

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

| | |
|--|----|
| INTERNET IN-PROCESS SITE | 11 |
| VEHICLE STABILITY | 11 |
| ROLLOVER STABILITY | 11 |
| ROADABILITY | 12 |
| SERVICEABILITY | 12 |
| CONSTRUCTION DOCUMENTATION | 13 |
| OPERATIONS AND SERVICE DOCUMENTATION | 14 |
| NFPA REQUIRED DOCUMENTATION FORMAT - CD-ROM | 14 |
| STATEMENT OF EXCEPTIONS | 15 |
| CARRYING CAPACITY | 15 |
| TESTING | 16 |
| ROAD TEST | 16 |
| LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST | 17 |
| TEST SEQUENCE | 17 |
| 1. RESERVE CAPACITY TEST | 17 |
| 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 | 18 |
| DOCUMENTATION | 18 |
| UL 120/240 VAC CERTIFICATION | 18 |
| DOCUMENTATION | 19 |
| DIELECTRIC VOLTAGE WITHSTAND TEST | 19 |
| UL PUMP CERTIFICATION | 20 |
| WARRANTY | 20 |
| GENERAL LIMITED WARRANTY - ONE (1) YEAR | 20 |
| LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS | 20 |
| STRUCTURAL WARRANTY - TEN (10) YEARS | 20 |
| PAINT LIMITED WARRANTY - TEN (10) YEARS | 20 |
| CONSTRUCTION PERIOD | 21 |
| OVERALL HEIGHT | 21 |
| OVERALL LENGTH | 21 |
| 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 |
| PUMP PROVISION | 22 |
| CAB STYLE | 23 |
| CAB FRONT FASCIA | 24 |
| FRONT GRILLE | 24 |
| CAB PAINT EXTERIOR | 25 |
| CAB PAINT MANUFACTURER | 25 |
| CAB PAINT PRIMARY/LOWER COLOR | 25 |
| CAB PAINT WARRANTY | 25 |
| CAB PAINT INTERIOR | 25 |
| CAB ENGINE TUNNEL | 25 |
| CAB ENTRY DOORS | 26 |
| CAB ENTRY DOOR TYPE | 26 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

| | |
|--|----|
| CAB STRUCTURAL WARRANTY | 26 |
| CAB TEST INFORMATION | 26 |
| ELECTRICAL SYSTEM | 26 |
| APPARATUS WIRING PROVISION | 27 |
| LOAD MANAGEMENT SYSTEM | 27 |
| DATA RECORDING SYSTEM | 27 |
| POWER & GROUND STUD | 27 |
| AUXILIARY POWER & GROUND STUD | 27 |
| EXTERIOR ELECTRICAL TERMINAL COATING | 27 |
| ENGINE | 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 | 28 |
| AUXILIARY ENGINE BRAKE CONTROL | 29 |
| FLUID FILLS | 29 |
| ELECTRONIC ENGINE OIL LEVEL INDICATOR | 29 |
| ENGINE WARRANTY | 29 |
| REMOTE THROTTLE HARNESS | 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 |
| ENGINE PUMP HEAT EXCHANGER | 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 | 33 |
| TRANSMISSION SHIFT SELECTOR | 33 |
| TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE | 33 |
| TRANSMISSION COOLING SYSTEM | 33 |
| TRANSMISSION WARRANTY | 33 |
| TRANSFER CASE | 33 |
| TRANSFER CASE DRIVEN PTO | 33 |
| TRANSFER CASE DRIVEN PTO CONTROL | 34 |
| LH PTO | 34 |
| LH PTO MODEL | 34 |
| PTO LOCATION | 34 |
| PTO CONTROL | 34 |
| DRIVELINE | 34 |
| MIDSHIP PUMP / GEARBOX | 34 |
| PUMP SHIFT CONTROLS | 35 |
| PUMP SHIFT CONTROL PLUMBING | 35 |
| FUEL FILTER/WATER SEPARATOR | 35 |
| FUEL LINES | 35 |
| FUEL SHUTOFF VALVE | 35 |
| FUEL TANK | 36 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

