CITY AND COUNTY OF SAN FRANCISCO
San Francisco Municipal Transportation Agency
Request for Proposals
THE PROCUREMENT OF
30-Foot, 40-FOOT AND 60-FOOT LOW FLOOR
DIESEL HYBRID COACHES

Proposal Section	Title	Bid Submission Requirements
11-A	TRAINING	Provide a brief description of your training program plan based upon the training section (Section 9.1 of the Technical Specifications-Vol. 2). Include a brief description of what will be provided for the Interactive Multimedia Training as described in Section 9.1.10 of the Technical Specifications-Vol. 2.

Please refer to the attached training plan applicable for XDE35, XDE40, and XDE60 buses.

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DRAFT TRAINING PLAN
for
SFMTA MUNI
BID 14-015
XDE40/60 XCELSIOR BUSES

PRESENTED BY:
DARRYL DESJARLAIS

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Note: The courses listed are standard offering. Other training not listed may include: Daily Service, Preventive Maintenance, IT Electrical, Surveillance System, Voice Annunciation, Articulation Joint (if applicable)

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Program Overview

The New Flyer training program is designed to provide Maintenance personnel with knowledge and skills required to operate, perform PM inspections, daily maintenance, running and major repairs to the New Flyer Transit Bus.

Program Objective

The learner will demonstrate knowledge and skills required to operate, perform PM inspections, daily maintenance, running and major repairs to the New Flyer Transit Bus.

Enabling Objectives

- Safely and efficiently manage all operating systems, safety, emergency functions and emergency procedures of the New Flyer Transit Bus
- Troubleshoot, diagnose, service and maintain the coach electrical, multiplexing charging and starting systems
- Troubleshoot, diagnose, repair and maintain the entrance and exit doors
- Troubleshoot, diagnose faults, and perform adjustments and repairs to the wheel chair ramp system
- Troubleshoot, diagnose, service and maintain the ABS brake system
- Troubleshoot, diagnose, service and maintain the air system
- Troubleshoot, diagnose, service and maintain the suspension and steering system
- Troubleshoot, diagnose, service and maintain the body and structure
- Effectively use and understand the Manuals provided for Service, Parts and Operations
- Troubleshoot, diagnose, service and maintain the electric fan drive system
- Safely and efficiently manage all operating systems, safety, emergency functions and emergency procedures of the New Flyer Transit Bus
- Troubleshoot, diagnose, service and maintain the engine.
- Troubleshoot, diagnose, service and maintain the hybrid propulsion system.
- Troubleshoot, diagnose, service and maintain the air conditioning system.
- Troubleshoot, diagnose, service and maintain the destination signs.

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Program Length

This program of instruction consists of 15 instructional modules. Modules are designed to be facilitated independently or grouped with other instructional modules.

Estimated time required to complete all modules of instruction is:

Module	Estimated Hours
Module A: Maintenance Orientation	4
Module B – Multiplex System	24
Module C – Entrance and Exit Doors	4
Module D – Wheelchair Ramp	8
Module E – Brake Systems and Axles	16
Module F – Air System and ABS	8
Module G – Front and Rear Suspension and Steering	2
Module H – Body and Structure	4
Module I – Parts (use of manuals)	4
Module J – Electric Fan Drive System	4
Module K – Operator Orientation	4
Module L – Engine Maintenance (Vendor)	8-32
Module M – Hybrid Propulsion Maintenance (Vendor)	8-24
Module N – HVAC, A/C Maintenance (Vendor)	8
Module O – Destination Signs Maintenance (Vendor)	4

Note: The number of classes for each subject will be determined by the SFMTA Maintenance Training Coordinator. Total hours not to exceed the hours as listed on the Training Contract Deliverables Sheet.

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Pre-Requisites

Participant should have basic knowledge in the operation, maintenance, servicing and repair of city transit buses.

Required Equipment, Tools and Resources

- Classroom, desk and chairs to accommodate students
- Whiteboard, eraser and markers
- Projector screen
- VCR/DVD Player & Monitor
- LCD Computer Projector
- Standard coach service tools
- Special tools noted for service and repair of the New Flyer Transit Bus.
- Training aids for module(s) as specified in the contract
- Mock-ups for the module(s) as specified in the contract
- Videos for the module(s) as specified in the contract

Presentation

Instruction will be provided by lecture, demonstration and practical exercises for each module of instruction.

