

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

Contents

INTERNET IN-PROCESS SITE	10
VEHICLE STABILITY	10
ROLLOVER STABILITY	10
ROADABILITY	11
SERVICEABILITY	11
CONSTRUCTION DOCUMENTATION	12
OPERATIONS AND SERVICE DOCUMENTATION	13
NFPA REQUIRED DOCUMENTATION FORMAT - CD-ROM	13
STATEMENT OF EXCEPTIONS	14
CARRYING CAPACITY	14
TESTING	16
ROAD TEST	16
LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST	16
TEST SEQUENCE	16
1. RESERVE CAPACITY TEST	16
2. ALTERNATOR PERFORMANCE TEST	17
TEST AT IDLE	17
TEST AT FULL LOAD	17
3. LOW VOLTAGE ALARM TEST	17
LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST	17
DOCUMENTATION	17
UL 120/240 VAC CERTIFICATION	18
DOCUMENTATION	18
DIELECTRIC VOLTAGE WITHSTAND TEST	19
WARRANTY	19
GENERAL LIMITED WARRANTY - ONE (1) YEAR	19
LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS	19
STRUCTURAL WARRANTY - TEN (10) YEARS	19
PAINT LIMITED WARRANTY - TEN (10) YEARS	20
GRAPHICS LIMITED WARRANTY	20
CONSTRUCTION PERIOD	20
OVERALL HEIGHT	20
OVERALL LENGTH	20
PRE-CONSTRUCTION CONFERENCE	20
FINAL INSPECTION CONFERENCE	20
DELIVERY AND DEMONSTRATION	21
MODEL	22
MODEL YEAR	22
COUNTRY OF SERVICE	22
APPARATUS TYPE	22
VEHICLE TYPE	22
AXLE CONFIGURATION	22
GROSS AXLE WEIGHT RATINGS FRONT	22
GROSS AXLE WEIGHT RATINGS REAR	22
CAB STYLE	23
CAB FRONT FASCIA	24
FRONT GRILLE	24
CAB PAINT EXTERIOR	24
CAB PAINT MANUFACTURER	24
CAB PAINT PRIMARY/LOWER COLOR	24
CAB PAINT WARRANTY	25
CAB PAINT INTERIOR	25
CAB ENTRY DOORS	25

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB ENTRY DOOR TYPE	25
LH EXTERIOR REAR COMPARTMENT	25
LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING	25
LH EXTERIOR COMPARTMENT INTERIOR FINISH	25
RH EXTERIOR REAR COMPARTMENT	25
RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING	26
RH EXTERIOR COMPARTMENT INTERIOR FINISH	26
CAB STRUCTURAL WARRANTY	26
CAB TEST INFORMATION	26
ELECTRICAL SYSTEM	26
APPARATUS WIRING PROVISION	26
MULTIPLEX DISPLAY	26
DATA RECORDING SYSTEM	27
POWER & GROUND STUD	27
AUXILIARY POWER & GROUND STUD	27
EXTERIOR ELECTRICAL TERMINAL COATING	27
ENGINE	28
CAB ENGINE TUNNEL	28
DIESEL PARTICULATE FILTER CONTROLS	28
ENGINE PROGRAMMING HIGH IDLE SPEED	28
ENGINE HIGH IDLE CONTROL	28
ENGINE PROGRAMMING ROAD SPEED GOVERNOR	28
AUXILIARY ENGINE BRAKE	29
AUXILIARY ENGINE BRAKE CONTROL	29
FLUID FILLS	29
ELECTRONIC ENGINE OIL LEVEL INDICATOR	29
ENGINE WARRANTY	29
ENGINE PROGRAMMING REMOTE THROTTLE	29
ENGINE PROGRAMMING IDLE SPEED	29
ENGINE FAN DRIVE	29
ENGINE COOLING SYSTEM	30
ENGINE COOLANT	30
ELECTRONIC COOLANT LEVEL INDICATOR	31
COOLANT HOSES	31
ENGINE AIR INTAKE	31
ENGINE EXHAUST SYSTEM	31
ENGINE EXHAUST ACCESSORIES	31
TRANSMISSION	32
TRANSMISSION MODE PROGRAMMING	32
TRANSMISSION FEATURE PROGRAMMING	32
ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR	32
TRANSMISSION SHIFT SELECTOR	33
TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE	33
TRANSMISSION COOLING SYSTEM	33
TRANSMISSION WARRANTY	33
LH PTO	33
LH PTO MODEL	33
PTO LOCATION	33
PTO CONTROL	33
DRIVELINE	34
FUEL FILTER/WATER SEPARATOR	34
FUEL LINES	34
FUEL SHUTOFF VALVE	34
FUEL TANK	34

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FUEL TANK FILL PORT	34
FRONT AXLE.....	35
FRONT AXLE WARRANTY	35
FRONT WHEEL BEARING LUBRICATION	35
FRONT SHOCK ABSORBERS.....	35
FRONT SUSPENSION	35
STEERING COLUMN/ WHEEL	35
POWER STEERING PUMP.....	35
ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR	36
FRONT AXLE CRAMP ANGLE	36
POWER STEERING GEAR.....	36
CHASSIS ALIGNMENT	36
REAR AXLE	36
REAR AXLE DIFFERENTIAL LUBRICATION.....	36
REAR AXLE WARRANTY	36
REAR WHEEL BEARING LUBRICATION.....	36
VEHICLE TOP SPEED	36
REAR SUSPENSION.....	37
REAR SHOCK ABSORBERS	37
FRONT TIRE.....	37
REAR TIRE	37
REAR AXLE RATIO	37
TIRE PRESSURE INDICATOR	37
FRONT WHEEL	38
REAR WHEEL.....	38
BRAKE SYSTEM	38
FRONT BRAKES	39
REAR BRAKES.....	39
PARK BRAKE	39
PARK BRAKE CONTROL.....	39
AIR DRYER.....	39
FRONT BRAKE CHAMBERS	39
REAR BRAKE CHAMBERS.....	39
AIR COMPRESSOR	39
AIR GOVERNOR	39
MOISTURE EJECTORS	40
AIR SUPPLY LINES.....	40
REAR AIR TANK MOUNTING	40
WHEELBASE	40
REAR OVERHANG.....	40
FRAME	41
FRAME WARRANTY	41
FRAME CLEAR AREA.....	41
FRAME PAINT	42
FRONT BUMPER	42
FRONT BUMPER EXTENSION LENGTH.....	42
FRONT BUMPER EXTENSION FRAME WIDTH.....	42
FRONT BUMPER APRON.....	42
AIR HORN.....	42
AIR HORN LOCATION	42
AIR HORN RESERVOIR	42
ELECTRONIC SIREN SPEAKER	43
ELECTRONIC SIREN SPEAKER LOCATION	43
FRONT BUMPER TOW EYES	43

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB TILT SYSTEM.....	43
CAB TILT CONTROL RECEPTACLE.....	43
CAB WINDSHIELD	44
GLASS FRONT DOOR	44
GLASS TINT FRONT DOOR	44
GLASS REAR DOOR RH	44
GLASS TINT REAR DOOR RIGHT HAND	44
GLASS REAR DOOR LH.....	44
GLASS TINT REAR DOOR LEFT HAND	44
GLASS SIDE MID RH	45
GLASS TINT SIDE MID RIGHT HAND.....	45
GLASS SIDE MID LH.....	45
GLASS TINT SIDE MID LEFT HAND	45
CLIMATE CONTROL	45
CLIMATE CONTROL ACTIVATION	45
A/C CONDENSER LOCATION.....	45
A/C COMPRESSOR	46
CAB INSULATION	46
UNDER CAB INSULATION	46
INTERIOR TRIM FLOOR.....	46
INTERIOR TRIM VINYL.....	46
REAR WALL INTERIOR TRIM	46
HEADER TRIM.....	46
INTERIOR TRIM SUNVISOR	46
TRIM CENTER DASH.....	47
TRIM LH DASH	47
TRIM RH DASH	47
ENGINE TUNNEL TRIM	47
POWER POINT DASH MOUNT	47
STEP TRIM	47
INTERIOR DOOR TRIM	47
DOOR TRIM CUSTOMER NAMEPLATE	47
CAB DOOR TRIM REFLECTIVE	47
INTERIOR GRAB HANDLE "A" PILLAR.....	48
INTERIOR GRAB HANDLE FRONT DOOR.....	48
INTERIOR GRAB HANDLE REAR DOOR	48
INTERIOR TRIM VINYL COLOR	48
INTERIOR ABS TRIM COLOR	48
INTERIOR FLOOR MAT COLOR	48
CAB PAINT INTERIOR DOOR TRIM	48
TRIM CENTER DASH INTERIOR PAINT.....	48
TRIM RIGHT HAND DASH INTERIOR PAINT	48
DASH PANEL GROUP	48
SWITCHES CENTER PANEL.....	49
SWITCHES LEFT PANEL.....	49
SWITCHES RIGHT PANEL	49
SEAT BELT WARNING	49
SEAT MATERIAL.....	49
SEAT COLOR	49
SEAT BACK LOGO.....	49
SEAT DRIVER	50
SEAT BACK DRIVER	50
SEAT OFFICER	50
SEAT BACK OFFICER	51

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

POWER SEAT WIRING	51
SEAT REAR FACING OUTER LOCATION	51
SEAT CREW REAR FACING OUTER	51
SEAT BACK REAR FACING OUTER	52
SEAT MOUNTING REAR FACING OUTER	52
SEAT BELT ORIENTATION CREW	52
SEAT FRAME REAR FACING CENTER	52
SEAT FRAME REAR FACING CENTER STORAGE ACCESS	52
SEAT FORWARD FACING CENTER LOCATION	52
SEAT CREW FORWARD FACING CENTER	53
SEAT BACK FORWARD FACING CENTER	53
SEAT MOUNTING FORWARD FACING CENTER	53
SEAT FRAME FORWARD FACING	53
SEAT FRAME FORWARD FACING STORAGE ACCESS	54
CAB FRONT UNDERSEAT STORAGE ACCESS	54
SEAT COMPARTMENT DOOR FINISH	54
WINDSHIELD WIPER SYSTEM	54
ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR	54
CAB DOOR HARDWARE	54
DOOR LOCKS	54
DOOR LOCK LH REAR CAB COMPARTMENT	55
DOOR LOCK RH REAR CAB COMPARTMENT	55
POWER DOOR LOCK COMPARTMENT ACTIVATION	55
GRAB HANDLES	55
REARVIEW MIRRORS	55
REARVIEW MIRROR HEAT SWITCH	55
TRIM LOWER SIDE	55
CAB FENDER	55
MUD FLAPS FRONT	55
CAB EXTERIOR FRONT & SIDE EMBLEMS	56
CAB EXTERIOR MODEL NAMEPLATE	56
IGNITION	56
BATTERY	56
BATTERY TRAY	56
BATTERY CABLE	56
BATTERY JUMPER STUD	56
ALTERNATOR	57
BATTERY CONDITIONER	57
BATTERY CONDITIONER DISPLAY	57
AUXILIARY AIR COMPRESSOR	57
ELECTRICAL INLET	57
ELECTRICAL INLET LOCATION	57
ELECTRICAL INLET CONNECTION	57
ELECTRICAL INLET COLOR	57
HEADLIGHTS	57
FRONT TURN SIGNALS	58
HEADLIGHT LOCATION	58
SIDE TURN/MARKER LIGHTS	58
MARKER AND ICC LIGHTS	58
HEADLIGHT AND MARKER LIGHT ACTIVATION	58
GROUND LIGHTS	58
STEP LIGHTS	58
ENGINE COMPARTMENT LIGHT	58
SIDE SCENE LIGHTS	58

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SIDE SCENE LIGHT LOCATION	58
SIDE SCENE ACTIVATION.....	59
INTERIOR OVERHEAD LIGHTS.....	59
MAP LIGHTS.....	59
DO NOT MOVE APPARATUS LIGHT	59
MASTER WARNING SWITCH.....	59
HEADLIGHT FLASHER	59
HEADLIGHT FLASHER SWITCH.....	59
INBOARD FRONT WARNING LIGHTS.....	59
INBOARD FRONT WARNING LIGHTS COLOR	60
FRONT WARNING SWITCH	60
INTERSECTION WARNING LIGHTS.....	60
INTERSECTION WARNING LIGHTS COLOR.....	60
INTERSECTION WARNING LIGHTS LOCATION	60
SIDE WARNING LIGHTS	60
SIDE WARNING LIGHTS COLOR.....	60
SIDE WARNING LIGHTS LOCATION.....	60
SIDE AND INTERSECTION WARNING SWITCH.....	60
SIREN CONTROL HEAD.....	60
HORN BUTTON SELECTOR SWITCH	61
AIR HORN ACTIVATION	61
BACK-UP ALARM.....	61
INSTRUMENTATION.....	61
RADIO	64
AM/FM ANTENNA	64
CAMERA	64
CAB EXTERIOR PROTECTION.....	64
FIRE EXTINGUISHER	64
ROAD SAFETY KIT	64
DOOR KEYS.....	64
WARRANTY.....	64
OPERATION MANUAL	65
ENGINE AND TRANSMISSION OPERATION MANUALS	65
AS BUILT WIRING DIAGRAMS.....	65
CHASSIS MODIFICATIONS.....	66
LUBRICATION AND TIRE DATA PLATE	66
VEHICLE DATA PLATE	66
OVERALL HEIGHT, LENGTH DATA PLATE (US).....	66
ACCIDENT PREVENTION	67
PERSONNEL CAPACITY	67
ACCIDENT PREVENTION	67
WEARING HELMET WARNING	67
FRONT BUMPER	67
BUMPER GRAVELSHIELD	67
HURST STREAMLINE HYDRAULIC TOOL CONNECTION.....	67
AIR HORN(S).....	67
MOTOR DRIVEN SIREN	67
SIREN ACTIVATION.....	68
FLOOR SWITCH MODIFICATION	68
FRONT TOW PROVISIONS	68
EXHAUST	68
RADIO ANTENNA INSTALLATION	68
RADIO/ANTENNA INSTALLATION.....	69
SHORE POWER AUTO-EJECT RECEPTACLE MODIFICATION.....	69

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SEAT BELT COLOR	69
SEAT BELT WEB LENGTH - CUSTOM CAB.....	69
SEAT BELT / VDR SYSTEM - CUSTOM CAB.....	69
STORAGE MODULE	69
EQUIPMENT HOOKS.....	69
CAB STEP LIGHTS	70
CAB STEP KICK PANELS.....	70
CAB CRASH TEST CERTIFICATION	70
CAB MIRRORS, DRIVER ADJUSTABLE	70
CAB TRIM REAR CORNERS	70
MUDFLAPS.....	70
AIR BRAKE SYSTEM QUICK BUILD-UP	70
MODIFY WHEELBASE	70
FUEL FILL	71
FUEL FILL	71
BODY DESIGN	71
EXTERIOR ALUMINUM BODY	72
ROOF CONSTRUCTION.....	72
BODY SUBFRAME	72
BODY MOUNTING	73
10" REAR STEP BUMPER	73
REAR TOW EYES	73
GROUND LIGHTS	73
WHEEL WELL EXTERIOR PANEL	73
STAINLESS STEEL BODY FENDERS	73
WHEEL WELL LINERS.....	73
SCBA CYLINDER COMPARTMENTS	73
ALUMINUM BODY PAINT SPECIFICATIONS.....	74
BODY PAINT PREPARATION.....	74
PAINT PROCESS	74
MACHINE POLISHED	74
PAINT - ENVIRONMENTAL IMPACT.....	74
PAINT FINISH - SINGLE COLOR.....	75
BODY UNDERCOATING.....	75
UNDERCOAT WARRANTY.....	75
PAINT WARRANTY	75
COMPARTMENT INTERIOR FINISH.....	75
ROOF COMPARTMENT INTERIOR FINISH	75
REFLECTIVE STRIPE	76
REFLECTIVE STRIPE - CAB SIDE	76
REFLECTIVE STRIPE - CAB FRONT	76
REFLECTIVE STRIPE - CAB DOOR INTERIOR	76
REFLECTIVE STRIPE - BODY SIDES.....	76
CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS	77
LETTERING	77
SIDE CAB DOOR LETTERING	77
UPPER BODY SIDE LETTERING	77
REAR BODY LETTERING.....	77
FRONT OF CAB LETTERING	78
CAB ROOF LETTERING	78
CUSTOM DECAL.....	78
SUPPLIED DECALS	78
EXTERIOR COMPARTMENT DOORS	79
ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)	79

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

BODY HEIGHT MEASUREMENTS	80
THREE (3) UPPER BODY COMPARTMENTS (INDIVIDUAL)	81
TRANSVERSE ROOF COMPARTMENT - SHELF TRAC	81
SIDE ROOF COMPARTMENT - SHELF TRAC	81
ROOF COMPARTMENT - VERTICAL PARTITION	81
UPPER BODY WALKWAY	81
WALKWAY LIGHTS	82
ROOF ACCESS STAIRWAY	82
STAIRWAY HANDRAILS	82
WALKWAY LIGHTS	82
FOLD-DOWN STEP	82
REAR BODY HANDRAILS	82
BODY WIDTH DIMENSIONS	83
STREETSIDE COMPARTMENT - FRONT (S1)	84
STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)	86
COMPARTMENT LAYOUT	86
STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)	88
COMPARTMENT LAYOUT	88
STREETSIDE COMPARTMENT - REAR (S4)	90
COMPARTMENT LAYOUT	90
CURBSIDE COMPARTMENT - FRONT (C1)	92
COMPARTMENT LAYOUT	92
CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)	94
COMPARTMENT LAYOUT	94
CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)	96
COMPARTMENT LAYOUT	96
CURBSIDE COMPARTMENT - REAR (C4)	97
COMPARTMENT LAYOUT	97
ROOF ACCESS STAIRWAY	99
STAIRWAY HANDRAILS	99
UPPER BODY COMPARTMENT - STREETSIDE	99
UPPER BODY COMPARTMENT - CURBSIDE	100
ROPE TIE-OFF OR PORTABLE WINCH RECEIVERS	100
FRONT GRAVEL GUARDS	101
ROLL-OUT AWNING CURBSIDE	101
REAR HURST CONNECTION	102
LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC	102
12 VOLT MULTIPLEX CONTROL CENTER	104
BATTERY SYSTEM	104
BATTERY SWITCH	105
BATTERY SOLENOID	105
BATTERY CONDITIONER	105
SHORE POWER INLET	105
ENGINE COMPARTMENT LIGHT	105
CAB HAZARD WARNING LIGHT	106
BACK-UP ALARM	106
REAR VIEW CAMERA	106
TAIL LIGHTS	106
MIDSHIP MARKER/TURN SIGNAL	106
MARKER LIGHTS	106
CAB STEP LIGHTS / GROUND LIGHTS	106
LICENSE PLATE LIGHT	107
ELECTRONIC SIREN	107
SIREN SPEAKER	107

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SIDE SCENE LIGHTS	107
REAR SCENE LIGHTS.....	107
SIGTRONICS INTERCOM SYSTEM.....	107
INTERCOM SYSTEM INSTALLATION	107
WARNING LIGHT PACKAGE.....	108
UPPER LEVEL OPTICAL WARNING DEVICES.....	109
LOWER LEVEL OPTICAL WARNING DEVICES	110
LINE VOLTAGE ELECTRICAL SYSTEM	111
ONAN PTO GENERATOR.....	111
GENERATOR ENGAGEMENT	111
WARRANTY PERIOD.....	112
GENERATOR SPLASH GUARD	112
GENERATOR MOUNTING.....	112
MANUALS AND SCHEMATICS.....	112
POWER-TAKE-OFF GENERATOR DRIVE.....	112
ENGINE SPEED CONTROL.....	112
GENERATOR MONITORING PANEL	113
LOADCENTER.....	113
OUTLETS AND CIRCUITS	113
LINE VOLTAGE ELECTRICAL SYSTEM	113
GENERAL REQUIREMENTS.....	113
120/240 VAC SCENE LIGHTING	119
SIDE UPPER RECESSED SCENE LIGHTS.....	119
REAR UPPER RECESSED SCENE LIGHTS	120
COMMAND LIGHT TOWER WITH METAL HALIDE BULB OPTION AND LOWER BANK BACKLIGHT	120
EQUIPMENT PAYLOAD WEIGHT ALLOWANCE.....	121
EQUIPMENT	121
REMAINING NFPA MINOR EQUIPMENT BY PURCHASER	121
EQUIPMENT MOUNTING	122

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

INTERNET IN-PROCESS SITE

The Bidder shall post and maintain a website where the Merced County Fire Department will be able to view digital images of their apparatus as its being manufactured. The digital images shall be posted once a week starting when the body begins production or when the cab/chassis arrives and shall continue until the final completion of the apparatus.

VEHICLE STABILITY

ROLLOVER STABILITY

The apparatus shall meet the criteria defined below, or it shall be equipped with a stability control system defined below.

The apparatus shall meet the criteria defined in either of the following:

- 1) The apparatus shall remain stable to 26.5 degrees in both directions when tested on a tilt table in accordance with SAE J2180, *A Tilt Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks*.
- 2) The calculated or measured center of gravity (CG) shall be no higher than 80 percent of the rear axle track width.

Compliance shall be certified by testing, calculating, or measuring the apparatus or by comparing the apparatus to a compliant, substantially similar example apparatus, and the certification shall be delivered with the fire apparatus.

The example apparatus shall be considered substantially similar if it includes a chassis with the same or higher CG height, the same or narrower rear axle track width, the same or greater water tank size and CG height, the same type of front and rear suspension, and the same type and size of aerial device.