| | |
|---|----|
| AIR HORN RESERVOIR | 43 |
| ELECTRONIC SIREN SPEAKER | 44 |
| ELECTRONIC SIREN SPEAKER LOCATION | 44 |
| FRONT BUMPER TOW HOOKS | 44 |
| CAB TILT SYSTEM..... | 44 |
| CAB TILT AUXILIARY PUMP | 44 |
| CAB TILT LIMIT SWITCH | 44 |
| CAB TILT CONTROL RECEPTACLE..... | 44 |
| CAB WINDSHIELD | 45 |
| GLASS FRONT DOOR | 45 |
| GLASS TINT FRONT DOOR | 45 |
| GLASS REAR DOOR RH | 45 |
| GLASS TINT REAR DOOR RH | 45 |
| GLASS REAR DOOR LH..... | 45 |
| GLASS TINT REAR DOOR LH..... | 45 |
| GLASS SIDE MID RH | 46 |
| GLASS TINT SIDE MID RH | 46 |
| GLASS SIDE MID LH..... | 46 |
| GLASS TINT SIDE MID LH..... | 46 |
| CLIMATE CONTROL | 46 |
| CLIMATE CONTROL ACTIVATION | 46 |
| A/C CONDENSER LOCATION..... | 46 |
| A/C COMPRESSOR | 46 |
| CAB INSULATION | 47 |
| UNDER CAB INSULATION | 47 |
| INTERIOR TRIM FLOOR..... | 47 |
| INTERIOR FLOOR MAT COLOR | 47 |
| INTERIOR TRIM VINYL..... | 47 |
| INTERIOR TRIM VINYL COLOR | 47 |
| REAR WALL INTERIOR | 47 |
| INTERIOR ABS TRIM COLOR | 47 |
| HEADER TRIM..... | 48 |
| INTERIOR TRIM SUNVISOR | 48 |
| TRIM CENTER DASH..... | 48 |
| TRIM LH DASH | 48 |
| TRIM RH DASH | 48 |
| ENGINE TUNNEL TRIM | 48 |
| STEP TRIM | 48 |
| INTERIOR DOOR TRIM | 48 |
| CAB PAINT INTERIOR DOOR TRIM | 48 |
| DOOR TRIM CUSTOMER NAMEPLATE | 48 |
| CAB DOOR TRIM REFLECTIVE | 49 |
| INTERIOR GRAB HANDLE "A" PILLAR..... | 49 |
| INTERIOR GRAB HANDLE FRONT DOOR..... | 49 |
| INTERIOR GRAB HANDLE REAR DOOR | 49 |
| DASH PANEL GROUP | 49 |
| SWITCHES CENTER PANEL..... | 49 |
| SWITCHES LEFT PANEL..... | 49 |
| SWITCHES RIGHT PANEL | 49 |
| SEAT BELT WARNING | 50 |
| SEAT MATERIAL | 50 |
| SEAT COLOR | 50 |
| SEAT BACK LOGO..... | 50 |
| SEAT DRIVER | 50 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

