house rebuild. Install rebuilt engines from SFMTA.		X		
	Remove and replace 59 ISL engines with new engines including new sensors, harnesses, and starter assembly		X		
	Remove and replace ISL engine with new engines including new sensors, harnesses, and starter assembly	X		X	
	Remove and replace engine motor mount	X	X	X	X
	Remove and replace exhaust flex pipe and clamps, using flex connector alignment tool	X	X	X	X
<b>6.1.4</b>	<b>Energy Storage System (ESS) (As Applicable)</b>				
	Refresh the Allison ESS battery with OEM refresh kit	X	X		

Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
	Refresh the BAE ESS battery with OEM refresh kit				X
	Replace high voltage cable bundle set	X	X	X	X
	Inspect and replace Allison HV Cable UV protection - AS NEEDED		X		
	Clean battery pack cooling condenser, expansion valve and fans. Change ESS cooler filter.		X		
<b>6.1.5</b>	<b>Exhaust Aftertreatment System (As Applicable)</b>				
	Inspect exhaust aftertreatment system - repair AS NEEDED		X	X	X
<b>6.1.6</b>	<b>Engine Compartment</b>				
	Inspect and test all gauges for proper functionality		X	X	X
	Inspect and replace engine exhaust blanket - AS NEEDED		X	X	X
	Hitch pin with retention cable to be added to the engine guard door.		X	X	X
<b>6.1.7</b>	<b>Differential</b>				
	Replace differential assemblies with units furnished by SFMTA – AS NEEDED		X	X	X
<b>6.2</b>	<b>Cooling System</b>				
	Inspect existing cooling systems for functionality and reliability		X	X	X
	Inspect all propulsion system cooling unit components for function and perform system manufacturer recommended maintenance		X	X	X
	Inspect EMP/Rotron WEG ECP pumps and replace - AS NEEDED			X	X
	Remove and clean coolant catch pans from electronic compartment		X	X	X
	The Contractor shall Remove and Replace all coolant system pressure relief fill caps with new.		X	X	X
<b>6.3</b>	<b>Drive Shaft</b>				