The apparatus shall be loaded with fuel, fire-fighting agents, hose, ladders, a weight of 250 lb in each seating position, and weight equivalent to the Miscellaneous Equipment Allowance as defined in NFPA 1901, 2009 Edition, Table 12.1.2.

If the apparatus is designed to meet a specified higher equipment loading or larger hose bed capacity or to carry additional ground ladders, these greater loads shall be included in the testing, calculating, or measuring.

The weight added to the fire apparatus for the purpose of test, calculation, or measurement shall be distributed to approximate typical in-service use of the fire apparatus while not exceeding the manufacturer's published individual compartment weight ratings.

If the apparatus is equipped with a stability control system, the system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer, and individual wheel brake controls.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ROADABILITY

The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

- 1) From a standing start, the apparatus shall be able to attain a speed of 35 mph (55 km/hr) within 25 seconds on a level road.
- 2) The apparatus shall be able to attain a minimum top speed of 50 mph (80 km/hr) on a level road.
- 3) The apparatus shall be able to maintain a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent.

The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (85 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

SERVICEABILITY

The fire apparatus shall be designed to allow the manufacturer's recommended routine maintenance checks of lubricant and fluid levels to be performed by the operator without lifting the cab of a tilt-cab apparatus or without the need for hand tools.

Where special tools are required for routine service on any component of the apparatus, such tools shall be provided with the apparatus.

Apparatus components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CONSTRUCTION DOCUMENTATION

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

The manufacturers record of apparatus construction details, including the following information:

- 1) Owner's name and address
- 2) Apparatus manufacturer, model, and serial number
- 3) Chassis make, model, and serial number
 - a) GAWR of front and rear axles and GVWR
 - b) Front tire size and total rated capacity in pounds (kilograms)
 - c) Rear tire size and total rated capacity in pounds (kilograms)
 - d) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
 - e) Engine make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
 - f) Type of fuel and fuel tank capacity
 - g) Electrical system voltage and alternator output in amps
 - h) Battery make, model, and capacity in cold cranking amps (CCA)
 - i) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
- 4) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
- 5) Pump transmission make, model, serial number, and gear ratio
- 6) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
- 7) Water and Foam tank certified capacity in gallons or liters
- 8) Paint manufacturer and paint number(s)
- 9) Company name and signature of responsible company representative
- 10) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
- 11) Certification of compliance of the optical warning system
- 12) Siren manufacturer's certification of the siren
- 13) Written load analysis and results of the electrical system performance tests
- 14) Certification of slip resistance of all stepping, standing, and walking surfaces
- 15) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
- 16) If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions
- 17) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
- 18) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
- 19) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
- 20) If the apparatus has a fire pump, the certification of inspection and test for the fire pump
- 21) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
- 22) When the apparatus is equipped with a water tank, the certification of water tank capacity
- 23) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
- 24) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus
- 25) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
- 26) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
- 27) If the apparatus has a line voltage power source, the certification of the test for the power source
- 28) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
- 29) Any other required manufacturer test data or reports.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

OPERATIONS AND SERVICE DOCUMENTATION

The Contractor shall deliver with the fire apparatus at least two (2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted.

The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof.

The Contractor shall also deliver with the fire apparatus the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

- 1) Manufacturer's name and address
- 2) Country of manufacture
- 3) Source for service and technical information
- 4) Parts replacement information
- 5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
- 6) Wiring diagrams for low voltage and line voltage systems to include the following information:
 - a) Pictorial representations of circuit logic for all electrical components and wiring
 - b) Circuit identification
 - c) Connector pin identification
 - d) Zone location of electrical components
 - e) Safety interlocks
 - f) Alternator-battery power distribution circuits
 - g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- 7) Lubrication charts
- 8) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- 9) Precautions related to multiple configurations of aerial devices, if applicable
- 10) Instructions regarding the frequency and procedure for recommended maintenance
- 11) Overall apparatus operating instructions
- 12) Safety considerations
- 13) Limitations of use
- 14) Inspection procedures
- 15) Recommended service procedures
- 16) Troubleshooting guide
- 17) Apparatus body, chassis, and other component manufacturer's warranties
- 18) Special data required by this standard
- 19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

The Contractor shall deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

NFPA REQUIRED DOCUMENTATION FORMAT - CD-ROM

The vehicle construction details and the operations and service documentation as required per NFPA 1901 latest edition shall be provided on a CD-ROM. These manuals shall be divided into sections for ease of reference. There shall be two (2) copies of the CD-ROM provided with the completed vehicle.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

STATEMENT OF EXCEPTIONS

The Contractor shall deliver with the fire apparatus either a certification that the apparatus fully complies with all requirements of this standard or, alternatively, a Statement of Exceptions specifically describing each aspect of the completed apparatus that is not fully compliant with the requirements of this standard at the time of delivery.

The Statement of Exceptions shall contain, for each noncompliant aspect of the apparatus or missing required item, the following information:

- 1) A separate specification of the section of the applicable standard for which compliance is lacking
- 2) A description of the particular aspect of the apparatus that is not in compliance therewith or required equipment that is missing
- 3) A description of the further changes or modifications to the delivered apparatus that must be completed to achieve full compliance
- 4) Identification of the entity that will be responsible for making the necessary post delivery changes or modifications or for supplying and installing any missing required equipment to the apparatus to achieve full compliance with this standard

Prior to, or at the time of, delivery of the apparatus, the Statement of Exceptions shall be signed by an authorized agent of the entity responsible for final assembly of the apparatus and by an authorized agent of the purchasing entity, indicating mutual understanding and agreement between the parties regarding the substance thereof.

An apparatus that is delivered subject to a Statement of Exceptions other than a certification of full compliance shall not be placed in emergency service until the apparatus has been modified as necessary to accomplish full compliance with this standard.

CARRYING CAPACITY

The GAWR and the GCWR or GVWR of the chassis shall be adequate to carry the weight of the completed vehicle when loaded to its estimated in-service weight. The Body Manufacturer shall establish the estimated in service weight during the design of the vehicle

The estimated in-service weight shall include the following:

- 5) The chassis, body, and tank(s)
 - 1) Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
 - 2) Full water and other agent tanks
 - 3) *250 lb (114 kg) in each seating position
 - 4) Fixed equipment such as pumps, aerial devices, generators, reels, and air systems as installed
 - 5) Ground ladders, suction hose, designed hose load in their hose beds and on their reels
 - 6) An allowance for miscellaneous equipment that is the greatest of the values for type of vehicle per NFPA 1901, a Purchaser provided list of equipment to be carried with weights, or a Purchaser specified miscellaneous equipment allowance.

The Body Manufacturer shall engineer and design the vehicle such that the completed unit, when loaded to its estimated in-service weight, with all movable weights distributed as close as is practical to their intended in-service configuration, does not exceed the GVWR.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

A final Body Manufacturer's certification of the GVWR or GCWR, along with a certification of each GAWR, shall be supplied on a label affixed to the vehicle.

Apparatus Type	Equip. Storage Area	Apparatus Size	Equipment Allowance	
			lb.	kg.
Special Service Fire Apparatus	Minimum of 120 cu ft (3.4 cu mt) of enclosed compartmentation.	10,000 lb to 15,000 lb (4,500 kg to 7,000 kg) GVWR	2,000	910
		15,001 lb to 20,000 lb (7,001 kg to 9,000 kg) GVWR	2,500	1,135
		20,001 lb to 30,000 lb (9,001 kg to 14,000 kg) GVWR	3,000	1,350
		30,001 lb to 40,000 lb (14,001 kg to 18,000 kg) GVWR	4,000	1,800
		40,001 lb to 50,000 lb (18,001 kg to 23,000 kg) GVWR	6,000	2,700
		50,001 lb to 60,000 lb (23,001 kg to 27,000 kg) GVWR	8,000	3,600
		60,001 lb and up (27,001 kg) GVWR	10,000	4,500

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

TESTING

ROAD TEST

Road test shall be conducted in accordance with this section to verify that the completed apparatus is capable of compliance with Roadability Section.

The tests shall be conducted at a location and in a manner that does not violate local, state or provincial, or federal traffic laws.

The tests shall be conducted on dry, level, paved roads that are in good condition. The apparatus shall be loaded to its estimated in service weight.

The engine shall not operate in excess of the maximum governed speed. Acceleration tests shall consist of two runs in opposite directions over the same route. The fire apparatus shall attain a speed of 35 mph (55 km/hr) from a standing start within 25 seconds. The fire apparatus shall attain a minimum top speed of 50 mph (80 km/hr).

If the apparatus is equipped with an auxiliary braking system, the manufacturer shall road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

If the apparatus is equipped with an air brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil, or grease.

If the apparatus is equipped with a hydraulic brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil, or grease.

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

The vehicles low voltage electrical system shall be tested and certified by the manufacturer. The certified test results shall be delivered with the completed vehicle. Tests shall be performed when the air temperature is between 0°F and 110°F (–18°C and 43°C).

TEST SEQUENCE

The following three (3) tests shall be performed in the order in which they appear below. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes. Failure of any of these tests shall require a repeat of the sequence.

1. RESERVE CAPACITY TEST

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off, and the minimum continuous electrical load shall be activated for 10 minutes.

All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure of the battery system.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

2. ALTERNATOR PERFORMANCE TEST

TEST AT IDLE

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

TEST AT FULL LOAD

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test.

An alarm sounded by excessive battery discharge, as detected by the warning system required in 13.3.4, or a system voltage of less than 11.8 V dc for a 12 V nominal system, 23.6 V dc for a 24 V nominal system, or 35.4 V dc for a 42 V nominal system for more than 120 seconds shall be considered a test failure.

3. LOW VOLTAGE ALARM TEST

The following test shall be started with the engine off and the battery voltage at or above 12 V for a 12 V nominal system, 24 V for a 24 V nominal system, or 36 V for a 42 V nominal system.

With the engine shut off, the total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals.

The test shall be considered a failure if the alarm does not sound in less than 140 seconds after the voltage drops to 11.70 V for a 12 V nominal system, 23.4 V dc for a 24 V nominal system, or 35.1 V for a 42 V nominal system.

The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

DOCUMENTATION

The manufacturer shall deliver the following with the fire apparatus:

- 7) Documentation of the electrical system performance tests
- 1) A written electrical load analysis, including the following:
 - 2) The nameplate rating of the alternator
 - a) The alternator rating
 - b) Each of the component loads specified that make up the minimum continuous electrical load
 - c) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load
 - d) Each individual intermittent electrical load.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

UL 120/240 VAC CERTIFICATION

The 120/240 volt electrical system shall be tested and certified by Underwriters Laboratories, to perform as listed below;

The prime mover shall be started from a cold start condition, and the unloaded voltage and frequency shall be recorded.

The line voltage electrical system shall be loaded to at least 100 % of the continuous rated wattage stated on the power source specification label. Testing with a resistive load bank shall be permitted.

The power source shall be operated in the manner specified by the apparatus manufacturer as documented on instruction plates or in operation manuals. The power source shall be operated at a minimum of 100 % of the continuous rated wattage as stated on the power source specification label for a minimum of 2 hours.

The load shall be adjusted to maintain the output wattage at or above the continuous rated wattage during the entire 2-hour test.

The following conditions shall be recorded at least every 1/2 hour during the test:

- e) The power source output voltage, frequency, and amperes
 - 1) The prime mover's oil pressure, water temperature, and transmission temperature, if applicable
 - 2) The power source hydraulic fluid temperature, if applicable
 - 3) The ambient temperature and power source air inlet temperature

The following conditions shall be recorded once during the test for power sources driven by dedicated auxiliary internal combustion engines:

- 4) Altitude
 - 1) Barometric pressure
 - 2) Relative humidity

If the generator is driven by the chassis engine and the generator allows for operation at variable speeds, the chassis engine speed shall be reduced to the lowest rpm allowed for generator operation and the voltage and frequency shall be recorded.

The load shall be removed, and the unloaded voltage and frequency shall be recorded.

Voltage shall be maintained within ± 10 % of the voltage stated on the power source specification label during the entire test. Frequency shall be maintained within ± 3 Hz of the frequency stated on the power source specification label during the entire test.

The total continuous electrical loads, excluding those loads associated with the equipment defined in NFPA 22.15.7.3.11.2, shall be applied during the testing unless an auxiliary engine drives the power source.

If the apparatus is equipped with a fire pump, the 2-hour certification test of the power source shall be completed with the fire pump pumping at 100 % capacity at 150 psi (1000 kPa) net pump pressure. The test shall be permitted to be run concurrently with the pump certification test.

DOCUMENTATION

The Body Manufacturer shall deliver the following with the fire apparatus:

The results of each test shall be recorded on an appropriate form and provided with the delivery of the fire apparatus.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

DIELECTRIC VOLTAGE WITHSTAND TEST

The line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for 1 minute. The testing shall be performed after all body work has been completed.

The test shall be conducted as follows:

- 3) Isolate the power source from the panel board and disconnect any solid state low voltage components
- 1) Connect one lead of the dielectric tester to all the hot and neutral buses tied together
- 2) Connect the other lead to the fire apparatus frame or body
- 3) Close any switches and circuit breakers in the circuit(s)
- 4) Apply the dielectric voltage for 1 minute in accordance with the testing equipment manufacturer's instructions

The electrical polarity of all permanently wired equipment, cord reels, and receptacles shall be tested to verify that wiring connections have been properly made.

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to fire fighters in normal operations.

If the apparatus is equipped with a transfer switch, it shall be tested to verify operation and that all non grounded conductors are switched.

Electrical light towers, floodlights, motors, fixed appliances, and portable generators shall be operated at their full rating or capacity for 30 minutes to ensure proper operation.

WARRANTY

A full statement shall be provided of the warranties for the vehicle(s) being bid. Warranties should clearly describe the terms under which the vehicle manufacturer accepts responsibility for the cost to repair defects caused by faulty design, quality of work or material, and for the applicable period of time after delivery.

Cost of repairs refers to all costs related thereto including, but not limited to, the cost of materials, and the cost of labor.

The Body Manufacturer shall warrant all materials and accessories used on the vehicle(s), whether fabricated by manufacturer or purchased from an outside source, and will deal directly with the Merced County Fire Department on all warranty work.

GENERAL LIMITED WARRANTY - ONE (1) YEAR

The vehicle shall be free of defects in material and workmanship for a period of one (1) year or 12,000 miles, whichever occurs first starting thirty (30) days after the original invoice date.

The Contractor must be the "single source" coordinator of all warranties on the vehicle.

LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS

The vehicle low voltage electrical system shall be free of defects in material and workmanship for a period of five (5) years or 60,000 miles, whichever occurs first, starting thirty (30) days after the original invoice date.

STRUCTURAL WARRANTY - TEN (10) YEARS

The body shall be free of structural or design failure or workmanship for a period of ten (10) years, or 100,000 miles whichever occurs first, starting thirty (30) days after the original invoice date.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

PAINT LIMITED WARRANTY - TEN (10) YEARS

The body shall be free of bubbling, or peeling as a result of a defect in the method of manufacture for a period of ten (10) years, or 100,000 miles whichever occurs first, starting thirty (30) days after the original invoice date.

GRAPHICS LIMITED WARRANTY

The 3M graphics installation shall be warranted for a period of two (2) years. The 3M materials installed on completed vehicles shall be warranted for seven (7) years. The 3M Diamond grade film (if specified) shall be warranted for ten (10) years.

CONSTRUCTION PERIOD

The completed vehicle shall be delivered within three hundred sixty (360) days after receipt of a purchase order, or contract.

Contractor shall not be held liable for delays of chassis delivery due to accidents, strikes, floods or other events not subject to their control. Contractor shall provide immediate written notice to Merced County Fire Department as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

OVERALL HEIGHT

The overall height (OAH) of the vehicle shall be approximately 128"(10' - 8") from the ground. This measurement shall be taken on flat ground with the tires properly inflated, in the unloaded condition, at that highest point of the vehicle.

OVERALL LENGTH

The overall length (OAL) of the vehicle shall be approximately 391"(32' - 7").

PRE-CONSTRUCTION CONFERENCE

A pre-construction conference shall be required, at the Contractor's factory for three (3) personnel from the Merced County Fire Department to finalize all construction details prior to manufacturing.

The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the pre-construction conference. Any travel distance greater than 250 miles shall be by non-stop commercial air travel.

FINAL INSPECTION CONFERENCE

A final inspection conference shall be required, at the Contractor's factory for three (3) personnel from the Merced County Fire Department to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed.

The Contractor shall at his/her expense, provide transportation, lodging, rental car and meal expenses during the final inspection conference. Any travel distance greater than 250 miles shall be by non-stop commercial air travel.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

DELIVERY AND DEMONSTRATION

The Contractor shall be responsible for the delivery of the completed unit to the Merced County Fire Departments location. On initial delivery of the apparatus, the Contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to representatives of the Merced County Fire Department regarding the operation, care, and maintenance of the apparatus and equipment supplied at Merced County Fire Department location.

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Merced County Fire Department.

After delivery of the apparatus, the Merced County Fire Department shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

MODEL

The chassis shall be a Metro Star model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2010 model year.

COUNTRY OF SERVICE

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis or their OEM needed to be in compliance with those regulations.

APPARATUS TYPE

The apparatus shall be a rescue vehicle designed for emergency service use which shall include the functions of a multipurpose vehicle which primarily provides support services at emergency scenes.

VEHICLE TYPE

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

AXLE CONFIGURATION

The chassis shall feature a 4 X 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 20,000 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 24,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB STYLE

The cab shall be a custom, fully enclosed, LFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 141.50 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 58.00 inches from the front floor to the headliner in the non-raised roof area and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 52.00 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.00 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 31.00 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 10.88 inches deep X 31.50 inches wide. The intermediate step shall measure approximately 8.63 inches deep X 33.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

The first step for the crew area shall measure approximately 10.88 inches deep X 21.50 inches wide. The intermediate step shall measure approximately 11.50 inches deep X 23.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.090 of an inch thick, one hundred percent primary aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. Two (2) chrome plated molded plastic bezels shall be provided on each side around each set of two lamps.

FRONT GRILLE

The front cab fascia shall include a classic box style, polished stainless steel front grille with a Spartan logo. The grille shall measure approximately 40.00 inches wide at the top of tapering to 32.00 inches wide at the bottom X 33.00 inches high X 1.50 inches deep.

The grille shall include a minimum free air intake of 632.90 square inches shall be installed on the front of the cab.

The upper portion of the grille shall be hinged at the bottom so it can be opened to allow easy access for examination of the windshield wiper motor, linkage and other options mounted within that area. The upper portion of the grille shall be secured with two (2) flush push button latches.

CAB PAINT EXTERIOR

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper, the seams shall be sealed with SEM brand seam sealer and painted with two (2) to four (4) coats of an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The cab shall then be painted with the specific color designated by the customer with a minimum thickness of 2.00 mils of paint, followed by a clear top coat not to exceed 2.00 mils.

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be PPG FBCH 8001 White.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB PAINT WARRANTY

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

CAB PAINT INTERIOR

The visible cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

CAB ENTRY DOORS

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

CAB ENTRY DOOR TYPE

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

LH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) On-Scene brand Night Stik LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 9.00 inches long and shall include six (6) bright white LEDs.

LH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the left hand exterior compartment shall have a Zolatone #20-72 silver gray texture finish.

RH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) On-Scene Night Stik brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 9.00 inches in length and shall include six (6) bright white LEDs.

RH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the right hand exterior compartment shall have a Zolatone #20-72 silver gray texture finish.

CAB STRUCTURAL WARRANTY

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

CAB TEST INFORMATION

The cab shall have successfully achieved survival of the International crash test ECE-29, Addendum 28, Revision 1 as indicated below.

As part of the ECE regulation 29 test, the frontal area of the cab is struck by a 3,700 pound pendulum weight. The weight is brought back to a sixty degree angle and then the weight is released and allowed to swing forward, imparting some 32,600 pounds foot of force to the cab front face. The cab shall be so constructed that after the test, there will be minimal intrusion of the cab structure into the passenger area. The doors shall remain usable for both entry and exit. Also, as part of the test the cab roof must withstand a static load bearing test. The cab shall withstand a weight of over 60,000 pounds without permanent damage or collapse. The above tests shall be witnessed by and attested to by an independent third party. The test results shall be recorded on/by cameras, high speed imagers, accelerometers and strain gauges, with notarized copies of the letters verifying the test results and videos of said test shall be available upon request.

ELECTRICAL SYSTEM

The chassis shall include a single starting electrical system which shall include a 12 volt direct current Weldon brand of multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

APPARATUS WIRING PROVISION

An apparatus wiring panel shall be installed on the officer side bulkhead below the dash which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

MULTIPLEX DISPLAY

The multiplex electrical system shall include a Weldon Vista III display which shall be located on the left side of the dash in the switch panel. The Vista III shall feature a full color LCD display screen which includes a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be virtual controls for the auto climate control and on-board diagnostics. The display screen shall be video ready for back- up cameras, thermal cameras, and DVD.

The Vista III display shall measure approximately 10.38 inches wide X 7.50 inches overall. The display shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

DATA RECORDING SYSTEM

The chassis shall have a Weldon Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded:

- 5) Vehicle Speed
 - Acceleration
 - Deceleration
 - Engine Speed
 - Engine Throttle Position
 - ABS Event
 - Seat Occupied Status
 - Seat Belt Status
 - Master Optical Warning Device Switch Position
 - Time
 - Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system.