| | |
|--|----|
| FRONT SCENE LIGHTS ACTIVATION..... | 58 |
| INTERIOR OVERHEAD LIGHTING..... | 58 |
| CAB SPOTLIGHTS..... | 59 |
| DO NOT MOVE APPARATUS LIGHT..... | 59 |
| MASTER WARNING SWITCH..... | 59 |
| HEADLIGHT FLASHER..... | 59 |
| ALTERNATING HEADLIGHT SWITCH..... | 59 |
| INBOARD FRONT WARNING LIGHTS..... | 59 |
| INBOARD FRONT WARNING LIGHTS COLOR..... | 59 |
| FRONT WARNING SWITCH..... | 59 |
| INTERSECTION WARNING LIGHTS..... | 59 |
| INTERSECTION WARNING LIGHTS COLOR..... | 60 |
| INTERSECTION WARNING LIGHTS LOCATION..... | 60 |
| SIDE AND INTERSECTOR WARNING SWITCH..... | 60 |
| SIREN CONTROL HEAD..... | 60 |
| HORN RING SELECTOR SWITCH..... | 60 |
| AIR HORN ACTIVATION..... | 60 |
| BACK-UP ALARM..... | 60 |
| INSTRUMENTATION..... | 61 |
| CAB EXTERIOR PROTECTION..... | 63 |
| FIRE EXTINGUISHER..... | 63 |
| ROAD SAFETY KIT..... | 63 |
| DOOR KEYS..... | 63 |
| AS BUILT WIRING DIAGRAMS..... | 64 |
| WARRANTY - CAB AND CHASSIS..... | 64 |
| OPERATORS AND PARTS LIST MANUAL..... | 64 |
| ENGINE AND TRANSMISSION OPERATION MANUALS..... | 64 |
| CAB/CHASSIS PREPAYMENT..... | 64 |
| CHASSIS MODIFICATIONS..... | 65 |
| LUBRICATION AND TIRE DATA PLATE..... | 65 |
| VEHICLE DATA PLATE..... | 65 |
| OVERALL HEIGHT, LENGTH DATA PLATE (US)..... | 65 |
| ACCIDENT PREVENTION..... | 66 |
| PERSONNEL CAPACITY..... | 66 |
| ACCIDENT PREVENTION..... | 66 |
| WEARING HELMET WARNING..... | 66 |
| FRONT BUMPER..... | 66 |
| BUMPER GRAVELSHIELD..... | 66 |
| BUMPER COMPARTMENTS..... | 66 |
| AIR HORN(S)..... | 66 |
| FRONT TOW PROVISIONS..... | 66 |
| EXHAUST..... | 67 |
| CELLULAR PHONE ANTENNA INSTALLATION..... | 67 |
| RADIO/ANTENNA INSTALLATION..... | 67 |
| 12 VDC ACCESSORY PLUG..... | 67 |
| SEAT BELT COLOR..... | 67 |
| SEAT BELT WEB LENGTH - CUSTOM CAB..... | 67 |
| SEAT BELT / VDR SYSTEM - CUSTOM CAB..... | 67 |
| HELMET STORAGE..... | 68 |
| CAB CRASH TEST CERTIFICATION..... | 68 |
| CAB MIRRORS, DRIVER ADJUSTABLE..... | 68 |
| MUDFLAPS..... | 68 |
| AIR BRAKE SYSTEM QUICK BUILD-UP..... | 68 |
| REAR CAB AREA LAYOUT..... | 69 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

| | |
|--|----|
| INTERIOR CABINET - COUNTER HEIGHT..... | 69 |
| FUEL FILL..... | 69 |
| BODY DESIGN..... | 69 |
| EXTERIOR ALUMINUM BODY..... | 70 |
| BODY SUBFRAME..... | 70 |
| BODY MOUNTING..... | 71 |
| 14" REAR STEP BUMPER..... | 71 |
| REAR TOW EYES..... | 71 |
| GROUND LIGHTS..... | 71 |
| WHEEL WELL EXTERIOR PANEL..... | 71 |
| DIEFORMED BEADED EDGE BODY FENDERS..... | 71 |
| WHEEL WELL LINERS..... | 71 |
| SCBA BOTTLE COMPARTMENTS..... | 71 |
| ALUMINUM BODY PAINT SPECIFICATIONS..... | 72 |
| BODY PAINT PREPARATION..... | 72 |
| PAINT PROCESS..... | 72 |
| MACHINE POLISHED..... | 72 |
| PAINT - ENVIRONMENTAL IMPACT..... | 72 |
| PAINT FINISH - SINGLE COLOR..... | 73 |
| BODY UNDERCOATING..... | 73 |
| UNDERCOAT WARRANTY..... | 73 |
| PAINT WARRANTY..... | 73 |
| COMPARTMENT INTERIOR FINISH..... | 73 |
| ROOF COMPARTMENT INTERIOR FINISH..... | 73 |
| REFLECTIVE STRIPE..... | 74 |
| REFLECTIVE STRIPE - CAB SIDE..... | 74 |
| REFLECTIVE STRIPE - CAB FRONT..... | 74 |
| REFLECTIVE STRIPE - BODY SIDES..... | 75 |
| CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS..... | 75 |
| LETTERING..... | 76 |
| UPPER BODY SIDE LETTERING..... | 76 |
| REAR BODY LETTERING..... | 76 |
| FRONT OF CAB LETTERING..... | 76 |
| CAB ROOF LETTERING..... | 77 |
| SUPPLIED DECALS..... | 77 |
| EXTERIOR COMPARTMENT DOORS..... | 77 |
| HINGED DOOR CONSTRUCTION..... | 77 |
| ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)..... | 78 |
| EXTERIOR ROLL-UP DOOR FINISH - SATIN..... | 78 |
| BODY HEIGHT MEASUREMENTS..... | 79 |
| TWO (2) UPPER BODY COMPARTMENTS..... | 79 |
| ROOF ACCESS LADDER..... | 80 |
| ROOF ACCESS HANDRAIL(S)..... | 80 |
| BODY WIDTH DIMENSIONS..... | 80 |
| STREETSIDE COMPARTMENT - FRONT (S1)..... | 81 |
| STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)..... | 82 |
| STREETSIDE COMPARTMENT - REAR (S3)..... | 83 |
| CURBSIDE COMPARTMENT - FRONT (C1)..... | 84 |
| CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)..... | 85 |
| CURBSIDE COMPARTMENT - REAR (C3)..... | 86 |
| REAR COMPARTMENT - CENTER (RC1)..... | 87 |
| HARD SUCTION COMPARTMENT..... | 88 |
| LADDER LIFT SYSTEM, CURBSIDE..... | 88 |
| SIDE BODY PROTECTION - RUB RAIL..... | 88 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