Learner Evaluation

Official testing will only be done if requested by SFMTA.

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Program Administration

The SFMTA Maintenance Training Coordinator, in conjunction with the New Flyer Training Dept., will determine the composition of training sessions, and develop a training calendar to meet the needs of the Maintenance Department. SFMTA will also arrange and schedule class location and attendance for each training session. New Flyer will arrange for facilitators to present the material for each training session in accordance to the calendar. New Flyer will provide SFMTA an attendance sheet at the conclusion of each block of training.

Upon conclusion of each session, New Flyer will provide SFMTA copies of all documentation (tests - scored written and practical) for each employee trained. New Flyer will also provide copies of all approved lesson plans, utilized during the course of the program, training aids, hand-outs, overhead transparencies, slides, videos, and mock ups utilized during the course of the module presentations, upon conclusion of the final session.

New Flyer will assume the responsibility to modify Lesson Plans and other documentation as required throughout the delivery of the program. Any modifications to approved Lesson Plans must be authorized by the SFMTA.

Class Syllabi

Class syllabi for Instruction Modules A-O are outlined on the following pages.

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MODULE A: MAINTENANCE ORIENTATION

I. INTRODUCTION:

New Flyer buses are some of the most advanced transit coaches in North America. Some of the latest technology available is found on the New Flyer Transit Bus. This module of instruction will provide you with the knowledge and skills necessary to safely and efficiently operate and service the coach.

II. COURSE OBJECTIVE:

- Safely and efficiently manage all operating systems, safety, emergency functions and emergency procedures of the New Flyer Transit Bus
- Location of all service compartments
- Fluid and lubrication points

III. ENABLING OBJECTIVES:

- Identify vehicle and passenger safety procedures
- Demonstrate coach emergency procedures and operation of the New Flyer Transit Bus
- Perform Pre-operational functional and safety checks, replenish washer fluids, engine oil, transmission fluid and coolant levels
- Locate and re-set tripped circuit breakers
- Location of all service compartments
- Location of all fluid and lubrication points and specifications of each
- Location of all maintenance and adjustment points on the bus

IV. LEARNER ACTIVITIES:

- Attend facilitator-led lecture / demonstration providing an overview of the New Flyer
- Construction, location of service access points, locating and resetting tripped circuit breakers, operation of coach systems and safety devices
- Participate in facilitator-led hands-on exercise demonstrating the position and operation of all operational, safety devices and emergency functions and procedures
- Participate facilitator-provided hands-on exercise of daily service routines, checking and adjusting fluid levels, and refueling and emergency procedures

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MODULE B: MULTIPLEX SYSTEM

I. INTRODUCTION:

The electrical system of the New Flyer Transit Bus is very different from conventional bus electrical systems. With the introduction of Multiplex wiring, provided with the Vansco Multiplex system, miles of wiring and several switches and relays have been eliminated. This module of instruction will provide you with information, knowledge and skills to maintain the electrical, multiplex, charging and starting system of the coach.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, service and maintain the coach electrical, multiplexing charging and starting systems.

III. ENABLING OBJECTIVES:

- Identify components and discuss operation of the electrical system
- Identify components and discuss operation of the charging and starting system
- Identify components and discuss operation of the multiplex wiring system
- Read and translate wiring diagrams, layout diagrams
- Read and translate PLC Ladder Logic
- Diagnose electrical, multiplex, charging and starting system faults using hand-held diagnostic test equipment
- Diagnose multiplex system faults using module indicator LEDs
- Diagnose and troubleshoot electrical, multiplex, charging and starting system faults using computerized equipment
- Repair electrical, multiplex, charging and starting system faults

IV. LEARNER ACTIVITIES:

- Attend facilitator-led lecture / demonstration discussing construction and operation of the electrical and multiplexing system, wiring diagrams, troubleshooting, diagnosing and repair of the electrical and multiplexing system
- Participate in facilitator provided exercises identifying components, operation, wiring diagrams, diagnosis, troubleshooting and repair of the electrical, multiplex, charging and starting systems, using module indicator lights, hand-held testing devices and computerized equipment