POWER & GROUND STUD

A 40 amp battery direct power and ground stud shall be provided and installed in the electrical distribution panel. The stud shall be size #10 and protected with a 40 amp circuit breaker.

AUXILIARY POWER & GROUND STUD

An auxiliary set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp load switched with the master power switch.

EXTERIOR ELECTRICAL TERMINAL COATING

All terminals exposed to the elements will be sprayed with a yellow protective rubberized coating to prevent corrosion.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ENGINE

The power plant for the vehicle shall offer a high pressure performance, turbo charged engine which shall feature a high pressure common rail fuel system. This system shall be coupled with a proven Holset turbo which delivers outstanding performance at ratings up to 360 HP. The Cummins ISC engine shall include replaceable mid-stop cylinder liners plus heavy duty roller followers, targeted piston cooling and 30% more efficient oil cooling for improved durability and reliability. The heavy duty design shall also feature stronger braking capacity.

The engine shall be EPA certified to meet the 2007 emissions standards without compromising performance, reliability or durability. The Cummins ISC 360 engine shall feature an air charge cooled engine which consists of an in line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 360 horse power at 2000 RPM which shall be governed at 2200 RPM. The torque rating shall feature 1050 foot pounds of torque at 1400 RPM with 506 cubic inches of displacement. The Cummins ISC 360 engine shall feature an electronic governor.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 23.00 inches high.

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral. There shall be an indication on the Vista screen for the high idle speed control.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

The engine shall include programming which will govern the top speed of the vehicle.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

AUXILIARY ENGINE BRAKE

A Jacobs engine compression brake, for the six (6) cylinder engine shall be provided. The engine compression brake shall actuate the vehicle's brake lights when engaged. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine brake shall activate upon zero 0% accelerator when in operation mode.

AUXILIARY ENGINE BRAKE CONTROL

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled via an off/low/high virtual button through the Vista display. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

FLUID FILLS

The front of the chassis shall accommodate fluid fills for the engine oil, and the power steering fluid through the grille. This area shall also accommodate checks for the engine oil, and power steering fluid.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

ENGINE WARRANTY

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

ENGINE PROGRAMMING REMOTE THROTTLE

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

ENGINE PROGRAMMING IDLE SPEED

The engine low idle speed will be programmed at 700 rpm.

ENGINE FAN DRIVE

The engine cooling system fan shall be direct drive belt driven on the engine.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the fire industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall utilize heavy-duty welds and be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a stacked, single depth package that provides the maximum cooling capacity for the specified engine as well as offers excellent serviceability. The main components shall include a surge tank, a charge air cooler, a recirculation shield, and a radiator.

Proposals unable to offer a stacked single depth cooling package shall not be considered.

There shall be a single depth core that allows greater efficiency, enhanced serviceability, and lighter weight with a higher ambient capability.

The cooling package core shall not protrude below the frame of the vehicle by more than 1.1 inch. This feature shall improve the angle of approach thereby reducing possible damage.

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall include a minimum of a 627 square inch core and shall be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded Polymer fan blade designed to provide long life in harsh environments. Polymer fans provide a significant weight reduction over metal fans providing longer life for fan clutch linings and bearings along with increased fan belt life.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a cap that meets the engine manufactures pressure requirements as well as the system design requirements.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance. When a center bumper compartment is installed an additional shield may be required to redirect the airflow into the coolers.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with welded side tanks. The charge air cooler shall have a minimum of a 390 square inch core and be bolted to the top of the radiator to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufactures requirements.

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees F.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ELECTRONIC COOLANT LEVEL INDICATOR

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

COOLANT HOSES

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the right hand side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame. This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the right hand side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the right hand side headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

ENGINE EXHAUST SYSTEM

The exhaust system shall include a diesel particulate filter and a diesel oxidation catalyst to meet current EPA standards.

The system shall utilize 0.065 inch thick stainless steel exhaust tubing between the engine turbo and the diesel particulate filter. This section of the exhaust system shall be wrapped with a thermal cover in order to retain the necessary heat for system regeneration. Zero leak clamps seal all system joints between the turbo and diesel particulate filter.

From the diesel particulate filter to the end of the tailpipe the system shall be plumbed with 0.065 inch thick aluminized steel tubing connected with overlapping band style clamps. The discharge shall terminate horizontally on the officer side of the vehicle ahead of the rear tires.

The exhaust system shall be mounted below the frame in the inboard position maximizing space for the body compartments.

ENGINE EXHAUST ACCESSORIES

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

TRANSMISSION

The drive train shall include an Allison Gen IV-E model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.65:1 (if applicable)
Rev	5.03:1

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will select five (5) speeds of operation. The sixth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

The EVS group package number 127 shall contain the 199 vocational package in consideration of the duty of this apparatus for rescue. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

An eight (8) pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission control module.

Function ID	Description	Wire assignment
C	PTO Request	143
F	Aux. Function Range Inhibit (Special)	101/142
G	PTO Enable Output (See Input Function C)	130
S	Neutral Indicator for PTO	145
	Signal Return	103

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

TRANSMISSION COOLING SYSTEM

The transmission shall include an air to oil cooler integrated into the lower portion of cooling package. The transmission cooling system shall meet all transmission manufacturer requirements. The cooling system shall feature a circuit provision located within the hydraulic transmission oil which shall provide for rapid warm up to the optimum transmission operating temperature.

TRANSMISSION WARRANTY

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

LH PTO

A Spartan supplied ten (10) bolt standard duty clutched drive PTO shall be installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch.

LH PTO MODEL

A ten (10) bolt Chelsea model 277-XMFJP-B5XD heavy duty transmission driven PTO shall be installed. The clutched shifted PTO is designed specifically for the Allison world transmission and provides torque ranges from 250 to 335 lb. ft.

PTO LOCATION

The transmission driven power take off (PTO) shall be mounted in the 9:00 o'clock position.

PTO CONTROL

The left hand power take off shall be controlled by the transmission. It will use a virtual switch on vista with text messages. Disable is displayed when switch is off. Enable is displayed when the switch is turned on. Active is displayed when the switch is on with positive engagement of the power take off.

Required operating conditions for enabling this function are:

- Throttle position is low
- Engine speed is within customer modifiable constant limits
- Output speed is within customer modifiable constant limits
- Park brake set

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

FUEL SHUTOFF VALVE

A fuel shutoff valve shall be installed in the fuel draw line at the primary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A second fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

FUEL TANK

The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 17.00 inches in height X 29.00 inches in length. The baffled tank shall be made of 14 gauge aluminized steel. The exterior of the tank shall be painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the hanger strap assemblies. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

FUEL TANK FILL PORT

The fuel tank fill ports shall be provided with the right fill port located in the middle position and the left fill ports located one (1) in the forward position and one (1) in the middle position of the fuel tank.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

FRONT AXLE WARRANTY

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

FRONT SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

FRONT SUSPENSION

The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

STEERING COLUMN/ WHEEL

The cab shall include a Douglas Autotech steering column shall be a seven (7) position tilt and 2.25 inch telescopic type with an 18.00 inch steering wheel located on the left side of the cab designating the driver's position. The steering wheel shall be covered with black absorbite padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

POWER STEERING PUMP

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

FRONT AXLE CRAMP ANGLE

The chassis shall have a front axle cramp angle of 48 degrees to the left and 44 degrees to the right.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 65 with an assist cylinder.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

REAR AXLE

The rear axle shall be a Meritor model RS-24-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a rated capacity of 24,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.50 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

REAR SUSPENSION

The single rear axle shall feature a Reyco 102AR air suspension with a single air bag on each side attached to a tapered forged drop leaf spring with one adjustable and one fixed torque rods.

The suspension shall feature dual air height control valves which shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. The suspension shall also include two premium shock absorbers, one each side.

The rear suspension capacity shall be rated at 21,000 to 27,000 pounds to meet the rear axle rating selected.

REAR SHOCK ABSORBERS

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

FRONT TIRE

The front tires shall be Michelin 315/80R-22.5 20PR "L" tubeless radial XZA1 highway tread.

The front tire stamped load capacity shall be 18,180 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 130 pounds per square inch.

The front tire US Fire Service Intermittent Usage load capacity shall be 20,000 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 130 pounds per square inch.

REAR TIRE

The rear tires shall be Michelin 11R-22.5 16PR "H" tubeless radial XDN2 all weather tread designed for exceptional traction and mileage.

The rear tire stamped load capacity shall be 24,020 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch.

The rear tire US Fire Service Intermittent Usage load capacity shall be 24,820 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch.

REAR AXLE RATIO

The rear axle ratio shall be 5.63:1.

TIRE PRESSURE INDICATOR

There shall be a voucher provided with the chassis for a dial style tire pressure indicator at the front tire valve stem and a pop up style tire pressure indicator at the rear tire valve stem. The indicator shall provide visual indication of pressure in the specific tire.

The tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50 inch X 9.00 inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator Anti-lock Braking System (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the tandem rear axle. The ATC system shall apply the ABS when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

Additional handling capabilities shall include Roll Stability Control (RSC) which shall monitor the vehicles rollover threshold based on the lateral acceleration. The system shall activate a computerized device which shall slow the vehicle when the threshold is exceeded in either direction. Normal vehicle operation shall resume once the problematic conditions cease. The RSC system shall be integral with the ABS and ATC systems.

A virtual style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FRONT BRAKES

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17" vented rotors.

REAR BRAKES

The rear brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

PARK BRAKE

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the left hand dash to the right of the steering column within easy reach of the driver.

AIR DRYER

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 100 watt heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right hand frame rail forward of the front wheel behind the right hand cab step.

FRONT BRAKE CHAMBERS

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

REAR BRAKE CHAMBERS

The rear axle shall include TSE 24/30 H.O.T. (High Output Technology) brake chambers shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake pads against the brake rotor.

AIR COMPRESSOR

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air cleaner bracket on the right frame rail behind the officer step.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

MOISTURE EJECTORS

A heated, automatic moisture ejector with a manual drain provision shall be installed on the wet tank of the air supply system. Manual pet-cock type drain valves shall be installed on all remaining reservoirs of the air supply system.

AIR SUPPLY LINES

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

REAR AIR TANK MOUNTING

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted parallel to frame.

WHEELBASE

The chassis wheelbase shall be 201.50 inches.

REAR OVERHANG

The chassis rear overhang shall be 78.00 inches.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FRAME

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The head bolts shall be flanged type with distorted threads, held in place by flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

FRAME WARRANTY

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

FRAME CLEAR AREA

The chassis frame shall be left clear of chassis mounted components inside or outside the frame rails within the first 30.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FRAME PAINT

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-cured pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils. The salt spray resistance per ASTM B-117-97 shall pass 500 hours of salt spray test. The applied process shall allow the application of other products over it and still maintain or exceed the 500 hours salt spray test.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

FRONT BUMPER

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 12.50 inches ahead of the cab.

FRONT BUMPER EXTENSION FRAME WIDTH

The front bumper extension frame shall feature an overall width of 34.25 inches.

FRONT BUMPER APRON

The 12.50 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

AIR HORN

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.

AIR HORN RESERVOIR

One (1) air tank, with a 1200 cubic inch reservoir, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ELECTRONIC SIREN SPEAKER

The bumper shall include one (1) Cast Products Inc. model SA4301, 100 watt speaker which shall be recess mounted within the bumper fascia. The speaker shall include a flat mounting flange and be chrome in color.

ELECTRONIC SIREN SPEAKER LOCATION

The electronic siren speaker shall be located on the front bumper face on the left side outboard of the frame rail in the far outboard position.

FRONT BUMPER TOW EYES

The bumper shall include two (2) chrome plated tow eyes which shall be installed below the front bumper. The tow eyes shall be fabricated from 0.75 inch thick 1020 ASTM-A36 hot rolled steel. The inside diameter of the eye shall be 2.00 inches and include a chamfered edge.

CAB TILT SYSTEM

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

CAB TILT CONTROL RECEPTACLE

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be installed using black self locking window rubber.

GLASS FRONT DOOR

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished using electric actuation. The power window shall be controlled with a switch on the driver's door.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

GLASS TINT FRONT DOOR

The windows located in the left and right front doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS REAR DOOR RH

The rear right hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's door panel.

GLASS TINT REAR DOOR RIGHT HAND

The window located in the right hand side rear window shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS REAR DOOR LH

The rear left hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's door panel.

GLASS TINT REAR DOOR LEFT HAND

The window located in the left hand side rear door shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

GLASS SIDE MID RH

The cab shall include a window on the officer's side behind the front and ahead of the crew doors which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

GLASS TINT SIDE MID RIGHT HAND

The window located on the right hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS SIDE MID LH

The cab shall include a window on the driver's side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

GLASS TINT SIDE MID LEFT HAND

The window located on the left hand side of the cab between the front and rear doors shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

CLIMATE CONTROL

The cab shall include a 57,600 BTU @ 425 CFM front overhead heater/defroster which shall be provided and installed above the windshield between the sun visors.

The cab shall also include a combination heater air-conditioning unit mounted on the engine tunnel. This unit shall offer eight (8) adjustable louvers, (4 forward facing , four rearward facing) a temperature control valve and two (2) blowers offering three (3) speeds which shall be capable of circulating 550 cubic feet of air per minute. The unit shall be rated for 42,500 BTU/Hr of cooling and 36,000 BTU/Hr of heating. The temperature and blower controls shall be located on the heater/air conditioning unit.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

CLIMATE CONTROL ACTIVATION

The front overhead heater/defroster controls shall be located on the unit. The controls for the combination heater/air conditioning unit shall be located on the Vista display and control screen.

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on cab forward of raised roof against the slope rise.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 13000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

CAB INSULATION

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer foam insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The insulation shall measure .56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil backing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads.

INTERIOR TRIM FLOOR

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

INTERIOR TRIM VINYL

The cab interior shall include trim on the front and rear crew ceiling, the cab walls and the rear wall of the cab. The trim shall be constructed of insulated vinyl over a hard board backing. The trim shall be securely fastened to the interior of the cab utilizing snap style fasteners with a decorative cover for a more appealing appearance.

REAR WALL INTERIOR TRIM

The rear wall of the cab shall be trimmed with vinyl.

HEADER TRIM

The cab interior shall include the header above the driver and officer positions which shall be constructed of vacuum formed ABS panel.

INTERIOR TRIM SUNVISOR

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate.

TRIM LH DASH

The left hand dash shall be a one (1) piece durable vacuum formed ABS composite housing which shall be custom molded for a perfect fit around the instrument panel and the lower control panels to the left and right of the steering column.

TRIM RH DASH

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick, one hundred percent primary aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

The cab engine tunnel shall be covered with .44 of an inch thick multi-layer mat consisting of .25 inch closed cell foam, .13 of an inch thick PVC acoustical barrier and .06 inch thick non-slip pebble grain. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

POWER POINT DASH MOUNT

The cab shall include one (1) 12 volt cigarette lighter type receptacle in the cab dash to provide a power source for 12 volt electrical equipment. The receptacle shall be wired to be live with the battery master switch.

STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have an opening on the outer edge to allow debris and water to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed with a Flex-Tred® adhesive grit surface material.

INTERIOR DOOR TRIM

The doors of the cab shall include an aluminum plate the same weight and grade as the cab on the interior of the door. The aluminum shall be then painted.

DOOR TRIM CUSTOMER NAMEPLATE

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape that measures 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

INTERIOR GRAB HANDLE "A" PILLAR

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 8.75 inches above the bottom of the door window opening and the right handle shall be located 1.00 inch above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

INTERIOR GRAB HANDLE FRONT DOOR

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

INTERIOR GRAB HANDLE REAR DOOR

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

INTERIOR TRIM VINYL COLOR

The cab interior vinyl trim surfaces shall be gray in color.

INTERIOR ABS TRIM COLOR

The cab interior vacuum formed ABS composite trim surfaces shall be gray in color.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be black in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with Zolatone #20-72 silver gray texture finish.

TRIM CENTER DASH INTERIOR PAINT

The entire center dash shall be coated with Zolatone #20-72 silver gray texture finish. Any accessory pods attached to the dash shall also be painted this color.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right hand dash shall be painted with Zolatone #20-72 silver gray texture finish.

DASH PANEL GROUP

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SWITCHES CENTER PANEL

The center dash panel shall include six (6) switch positions in the upper left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have red backlighting provided.

SWITCHES LEFT PANEL

The left dash panel shall include one (1) windshield wiper/washer control switch located in the left hand side of the panel. The switch shall have red backlighting provided.

SWITCHES RIGHT PANEL

The right dash panel shall include no rocker switches or legends.

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

SEAT MATERIAL

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

SEAT COLOR

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

SEAT BACK LOGO

The seat backs shall include the logo for the OEM body manufacturer. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK DRIVER

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature six-way electric positioning. The six (6) positions shall include up and down, fore and aft and front and rear tilt. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SEAT BACK OFFICER

The officer's seat shall feature a SecureAll™ SCBA locking system which shall be one bracket model and store all U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

POWER SEAT WIRING

The power seat or seats installed in the cab shall be wired directly to battery power.

SEAT REAR FACING OUTER LOCATION

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the driver seat and one (1) located directly behind the officer seat.

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SEAT BACK REAR FACING OUTER

The rear facing outboard seat shall feature a Bostrom SecureAll™ self contained breathing apparatus (SCBA) locking system which shall store all U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

SEAT MOUNTING REAR FACING OUTER

The rear facing outer seats shall offer special mounting positions which shall be 2.00 inches towards the rear wall offering additional space between the front seats and the outer rear facing seats.

SEAT BELT ORIENTATION CREW

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

SEAT FRAME REAR FACING CENTER

The rear facing center seating shall include a seat frame which is located and installed behind the engine tunnel. The seat frame shall measure 24.00 inches wide X 12.00 inches high X 15.88 inches deep and shall have a rear facing storage access opening. The seat frame shall be constructed of 5052-H32 Marine Grade, .190 inch thick, 100 percent primary smooth aluminum plate. The seat box shall be painted with the same color as the remaining interior.

SEAT FRAME REAR FACING CENTER STORAGE ACCESS

The rear facing center single seat frame shall include a storage access opening which measures 14.62 inches wide X 5.50 inches high to allow access within the seat frame for storage.

SEAT FORWARD FACING CENTER LOCATION

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SEAT CREW FORWARD FACING CENTER

The crew area shall include a seat in the forward facing center position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK FORWARD FACING CENTER

The forward facing center seat shall feature a SecureAll™ self contained breathing apparatus (SCBA) locking system which shall be one bracket model and store all U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

SEAT MOUNTING FORWARD FACING CENTER

The forward facing center seats shall be installed facing the front of the cab.

SEAT FRAME FORWARD FACING

The forward facing center seating positions shall include an enclosed seat frame which is located and installed on the rear wall. The seat frame shall measure 42.38 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of 5052-H32 Marine Grade 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be two (2) access points to the seat frame storage area, one (1) on each side of the seat frame. Each access point shall be covered by a hinged door which measures 15.00 inches in width X 10.63 inches in height.

CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

SEAT COMPARTMENT DOOR FINISH

All underseat storage compartment access doors shall have a Zolatone #20-72 silver gray texture.

WINDSHIELD WIPER SYSTEM

The cab shall include a parallel arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers, one (1) for the driver and one (1) for the officer, which shall be affixed to a rod style arm. The system shall include dual motors which shall initiate the arms in which both the driver and officer windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motors shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the speedometer shall display a "Check Washer Fluid Level" message.

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

DOOR LOCKS

The doors shall include a Controller Area Network (CAN) based electronic door lock system which shall include two (2) external keypads, one (1) located on the left side next to the front grab handle and one (1) on the right side next to the front grab handle. There shall be one (1) red rocker switch provided on the inside of each front cab entry door to actuate the door locks. The rear cab entry doors shall be provided with a red manual knob on the interior paddle handle to actuate the door lock on the respective door. The electronic door lock system shall include four (4) key fobs for actuation with buttons for cab entry door locks and for compartment door locks.

Wiring shall also be provided for up to four (4) exterior cab compartments and up to four (4) body compartments.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

DOOR LOCK LH REAR CAB COMPARTMENT

The left hand side rear compartment shall feature a power door lock actuator.

DOOR LOCK RH REAR CAB COMPARTMENT

The right hand side rear compartment shall feature a power door lock actuator.

POWER DOOR LOCK COMPARTMENT ACTIVATION

The power door lock feature shall include activation for exterior compartment door locks through the key fob, keypads and through a virtual switch on the multiplex display.

GRAB HANDLES

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style dual vision mirror heads model 613315 shall be provided and installed each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirror in the mirror head below the flat glass to provide wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirror backs shall be constructed of vacuum formed chrome plated ABS plastic housings that are corrosion resistant and shall include an amber marker light. The mirrors shall be manufactured with the finest quality non-glare glass.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a virtual button on the multiplex display.

TRIM LOWER SIDE

A stainless steel trim band, 12.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab and doors. The trim shall be installed so that the top edge is even with the top of the front bumper, and shall be affixed without holes and fasteners.

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.

MUD FLAPS FRONT

The front wheel wells shall have mud flaps installed on them.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) installed on each side of the cab exterior above the wheel well.

CAB EXTERIOR MODEL NAMEPLATE

The cab shall include custom "Metro Star" nameplates on the front driver and officer side doors.

IGNITION

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a ¼ turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

A hidden toggle switch with protective cover shall be provided. The switch shall be located so it can be activated at the driver's discretion. The switch shall be wired in such a manor so if the parking brake is released and the transmission is placed in gear, electrical power will be cut to disable the engine to prevent unauthorized personnel from commandeering the vehicle.