| | |
|---|-----|
| APPARATUS LABELS..... | 88 |
| COMPARTMENT COMPONENTS DESCRIPTIONS..... | 89 |
| ADJUSTABLE SHELVING HARDWARE..... | 89 |
| ADJUSTABLE SHELF/SHELVES..... | 89 |
| COMPARTMENT LIGHTING..... | 89 |
| ELECTRIC CORD REEL..... | 90 |
| UNDERBODY SLIDE-OUT STEP..... | 91 |
| STEP / GROUND LIGHTS..... | 91 |
| LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC..... | 91 |
| 12 VOLT DIAGNOSTIC RELAY CONTROL CENTER..... | 94 |
| ROCKER SWITCH PANEL..... | 94 |
| ELECTRICAL SYSTEM MANAGER..... | 94 |
| BATTERY SYSTEM..... | 95 |
| BATTERY SWITCH..... | 95 |
| BATTERY SOLENOID..... | 95 |
| BATTERY CONDITIONER..... | 95 |
| ENGINE COMPARTMENT LIGHT..... | 95 |
| CAB HAZARD WARNING LIGHT..... | 96 |
| BACK-UP ALARM..... | 96 |
| TAIL LIGHT MODULES..... | 96 |
| MIDSHIP MARKER/TURN SIGNAL..... | 96 |
| MARKER LIGHTS..... | 96 |
| LICENSE PLATE LIGHT..... | 96 |
| ELECTRONIC SIREN..... | 96 |
| SIREN SPEAKER..... | 96 |
| SIDE SCENE LIGHTS..... | 97 |
| REAR SCENE LIGHTS..... | 97 |
| TRAFFIC DIRECTIONAL LIGHT..... | 97 |
| DAVID CLARK INTERCOM SYSTEM..... | 97 |
| WARNING LIGHT PACKAGE..... | 98 |
| UPPER LEVEL OPTICAL WARNING DEVICES..... | 98 |
| LOWER LEVEL OPTICAL WARNING DEVICES..... | 100 |
| LINE VOLTAGE ELECTRICAL SYSTEM..... | 101 |
| ONAN HYDRAULIC GENERATOR..... | 101 |
| GENERATOR MONITORING PANEL..... | 101 |
| WARRANTY PERIOD..... | 101 |
| HYDRAULIC COMPONENTS..... | 101 |
| GENERATOR MOUNTING..... | 102 |
| MANUALS AND SCHEMATICS..... | 102 |
| POWER-TAKE-OFF GENERATOR DRIVE..... | 102 |
| LOADCENTER..... | 102 |
| OUTLETS AND CIRCUITS..... | 102 |
| GENERAL REQUIREMENTS..... | 103 |
| 120/240 VAC SCENE LIGHTING..... | 109 |
| FRONT CAB-MOUNTED SCENE LIGHT(S)..... | 109 |
| SIDE UPPER RECESSED SCENE LIGHTS..... | 109 |
| COMMAND LIGHT - SHADOW RT TOWER..... | 110 |
| HALE FIRE PUMP SYSTEM (PUMP MODULE ASSEMBLY)..... | 111 |
| PUMP ASSEMBLY..... | 111 |
| GEARBOX..... | 112 |
| CERTIFICATION..... | 112 |
| PRIMING PUMP..... | 112 |
| BALL VALVES..... | 113 |
| INTRUMENT PANEL..... | 113 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