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MODULE C: ENTRANCE & EXIT DOORS

I. INTRODUCTION:

The doors of the New Flyer Transit Bus, even though they have several similarities to the doors now in service, have some major differences to include controls integrated with the multiplexing system. This module of instruction will provide information, knowledge and skills to maintain the Vapor entrance and exit doors

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, repair and maintain the Vapor entrance and exit doors

III. ENABLING OBJECTIVES:

- Identify parts associated with the entrance and exit doors
- Describe the operation of the entrance and exit doors
- Describe the interrelationships of the door system to the brake system, lighting system, safety and emergency systems
- Troubleshoot, diagnose, service and adjust the entrance and exit doors
- Troubleshoot, diagnose, remove and replace or repair entrance and exit door operating units and controls

IV. LEARNER ACTIVITIES:

- Attend facilitator-led lecture / demonstration discussing the operation, controls, adjustments and interlock circuits of the entrance and exit doors
- Participate in facilitator-led exercises demonstrating the operation, controls, adjustments

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MODULE D: WHEELCHAIR RAMP

I. INTRODUCTION:

The wheelchair ramp, even though it performs the same basic job, is very different in many ways to the lifts currently utilized in the system. The lift is not only different in its configuration and the way it works, but it also utilizes the multiplexing system to perform other functions. This module of instruction will provide you with the knowledge and skills necessary to properly troubleshoot, diagnose faults, and perform maintenance and repairs to the lift.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose faults, and perform adjustments and repairs to the wheelchair ramp.

III. ENABLING OBJECTIVES:

- Identify interlocks activated with use of the ramp
- Identify parts associated with the wheelchair ramp
- Discuss operating principle of the wheelchair ramp
- Troubleshoot operational faults of the wheelchair ramp
- Diagnose faults and make repairs to the wheelchair ramp
- Perform adjustments to the wheelchair ramp

IV. LEARNER ACTIVITIES:

- Attend facilitator-led discussion and demonstration of the wheelchair ramp operation, troubleshooting, diagnosis and repair.

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MODULE E: BRAKE SYSTEMS and AXLES

I. INTRODUCTION:

The New Flyer Transit Bus uses an "I" beam front axle and hypoid-bevel gear single reduction rear axle. This module of instruction provides information necessary to properly maintain the front and rear axle, maintain brake adjustments and diagnose and repair the axles and disc brakes.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, service and maintain the axle and disc brake system

III. ENABLING OBJECTIVES:

- Identify and locate components of the axles
- Describe power flow and operation of the single reduction axle
- Describe procedure to replace axles
- Diagnose and repair disc brake calipers
- Perform brake adjustments
- Troubleshooting, diagnosis and service the axles

IV. LEARNER ACTIVITIES:

- Attend lecture / demonstration discussing the brakes and axles
- Participate in facilitator provided exercises performing brake adjustments, axle service, troubleshooting, repair and adjustments

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MODULE F: AIR SYSTEM and ABS

I. INTRODUCTION:

This module of instruction provides you information, knowledge and skills necessary to diagnose, troubleshoot and repair faults on the air systems and ABS brakes.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, service and maintain the ABS brake system

III. ENABLING OBJECTIVES:

- Identify components and discuss operation of the ABS brake system
- Describe the operation and service procedures of the air dryer
- Describe the operation of the WABCO Anti-skid Brake system
- Describe service procedures of the WABCO Anti-skid Brake system
- Diagnosis, service and repair ABS brake valves
- Troubleshoot, diagnose and repair faults in the WABCO Anti-skid Brake system

IV. LEARNER ACTIVITIES:

- Attend facilitator-led lecture / demonstration discussing the WABCO Anti-skid Brake system
- Participate in facilitator-provided exercises in troubleshooting, diagnosing faults and repairing WABCO ABS brake system components, functions and service procedures

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MODULE G: FRONT & REAR SUSPENSION and STEERING