BATTERY

The single start electrical system shall include (6) Harris BCI 31 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

BATTERY TRAY

The batteries shall be installed within two (2) steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

BATTERY CABLE

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed and encapsulated at the ends with heat shrink and sealant.

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ALTERNATOR

The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

BATTERY CONDITIONER

A Kussmaul 1200 Pump Plus battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab behind the driver's seat.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

AUXILIARY AIR COMPRESSOR

A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be installed behind the driver's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

ELECTRICAL INLET

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

Amp Draw Reference List:

*Kussmaul 1000 Charger - 3.5 Amps
Kussmaul 1200 Charger - 10 Amps
Kussmaul 35/10 Charger - 10 Amps
1000W Engine Heater - 8.33 Amps
1500W Engine Heater - 12.5 Amps
120V Air Compressor - 4.2 Amps*

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The Kussmaul electrical inlet connection shall include a yellow cover.

HEADLIGHTS

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the ignition switch is in the "On" position and the parking brake is released.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch LED programmable amber turn signals which shall be installed in a chrome bezel outboard of the front warning and headlamps.

HEADLIGHT LOCATION

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) cab LED marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

GROUND LIGHTS

Each door shall include an incandescent NFPA compliant ground light mounted to the under side of the cab step below each door. Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the door on the respective cab side, when the parking brake is set and through the Vista screen.

STEP LIGHTS

The middle step located at each door shall include a 4.00 inch round incandescent light which shall activate with the opening of the respective door.

ENGINE COMPARTMENT LIGHT

There shall be an incandescent NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

SIDE SCENE LIGHTS

The side of the cab shall include two (2) Whelen model 900 scene lights, one (1) each side which shall be recess mounted. The Whelen lights shall offer halogen lighting at a gradient 32-degree angle.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 10.00 inch raised roof portion of the cab between the front and rear crew doors.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) virtual buttons on the Vista display and control screen(s), one (1) for each light, and by opening the respective side cab doors.

INTERIOR OVERHEAD LIGHTS

The cab shall include a two-section incandescent dome lamp with a red and clear lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and via the multiplex display and both the red and clear portion can be activated by individual switches on each lamp.

An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

MAP LIGHTS

A Roxter gooseneck style map light shall be provided. The light shall have a clear bulb and a control switch on the base. The light shall be located on the right hand side of the dash.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a red flashing light, located in the center for greatest visibility. The light shall be 6.00 inches long X 2.50 inches wide X 1.75 inches high and shall be clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound when a door is open and the parking brake is released.

The light and alarm shall be interlocked for activation when a cab door is not firmly closed, an apparatus cabinet door is not closed and the parking brake is released.

MASTER WARNING SWITCH

A master switch shall be included, as a button on the MUX display screen and be labeled "E Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

HEADLIGHT FLASHER

An alternating high beam headlamp flashing system shall be installed into the high beam headlamp circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

HEADLIGHT FLASHER SWITCH

The flashing headlights shall be activated through a virtual button on the Vista display and control screen.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include dual Whelen series 600 Super LED warning lights which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be surface mounted to the front fascia of the cab within a chrome bezel in the inboard position.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

INBOARD FRONT WARNING LIGHTS COLOR

The front warning lights mounted on the fascia in the inboard positions shall be red.

FRONT WARNING SWITCH

The front warning lights shall be controlled through a virtual control on the MUX display. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen series 600 Super LED 4.00 inch X 6.00 inch intersection warning lights, one (1) each side, which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted in the rear position on the side of the bumper.

SIDE WARNING LIGHTS

The cab sides shall include a Whelen series 600 Super LED 4.00 inch X 6.00 inch warning light, one (1) each side, which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

SIDE WARNING LIGHTS COLOR

The warning lights located on the side of the cab shall be red.

SIDE WARNING LIGHTS LOCATION

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

SIDE AND INTERSECTION WARNING SWITCH

The side warning lights shall be controlled through a virtual button on the Vista display and control panel. This button shall be clearly labeled for identification.

SIREN CONTROL HEAD

A Whelen 295HFS2 200 watt "hands free" remote siren amplifier control head shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature hands free mode and will be in "standby" mode awaiting instruction. The siren shall offer radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

HORN BUTTON SELECTOR SWITCH

A virtual button on the Vista display and control screen shall be provided to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

AIR HORN ACTIVATION



The air horn activation shall be accomplished by the steering wheel horn button for the driver and a black push button on the switch panel. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

BACK-UP ALARM

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse. A virtual button shall be provided on the Vista display and control screen to disable the backup alarm.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. The gauges shall be backlit with red LED lamps. All gauges shall be driven by stepper motor movements. The instrumentation system shall be multiplexed and shall receive engine and transmission information over the J1939 data bus to reduce redundant sensors.

The instrument panel shall contain the following gauges:

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) electronic speedometer with an integral LCD odometer/ trip odometer and hour meter shall be included. The speedometer shall have a dual scale with miles per hour (MPH) as the dominant scale and kilometers per hour (KPH) on the minor scale. The speedometer scale shall read from 0 to 90 MPH (0 to 140 KPH). The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display up to 9,999.9 miles. The LCD screen shall also be capable of displaying certain diagnostic functions. The hour meter shall display engine hours of operation.

One (1) three function gauge with primary system, secondary system and fuel level shall be included. The scale on the air pressure gauges shall read from 0 to 140 pounds per square inch (PSI). The air pressure scales shall be non-linear to expand the scales in the region of normal operation. A red indicator light in the gauge shall indicate a low air pressure. The scale on the fuel level gauge shall read from empty to full. A yellow indicator light shall indicate low fuel at the quarter tank level.

One (1) four function gauge with engine oil pressure, coolant temperature, transmission oil temperature and a voltmeter shall be included. The scale on the engine oil pressure gauge shall read from 0 to 140 pounds per square inch (PSI). The engine oil pressure scale shall be non-linear to expand the scale in the region of normal operation. A red indicator light in the gauge shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 160 to 250 degrees Fahrenheit (F). A red indicator light in the gauge shall indicate high coolant temperature. The scale on the transmission oil temperature gauge shall read from 100 to 300 degrees Fahrenheit (F). A red indicator light in the gauge shall indicate high transmission oil temperature. The scale on the voltmeter shall read from 8 to 16 volts. A red indicator light shall indicate high or low system voltage.

The instrument panel shall contain an Annunciator Module that contains the following indicator lights. All indicator lights shall contain LED lamps.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

RED LAMPS

Stop Engine - indicates critical engine fault. (5)
Park Brake - indicates park brake is set.
Volts - indicates high or low system voltage. (4)
Low Oil Press - indicates low engine oil pressure. (4)
High Coolant Temp - indicates excessive engine coolant temperature. (4)
High Trans Temp - indicates excessive transmission oil temperature. (4)
Low Air - indicates low air pressure in either system one or system two. (4)
Low Coolant Level - indicates low engine coolant level. (1) (5)
Air Filter - indicates excessive engine air intake restriction. (5)
Brake System Fault – indicates a failure in the brake system (hydraulic brake systems only). (5)
Seat Belt Indicator – indicates when a seat is occupied and corresponding seat belt remains unfastened.

YELLOW LAMPS

Check Engine - indicates engine fault. (5)
Check Trans - indicates transmission fault. (5)
Wait to Start - indicates active engine air preheat cycle. (2) (5)
ABS - indicates anti-lock brake system fault. (5)
Water in Fuel - indicates presence of water in fuel filter. (1) (5)
Check Message Center – indicates there is a fault message present in the LCD digital display.
SRS – indicates a problem in the RollTek supplemental restraint system. (1) (5)
DPF – indicates a restriction of the diesel particulate filter. (3) (5)
HEST – indicates a high exhaust system temperature. (3) (5)
MIL – indicates an engine emission control system fault. (3) (5)
Low Fuel – indicates low fuel. (4)

GREEN LAMPS

Left and Right turn signal indicators.
Aux Brake Active - indicates secondary braking device is active. (1)
High Idle - indicates engine high idle is active. (1)
ATC – indicates low wheel traction for automatic tractions control equipped vehicles, also indicates mud/snow mode is active for ATC system. (1) (5)
OK to Pump – indicates the pump engage conditions have been met. (1)
Pump Engaged – indicates the pump is currently in use. (1)

BLUE LAMPS

High beam indicator.

The instrumentation system shall provide a constant audible alarm for the following situations:

Low air pressure.
Low engine oil pressure.
High engine coolant temperature.
High transmission oil temperature.
Low coolant level. (1)
High or low system voltage
Critical engine fault (Stop Engine).

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

The Check Message Center icon will illuminate and a message will be displayed in the LCD screen for the following situations:

- Cab Ajar
- Low Oil Level
- Door Ajar
- Engine Communication Error
- Transmission Communication Error
- ABS Communication Error
- High Coolant Temp
- Turn Signal Reminder (turn signal left on for more than one (1) mile)
- Low Fuel
- Low Oil Pressure
- Low Coolant Level
- Low Battery Voltage
- High Battery Voltage
- Low Primary Air Pressure
- Low Secondary Air Pressure
- High Trans Temp

The instrumentation system will provide a continuous alarm for the following situations:

- Stop Engine
- Low Coolant Level (1)
- Brake System Fault
- Check Trans
- Check Engine
- ABS
- Engine Communications Error
- Transmission Communications Error
- ABS Communications Error
- Low Fuel
- Low Primary Air Pressure
- Low Secondary Air Pressure
- Low or High Battery Voltage
- High Trans Temp
- Low Oil Pressure
- High Coolant Temp

The instrumentation system will provide a 160 millisecond second alarm every 880 milliseconds for the following situations:

- Seat Belt
- Air Filter
- Water in Fuel (1)
- Cab Ajar
- Low Oil Level
- Door Ajar

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

The instrumentation system will provide a 160 millisecond second alarm every 5 seconds for the following situation:
Turn Signal Reminder (turn signal left on for more than one (1) mile)

- (1) Feature only available when optionally equipped.
- (2) Feature only available on engines with pre-heat capability.
- (3) Feature only on vehicles with diesel particulate filter (DPF).
- (4) Warning light is present in gauge.
- (5) A message in the LCD screen will also be displayed.

RADIO

A Panasonic compact disc player with AM/FM stereo receiver, weather band and four (4) speakers shall be installed in the cab. The receiver shall be installed above the driver position. The speakers shall also be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers in the upper rear corners of the cab.

AM/FM ANTENNA

A small antenna shall be located on the left hand side of the cab roof for AM/FM and weather band reception.

CAMERA

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) camera with a teardrop shaped chrome plated housing shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle and one (1) shall be mounted on the officer side of the cab below windshield ahead of the front door at approximately the same level as the cab door handle.

The cameras shall be wired to a single Weldon Vista display located on the driver's side dash. The rear camera shall activate when the transmission is placed in reverse and the right camera shall activate with the right side turn signal. Each camera shall also be activated by a button on the Vista display.

CAB EXTERIOR PROTECTION

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

FIRE EXTINGUISHER

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

ROAD SAFETY KIT

The cab and chassis shall include one (1) emergency road side triangle kit.

DOOR KEYS

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

WARRANTY

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twelve (12) months, or the first 24,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

OPERATION MANUAL

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUALS

There shall be one (1) printed hard copy set of the engine operation manual and one (1) printed hard copy set of the transmission operation manual specific to the model ordered included with the chassis in the ship loose items.

AS BUILT WIRING DIAGRAMS

The cab and chassis shall include two (2) complete sets of wiring schematics and option wiring diagrams. One (1) set shall be a printed hard copy, one (1) set shall be a digital copy.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CHASSIS MODIFICATIONS

LUBRICATION AND TIRE DATA PLATE

A permanent label in the driving compartment shall specify the quantity and type of the following fluids used in the vehicle and tire information:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid . . (if applicable)
- Pump priming system fluid, if applicable . . (if applicable)
- Drive axle(s) lubrication fluid
- Air conditioning refrigerant . . (if applicable)
- Air conditioning lubrication oil . . (if applicable)
- Power steering fluid
- Cab tilt mechanism fluid . . (if applicable)
- Transfer case fluid . . (if applicable)
- Equipment rack fluid (if applicable)
- CAFS air compressor system lubricant . . (if applicable)
- Generator system lubricant . . (if applicable)
- Front tire cold pressure
- Rear tire cold pressure
- Maximum tire speed ratings

VEHICLE DATA PLATE

A permanent label in the driving compartment which indicates the following:

- Filter part numbers for the;
 - Engine
 - Transmission
 - Air
 - Fuel
- Serial numbers for the;
 - Engine
 - Transmission
- Delivered Weights of the Front and Rear Axles
- Paint Brand and Code(s)
- Sales Order Number

OVERALL HEIGHT, LENGTH DATA PLATE (US)

The fire apparatus manufacturer shall permanently affix a high-visibility label in a location visible to the driver while seated.

The label shall show the height of the completed fire apparatus in feet and inches, the length of the completed fire apparatus in feet and inches, and the GVWR in pounds.

Wording on the label shall indicate that the information shown was current when the apparatus was manufactured and that, if the overall height changes while the vehicle is in service, the fire department must revise that dimension on the plate.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ACCIDENT PREVENTION

There shall be a placard in the cab seating area which reads, "ALL OCCUPANTS MUST BE SEATED AND BELTED WHEN THE APPARATUS IS IN MOTION".

PERSONNEL CAPACITY

A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.

ACCIDENT PREVENTION

If the rear bumper is 8" deep or more, there shall be a placard on the rear face of the body, in clear sight from the ground, which reads, "WARNING - DO NOT RIDE ON STEPS OR DECK AREAS WHILE THE APPARATUS IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT".

WEARING HELMET WARNING

A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be visible from each seating location.

FRONT BUMPER

The front bumper shall be as provided by the cab/chassis manufacturer. No other alternation or modifications are required.

BUMPER GRAVELSHIELD

The bumper extension gravel shield shall be provided by the cab/chassis manufacturer.

HURST STREAMLINE HYDRAULIC TOOL CONNECTION

There shall be two (2) Hurst Streamline hydraulic tool connections provided on the curbside of the bumper gravel shield. The fittings shall be recess mounted inside the curbside bumper compartment at a forty-five (45) degree angle and will have a hinged aluminum cover. The recessed area shall be constructed with enough space around the connectors to allow a firefighter wearing gloves to easily connect and disconnect the hydraulic hoses from the fittings.

The hose color will be blue and will run from the bulkhead connection located in C1.

AIR HORN(S)

The air horn(s) shall be supplied and installed by the cab/chassis manufacturer.

MOTOR DRIVEN SIREN

There shall be a motor driven, streamlined, rotary siren with chrome plated grill and housing recess mounted in the extended front bumper. The siren shall be properly wired with heavy copper cable for minimum voltage drop. Make: Federal, Model: Q2B.

The siren shall be located at the center of the front bumper.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

SIREN ACTIVATION



The mechanical siren shall be actuated by a Linemaster model SP491-S81 foot switch mounted in the front section of the cab for use by the driver and a black push button in the switch panel on the officer's side dash. A red momentary siren brake rocker switch shall be provided in the switch panel on the center dash, and a black momentary siren brake rocker switch shall be provided in the switch panel on the officer's side dash.

The siren shall only be active when master warning switch is on to prevent accidental engagement. A switch on the 12 volt electrical control panel shall be provided to switch the steering column horn button between the siren and the chassis 12 volt electric horn.

FLOOR SWITCH MODIFICATION

The cab/chassis supplied driver's side floor switch mounting plate shall be removed and a larger plate installed to allow for wider spacing between the air horn and Q2B siren switches. The panel will extend the full width of the left side drivers foot area, from the cab side wall to the steering column.

FRONT TOW PROVISIONS

The front tow provisions shall be supplied and installed by the cab/chassis manufacturer.

EXHAUST

The existing exhaust tailpipe shall be extended to the area ahead of the rear axle on the streetside. ***The exhaust tubing shall be located forward of the tire with adequate clearance to safely and easily operate a folding wheel chock on the front side of the tire.***

The exhaust piping and discharge outlet shall be located or shielded so as not to expose any portion of the apparatus or equipment to excessive heating.

Exhaust pipe discharge shall be directed away from any operator's position.

Where parts of the exhaust system are exposed so that they are likely to cause injury to operating personnel, protective guards shall be provided.

RADIO ANTENNA INSTALLATION

There shall be three (3) radio antenna mounts provided and installed. The antennas shall be located on the cab roof as listed and the leads routed to the following locations:

- One (1) radio antenna shall be mounted on the raised roof area above the driver's position and routed to the center dash panel for use with the Merced County Fire Department supplied Kenwood 780K dash mounted radio
- One (1) spare radio antenna shall be mounted on the raised roof area above the officer's position and routed to the area behind the MDT mounting provision on the officer's side dash
- One (1) Merced County Fire Department supplied 'puck' style GPS antenna shall be mounted on the lower roof area above the officer's position and routed to the center dash panel for later use with a GPS system.

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and Merced County Fire Department shall provide the whip.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

RADIO/ANTENNA INSTALLATION

There shall be one (1) Merced County Fire Department supplied Kenwood 780K radio(s) with antenna installed. The radio transceiver shall be located under the center dash panel and the remote radio head shall be mounted centered above the center dash panel on a customer supplied swivel.

Radio shall be installed per manufacturers requirements and wired for proper 12 volt power and ground.

SHORE POWER AUTO-EJECT RECEPTACLE MODIFICATION

The auto-eject mechanism as provided by the cab/chassis manufacturer shall be removed from the cab side and relocated to the rear of the apparatus. A white auto-eject cover shall be provided and installed over the existing opening. The lift up portion of the auto-eject cover shall be permanently sealed with epoxy to close off the cab opening.

SEAT BELT COLOR

Section 14.1.3.4 of the NFPA 1901 Standards, 2009 edition, requires all seat belt webbing in cab to be bright red or bright orange in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

SEAT BELT WEB LENGTH - CUSTOM CAB

Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901 standards, 2009 edition, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".

The chassis seat belt web length as supplied by the custom chassis manufacturer shall be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

SEAT BELT / VDR SYSTEM - CUSTOM CAB

The seat belt warning and vehicle data recorder systems shall be provided by the cab/chassis manufacturer.

STORAGE MODULE

A storage module shall be provided in the cab directly behind the engine tunnel. The cab/chassis supplied rear facing center seat box shall be removed to allow the storage module to sit directly on the cab floor. The module shall be approximately 38.00" W x 22.00" D x 22.50" H and shall be designed to hold the following Merced County Fire Department supplied items:

- One (1) cooler (located on the bottom of the module) measuring approximately 15.00" D x 22.50" W x 16.00" T
- One (1) EMS bag measuring approximately 27.00" W x 15.00" D x 12.00" T
- One (1) Trauma bag measuring approximately 12.00" W x 12.00" D x 15.00" T
- One (1) defibrillator measuring approximately 13.50" W x 12.00" D x 5.50" T
- One (1) collar bag measuring approximately 24.00" W x 4.50" D x 12.00" T
- One (1) transfer sheet bag measuring approximately 16.00" W x 2.00" D x 15.00" T

The module shall include netting over the rear facing opening to contain items while the apparatus is in motion.

EQUIPMENT HOOKS

There shall be one (1) equipment hooks provided in the crew area of the cab, high on the rear wall between the forward facing center crew seats and the outer wall. Each hook shall be fabricated of brushed stainless steel and include a 12" x 12" brushed stainless steel backing plate.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB STEP LIGHTS

There shall be one (1) OnScene Solutions 9" LED Night Stik light provided in each upper cab step area. The lights shall be activated when the corresponding cab door is opened.

Each light shall be mounted in a ball burnished cast aluminum housing to protect against damage from personnel or equipment.

CAB STEP KICK PANELS

There shall be a brushed stainless steel kick plate provided in the rise of each step, two (2) per door opening.

CAB CRASH TEST CERTIFICATION

A cab crash test certification from the fire apparatus manufacturer shall be provided with the equipment. A copy of this certification shall be included with the bid.

NOTE: There shall be no exception to any portion of the cab integrity certification requirements. Nonconformance shall lead to immediate rejection of bid.

The certification shall state that the cab does meet or exceed the requirements below:

- 1) European Occupant Protection Standard ECE Regulation No. 29.
- 2) SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.

CAB MIRRORS, DRIVER ADJUSTABLE

Section 14.3.5 of the NFPA 1901 Standards, 2009 edition, requires all primary rear view mirrors used by the driver to be adjustable from the driver's position.

CAB TRIM REAR CORNERS

There shall be a full height mirror finished SST trim band furnished and installed around the rear edges of the cab. The stainless steel plate shall be affixed to the cab using two sided adhesive tape

MUDFLAPS

There shall be rubber mudflaps furnished and installed behind each set of tires.

AIR BRAKE SYSTEM QUICK BUILD-UP

There shall be one (1) cab/chassis supplied Milton male quick connector type air shoreline inlet to provide air to the chassis air tanks from an external source compressed air shoreline hookup in order to maintain full operating air pressure while the vehicle is not running. Air inlet shall be located near driver's door. The female end of the connector shall be supplied by the Merced County Fire Department.

The quick buildup system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time.

MODIFY WHEELBASE

The existing wheelbase shall be modified as necessary for installation of the new body. All unused holes in the chassis frame shall be filled with grade 8 bolts, nuts and washers.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FUEL FILL

There shall be one (1) Cast Products fuel fill door located in the streetside exterior wheel well panel, behind the rear axle. The fill door shall have a spring-loaded hinged door and a permanent label with the text "DIESEL FUEL ONLY".