| | |
|---|-----|
| PIPING AND MANIFOLDS | 113 |
| TANK FILL..... | 113 |
| PUMP COOLER AND ENGINE COOLER VALVE | 113 |
| SUCTIONS..... | 114 |
| 6" STEAMER INLETS..... | 114 |
| 2-½" LEFT SIDE SUCTION | 114 |
| 2-½" RIGHT SIDE SUCTION..... | 114 |
| 4" RIGHT REAR MIV | 114 |
| TANK TO PUMP | 115 |
| RELIEF VALVE | 115 |
| DISCHARGES..... | 116 |
| 2-½" STREETSIDE DISCHARGES | 116 |
| 3" CURBSIDE DISCHARGE | 116 |
| 2-½" CURBSIDE DISCHARGE..... | 116 |
| 3" DECK GUN DISCHARGE | 116 |
| 2-1/2" CURBSIDE REAR DISCHARGE..... | 116 |
| CROSSLAY | 117 |
| 2" FRONT BUMPER JUMP LINE DISCHARGE..... | 117 |
| 2" REAR BUMPER JUMP LINE DISCHARGE | 117 |
| VALVE CONTROLS SIDE | 117 |
| WIRING HARNESS | 117 |
| PRESSURE GOVENOR | 117 |
| ENFO III | 117 |
| MASTER GAUGES..... | 118 |
| INDIVIDUAL DRAINS | 118 |
| MASTER PUMP DRAIN..... | 118 |
| U.L. TEST POINTS..... | 118 |
| TANK LEVEL GAUGE | 118 |
| DISCHARGE GAUGES | 118 |
| CLASS A FOAM SYSTEM..... | 118 |
| WARRANTY..... | 119 |
| BODY BUILDER FIRE PUMP SYSTEM ADDITIONS/MODIFICATIONS | 119 |
| DECK GUN/GENERATOR AREA MODIFICATION | 119 |
| FOAM SYSTEM | 119 |
| FOAM DISCHARGES | 120 |
| INTAKE(S)..... | 120 |
| DISCHARGE(S) | 120 |
| REAR DISCHARGE(S) | 120 |
| FRONT DISCHARGE(S)..... | 120 |
| MISCELLANEOUS DISCHARGE(S) | 121 |
| REAR BUMPER & PRE-CONNECT HOSE LAY | 121 |
| CROSS LAY(S) | 121 |
| DECK GUN | 121 |
| DELUGE MONITOR | 121 |
| PUMP PANEL | 121 |
| COLOR CODED LABELS | 121 |
| PUMP PANEL LIGHTING | 121 |
| UPF POLY WATER TANK..... | 122 |
| TANK FILL / VENT | 123 |
| UPF TANK OVERFLOW | 123 |
| CLASS A POLYPROPYLENE FOAM CELL..... | 123 |
| HOSE BED STORAGE AREA | 123 |
| HOSEBED PARTITION(S)..... | 123 |
| HOSEBED CAPACITY..... | 123 |

Rescue Pumper

Production Specification

| | |
|---|-----|
| VINYL HOSE BED COVER | 123 |
| ALUMINUM HOSE BED COVER..... | 124 |
| EQUIPMENT PAYLOAD WEIGHT ALLOWANCE..... | 124 |
| EQUIPMENT | 124 |
| REMAINING NFPA MINOR EQUIPMENT BY PURCHASER | 126 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

INTERNET IN-PROCESS SITE

The Bidder shall post and maintain a website where the Inter-Canyon 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.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CONSTRUCTION DOCUMENTATION