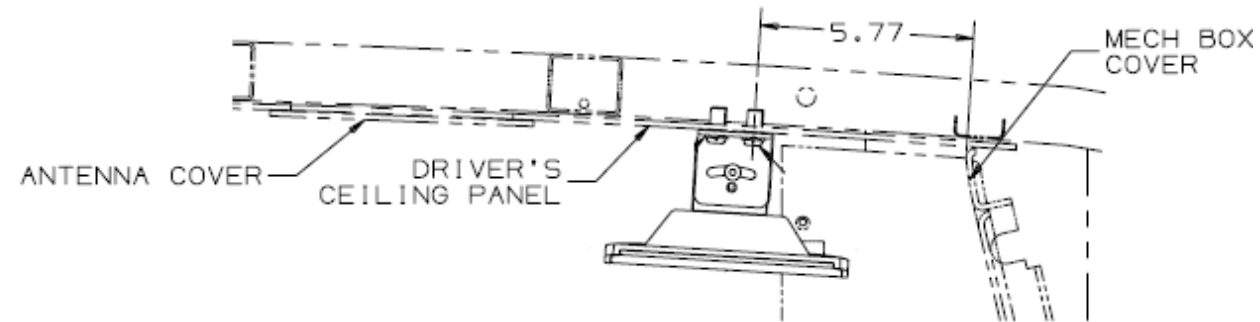
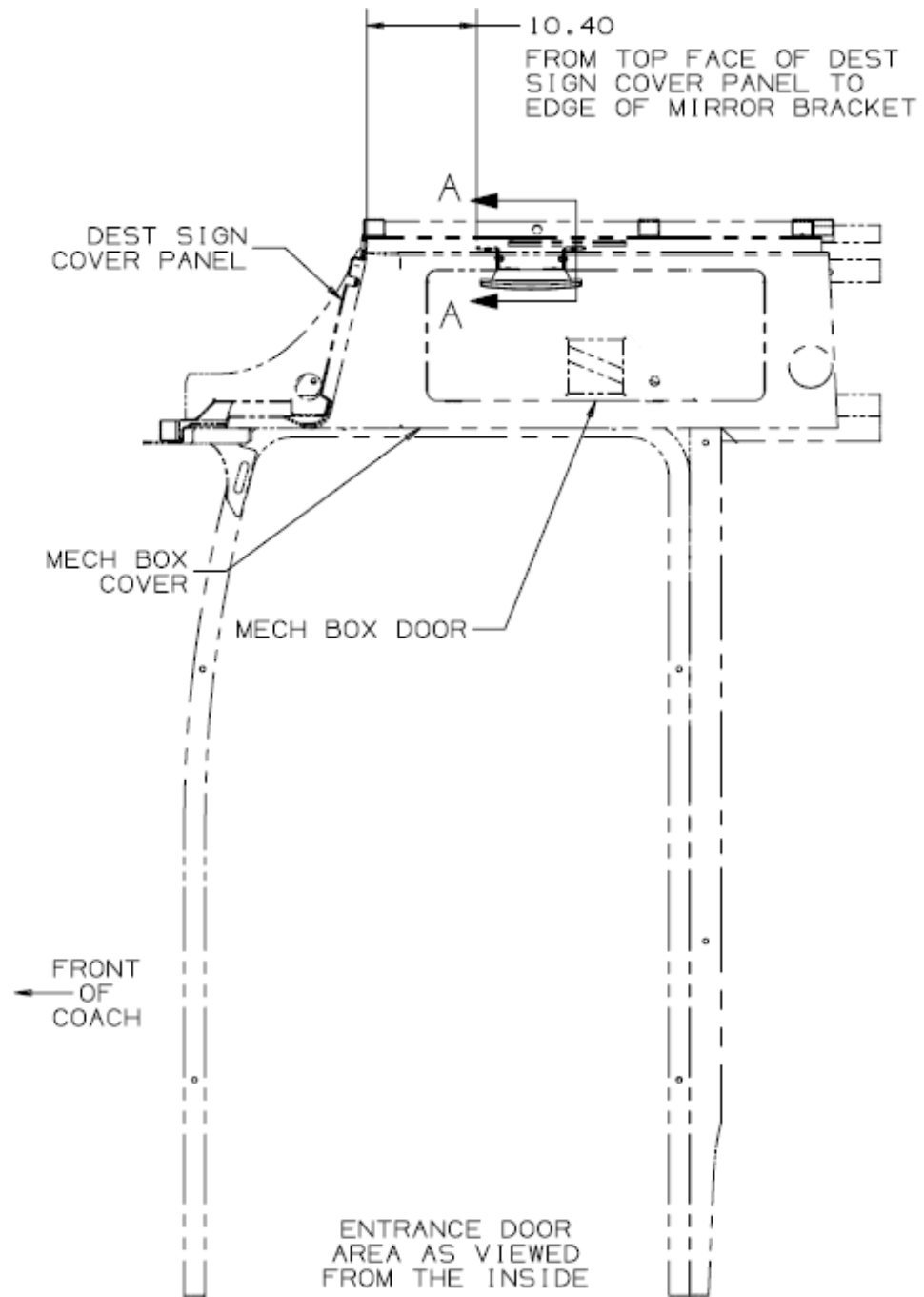
Section	Body - Scope Line Items	40' Allison	60' Allison	40' BAE	40' BAE
		SR-2043	SR-2116	SR-2117	SR-2118
	Inspect drive shaft for wear or damage. Repair or Replace - AS NEEDED		X	X	X
	Inspect drive shaft bolts, bearing strap, locking plates, and universal joints at each end. Remove and replace - AS NEEDED		X	X	X
	Inspect drive shaft guard plate and replace AS NEEDED		X	X	X
<b>7.1</b>	<b>Batteries</b>				
	Remove and replace new house batteries (two 8D AGM/Deka 1450 CCA East Penn). Ensure that batteries are installed prior to shipment to SFMTA. Record installation date		X	X	X
	Remove and replace new battery cables		X	X	X
	Inspect battery tray's rubber mounts, rollers (battery tray and support tray), pivot mechanism, and rubber/water dust ejector for damage. Replace AS NEEDED		X	X	X
<b>7.2</b>	<b>Alternator / Charging System</b>				
	Inspect static converter (Vanner High Voltage DC/DC Converter)				
	Inspect static converter (BAE APS2)			X	X
	Inspect Nieoff C803		X		
<b>7.3</b>	<b>PLC program</b>				
	Revise PLC program per contract scope and provide change summaries per SR		X	X	X



**13.12 ATTACHMENT 12: RESERVED**

**13.13 ATTACHMENT 13: RESERVED**

13.14 ATTACHMENT 14: ENTRANCE DOOR MIRROR



SECTION A-A  
SCALE 1:3  
SOME STRUCTURE REMOVED  
FOR CLARITY