FUEL FILL

There shall be one (1) Cast Products fuel fill door located in the curbside exterior wheel well panel, behind the rear axle. The fill door shall have a spring-loaded hinged door and a permanent label with the text "DIESEL FUEL ONLY".

BODY DESIGN

The importance of public safety associated with emergency vehicles requires that the construction of this vehicle meet the following specifications. These specifications are written to establish the minimum level of quality and design. All Bidders shall be required to meet these minimum requirements.

It is the intent of these specifications to fully describe the requirements for a custom built emergency type vehicle. In order to extend the expected service life of this vehicle, the body module shall be removable from the chassis frame and be capable of being installed on a new chassis.

The sheet metal material requirements, including alloy and material thickness, throughout the specifications are considered to be a minimum. Since such materials are available to all Manufacturers, the material specifications shall be strictly adhered to.

The fabrication of the body shall be formed sheet metal. Formed components shall allow the Merced County Fire Department to have the body repaired locally in the case where any object has struck the body and caused damage. The use of proprietary extrusions will prevent the Merced County Fire Department from such repair and shall NOT be used.

Following construction of the subframe, which supports the apparatus body, the sheet metal portion of the body shall be built directly on the subframe. The joining of the subframe and body shall be of a welded integral construction.

The sheet metal fabrication of the body shall be performed using inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of structural construction may allow premature failure of the body structure. Therefore, pop rivets shall NOT be used in the construction of the structural portions of the body. This includes side body sheets, inner panels of compartment doors, and any other structural portions of the body.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

EXTERIOR ALUMINUM BODY

The fabrication of the body shall be constructed from aluminum 3003H-14 alloy smooth plate. This shall include compartment front panel, vertical side sheets, side upper rollover panels, rear panels and compartment door frames.

The body compartment floors and exterior panels shall be constructed with not less than 3/16" (.187) aluminum 3003H-14 smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Lighter gauge sheet metal will not be acceptable in these areas.

The door side frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, will not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

All exterior seams in sheet metal below frame, and around the rear wheel well area shall be welded continuous to prevent moisture from entering compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

Only stainless steel bolts, nuts, and sheet metal screws shall be used in mounting exterior trim, hardware and equipment.

Exterior compartments shall have louvers in lower back wall of compartment for ventilation.

ROOF CONSTRUCTION

The roof shall be integral with the body and shall be all welded construction. The roof of the body shall not be less than 3/16" aluminum 3003H-14 alloy tread plate, fully and continuously welded. The roof shall be reinforced with 2" x 2" x 1/4" aluminum tubing running the full width of the body. A 2" rounded radius shall be provided along the body sides.

BODY SUBFRAME

The chassis frame rails shall be fitted with 1/4" custom extruded UHMW polyethylene rail cap to isolate the body frame members from direct contact with chassis frame rails.

The body subframe shall be constructed from 6061T6 aluminum alloy tubing. Subframe shall consist of two (2) 2" x 6" x 1/4" aluminum tubes, the same width as the chassis frame rails, NO EXCEPTION. Welded to this tubing shall be cross members of 2" x 6" x 1/4" aluminum. These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located as necessary to support walkway or heavy equipment.

To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy welding wire.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

BODY MOUNTING

The body subframe shall be fastened to the chassis frame with a minimum of six (6) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to prevent any corrosion. Each mounting assembly shall utilize two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement will not be acceptable.

10" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 10" and provide a rear step with a minimum of 1/2" space at body for water drainage.

REAR TOW EYES

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below the apparatus body. The tow eyes shall be fabricated from 3/4" thick steel plate and shall have a black powder coat finish.

GROUND LIGHTS

Two (2) OnScene Solutions 9" LED Nightstik ground lights shall be mounted below the bumper.

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel well enclosure shall be constructed from 3/16" smooth aluminum panels.

STAINLESS STEEL BODY FENDERS

The body wheel well openings shall be provided with round radius, polished stainless steel fenderettes. The fenderettes shall be bolted and easily replaceable if damaged. The fenderettes shall be installed using a rubber gasket to reduce buildup of moisture and/or debris.

WHEEL WELL LINERS

The wheel wells shall be provided with an easily removable polymer, circular inner fender liner. The inner liner shall be bolted to the wheel well with stainless steel bolts and spaced away from the wheel well so the liner will not accumulate dirt or water.

SCBA CYLINDER COMPARTMENTS

Two (2) SCBA cylinder storage compartments shall be provided, one (1) each side of the body in rear wheel well area. Each compartment shall have a Cast Products aluminum door assembly with a positive catch latch. Each compartment shall have a 8" diameter aluminum tube behind the wheel well panel attached to the Cast Products door assembly. Each compartment shall allow the storage of an SCBA cylinder up to 7-3/4" in diameter. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ALUMINUM BODY PAINT SPECIFICATIONS

BODY PAINT PREPARATION

After the body and components have been fabricated they shall be disassembled prior to painting so when the vehicle is complete there shall be finish paint beneath the removable components. The body shall be totally removed from chassis during the paint process to insure the entire unit is covered. The body and components shall be metal finished as follows to provide a superior substrate for painting.

The exterior body shall undergo a thorough cleaning process starting with a biodegradable phosphoric acid solution to begin the etching process followed by a complete clear water rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the metal surface for greater film adhesion. If the compartment interior is to be painted the interior shall be acid etched as described above then primed with an epoxy primer and all seams caulked.

All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be chrome plated. Iron fittings shall be copper under plated prior to chrome plating.

PAINT PROCESS

The paint process shall follow the strict standards set forth by PPG Industries guidelines. Painters applying PPG products will be PPG Certified Commercial Technicians, and re-certified every two (2) years.

The body shall go through an eight-stage paint process;

- 1) Clean bare metal using a solvent base wax & grease remover.
- 1) Finish all exterior body seams as necessary, followed by a thorough sanding of all bare metal to be painted.
- 2) Re-clean bare metal using a solvent base wax & grease remover.
- 3) Bare Metal Epoxy Primer Coat - PPG Delfleet® Evolution corrosion resistance epoxy primer to be applied at 1.0-2.0 mills DFT over clean abraded bare metal.
- 4) Primer Filler Coat - PPG Delfleet® Evolution urethane build primer to achieve total thickness of 3.0-6.0 mills DFT after sanding.
- 5) Base coat (Color) - PPG Delfleet® Evolution High Solids Polyurethane Base coat. Apply 1.0-3.0 mills DFT of base coat color to achieve full hiding.
- 6) Clear coat PPG Delfleet® Evolution polyurethane premium quality clear coat with improved mar resistant finish. The clear coat shall be applied to achieve a total dry film thickness of 2.0-3.0 mills.
- 7) Curing process of the painted body shall go through a force dry/bake cycle process. The painted components shall be baked 180 degrees for 2 hours to achieve a complete coating cure on the finished product.

MACHINE POLISHED

After the force dry/bake cycle and ample cool down time, the coated surface shall be sanded using 1,000, 1,500, and or 3,000 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed then polished to an extra high gloss smooth finish. Total dry film thickness of paint will average between 8.0-12.0 mills.

PAINT - ENVIRONMENTAL IMPACT

The contractor shall meet or exceed all current State (his) regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. PPG Delfleet® Evolution paint shall be free of all heavy metal (lead & chromate) components. Paint emissions from sanding and painting shall be filtered and collected. All paint wastes shall be disposed of in an environmentally safe manner. Solvents used in cleanup operations shall be collected, sent off-site for distillation and returned for reuse.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

PAINT FINISH - SINGLE COLOR

The body shall be painted with a single color of PPG Delfleet® Evolution paint per approved customer sprayout.

Prior to the assembly and reinstallation of exterior components; i.e. warning and DOT lights, handrails, steps, door hardware, and miscellaneous items, an isolation tape, or gasket shall be used to prevent damage to the finish painted surfaces. These components shall be fastened to body using either a plastic insert into body metal with stainless steel screws or zinc coated nutserts into body surface using stainless steel bolts to prevent corrosion from dissimilar metals.

Touch-up paint shall be provided with completed vehicle.

8) Paint Color: Match cab/chassis supplied paint color.

BODY UNDERCOATING

The entire underside of body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas underside of body and wheel well area to help prevent corrosion under the vehicle.

UNDERCOAT WARRANTY

The body undercoating shall have a warranty provided by the manufacturer for the lifetime of the vehicle or twenty (20) years, whichever occurs first. The warranty shall be transferable between vehicle owners. Should the undercoating material applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.

PAINT WARRANTY

The vehicle shall be provided with a ten (10) year non-prorated warranty to the original owner. Warranty is provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle.

COMPARTMENT INTERIOR FINISH

The compartment interiors shall be treated with phosphoric acid and then sprayed with an epoxy primer applied 1.0 mil thick. All body seams will be caulked with urethane seam sealer and painted with two (2) coats of textured Zolatone paint. Zolatone catalysts will be added to the Zolatone to help in resisting moisture and provide a more durable finish. Paint color shall be gray.

ROOF COMPARTMENT INTERIOR FINISH

The roof compartments shall be treated with phosphoric acid and then sprayed with an epoxy primer will be applied 1.0 mil thick. All body seams will be caulked with urethane seam sealer and painted with two (2) coats of textured Zolatone paint. Zolatone catalysts will be added to the Zolatone to help in resisting moisture and provide a more durable finish. Paint color shall be gray.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

REFLECTIVE STRIPE

All retroreflective materials shall conform to the requirements of ASTM D 4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

All retroreflective materials used that are colors not listed in ASTM D 4956, Section 6.1.1, shall have a minimum coefficient of retroreflection of 10 with observation angle of 0.2 degrees and entrance angle of -4 degrees.

Any printed or processed retroreflective film construction used shall conform to the standards required of an integral colored film as specified in ASTM D 4956, Section 6.1.1.

REFLECTIVE STRIPE - CAB SIDE

A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side.

The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

The 4 in. (100 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be blue in color.

REFLECTIVE STRIPE - CAB FRONT

A reflective stripe shall be affixed to the front of cab. The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

A retroreflective stripe(s) shall be affixed to at least 25 percent of the width of the front of the apparatus.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be blue in color.

REFLECTIVE STRIPE - CAB DOOR INTERIOR

Any door of the apparatus designed to allow persons to enter or exit the apparatus shall have at least 96 in.² (62,000 mm²) of retroreflective material affixed to the inside of the door.

The stripe material shall be 3M Scotchlite 680.

- This reflective stripe shall be blue in color.

REFLECTIVE STRIPE - BODY SIDES

A 4" minimum reflective stripe shall be affixed to the sides of the body.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be blue in color.

The stripe shall extend straight back from the chassis and then, ahead of the rear wheels, it shall form an "S" and then extend straight back to the rear of the body. The "S" portion of the stripe shall be shaded in the corners.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS

At least 50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, excluding any pump panel areas not covered by a door, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" width.

The rear side panels only of the body shall have a Chevron style reflective stripe layout, and cover as much of the rear side panels as possible. Chevron panels shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panels shall have a minimum 10 year warranty for material failure, and colorfastness.

- The stripe material shall be 3M Diamond Grade.

All retroreflective materials required shall conform to the requirements of ASTM D 4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

- This reflective chevron stripe shall alternate red and fluorescent yellow-green in color.

LETTERING

The following lettering shall be furnished and installed on the completed unit:

SIDE CAB DOOR LETTERING

There shall be forty two (42) 3" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be blue in color.
- Lettering will read "Merced County Fire Dept."

UPPER BODY SIDE LETTERING

There shall be thirty two (32) 11" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be blue in color.
- Lettering will read "MERCED COUNTY FIRE"

REAR BODY LETTERING

There shall be six (6) 3" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be blue in color.
- Lettering will be located on the Cast Products door and read "MFD R??" Unit number to be determined.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

FRONT OF CAB LETTERING

There shall be sixteen (16) 3" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be blue in color.
- Lettering shall read "MERCED COUNTY FIRE"

There shall be six (6) 8" high reflective letters furnished and installed on the vehicle.

- This reflective lettering shall be blue in color.
- Lettering shall read "MRD R??" unit number to be determined

CAB ROOF LETTERING

CUSTOM DECAL

One (1) custom designed Scotchcal type retroreflective decal with lettering of the unit number shall be provided and located on top of the command light.

One (1) copy of the above custom logo shall be provided and located on the completed vehicle as directed by Merced County Fire Department.

SUPPLIED DECALS

The bidder shall install two (2) Merced County Fire Department supplied decal(s) on the vehicle, located on the.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

EXTERIOR COMPARTMENT DOORS

ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)

The apparatus shall be equipped with Robinson ROM Series III roll-up exterior compartment doors. Robinson roll-up doors shall be complete with the following features;

- Doors shall be front roll with drum positioned at upper front portion of compartment to afford maximum clearances and head room for mounting equipment to ceiling of compartment
- There shall be a non-abrasive side brush seals
- Every slat must have interlocking end shoes to prevent slat from moving side-to-side and binding the door
- Between each slat must be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture. This inner seal is not visible to detract from appearance of door
- Slat is to have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects
- Slat to be double-wall extrusion 1.366" high by .315" thick. Exterior surface to be flat and interior surface to be concave to prevent loose equipment from interfering with door operation
- Latch system to be a full width one piece lift bar operable by one (1) hand
- A 2" wide finger pull integrated into the bottom rail extrusion for easy one (1) hand opening and closing
- Clip system that connects the curtain slats to the operator drum which allows for easy tension adjustment without tools
- Each roll-up door shall have a 4" diameter counterbalance operator drum to assist in lifting the door.
- Track shall be one-piece aluminum that has an attaching flange and finishing flange incorporated into its design
- Drip rail will have specially designed seal that prevents the seal from scratching the door
- Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door
- Bottom rail to have "V" shaped double seal to prevent water and debris from entering the compartment
- Standard replacement parts to be shipped from the United States and available in as little as 48 hours

Each shutter door shall decrease the compartment door frame opening approximately 2.00" in width and approximately 4.50" in height for the bottom section of door assembly.

The specified retroreflective stripe material shall be applied on the roll-up compartment doors. The stripe shall be precision machine cut for each door slat of the roll-up doors. Under no circumstance will the stripe material be cut on roll-up door surface.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	84.0"
B	Bottom of Subframe to Bottom of Body	25.0"
C	Vertical Door Opening	
	-with roll-up door	67.5"
	-with hinged door	71.5"

ABOVE REAR AXLE

	<u>Description</u>	<u>Dimension</u>
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.0"

BEHIND REAR AXLE

	<u>Description</u>	<u>Dimension</u>
E	Bottom of Subframe to Bottom of Body	20.0"
F	Vertical Door Opening	
	-with roll-up door	62.0"
	-with hinged door	66.0"

GENERAL

	<u>Description</u>	<u>Dimension</u>
G	Bottom of Drip Rail to Top of Body	33.5"

(Dimensions are generic and subject to change during the actual design process)

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

THREE (3) UPPER BODY COMPARTMENTS (INDIVIDUAL)

The forward transverse compartment shall be 92.0" long x 27.0" wide x 28.5" deep. There shall be two (2) compartments parallel to the sides of the body, one (1) on each side. Each of these compartments shall be 99.0" long x 28.0" wide x 18.5" deep. The side compartments shall be open under each door sill to allow for long equipment. Each compartment shall be integral with the body construction, and will not be bolted or add-on modules. The outside walls of each compartment will be double walled to prevent equipment from denting the outside painted surface.

Each compartment shall have a lift-up type compartment door hinged on the outboard side. Each door shall be fabricated from 3/16" aluminum tread plate. Each door shall have two (2) pneumatic type cylinders, one (1) at each end, attached to cast aluminum brackets mounted to the interior surface of the door to hold the door in both the opened and closed positions. Each door shall be mounted using 16" long, equally spaced, 14 gauge stainless steel hinges, with 1/4" stainless steel pin. A polyester barrier film gasket shall be placed between stainless steel hinge and the body mounting surface as necessary to prevent corrosion caused by dissimilar metals.

Each compartment door shall overlap a 2" vertical lip on the body roof to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

Each roof compartment door shall have a chrome 7" handle bolted to center of each door.

Each compartment shall have a horizontally mounted OnScene Solutions LED Night Stik on the underside of the door. The light and NFPA Door Ajar System shall be automatically activated by an individual switch per compartment.

The hinged door(s) shall have an automotive tailgate style lift-up locking handle. A gasket shall be placed between the handle and the compartment exterior wall. Door latches shall be a single point, double-catch latch, mounted on the interior wall of the compartment panel.

TRANSVERSE ROOF COMPARTMENT - SHELF TRAC

There shall be one (1) roof compartment(s) provided with horizontally mounted Shelf Trac on front and rear walls for vertical partition installation.

SIDE ROOF COMPARTMENT - SHELF TRAC

There shall be two (2) roof compartment(s) provided with horizontally mounted Shelf Trac on front and rear walls for vertical partition installation.

ROOF COMPARTMENT - VERTICAL PARTITION

There shall be six (6) vertical partition(s) provided in the roof compartment(s). The partitions shall be designed for holding equipment in place during travel. Each partition shall be fabricated from 3/16" smooth aluminum and bolted to specified Shelf Trac for ease of adjustment.

UPPER BODY WALKWAY

A 34" wide, upper body walkway shall be provided at the center of body and recessed into the roof structure. The walkway shall be finished with NFPA compliant 3/16" aluminum tread plate with continuously welded seams to prevent moisture penetration into apparatus body. Drains shall be installed at front of walkway to allow water to drain to the ground through flexible drain hose.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

WALKWAY LIGHTS

There shall be two (2) OnScene Solutions 9" LED Night Stik lights provided to illuminate the upper body walkway area. The lights shall be activated when the parking brake is set.

Each light shall be mounted in a ball burnished cast aluminum housing to protect against damage from personnel or equipment.

ROOF ACCESS STAIRWAY

The rear of the body shall be provided with a recessed center stairway with minimum 34" width. Stairs treads shall be 10" minimum depth and formed from 3/16" NFPA compliant aluminum tread plate with uniformed riser height design. Roll-out ladder design requiring set-up time and 8 plus feet behind apparatus or vertical ladders that do not allow firefighter to safely ascend or descend with equipment will not be acceptable.

STAIRWAY HANDRAILS

There shall be two (2) handrails provided, one (1) on each side wall of recessed center stairway providing three-points of contact at all times for safer access to roof compartments. The handrails shall be angled for optimum use during ingress or egress of the upper walkway area.

Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

WALKWAY LIGHTS

There shall be two (2) OnScene Solutions 9" LED Night Stik lights provided to illuminate the upper body walkway area. The lights shall be activated when the parking brake is set.

Each light shall be mounted in a ball burnished cast aluminum housing to protect against damage from personnel or equipment.

FOLD-DOWN STEP

There shall be one (1) fold-down step located at the bottom of the roof access stairway mounted on top of bumper to reduce the distance from the ground to the first step. The step surface shall be NFPA compliant aluminum treadplate and shall manually fold up into the stairway with an over-center gas shock to hold step in position during travel. The step shall activate the "Hazard Warning Light" in the cab when not in the stowed position.

REAR BODY HANDRAILS

There shall be two (2) vertical handrails on the rear of the body. Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

BODY WIDTH DIMENSIONS

The body shall be 100.0" wide, not including drip rail or non-permanent fixtures. Interior compartment depth dimensions shall be:

<u>Area Description</u>	<u>Dimension</u>
Transverse Area:	95.5"
- Above Top of Subframe	
Compartment Depth:	24.5"
- Below Top of Subframe	
- Ahead of Rear Axle	
Compartment Depth:	23.5"
- Below Top of Subframe	(Eng. Note)
- Behind the Rear Axle	

(Dimensions are generic and subject to change during the actual design process)

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 49.0" wide.

The compartment door opening shall be approximately 42.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) shelf approximately 24" deep. The shelf shall be fabricated from 3/16" 3003 aluminum sheet. The shelf will be located above the Paratech foot plates.
- There will be one (1) module designed to hold six (6) Merced County Fire Department supplied Paratech model 22-796360 72" Long Shore Strut 610 rescue struts. Each strut will be stored in an individual PVC tube constructed using 4" ID to support the struts and prevent metal on metal contact when stored. There will be a drop down door located across the opening of the tubes to prevent contact between the struts and the roll up door during transport. The module shall only allow access from the streetside of the vehicle.
- There will be one (1) storage module designed to hold base plates for the Paratech Struts. The module will be located above the extended floor area per the drawing. The plates will be stored on edge and will slide into position within in a guide track.
- There shall be one (1) slide-out smooth aluminum vertical tool board(s) approximately 24" deep. Each tool boards shall be fabricated of 3/16" (.188) aluminum 3003H-14 alloy smooth plate with double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.
 - The board will be designed to hold Paratech Struts to match SVI #742.
- Each tool board will be bolted to compartment floor.
- There shall be one (1) vertical compartment partition dividing the compartment into left and right sides.
- There shall be four (4) removable aluminum tool box(s) with handles. Each box shall be fabricated from 3/16" (.188) 3003H-14 aluminum alloy sheet. Three (3) boxes will be approximately 8.00" W x 10.00" T x 16.00" D, and one (1) box will be approximately 24.00" W x 10.00" T x 16.00" D. The larger box will include a hinged lid and legs to allow it to nest above the lower tool boxes.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- There shall be one (1) bracket provided on the rear of the vertical partition for the storage of one (1) Paratech receiver accessory.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- The 12 volt electrical distribution panel shall be located in the streetside front lower compartment.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

STREETSIDE COMPARTMENT - AHEAD OF REAR WHEELS (S2)

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. Each tray shall be vertically adjustable. Each tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
- There shall be one (1) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".