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

- (1) The manufacturers record of apparatus construction details, including the following information:
 - (a) Owner's name and address
 - (b) Apparatus manufacturer, model, and serial number
 - (c) Chassis make, model, and serial number
 - (d) GAWR of front and rear axles and GVWR
 - (e) Front tire size and total rated capacity in pounds (kilograms)
 - (f) Rear tire size and total rated capacity in pounds (kilograms)
 - (g) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
 - (h) 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
 - (i) Type of fuel and fuel tank capacity
 - (j) Electrical system voltage and alternator output in amps
 - (k) Battery make, model, and capacity in cold cranking amps (CCA)
 - (l) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
 - (m) Ratios of all driving axles
 - (n) Maximum governed road speed
 - (o) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
 - (p) Pump transmission make, model, serial number, and gear ratio
 - (q) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
 - (r) Water and Foam tank certified capacity in gallons or liters
 - (s) Paint manufacturer and paint number(s)
 - (t) Company name and signature of responsible company representative
 - (u) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)
- (2) Certification of compliance of the optical warning system
- (3) Siren manufacturer's certification of the siren
- (4) Written load analysis and results of the electrical system performance tests
- (5) Certification of slip resistance of all stepping, standing, and walking surfaces
- (6) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
- (7) 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
- (8) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
- (9) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
- (10) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
- (11) If the apparatus has a fire pump, the certification of inspection and test for the fire pump
- (12) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
- (13) When the apparatus is equipped with a water tank, the certification of water tank capacity
- (14) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
- (15) 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
- (16) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
- (17) If the apparatus has a line voltage power source, the certification of the test for the power source
- (18) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification (see 24.9.7), and the results of the testing of the air system installation
- (19) Any other required manufacturer test data or reports

Inter-Canyon Fire Rescue

Rescue Pumper

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.

Inter-Canyon Fire Rescue

Rescue Pumper

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:

- (1) The chassis, body, and tank(s)
- (2) Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
- (3) Full water and other agent tanks
- (4) *250 lb (114 kg) in each seating position
- (5) Fixed equipment such as pumps, aerial devices, generators, reels, and air systems as installed
- (6) Ground ladders, suction hose, designed hose load in their hose beds and on their reels
- (7) 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.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

| | | | Equipment Allowance | |
|---|--|--|----------------------------|------------|
| Apparatus Type | Storage Areas | Apparatus Size | lb. | kg. |
| Pumper Fire Apparatus | Equipt. minimum of 40 cu ft (1.1 cu mt) of enclosed compartmentation. | Less than 250 cu ft (7 cu mt) compartment space | 2,000 | 910 |
| | Hose minimum of 30 cu ft (0.8 cu mt) for 2 1/2" (65 mm) or larger fire hose. | 250 cu ft (7 cu mt) or more of compartment space | 2,500 | 1,135 |
| | (2) areas for pre-connects each minimum of 3.5 cu.ft. (0.1 cu.mt.) for 1 1/2" (38 mm) or larger fire hose. | | | |
| Compartment space for pumpers is calculated based on the inside dimensions of the enclosed compartment. | | | | |

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 it's 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST

DOCUMENTATION

The manufacturer shall deliver the following with the fire apparatus:

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

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:

- (1) The power source output voltage, frequency, and amperes
- (2) The prime mover's oil pressure, water temperature, and transmission temperature, if applicable
- (3) The power source hydraulic fluid temperature, if applicable
- (4) 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:

- (1) Altitude
- (2) Barometric pressure
- (3) 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 manufacturer shall deliver the following with the fire apparatus:

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

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:

- (1) Isolate the power source from the panel board and disconnect any solid state low voltage components.
- (2) Connect one lead of the dielectric tester to all the hot and neutral buses tied together.
- (3) Connect the other lead to the fire apparatus frame or body.
- (4) Close any switches and circuit breakers in the circuit(s).
- (5) 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

UL PUMP CERTIFICATION

The fire pump shall be tested and certified by Underwriters Laboratories, to perform as listed below;

- 100% of rated capacity at 150 psi (1,000 kPa) net pressure.
- 70% of rated capacity at 200 psi (1,400 kPa) net pressure.
- 50% of rated capacity at 250 psi (1700 kPa) net pressure.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 psi (3,400 kPa).

The pump shall comply with the applicable requirements of "Standard for Automotive Fire Apparatus 1901, latest edition.

The pump shall be capable of producing fire streams that are free from objectionable pulsation under all normal operating conditions.

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 Inter-Canyon 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.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 Inter-Canyon 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 126" (10' - 6") 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 360" (30' - 0").

DELIVERY AND DEMONSTRATION

The contractor shall be responsible for the delivery of the completed unit to the Inter-Canyon 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 Inter-Canyon Fire Department regarding the operation, care, and maintenance of the apparatus and equipment supplied at Inter-Canyon Fire Department location.

The delivery engineer shall set delivery and instruction schedule with the person appointed by Inter-Canyon Fire Department.