I. INTRODUCTION:

The New Flyer Transit Bus uses an "I" beam front axle and air bags. The bus is also equipped with a kneeling system. This module of instruction provides information necessary to properly maintain the front and rear suspension, maintain steering adjustments and diagnose and repair the power steering system.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, service and maintain the suspension and steering system

III. ENABLING OBJECTIVES:

- Identify and locate components of the steering and suspension systems
- Describe fluid flow and operation of the power steering system
- Describe procedure to replace air bags
- Diagnose and repair power steering faults
- Perform steering adjustments
- Troubleshooting, diagnosis and service the kneeling system

IV. LEARNER ACTIVITIES:

- Attend lecture / demonstration discussing the suspension and steering system
- Participate in facilitator-provided exercises performing air bag height adjustments, steering adjustments, troubleshooting, repair and adjustments of the power steering and kneeling system

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MODULE H: BODY & STRUCTURE

I. INTRODUCTION:

This module of instruction will provide you with the knowledge and skills necessary to efficiently repair the body panels, structure and flooring of the bus.

II. COURSE OBJECTIVE:

- Accurately and efficiently use the materials to effectively repair the body and structure on the New Flyer Transit Bus

III. ENABLING OBJECTIVES:

- Correctly locate and identify components on the bus
- Identify different materials used in the bus construction
- Identify different sealants and adhesives used in the bus construction
- Correctly locate various repair procedures outlined in the service manuals

IV. LEARNER ACTIVITIES:

- Attend facilitator-led lecture / demonstration providing an overview of the New Flyer construction and location of coach components
- Participate in facilitator-led hands-on exercise demonstrating the use of sealant and adhesives
- Participate facilitator-provided hands-on exercise of use of flooring materials, panel replacement
- Participate facilitator-provided hands-on exercise of welding procedures and structure replacement

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MODULE I: PARTS (Use of Manuals)

I. INTRODUCTION:

This module of instruction will provide you with the knowledge and skills necessary to efficiently use the Service, Parts and Operators manuals.

II. COURSE OBJECTIVE:

- Accurately and efficiently use the Service, Parts and Operators Manuals to require the necessary information on the New Flyer Transit Bus

III. ENABLING OBJECTIVES:

- Correctly locate and identify components on the bus
- Identify components and discuss structure of the parts manuals
- Identify the parts numbering system
- Correctly locate various repair procedures outlined in the service manuals
- Describe use of CD-ROM based manuals on Windows based PC

IV. LEARNER ACTIVITIES:

- Attend facilitator-led lecture / demonstration providing an overview of the New Flyer Construction, location of coach systems and operation
- Participate in facilitator-led hands-on exercise demonstrating the use of manuals, searching for information and interpretation of codes and nomenclature
- Participate in facilitator-provided hands-on exercise of use of computer-based manuals on CD-ROM disc

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MODULE J: EMP COOLING SYSTEM

I. INTRODUCTION:

This module of instruction provides information and knowledge necessary to safely and efficiently perform maintenance on the EMP cooling system.

II. COURSE OBJECTIVE:

- Service, troubleshoot and repair the system

III. ENABLING OBJECTIVES:

- Identify components of the EMP system
- Discuss the function and operation of the system components
- Troubleshoot, diagnose and repair faults in the system

IV. LEARNER ACTIVITIES:

- Attend facilitator-led discussion on the cooling system
- Attend facilitator-led demonstration on the operation of the system
- Participate in facilitator-led exercises of diagnosing, troubleshooting and repair of the cooling system

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MODULE K: OPERATOR ORIENTATION

I. INTRODUCTION:

New Flyer buses are some of the most advanced transit coaches in North America. Some of latest technology available is found on this coach. This module of instruction will provide you with the knowledge and skills necessary to safely and efficiently operate the coach.