The tray will have welded in partitions to copy the previous Merced County unit, SVI #742.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- There shall be one (1) transverse module fabricated from 3/16" (.188) 3003H-14 aluminum alloy smooth sheet. The module shall be reinforced sufficiently to carry the weight of the items stored without sagging or bowing. The module shall be designed for the following long tools and equipment:
 - One (1) Merced County Fire Department supplied 2.00" x 10.00" dimensional lumber in the open area between the stokes basket and the breaker bar storage area.
 - Four (4) Merced County Fire Department supplied breaker bar(s). A hinged door shall be provided to prevent the bars from sliding out of the storage module during transport. The storage area shall be located at the edge of the compartment to allow for easy loading and unloading of equipment.
 - One (1) Merced County Fire Department supplied stokes basket(s).
 - One (1) Merced County Fire Department supplied backboard. The backboard storage area shall include 'L' shaped brackets to allow the backboard to be slid in place above the stokes basket.
 - There shall be one (1) OnScene Solutions cargo straps provided to secure the stored equipment.
- There shall be one (1) transverse plywood storage module located on the floor of the compartment. The module shall be designed for the storage of 4' x 8' sheets of plywood without altering the size. The module shall be approximately 14.00" tall and be fabricated from 3/16" (.188) 3003H-14 aluminum alloy sheet. The module shall have a hinged drop down door on each side and one (1) adjustable shelf to allow multiple storage configurations. Module shall hold the following items;
 - Eight (8) Merced County Fire Department supplied sheets of 4' x 8' x 3/4" sheets of plywood.
 - Twelve (12) Merced County Fire Department supplied sections of 4"x4"x8' dimensional lumber.
- There shall be two (2) removable aluminum tool box(s) with hand holes. Each box shall be fabricated from 3/16" (.188) 3003H-14 aluminum alloy sheet. One (1) tool box shall be approximately 26.50"L x 14.00"D x 10.00"T, and one tool box shall be approximately 18.00"L x 14.00"D x 10.00"T. The tool boxes shall be located on the fixed 400 lbs. slide-out tray.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S3)

The interior useable compartment width shall be approximately 59.0" wide.

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
 - The tray will have several welded in partitions to create several separate areas. The design will be the same as SVI #742.
- There shall be two (2) 12 volt accessory plug(s) wired battery direct furnished and installed on the rear area of the 400 lbs. slide-out tray, adjacent to the specified 120V power strip. The power ports will be used to power one (1) 12 VDC DeWalt battery charger and one (1) portable radio charger.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- One (1) 12 volt terminal block(s) installed to provide 12 VDC power for equipment supplied by the Merced County Fire Department. Exact location shall be determined at the pre-construction meeting.
- One (1) 120/240 VAC load center.
 - The generator gauge panel.
- A 100 ampere, 240 VAC, single phase shore power receptacle shall be located in this compartment.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- There shall be one (1) 120 volt outlet(s) located in this compartment on the forward wall unless noted otherwise.
- The outlet receptacle(s) shall be 15 amp, straight-blade (NEMA 5-15R).
- There shall be one (1) 120 volt outlet strip(s) approximately 2' long with straight blade household type outlets provided with this outlet. Exact mounting location shall be specified by the Merced County Fire Department at the pre-construction meeting.
 - Outlet(s) shall be powered by both the on-board generator and shore power system through a relay system.
- A Bauer model BP-13H-E3 air compressor with a recharging rate of 13.0 SCFM @ 6,000 PSI shall be provided, . Compressor skid shall include soft start electric motor, P5 Securus purification system, electronic CO monitor, and fill station inter-connecting harness.
- An Appleton inlet and base for providing shore power shall be provided for operating compressor system from in-house electrical building system. The matching Appleton plug shall be provided loose with delivered unit. Any building wiring shall be responsibility of Merced County Fire Department. The shore power receptacle shall be installed in such a way as to prevent the shore power cable from contacting the 400 lbs. slide out tray or it's contents.
- Air storage system consisting of three (3) 6,000 PSI, ASME cylinders with gauges and valves shall be provided.
 - There will be a welded reinforcement above the body frame to carry specified DOT or ASME cylinders. The mounting of the cylinders will be with adjustable track and powder coated steel band straps to securely hold all cylinders in place.
 - Training and instruction shall be provided by compressor manufacturer at Merced County Fire Department location on proper use of complete air compressor system.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

STREETSIDE COMPARTMENT - REAR (S4)

The interior useable compartment width shall be approximately 49.0" wide.

The compartment door opening shall be approximately 42.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 70" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
 - The tray shall have a middle partition dividing the center portion of tray into two equal sections length-wise. The reward portion of the tray shall have eight (8) individual sections created to hold assorted drill bits, and miscellaneous items. There shall be provisions on the low pressure air bag module to store two (2) bolt cutters and the sledge/axe/Pulaski storage module which were previously stored in the transverse cab compartment of the last unit built. The tray will copy the design of the previous Merced County unit #742.
- There shall be one (1) slide-out smooth aluminum vertical tool board(s) approximately 30" deep. Each tool boards shall be fabricated of 3/16" (.188) aluminum 3003H-14 alloy smooth plate with double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board shall be provided with Accuride 9300 series slide tracks. Each board shall be rated for a maximum 200 lbs. evenly distributed load. Each tool board shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.
 - The tool board will hold three (3) Hilti electric breakers, one (1) on the front side of the board and tow (2) on the opposite side of the board. There will be pockets located on each side of the board to hold the breakers bars and the power cord. The design will copy the previous Merced County unit #742.
 - Each tool board shall be horizontally adjustable; mounted on aluminum shelf trac on compartment floor.
- There shall be one (1) vertical compartment partition dividing the compartment into left and right sides.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- There shall be one (1) air bag storage module(s). The module shall be fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. Circular notches shall be provided along the front edge to ease the access to the air bags. Each bay shall be sized to hold the air bag and a matching piece of plywood. The module will be mounted to the vertical partition.
 - One (1) Paratech KPI-12
 - One (1) Paratech KPI-17
 - One (1) Paratech KPI-28
 - One (1) Paratech KPI-44
- There shall be one (1) air hose storage module located on the underside of the extended floor. The module shall be approximately 2" tall by 42" long and divided into two (2) sections. The module shall be used to store various sections of Merced County Fire Department supplied Paratech air hose.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- One (1) Hannay EF1520-17-18 low pressure air hose reel(s) capable of storing 200' of low pressure air hose. The rewind button for each reel shall be located adjacent to the reel it controls.
 - The hose reel shall equipped with 200' of 3/8 low pressure air hose. Molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Red in color.
 - The air supply shall be from the mobile breathing air system.
 - The air supply shall be from the mobile breathing air system. A reel shut-off valve, pressure regulator, and 0-150 psi gauge shall be provided at the air control panel.
 - The fairlead roller shall be mounted directly to the reel.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 49.0" wide.

The compartment door opening shall be approximately 42.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
 - The tray will be divided to hold one Hurst power unit and two (2) bottle jacks.
- There shall be one (1) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 70" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
 - The tray will be designed to match Merced #742.
- There shall be one (1) OnScene Solutions heavy duty, slide-out vertical tool board(s) approximately 46" deep. Each tool board shall be mounted on an OnScene Solutions slide frame constructed of anodized aluminum extrusion(s). Each slide shall have a cable operated, spring loaded latch complimented by a red "T" handle (Pull to Release). The slide shall lock in the closed and full extension positions. The slide shall be rated for a maximum evenly distributed load of 1,000 lbs. The slide shall include a one piece section of plastic sheeting on each side to protect the aluminum surface from being damaged due to the loading/unloading of tools.
 - There shall be mounting provisions for one (1) Merced County Fire Department supplied Hurst hydraulic ram with Streamline fitting provided on the aft side of the specified tool board.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- There shall be mounting provisions for one (1) Merced County Fire Department supplied Hurst model 362R488 MOC Ultra hydraulic cutter with Streamline fitting provided on the aft side of the specified tool board.
- There shall be mounting provisions for one (1) Merced County Fire Department supplied Hurst model 262R471 Defender 28 hydraulic spreader with Streamline fitting provided on the aft side of the specified tool board.
- There shall be mounting provisions for one (1) Merced County Fire Department supplied Stihl K12 type demo saw provided on the forward side of the specified tool board.
- There shall be mounting provisions for one (1) Merced County Fire Department supplied Stihl MS44120 chain saw with 20" blade provided on the forward side of the specified tool board.
- There shall be mounting provisions for one (1) Merced County Fire Department supplied TS41012 circular saw provided on the forward side of the specified tool board.
- The vertical tool board material shall be 3/16" (.188) 3003H-14 aluminum alloy sheet.
- Each tool board will be bolted to compartment floor.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- One (1) Hannay EF2016-17-18 hydraulic hose reel(s) capable of storing 100' of dual line hydraulic hose. The rewind button for each reel shall be located adjacent to the reel it controls.
 - The hydraulic reel shall be equipped with 100' of Hurst hydraulic hose. The hose shall be Orange in color.
 - The hydraulic reel shall connect to the hydraulic pump with a 12' Hurst pigtail. The hose shall be Orange in color.
 - The fairlead roller shall be mounted directly to the reel.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- There shall be a compartment hydraulic bulkhead panel located in the lower portion of the compartment, against the aft compartment wall. The panel shall include five (5) Hurst Streamline quick connect nipple fittings (Hurst model #128R108) to connect the Merced County Fire Department supplied gas Simo hydraulic power unit to the two (2) front bumper connections, the two (2) rear body connections, or the compartment hose reel via the hydraulic unit attached pigtail connectors. The connections shall be clearly labeled as to end location.
 - The front bumper Streamline fittings shall connect to the hydraulic bulkhead panel with two (2) 30' Hurst pigtail(s). The hose shall be Blue in color.
 - The rear apparatus Streamline fittings shall connect to the hydraulic bulkhead panel with two (2) 30' Hurst pigtail(s). The hose shall be Green in color.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CURBSIDE COMPARTMENT - AHEAD OF REAR WHEEL (C2)

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. The tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 24" deep and as wide as the compartment layout or door opening permits. Each tray shall be vertically adjustable. Each tray top shall be fabricated from 3/16" 3003 aluminum sheet with a 3" vertical lip and welded corners to form a box type tray surface. The sliding tracks shall extend 100% of the slide length. The tray assembly shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.
- There shall be one (1) 150 lbs. slide out and down tray(s) with an OnScene Solutions base approximately 46" deep and as wide as the compartment layout or door opening permits. It shall be located above the level of the chassis frame rails and shall be vertically adjustable in height. Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will hold the tray in the closed position. Each tray shall be fabricated from 3/16" 3003 aluminum sheet and have welded corners to form a box type tray surface with an internal depth of approximately 3 ½".
- There shall be one (1) vertical compartment partition dividing the compartment into left and right sides.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- There shall be one (1) transverse module(s) which extends to the opposite side of the body. (Specified in opposite side compartment.)
 - There shall be one (1) OnScene Solutions cargo straps provided to secure the stored equipment.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- One (1) Hannay ECR1616-17-18 electric cable reel(s) capable of storing 150' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
 - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function.
 - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.
 - The cable reel shall equipped with 150' of 10/3 SEOW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.
 - One (1) Akron model EJB, cast aluminum electrical power distribution box with yellow powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include:
 - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
 - One (1) L5-15 single twist lock receptacle
 - One (1) L5-15 single twist lock receptacle
 - One (1) L5-15 single twist lock receptacle
 - One (1) L5-15 single twist lock receptacle
 - One (1) Akron EJB treadplate vertical apparatus mounting bracket shall be provided.
 - The fairlead roller shall be mounted directly to the reel.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C3)

The interior useable compartment width shall be approximately 59.0" wide.

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) SCBA cylinder storage module for 8" OD (maximum) SCBA bottles. The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to prevent damage or abrasion to cylinders. In addition there shall be rubber matting provided in the base of each storage tube for bottle protection and to prevent slipping.
 - The SCBA cylinder module shall be capable of storing six (6) SCBA cylinders up to 7.5" diameter.
 - There shall be one (1) OnScene Solutions cargo straps provided to secure the stored equipment.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CURBSIDE COMPARTMENT - REAR (C4)

The interior useable compartment width shall be approximately 49.0" wide.

The compartment door opening shall be approximately 42.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door slats and the door trim components shall be painted to match the single tone exterior color.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- A keyed cylinder lock shall be provided in the bottom portion of the roll-up door.
- One (1) nylon strap shall be provided to assist in closing the door. The strap shall be fastened to the left side of the lower inside door sill. The strap shall extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) vertically mounted OnScene Solutions LED Nightstik.
- The controls for the specified light tower(s).
- There will be a locking Accuride slide-out bracket that will hold the Bauer compressor filters. This bracket will be located against the rear body wall and next to the fill station

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- One (1) Bauer model CFSII-2S (Containment Type), two (2) position filling station with compressor controls shall be provided with proper reinforcement for weight of fill station.
 - Filling operation shall be controlled with manual controls mounted on front of fill station. An air flow selector valve to fill from either compressor or storage, and manual valves and gauges for each air storage cylinder (maximum of four (4)).
 - An air storage refill port shall be provided on the fill station.
 - One (1) low pressure air hose reel gauge(s), 0-300 psi adjustable regulator(s), and fill control(s) shall be provided on front panel with outlet port located on the rear of the fill station.
 - One (1) fill station fill line(s) shall have a quick disconnect with 2,216 psi fill adapter(s) and pressure relief valve.
 - The fill station fill whip(s) shall terminate in a high pressure 4,500 PSI, CGA-347 threaded SCBA connectors.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ROOF ACCESS STAIRWAY

The rear of the body shall be provided with a recessed center stairway with minimum 34" width. Stairs treads shall be 10" minimum depth and formed from 3/16" NFPA compliant aluminum tread plate with uniformed riser height design. Roll-out ladder design requiring set-up time and 8 plus feet behind apparatus or vertical ladders that do not allow firefighter to safely ascend or descend with equipment will not be acceptable.

STAIRWAY HANDRAILS

There shall be two (2) handrails provided, one (1) on each side wall of recessed center stairway providing three-points of contact at all times for safer access to roof compartments. The handrails shall be angled for optimum use during ingress or egress of the upper walkway area.

Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

UPPER BODY COMPARTMENT - STREETSIDE

Above the exterior streetside compartments shall be an upper body compartment for storage of long equipment. The compartment shall be integral with the body construction, and will not be bolted or added on modules. The outside walls of compartment will be double walled to prevent equipment from denting the outside painted surface. The compartment shall be approximately (insert actual dimensions).

Access to the compartment shall be from a rear facing lift-up compartment door. Door shall be fabricated from 3/16" smooth aluminum with full length 14 gauge stainless steel hinge, with 1/4" stainless steel pin, 6" non-locking stainless steel "D" ring handle, and a gas cylinder door holder. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary to prevent corrosion. Door shall overlap body surface to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

Compartment shall have a flush mounted light near door opening that will be automatically activated when door is opened, and wired to compartment door ajar warning light provided in cab.

Devices to secure equipment, compartment dividers, or UHMW plastic angles, or sheeting will be used for storage of specified equipment as required to prevent damage to equipment.

The compartment will be designed to store the following equipment:

- Two (2) 10' wall ladder(s).

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

UPPER BODY COMPARTMENT - CURBSIDE

Above the exterior curbside compartments shall be an upper body compartment for storage of long equipment. The compartment shall be integral with the body construction, and will not be bolted or added on modules. The outside walls of compartment will be double walled to prevent equipment from denting the outside painted surface. The compartment shall be approximately (insert actual dimensions).

Access to the compartment shall be from a rear facing lift-up compartment door. Door shall be fabricated from 3/16" smooth aluminum with full length 14 gauge stainless steel hinge, with 1/4" stainless steel pin, 6" non-locking stainless steel "D" ring handle, and a gas cylinder door holder. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary to prevent corrosion. Door shall overlap body surface to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

Compartment shall have a flush mounted light near door opening that will be automatically activated when door is opened, and wired to compartment door ajar warning light provided in cab.

Devices to secure equipment, compartment dividers, or UHMW plastic angles, or sheeting will be used for storage of specified equipment as required to prevent damage to equipment.

The compartment will be designed to store the following equipment:

- One (1) pieces of dimensional wood lumber up to 10' in length.

ROPE TIE-OFF OR PORTABLE WINCH RECEIVERS

The completed unit shall have an integrated receiver system for use with rope rescue accessories and/or electric winch components when specified. Each receiver shall have the following load rating:

	<u>STRAIGHT PULL</u>	<u>SAFETY FACTOR</u>
Rope Tie Off:	600 LBS.	15:1
Winch:	1,000 LBS	4:1

The following items shall be provided to accomplish rope rescue and/or portable winch operations:

- Four (4) rope accessory receiver(s) shall be furnished and installed on the body roof. The receiver shall be manufactured using 1/4" wall receiver tube and 1/2" steel plate. The receiver assembly shall be powder coat painted. Each receiver shall have hitch pin provided to lock the rope accessory in place. Body reinforcements shall be added to the roof to increase the structural integrity and to provide a weight rating of 600 lbs. working load and 9000 lbs. maximum load using a 15:1 safety factor to match 1/2" diameter rope ratings.
- Two (2) rope tie off anchor accessories shall be provided with the completed vehicle. Each anchor accessory shall include a hitch pin to lock it in place. The tie off anchor accessories shall have an eyelet for use with a rope rescue carabineer. A mounting bracket shall be provided to store each rope tie off accessory in a body compartment as close to receiver as possible.
- There shall be one (1) receiver tube(s) located on the streetside of the body in the rearward portion of the wheel well panel for use with rope tie-off accessory and/or a portable electric winch.
 - There shall be one (1) rubber cover / plug for the receiver.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

- There shall be one (1) brushed stainless steel body protection panel for the receiver. The protection panel shall extend approximately 3" around the sides of the receiver and be designed to prevent paint damage from tie off use.
- There shall be one (1) receiver tubes located on the streetside below body ahead of rear wheels (50" center-center from roof tie-off location) for use with rope tie-off accessory and/or a portable electric winch. ***The receiver tube shall have the pin hole drilled 1" further forward than standard to allow for use with the Paratech high angle system.***
 - There shall be one (1) rubber cover / plug for the receiver.
- There shall be one (1) receiver tube(s) located on the curbside of the body in the rearward portion of the wheel well panel for use with rope tie-off accessory and/or a portable electric winch.
 - There shall be one (1) rubber cover / plug for the receiver.
- There shall be one (1) brushed stainless steel body protection panel for the receiver. The protection panel shall extend approximately 3" around the sides of the receiver and be designed to prevent paint damage from tie off use.
- There shall be one (1) receiver tubes located on the curbside below body ahead of rear wheels (50" center-center from roof tie-off location) for use with rope tie-off accessory and/or a portable electric winch. ***The receiver tube shall have the pin hole drilled 1" further forward than standard to allow for use with the Paratech high angle system.***
 - There shall be one (1) rubber cover / plug for the receiver.

FRONT GRAVEL GUARDS

Gravel guards shall be fabricated of brushed stainless steel. Gravel guards shall be installed on the front lower body corners and shall wrap around the corners to the front compartment door hinge on each side.

ROLL-OUT AWNING CURBSIDE

A heavy duty canopy awning shall be installed on the apparatus body. The awning shall be approximately 18' long with approximately 8' of extension length.

The awning shall be manufactured with satin finish extruded aluminum arms and braces. The arm channels shall utilize nylon bearings for a smooth operation. Awning shall lock while in stored position to prevent any rattling during travel. Awning shall lock and unlock with a remote brake control located on awning arm, not requiring the use of a wand.

The awning shall activate the door ajar warning system in the cab when not in the stowed position.

Features of the awning are:

- Awning hangers
- Built-in awning tie downs to hold awning steady in a breeze
- Alumaguard metal wrap cover
- The awning fabric shall be Firesist Black (88008-000)

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

REAR HURST CONNECTION

There shall be two (2) Hurst Streamline hydraulic tool quick connections located on the driver side rear body wall, adjacent to the stairwell. The connections shall be located behind a Cast Products aluminum door. The hose will be green in color and will run to the bulkhead connection located in C1.

LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC

General

Any low voltage electrical systems or warning devices installed on the fire apparatus shall be appropriate for the mounting location and intended electrical load.

Where wire passes through sheet metal, grommets shall be used to protect wire and wire looms. Electrical connections shall be with double crimp water-tight heat shrink connectors.

All 12 VDC wiring running from front to back of vehicle body shall be run in full length electrical wiring raceway down each side of body.

Wiring

All electrical circuit feeder wiring supplied and installed by the fire apparatus manufacturer shall meet the requirements of NFPA Chapter 13.

The circuit feeder wire shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 % of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10 %. The use of star washers for circuit ground connections shall not be permitted.

All circuits shall otherwise be wired in conformance with SAE J1292, *Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring*.

Wiring and Wire Harness Construction

All insulated wire and cable shall conform to SAE J1127, *Low Voltage Battery Cable*, or SAE J1128, *Low Voltage Primary Cable*, type SXL, GXL, or TXL.

All conductors shall be constructed in accordance with SAE J1127 or SAE J1128, except where good engineering practice dictates special strand construction. Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application. Physical and dimensional values of conductor insulation shall be in conformance with the requirements of SAE J1127 or SAE J1128, except where good engineering practice dictates special conductor insulation. The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher temperatures. The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating of 194°F (90°C), except where good engineering practice dictates special consideration for cable installations exposed to higher temperatures.

All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. All ungrounded electrical terminals shall have protective covers or be in enclosures. Wire nut, insulation displacement, and insulation piercing connections shall not be used.

Wiring shall be restrained to prevent damage caused by chafing or ice buildup and protected against heat, liquid contaminants, or other environmental factors.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

Wiring shall be uniquely identified at least every 2 ft (0.6 m) by color coding or permanent marking with a circuit function code. The identification shall reference a wiring diagram.

Circuits shall be provided with properly rated low voltage overcurrent protective devices. Such devices shall be readily accessible and protected against heat in excess of the overcurrent device's design range, mechanical damage, and water spray. Circuit protection shall be accomplished by utilizing fuses, circuit breakers, fusible links, or solid state equivalent devices.

If a mechanical-type device is used, it shall conform to one of the following SAE standards:

- SAE J156, *Fusible Links*
- SAE J553, *Circuit Breakers*
- 1) SAE J554, *Electric Fuses (Cartridge Type)*
- 2) SAE J1888, *High Current Time Lag Electric Fuses*
- 3) SAE J2077, *Miniature Blade Type Electrical Fuses*

Switches, relays, terminals, and connectors shall have a direct current (dc) rating of 125 % of maximum current for which the circuit is protected.

Power Supply

A 12 V or greater electrical alternator shall be provided. The alternator shall have a minimum output at idle to meet the minimum continuous electrical load of the vehicle, at 200°F (93°C) ambient temperature within the engine compartment, and shall be provided with full automatic regulation.

Minimum Continuous Electrical Load

The minimum continuous electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode during emergency operations:

- 4) The propulsion engine and transmission
- 5) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers
- 1) The radio(s) at a duty cycle of 10 percent transmit and 90 % receive (for calculation and testing purposes, a default value of 5 A continuous)
- 2) The lighting necessary to produce 2 fc (20 lx) of illumination on all walking surfaces on the apparatus and on the ground at all egress points onto and off the apparatus, 5 fc (50 lx) of illumination on all control and instrument panels, and 50 percent of the total compartment lighting loads
- 3) The minimum optical warning system, where the apparatus is blocking the right-of way
- 4) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps
- 5) Other warning devices and electrical loads defined by the purchaser as critical to the mission of the apparatus

If the apparatus is equipped to tow a trailer, an additional 45 A shall be added to the minimum continuous electrical load to provide electrical power for the federally required clearance and marker lighting and the optical warning devices mounted on the trailer.

The condition of the low voltage electrical system shall be monitored by a warning system that provides both an audible and a visual signal to persons on, in, or near the apparatus of an impending electrical system failure caused by the excessive discharge of the battery set.

The charge status of the battery shall be determined either by direct measurement of the battery charge or indirectly by monitoring the electrical system voltage.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

If electrical system voltage is monitored, the alarm shall sound if the system voltage at the battery or at the master load disconnect switch drops below 11.8 V for 12 V nominal systems, 23.6 V for 24 V nominal systems, or 35.4 V for 42 V nominal systems for more than 120 seconds.

A voltmeter shall be mounted on the driver's instrument panel to allow direct observation of the system voltage.

Electromagnetic Interference

Electromagnetic interference suppression shall be provided, as required, to satisfy the radiation limits specified in SAE J551/1, *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*.

Wiring Diagram

A complete electrical wiring schematic of actual system shall be provided with finished apparatus. Similar or generic type electrical schematics shall NOT BE ACCEPTABLE.

Low Voltage Electrical System Performance Test

A low voltage electrical system test certification shall be provided with delivered apparatus.

12 VOLT MULTIPLEX CONTROL CENTER

The apparatus shall have a multiplexed 12 volt electrical system that will provide complete diagnostic capability. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions.

The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators.

BATTERY SYSTEM

The battery connectors shall be heavy duty type with cables terminating in heat shrink loom. Heavy duty battery cables shall provide maximum power to the electrical system. Where required, the cables shall be shielded from exhaust tubing and the muffler. Large rubber grommets shall be provided where cables enter the battery compartment.

Batteries shall be of the high-cycle type. With the engine off, the battery system shall be able to provide the minimum continuous electrical load for 10 minutes without discharging more than 50 percent of the reserve capacity and then to restart the engine. The battery system cold cranking amps (CCA) rating shall meet or exceed the minimum CCA recommendations of the engine manufacturer. The batteries shall be mounted to prevent movement during fire apparatus operation and shall be protected against accumulations of road spray, snow, and road debris. The batteries shall be readily accessible for examination, testing, and maintenance.

A means shall be provided for jump-starting the engine if the batteries are not accessible without lifting the cab of a tilt-cab apparatus.

Where an enclosed battery compartment is provided, it shall be ventilated to the exterior to prevent the buildup of heat and explosive fumes. The batteries shall be protected against vibration and temperatures that exceed the battery manufacturer's recommendation.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

A master load disconnect switch shall be provided between the starter solenoid(s) and the remainder of the electrical loads on the apparatus. The starter solenoids shall be connected directly to the batteries.

Electronic control systems and similar devices shall be permitted to be otherwise connected if so specified by their manufacturer.

The alternator shall be wired directly to the batteries through the ammeter shunt(s), if one is provided, and not through the master load disconnect switch.

A green "battery on" pilot light that is visible from the driver's position shall be provided.

A sequential switching device shall be permitted to energize the optical warning devices and other high current devices required in minimum continuous electrical load, provided the switching device shall first energize the electrical devices required in minimum continuous electrical load within five (5) seconds.

BATTERY SWITCH

One (1) battery "On/Off" switch in cab located within easy reach of Driver with green "BATTERY ON" pilot light that is visible from the driver's position shall be provided. The switch and pilot light shall be supplied and installed by the cab/chassis manufacturer.

BATTERY SOLENOID

Battery switch shall consist of a minimum 200 ampere, constant duty solenoid to feed from positive side of battery.

BATTERY CONDITIONER

One (1) Kussmaul model Auto Charge 1000 single battery conditioner, with 120 VAC input and 15 amp, 12 volt output shall be provided. This system shall monitor the condition of batteries and provide an electrical current at variable rates to overcome battery failure. A display shall be provided with charge indicator, remote mounted.

SHORE POWER INLET

One (1) Kussmaul 120 VAC, 20 amp shore power inlet with weather resistant snap cover shall be provided. The protective ground from the shoreline inlet shall be bonded to the vehicle frame.

6) The outlet cover shall be red.

7) The shore power inlet shall be located on the streetside rear of the body.

ENGINE COMPARTMENT LIGHT

Engine compartment light(s) shall be supplied and installed by the cab chassis manufacturer.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

CAB HAZARD WARNING LIGHT

A red "HAZARD" warning light shall be supplied and installed by the cab/chassis manufacturer. Light shall illuminate automatically to warn the Driver of the following when the apparatus parking brake is not fully engaged:

- Any passenger or compartment door is open
- Equipment rack is not in stowed position
- Light tower is extended

The light shall be labeled "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

BACK-UP ALARM

An electronic back-up alarm shall be supplied and installed by the cab/chassis manufacturer. The back-up alarm shall actuate automatically when the transmission gear selector is placed in reverse.

REAR VIEW CAMERA

The cab chassis provided rear view camera shall be installed on the rear of the body.

TAIL LIGHTS

Rear body tail lights shall be vertically mounted per Federal Motor Vehicle Safety Standards. The following lights shall be furnished:

- Two (2) Whelen amber LED 600 Series 60A00TAR turn signal lights
- Two (2) Whelen red LED 600 Series 60R00XRR stop/tail lights
- Two (2) Whelen halogen 600 Series 60J000CR back-up lights with clear lens
- Two (2) Whelen warning lights as detailed in the warning light section

Two (2) Whelen CAST-4V, 4-light polished aluminum bezels shall be provided, one (1) each side vertically mounted on the rear of the apparatus body for the above tail lights.

MIDSHIP MARKER/TURN SIGNAL

Two (2) Whelen LED midship body clearance marker/turn signal lights (T0A00MAR) shall be installed. There shall be one (1) light on each side of the body, in the wheel well, ahead of the rear axle. Both lights shall have an amber lens and operate with the chassis clearance marker and turn signals.

MARKER LIGHTS

The apparatus body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) regulations. All body clearance lights shall be Truck-Lite Model 18 LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

CAB STEP LIGHTS / GROUND LIGHTS

The step lights and/or ground lights shall be supplied and installed by the cab/chassis manufacturer. Light(s) shall be capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

Lighting designed to provide illumination on areas under the driver and crew riding area exits shall be switchable but activated automatically when the exit doors are opened.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

LICENSE PLATE LIGHT



One (1) Arrow #437 chrome plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.

ELECTRONIC SIREN

The siren control head shall be supplied and installed by the cab/chassis manufacturer.

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer.

SIDE SCENE LIGHTS

There shall be four (4) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) provided on the upper body. Light quantity shall be divided equally per side. Each light will have an 8-32 degree gradient lens and chrome flange.

Two (2) switches shall be provided, one (1) for the streetside scene lights, and one (1) for the curbside scene lights.

The lights shall be switched at the Vista display in the cab.

REAR SCENE LIGHTS

Two (2) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) shall be provided on the upper rear body to light the work area immediately behind the vehicle to a level of at least 3 fc (30 lx) within a 10 ft x 10 ft (3 m x 3 m) square. Each light will have a 8-32 degree gradient lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

The rear scene lights shall also be activated when the apparatus is in reverse.

SIGTRONICS INTERCOM SYSTEM

The following Sigtronics intercom system shall be provided and installed to improve the safety of firefighters and rescue professionals through enhanced communication and hearing protection. System shall have the following major components as minimum;

INTERCOM SYSTEM INSTALLATION

The above listed intercom system shall be installed in the following locations in the cab:

The system will be a model US-67s with a Kenwood 780K single radio interface. The driver and officer headset will have PTT radio feature.

- Driver's – Mounted above the left shoulder position on the outside wall.
- Officer's – Mounted above the right shoulder position on the outside wall.
- Driver's side rear facing – above the right shoulder on the wall or ceiling.
- Officer's side rear facing – above the left shoulder on the wall or ceiling.
- Driver's side forward facing – above the right shoulder on the rear wall or ceiling.
- Driver's side forward facing center – above the left shoulder on the rear wall or ceiling.
- Officer's side forward facing center – above the right shoulder on the rear wall or ceiling.
- One (1) additional jack located at the air fill station.



Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

WARNING LIGHT PACKAGE

Each apparatus shall have a system of optical warning devices that meets or exceeds the requirements of this section.

The optical warning system shall consist of an upper and a lower warning level. The requirements for each level shall be met by the warning devices in that particular level without consideration of the warning devices in the other level.

For the purposes of defining and measuring the required optical performance, the upper and lower warning levels shall be divided into four warning zones. The four zones shall be determined by lines drawn through the geometric center of the apparatus at 45 degrees to a line drawn lengthwise through the geometric center of the apparatus. The four zones shall be designated A, B, C, and D in a clockwise direction, with zone A to the front of the apparatus.

Each optical warning device shall be installed on the apparatus and connected to the apparatus's electrical system in accordance with the requirements of this standard and the requirements of the manufacturer of the device.

A master optical warning system switch that energizes all the optical warning devices shall be provided.

The optical warning system on the fire apparatus shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One mode shall signal that the apparatus is stopped and is blocking the right-of-way. The use of some or all of the same warning lights shall be permitted for both modes provided the other requirements of this chapter are met.

A switching system shall be provided that senses the position of the parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical warning system switch is closed and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized. The system shall be permitted to have a method of modifying the two signaling modes.

The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s). The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

UPPER LEVEL OPTICAL WARNING DEVICES

The upper-level optical warning devices shall be mounted as high and as close to the corner points of the apparatus as is practical to define the clearance lines of the apparatus. The upper-level optical warning devices shall not be mounted above the maximum height, specified by the device manufacturer.

ZONE A - FRONT WARNING LIGHTS

There shall be one (1) Whelen Edge FN72QLED LED 72" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

<u>SECTION</u>	<u>INTERNAL COMPONENTS</u>	<u>LENS COLOR</u>
1	Red Linear LED - Side Facing	Clear
2	Red Corner LED	Clear
3	Clear Linear LED	Clear
4	Red Linear LED	Clear
5	Red Linear LED (Steady Burn)	Clear
6	Red Linear LED	Clear
7	Clear Linear LED	Clear
8	Clear Linear LED	Clear
9	Red Linear LED	Clear
10	Red Linear LED (Steady Burn)	Clear
11	Red Linear LED	Clear
12	Clear Linear LED	Clear
13	Red Corner LED	Clear
14	Red Linear LED - Side Facing	Clear

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901.

The lightbar shall be separately switched at the vista display in the cab.

ZONES B AND D - SIDE WARNING LIGHTS

UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red Linear Super-LED lights (90RR5FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red Linear Super-LED lights (90RR5FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red Linear Super-LED lights (90RR5FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

LOWER LEVEL OPTICAL WARNING DEVICES

To define the clearance lines of the apparatus, the optical center of the lower-level optical warning devices in the front of the vehicle shall be mounted on or forward of the front axle centerline and as close to the front corner points of the apparatus as is practical.

The optical center of the lower-level optical warning devices at the rear of the vehicle shall be mounted on or behind the rear axle centerline and as close to the rear corners of the apparatus as is practical. The optical center of any lower-level device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground for large apparatus, and 18 in. and 48 in. (460 mm and 1220 mm) above level ground for small apparatus.

A midship optical warning device shall be mounted right and the left sides of the apparatus if the distance between the front and rear lower-level optical devices exceeds 25 ft (7.6 m) at the optical center. Additional midship optical warning devices shall be required, where necessary, to maintain a horizontal distance between the centers of adjacent lower-level optical warning devices of 25 ft (7.6 m) or less. The optical center of any midship mounted optical warning device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground.

ZONE A - FRONT WARNING LIGHTS

The warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system.

The lights shall be switched at the Vista display in the cab.

ZONES B AND D - CAB INTERSECTOR LIGHT (CAB FRONT CORNERS)

The warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system.

The lights shall be switched at the Vista display in the cab.

ZONES B AND D - BODY INTERSECTOR LIGHT (BODY WHEELWELL AREA)

There shall be two (2) Whelen 600 series (6" x 4") red Linear Super-LED lights (60R02FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

ZONES B AND D - BODY INTERSECTOR LIGHT (BODY REAR CORNERS)

There shall be two (2) Whelen 600 series (6" x 4") red Linear Super-LED lights (60R02FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Whelen 600 series (6" x 4") red Linear Super-LED lights (60R02FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

LINE VOLTAGE ELECTRICAL SYSTEM

ONAN PTO GENERATOR

The vehicle shall be equipped with an Onan Protec PTO generator system with a capacity of 40,000 watts at 120/240 VAC three phase. Current frequency shall be stable at 60 hertz.

The transmission's PTO port and PTO, or the split shaft PTO, and all associated drive shaft components shall be rated to support the continuous duty torque requirements of the generator's continuous duty rating as stated on the power source nameplate.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO, the driving compartment speedometer shall register when the generator drive system is engaged.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO and a chassis transmission retarder is furnished, it shall be automatically disengaged for generator operations.

The direct drive generator shall be mounted so that it does not change the ramp breakover angle, angle of departure, or angle of approach as defined by other components, and it shall not extend into the ground clearance area.

The direct drive generator shall be mounted away from exhaust and muffler areas or provided with a heat shield to reduce operating temperatures in the generator area.

GENERATOR ENGAGEMENT

A "Generator Engaged" indicator shall be provided in the driving compartment to indicate that the generator shift has been successfully completed.

An "OK to Operate Generator" indicator shall be provided in the driving compartment to indicate that the generator is engaged (if not always engaged), the transmission is in the proper gear (if required, automatic transmissions only), and the parking brake is engaged (if applicable).

An interlock system shall be provided to prevent advancement of the engine speed in the driving compartment or at any operator's panel unless the parking brake is engaged, and the transmission is in neutral or the output of the transmission is correctly connected to a pump or generator instead of the drive wheels.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

WARRANTY PERIOD

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the Protec YDCR series PTO generators shall be free from defects in material and workmanship for a period of five (5) years or one thousand (1,000) hours, whichever comes first, from the date of delivery to the first purchaser.

GENERATOR SPLASH GUARD

A powder coat painted splash cover shall be installed to reduce the amount of road spray on the frame mounted PTO generator. A V-ring seal shall also be installed in the cover to provide additional protection against contaminants reaching the generator front seals.

GENERATOR MOUNTING

The generator shall be mounted between the chassis frame rails. The generator mounting brackets shall be fabricated using heavy duty steel tubing, or structural channel. The generator mounting shall be bolted and removable so that the generator can be lowered from under apparatus for service, if necessary. The generator case shall not extend below the bottom edge of the apparatus body.

MANUALS AND SCHEMATICS

Two (2) complete manuals on parts list, maintenance, wiring schematics, hydraulic schematics, circuit boards, voltage regulator board and other components shall be provided on delivery.

POWER-TAKE-OFF GENERATOR DRIVE

There shall be a "Hot Shift" power-take-off (PTO) installed on the transmission PTO opening of the chassis. The "Hot Shift" PTO is provided to allow the engagement of the PTO at higher engine RPM speeds. The PTO output shall be connected to the generator through hollow tube type driveline with heavy duty universals.

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO.

The power supply to the PTO engagement control shall be wired to the parking brake and a neutral position transmission switch to prevent engagement unless the vehicle is stopped and transmission has been placed in neutral.

The installation of the engine, transmission, driven accessories (power takeoffs (PTO), etc.) shall meet the engine and transmission manufacturers' installation recommendations for the service intended.

Model part number shall be Chelsea 277XMFJPB5XD, 129% Ratio.

ENGINE SPEED CONTROL

The apparatus shall be equipped with an InPower ETM, Electronic Throttle Module to maintain a stable cycle output from generator.

An interlock shall prevent the operation of the engine speed auxiliary control device unless the parking brake is engaged and the transmission is in neutral or park, or the parking brake is engaged and the engine is disengaged from the drive wheels.

The engine shall be prevented from regulating its own engine speed during times when engine rpm control is critical for consistent apparatus functions such as generator, water pump, or aerial operation.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

GENERATOR MONITORING PANEL

To properly monitor the generator performance and load demand during operation, the generator installation shall be equipped with a full instrument monitor panel.

- Generator frequency in hertz
- Line voltage, phase to neutral or phase to phase, in volts
- Line current in amperes

Individual line current and voltage shall be displayed at the push of a button.

The program shall support the accumulation of elapsed generator hours. Generator hours shall be displayed.

LOADCENTER

The loadcenter shall be a Cutler Hammer, BR Series, specifically designed for protection and distribution of 120/240 volt AC, such as lighting and small motor branch circuits. The loadcenter enclosure shall be made of 16 gauge galvanized sheet steel. The galvanized coating provides corrosion protection and as such does not require paint. All trims used on the BR Loadcenter shall be chromate sealed and finished with electro disposition epoxy paint (ASA61) which exceeds requirements for outdoor and indoor applications. A combination surface/flush cover with integral door shall be supplied.

The loadcenter shall be UL / CSA listed, **NO EXCEPTIONS** will be allowed.

OUTLETS AND CIRCUITS

The generator and or shore power shall supply the 120/240 volt electrical equipment and outlets outlined below. Proper circuit protection shall be installed as noted:

Two (2) 120 volt exterior outlets, one (1) each side near rear wheel well area.

- The outlet receptacle(s) shall be 15 amp, twist-lock (NEMA L5-15R).

Two (2) 120 volt exterior outlets, one (1) each side rear of body.

- The outlet receptacle(s) shall be 15 amp, twist-lock (NEMA L5-15R).

LINE VOLTAGE ELECTRICAL SYSTEM

GENERAL REQUIREMENTS

Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz, ± 3 Hz when producing power at all levels between no load and full rated power. Any fixed line voltage power source shall produce electric power at the rated voltage ± 10 percent when producing power at all levels between no load and full rated power.

The maximum voltage supplied to portable equipment shall not exceed 275 volts to ground. Higher voltage shall be permitted only when used to operate fixed wired, permanently mounted equipment on the apparatus.

Conformance with National Electrical Code

All components, equipment, and installation procedures shall conform to *NFPA 70, National Electrical Code*, except where superseded by the requirements of this chapter. Where the requirements of this chapter differ from those in *NFPA 70*, the requirements in this chapter shall apply.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

Where available, line voltage electrical system equipment and materials included on the apparatus shall be listed and used only in the manner for which they have been listed. All equipment and materials shall be installed in accordance with the manufacturer's instructions.

Location Ratings

Any equipment used in a dry location shall be listed for dry locations. Any equipment used in a wet location shall be listed for wet locations.

Any equipment, except a PTO-driven generator, used in an underbody or under chassis location that is subject to road spray shall be either listed as Type 4 or mounted in an enclosure that is listed as Type 4.

If a PTO-driven generator is located in an underbody or under chassis location, the installation shall include a shield to prevent road spray from splashing directly on the generator.

Grounding

Grounding shall be in accordance with 250.34(A) and 250.34(B) of *NFPA 70*. Ungrounded systems shall not be used.

Only stranded or braided copper conductors shall be used for grounding and bonding.

The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts.

The neutral conductor shall be colored white or gray in accordance with 200.6, "Means of Identifying Grounded Conductors," of *NFPA 70*.

Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

Bonding

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum ampere rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated ampere on the power source specification label.

A single conductor that is sized to meet the low voltage and line voltage requirements shall be permitted to be used.