II. COURSE OBJECTIVE:

- Safely and efficiently manage all operating systems, safety, emergency functions and emergency procedures of the New Flyer Transit Bus

III. ENABLING OBJECTIVES:

- Identify vehicle and passenger safety procedures
- Demonstrate coach emergency procedures
- Demonstrate operation of the New Flyer Transit Bus
- Operating controls
- Perform pre-operational functional and safety checks
- Replenish washer fluids, engine oil, transmission fluid, and coolant levels
- Locate and re-set tripped circuit breakers

IV. LEARNER ACTIVITIES:

- Attend facilitator-led lecture / demonstration providing an overview of the New Flyer
- Construction, location of service access points, locating and resetting tripped circuit breakers, operation of coach systems and safety devices
- Participate in facilitator-led hands-on exercise demonstrating the position and operation of all operational, safety devices and emergency functions and procedures
- Participate facilitator-provided hands-on exercise of daily service routines, checking and adjusting fluid levels, refueling and emergency procedures

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MODULE L: ENGINE MAINTENANCE

1. INTRODUCTION:

The engine utilizes an electronic engine control system. Diagnosis of faults and determination of engine functions are accomplished by use of the diagnostic program. The program is PC based on a laptop computer. This module of instruction provides detailed information on the diagnosis of faults and determination of engine functions.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, service and maintain the engine.

III. ENABLING OBJECTIVES:

- Identify components of the Electronic Engine Control System
- Discuss operation and function of components associated with the Electronic Engine Control System
- Utilize the diagnostic program and laptop computer to determine engine faults, and re-configure engine operating characteristics
- Perform running repairs on the engine

IV. LEARNER ACTIVITIES:

- Attend facilitator led presentation on the use of a laptop computer and the diagnostic program to determine faults of the engine.
- Participate in facilitator led exercise to troubleshoot, diagnose, repair and adjust the engine
- Participate in facilitator provided exercise to troubleshoot, diagnose, repair and adjust the engines, using approved equipment and tools.

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MODULE M: HYBRID PROPULSION SYSTEM MAINTENANCE

I. INTRODUCTION:

This module of instruction is provided to afford you with information and knowledge to perform troubleshooting and internal adjustments or repairs to the hybrid propulsion system.

II. COURSE OBJECTIVE:

- Diagnose, troubleshoot and perform internal adjustment and repairs to the hybrid drive system.
- Diagnose, troubleshoot and repair the energy storage system.

III. ENABLING OBJECTIVES:

- Identify internal components and functions of the hybrid drive
- Identify "in-frame" internal repairs afforded to the hybrid drive
- Perform internal adjustments and repairs to the hybrid drive in accordance with the manufacturer's recommendations.

IV. LEARNER ACTIVITIES:

- Attend facilitator led discussion / demonstration discussing internal repairs and adjustments afforded to the hybrid drive.
- Participate in facilitator provided exercise to perform internal repairs and adjustments to the hybrid drive.
- Participate in facilitator provided exercise to perform repairs and adjustments to the energy storage system.

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MODULE N: HVAC - AIR CONDITIONING MAINTENANCE

I. INTRODUCTION:

The air conditioning system utilized on this coach encumbers some of the latest technology available for coach application, with it's circuit board technology, self-diagnostic capabilities and multiplex wiring enhancements. This module of instruction provides information to afford you knowledge and skills necessary to maintain the system.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, service and maintain the air conditioning system.

III. ENABLING OBJECTIVES:

- Identify components of the air conditioning system.
- Discuss operating principles of the air conditioning system.
- Discuss electrical interface and multiplex wiring systems of the A/C system.
- Discuss the micro and circuit board controls of the air conditioning system.
- Troubleshoot, diagnose and repair faults of the air conditioning system.

IV. LEARNER ACTIVITIES:

- Attend facilitator led discussion / demonstration addressing the conditioning system, troubleshooting, diagnosing and repair procedures.
- Participate in facilitator provided exercise in troubleshooting, diagnosing and repair of the air conditioning system.

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MODULE O: DESTINATION SIGNS

I. INTRODUCTION:

This module of instruction will provide you with the knowledge and skills necessary to perform repairs and maintenance to electronic route signs.

II. COURSE OBJECTIVE:

- Troubleshoot, diagnose, service and maintain the electronic route signs.

III. ENABLING OBJECTIVES:

- Identify parts and components of the sign
- Discuss principle of operation and function of the sign
- Troubleshoot, diagnose, remove and replace failed components

IV. LEARNER ACTIVITIES:

- Attend facilitator provided lecture / demonstration discussing components, principle of operation, function, troubleshooting procedures, diagnosis and parts replacement of the sign.