Ground Fault Circuit Interrupters

In special service vehicles incorporating a lavatory, sink, toilet, shower, or tub, 120 V, 15 or 20 A receptacles within 6 ft (1.8 m) of these fixtures shall have ground fault circuit interrupter (GFCI) protection. GFCIs integrated into outlets or circuit breakers or as stand-alone devices shall be permitted to be used in situations.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

Power Source General Requirements

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

The power source shall be shielded from contamination that would prevent the power source from operating within its design specifications.

Power Source Rating

For power sources of 8 kW or larger, the power source manufacturer shall declare the continuous duty rating that the power source can provide when installed on fire apparatus according to the manufacturer's instructions and run at 120°F (49°C) air intake temperature at 2000 ft (600 m) above sea level.

The rating on the power source specification label shall not exceed the declared rating from the power source manufacturer.

Access shall be provided to permit both routine maintenance and removal of the power source for major servicing. The power source shall be located such that neither it nor its mounting brackets interfere with the routine maintenance of the fire apparatus.

Instrumentation

If the power source is rated at less than 3 kW, a "Power On" indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided.

If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator's panel:

- Voltmeter
- Current meters for each ungrounded leg
- Frequency (Hz) meter
- 1) Power source hour meter

The instrumentation shall be permanently mounted at an operator's panel. The instruments shall be located in a plane facing the operator. Gauges, switches, or other instruments on this panel shall each have a label to indicate their function.

The instruments and other line voltage equipment and controls shall be protected from mechanical damage and not obstructed by tool mounting or equipment storage.

An instruction plate(s) that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Operation

Provisions shall be made for placing the generator drive system in operation using controls and switches that are identified and within convenient reach of the operator.

Where the generator is driven by the chassis engine and engine compression brakes or engine exhaust brakes are furnished, they shall be automatically disengaged for generator operations.

Any control device used in the generator system power train between the engine and the generator shall be equipped with a means to prevent unintentional movement of the control device from its set position in the power generation mode.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

If there is permanent wiring on the apparatus that is designed to be connected to the power source, a power source specification label that is permanently attached to the apparatus at the operator's control station shall provide the operator with the information required.

The power source, at any load, shall not produce a noise level that exceeds 90 dBA in any driving compartment, crew compartment, or onboard command area with windows and doors closed or at any operator's station on the apparatus.

Power Supply Assembly

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source.

If the power supply assembly connects to the vibrating part of a generator (not a connection on the base), the conductors shall be flexible cord or other fine-stranded conductors enclosed in metallic or nonmetallic liquid tight flexible conduit rated for wet locations and temperatures not less than 194°F (90°C).

Overcurrent Protection

Manually resettable over current devices shall be installed to protect the line voltage electrical system components.

Power Source Protection

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.

If the main over current protection device is subject to road spray, the unit shall be housed in a Type 4-rated enclosure.

Branch Circuit Overcurrent Protection

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, "Protection of Conductors," of *NFPA 70*.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

Panelboards

All fixed power sources shall be hardwired to a permanently mounted panel board unless one of the following conditions exists:

- 2) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated over current devices.
- 3) Only one circuit is hardwired to the power source, which is protected by an integrated over current device.

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

Wiring Methods

Fixed wiring systems shall be limited to the following:

- 4) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)
- 1) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

- 2) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
- 1) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow “flexing” between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used.

Splices shall be made only in a listed junction box.

Additional Requirements for Flexible Cord Installations

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

Wiring System Components

Only stranded copper conductors with an insulation rated for temperatures of at least 194°F (90°C) and wet locations shall be used. Conductors in flexible cord shall be sized in accordance with Table 400.5(A) of *NFPA 70*. Conductors used in conduit shall be sized in accordance with 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*. Aluminum or copper-clad aluminum conductors shall not be used.

All boxes shall conform to and be mounted in accordance with Article 314, "Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Manholes," of *NFPA 70*. All boxes shall be accessible using ordinary hand tools. Boxes shall not be permitted behind welded or pop-riveted panels.

The maximum number of conductors permitted in any box shall be in accordance with 314.16, "Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies," of *NFPA 70*.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer's instructions. Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

Each switch shall indicate the position of its contact points (i.e., open or closed) and shall be rated for the continuous operation of the load being controlled. All switches shall be marked with a label indicating the function of the switch. Circuit breakers used as switches shall be "switch rated" (SWD) or better. Switches shall simultaneously open all associated line voltage conductors. Switching of the neutral conductor alone shall not be permitted.

Line voltage circuits controlled by low voltage circuits shall be wired through properly rated relays in listed enclosures that control all non-grounded current-carrying conductors.

Receptacles and Inlet Devices

Wet and Dry Locations

All wet location receptacle outlets and inlet devices, including those on hardwired, remote power distribution boxes, shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 406.8, "Receptacles in Damp or Wet Locations," of *NFPA 70*.

All receptacles located in a wet location shall be not less than 24 in. (600 mm) from the ground. Receptacles on off road fire apparatus shall be a minimum of 30 in. (750 mm) from the ground. All receptacles located in a dry location shall be of the grounding type and shall be at least 12 in. (300 mm) above the interior floor height. No receptacle shall be installed in a face-up position.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

Receptacle Label

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, *Standard for Safety Attachment Plugs and Receptacles*, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

Wiring Schematics

An "As-Built" Wiring diagrams for line voltage systems shall be provided to include the following information;

- 2) Pictorial representations of circuit logic for all electrical components and wiring
 - 1) Circuit identification
 - 2) Connector pin identification
 - (1) Zone location of electrical components
 - (a) Safety interlocks
 - (b) Alternator–battery power distribution circuits
 - (c) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems


120/240 VAC SCENE LIGHTING

SIDE UPPER RECESSED SCENE LIGHTS

Two (2) Fire Research Focus, model FCA200-M12, recessed light(s) shall be installed. They shall be equally divided between the curbside and streetside. The housing shall incorporate internal heat-dissipating fins and have cutout dimensions not to exceed 2" deep by 4 1/4" high by 16 1/8" wide. The lamphead shall protrude no more than 1 1/2" from the housing flange. Wiring shall extend from the bottom of the recessed housing.

The lamp head shall have one (1) quartz halogen 1000 watt 240 volt bulb. The bulb shall draw 4.2 amps and generate 22,000 lumens. The bulb shall be accessible through the front. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. Lamphead and housing shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

- (d) The above lights shall be controlled by two (2) switch(es). The switch(es) shall be located in the cab within reach of the Driver and/or Officer. 

Merced County Fire Department

Air/Light Heavy Rescue


Production Specification

REAR UPPER RECESSED SCENE LIGHTS

Two (2) Fire Research Focus, model FCA200-M12, recessed light(s) shall be installed. They shall be equally divided between the curbside and streetside. The housing shall incorporate internal heat-dissipating fins and have cutout dimensions not to exceed 2" deep by 4 1/4" high by 16 1/8" wide. The lamphead shall protrude no more than 1 1/2" from the housing flange. Wiring shall extend from the bottom of the recessed housing.

The lamp head shall have one (1) quartz halogen 1000 watt 240 volt bulb. The bulb shall draw 4.2 amps and generate 22,000 lumens. The bulb shall be accessible through the front. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. Lamphead and housing shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

(e) The above lights shall be controlled by one (1) switch(es). The switch(es) shall be located in the cab within reach of the Driver and/or Officer. 

COMMAND LIGHT TOWER WITH METAL HALIDE BULB OPTION AND LOWER BANK BACKLIGHT

The apparatus shall be equipped with one (1) all-electric Command Light(s). The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the all-electric light tower specified.

The light bank shall have four (4) weatherproof, 1,500 watt, 240-volt quartz halogen lights and (2) two 1,000 watt metal halide lights. Light heads shall be mounted in three (3) pairs, giving two (2) vertical lines of three (3) when the lights are in the upright position. Power for light bank shall be transmitted through power collecting rings thus allowing 360+ degree continuous rotation in either direction

The lower pair of light heads shall be capable of being rotated about a horizontal axis to provide light down on the vehicle or to the opposite side of the vehicle.

Positioning of the light bank shall be accomplished with maintenance free, heavy-duty 12-volt linear actuators.

The Command Light assembly shall be all aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

Light tower shall be controlled with a hand-held umbilical line remote control. Command Light to be equipped with "Auto-Park" automatic nesting feature.

Command Light controls shall feature:

- (f) Three (3) switches, one (1) for each light bank
 - One (1) light bank rotation switch
 - One (1) switch for elevating lower stage
 - One (1) switch for elevating upper stage
 - One (1) light to indicate when light bank is out of roof nest position
 - One (1) light to indicate when light bank is rotated to proper nest position

Command Light controls shall be located per itemized compartment list.

The light tower shall have a full extension of 10' - 6" from mounted position and shall extend from nested position to full upright in 20 seconds.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

The overall size of the nested light tower shall be approximately 48" wide x 73" long x 15.1/4" high, and weigh approximately 350 lbs.

A flashing warning light shall be provided in cab, indicating when a light tower is not in nested position as required by NFPA 1901. The operational envelope of the mast shall be automatically illuminated whenever the mast assembly is being raised, lowered, or rotated as required by NFPA 1901.

The Command Light shall be covered by a five (5) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the delivered apparatus.

The specified light tower(s) shall be recessed into the roof of the apparatus body. The recessed area shall have two (2) water drain holes (in opposite corners) with flexible 1" diameter hose routed to the area below the body.

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance of 4,000 lbs. of Merced County Fire Department provided loose equipment based on a 30,001 - 40,000 pound gross vehicle weight rating.

EQUIPMENT

The following equipment shall be furnished with the completed special service vehicle;

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.
- There shall be two (2) NFPA approved folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.
 - The wheel chock(s) shall be mounted behind rear wheels, below body on streetside.
- Two (2) Duo-Safety 750-A series 10' aluminum wall ladder(s) shall be provided with the completed unit.
 - The ladder(s) shall be mounted on vehicle, per itemized compartment list.
- Four (4) Bright Start Light Hawk hand held lanterns with 12VDC chargers shall be provided. Each flashlight shall be orange in color. Each flashlight shall have a 12 volt DC charger and vehicle mount kit. The flashlights shall be wired to battery direct unless otherwise specified by the customer.
- The flashlight(s) shall be mounted in the cab of the completed unit. One (1) light shall be located in the officers step area, one (1) flashlight shall be located on the top rear streetside of the engine tunnel cover, and two (2) shall be located on the rear wall of the cab, one (1) per side and accessible from the ground level.
- There shall be one (1) Hannay manual rewind hydraulic hose reel(s) provided. Each reel shall have 66' of Hurst twin line hydraulic hose and shall terminate with a Hurst Streamline quick connect coupler. The hose reel pigtail connection shall be 6' in length and have a Streamline quick connect coupler.

REMAINING NFPA MINOR EQUIPMENT BY PURCHASER

All other minor equipment not specified above, but required by NFPA 1901 before the unit is placed in service shall be supplied and mounted by Merced County Fire Department.

Merced County Fire Department

Air/Light Heavy Rescue

Production Specification

EQUIPMENT MOUNTING

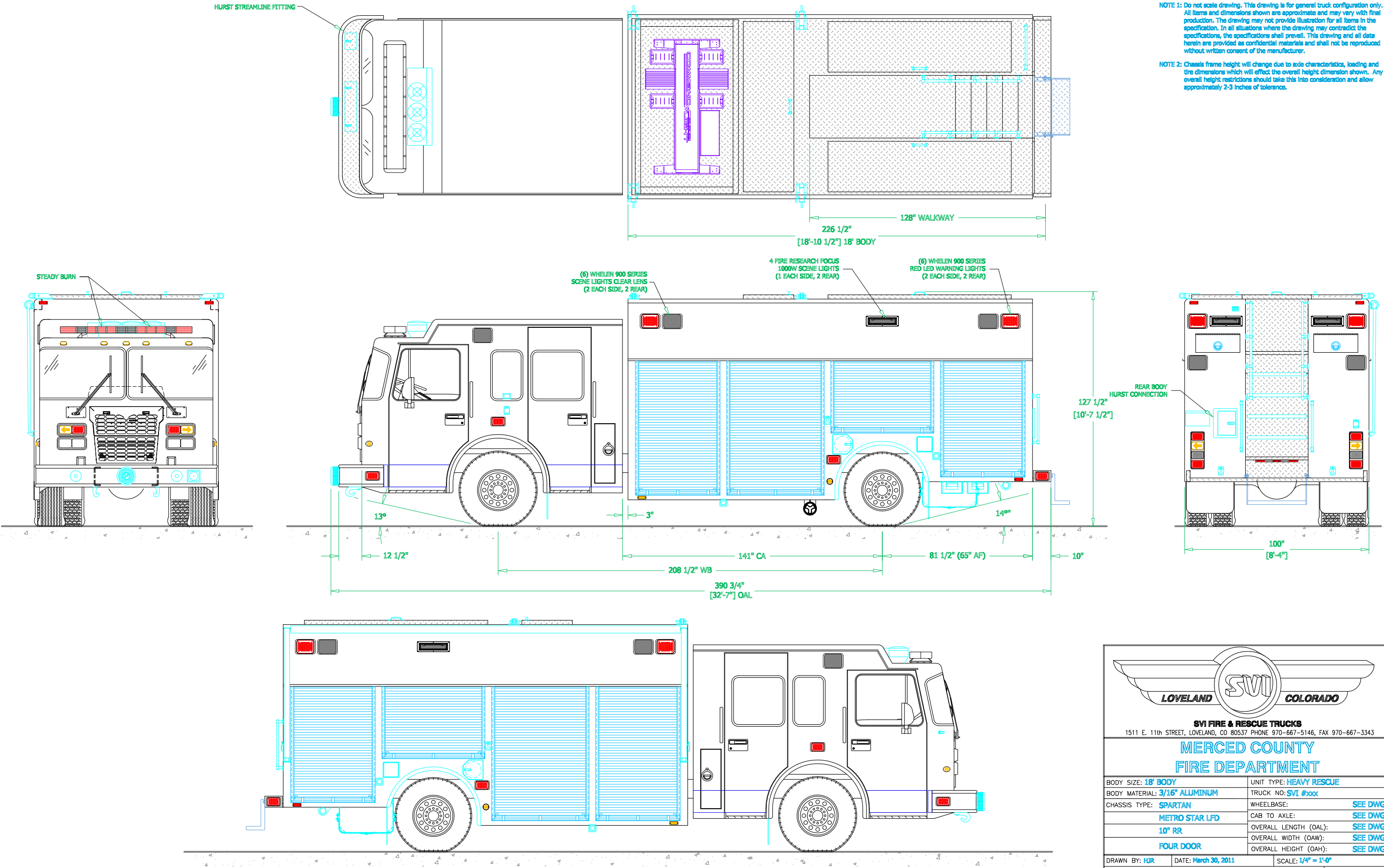
The SVI supplied and customer supplied equipment will be installed at SVI at the direction of Merced County.

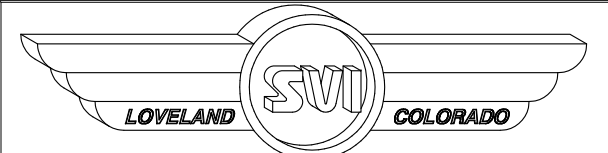
PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

REVISIONS			
REV	DESCRIPTION	DATE	BY

NOTE 1: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of the manufacturer.

NOTE 2: Chassis frame height will change due to axle characteristics, loading and tire dimensions which will effect the overall height dimension shown. Any overall height restrictions should take this into consideration and allow approximately 2-3 inches of tolerance.





LOVELAND SVI COLORADO

SVI FIRE & RESCUE TRUCKS

1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

**MERCED COUNTY
FIRE DEPARTMENT**

BODY SIZE: 18' BODY	UNIT TYPE: HEAVY RESCUE
BODY MATERIAL: 3/16" ALUMINUM	TRUCK NO: SVI #100X
CHASSIS TYPE: SPARTAN	WHEELBASE: SEE DWG
METRO STAR LFD	CAB TO AXLE: SEE DWG
10" RR	OVERALL LENGTH (OAL): SEE DWG
FOUR DOOR	OVERALL WIDTH (OAW): SEE DWG
	OVERALL HEIGHT (OAH): SEE DWG

DRAWN BY: **HJR**

DRAWING NO: **MercedCounty_CA_sl_PrcCON1**

DATE: **March 30, 2011**

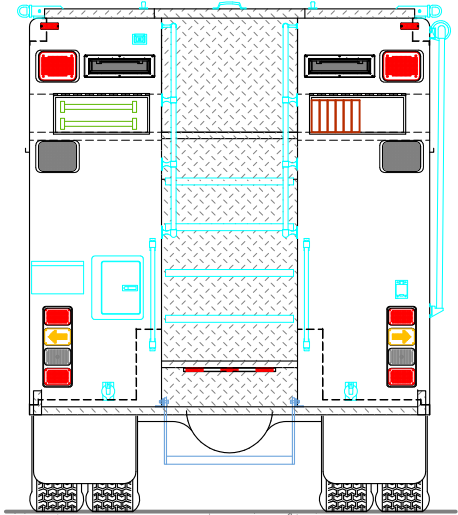
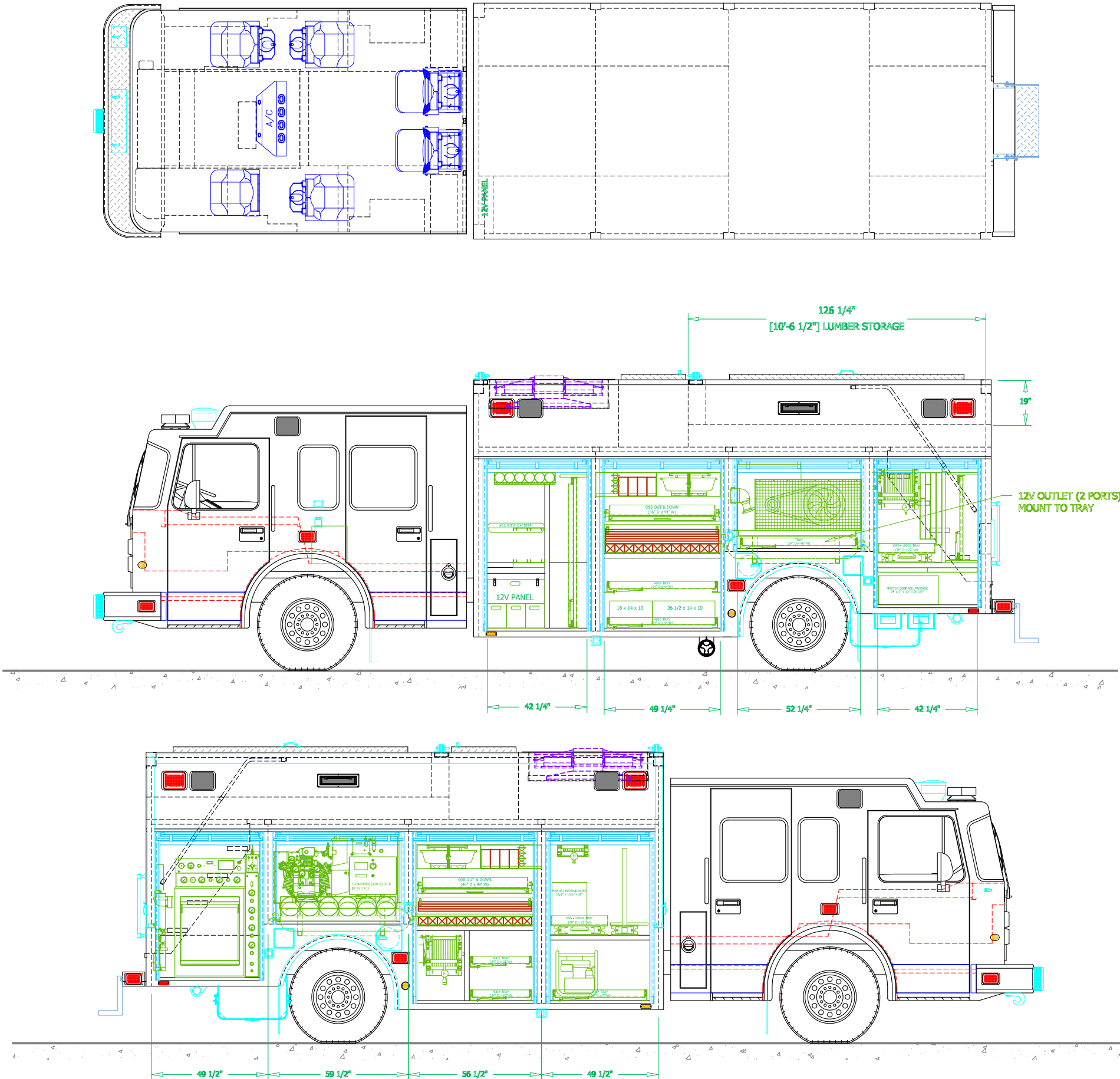
SCALE: **1/4" = 1'-0"**

SHEET **1** OF **2**

PRELIMINARY DRAWING - FOR LAYOUT PURPOSES ONLY

REVISIONS			
REV	DESCRIPTION	DATE	BY

NOTE 1: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of the manufacturer.



LOVELAND

SVI

COLORADO

SVI FIRE & RESCUE TRUCKS
1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

MERCED COUNTY
FIRE DEPARTMENT

DRAWN BY: HDR

DATE: March 30, 2011

SCALE: 1/4" = 1'-0"

DRAWING NO: MercedCounty_CA_al_PrcCON1

SHEET 2 OF 2