After delivery of the apparatus, the Inter-Canyon 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.

Inter-Canyon Fire Rescue

Rescue Pumper

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).

APPARATUS TYPE

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 750 gallons per minute (3000 L/min). The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

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 4 axle configuration consisting of a single rear drive axle with a single front drive steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 17,000 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.

PUMP PROVISION

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CAB STYLE

The cab shall be a custom, enclosed model, built specifically for the fire service by a company specializing in cab and chassis design for all fire service applications.

The cab shall be manufactured for heavy-duty service utilizing adequate strength and capacity for the application of protecting firefighters. The cab shall be of a modular design offering improved strength, durability and reduced weight. The modular design shall allow for faster, less costly replacement of components. Per pound, sheet panel aluminum extrusions offer a higher tensile strength, 45,000 PSI, and yield strength, 40,000 PSI, than that of lower grade sheet such as 3003-H13. For this reason, the cab shall be of aluminum extrusion construction, which shall offer superior strength and the truest, flattest surface ensuring less expensive paint repairs if needed.

The method of cab construction shall use a process incorporating techniques outlined in accordance with the American Welding Society D1.1-96 requirements for structural steel welding. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side panels shall be assembled using proven industrial adhesives, designed specifically for aluminum fabrication, which exceed the strength of a weld, for construction.

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

The cab shall be constructed of 5052-H32 Marine Grade, one hundred percent primary aluminum plate. A single formed, one (1) piece extrusion, manufactured from 6061-T6 100 percent primary one-quarter inch thick aluminum shall be used for the "A" pillar adding strength and rigidity to the cab as well as additional roll-over protection. The cab side wall skins and shall be 0.125 inch thick, the rear wall and roof skin shall be 0.19 inch thick, the front skin shall be 0.125 inch thick.

The cab shall incorporate tongue and groove fitted 6061-T6 0.25 inch thick aluminum extrusions for extreme duty situations. The cab shall include multi-layer composite insulation for improved cab heating and cooling in addition to noise reduction.

Proposals offering products built with anything less than the alloy-temper mentioned or from any other material, other than aluminum, shall not be considered. Additionally, any cabs utilizing recycled or recovered aluminum plate or extrusion products shall not be considered due to impurities in the composition leading to a lack of strength.

The cab shall incorporate a fully enclosed design, allowing for a spacious cab area with no partition between the front and rear sections of the cab. The walls of the vehicle shall include roof supports allowing for an open design. The outside dimension of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches.

The cab overall length shall be 128.00 inches in length with 54.00 inches from the centerline of the front of the axle to the back of the cab. The cab shall offer a height of 58.00 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches, at a minimum. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

In order to offer the optimum amount of cab space to occupants, there shall be no consideration given for any cab unable to comply with the minimum measurements for interior cab space as listed.

The cab shall include a driver and officer area with two (2) cab doors. The front doors shall offer a clear opening of 40.00 inches wide X 53.50 inches high. The cab shall also include a crew area with up to two (2) cab doors. The rear doors shall offer a clear opening of 31.00 inches wide X 61.00 inches high. This style of cab shall provide up to eight (8) seating positions.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

The cab shall incorporate a two (2) step configuration from the ground to the cab floor for each door opening. The lower step shall be constructed of heavy duty safety grating which meets or exceeds Federal Specification RRG-1602-latest revision and performs under dry, greasy, muddy, soapy and icy conditions and offers open drainage.

The first step for the driver and officer area shall measure 11.44 inches deep X 31.13 inches wide. The intermediate step shall measure 8.75 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.

The first step for the crew area shall measure 12.13 inches deep X 20.44 inches wide. The intermediate step shall measure 10.50 inches deep X 23.00 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.

The cab front shall be constructed of 5052-H32 Marine Grade, .090 of an inch thick, one hundred percent primary aluminum plate which shall include a classic front appearance. The front of the cab shall include a cast molded module accommodating up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 lower paint color shall be PPG FBCH 71663 Red.

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 owners 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 ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, .190 of an inch thick, aluminum alloy plate. The tunnel shall be a maximum of 41.50 inches wide X 23.00 inches high.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CAB ENTRY DOORS

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors as high as possible for ease of entering and egress when outfitted with an SCBA. The doors shall be full height and constructed of extruded aluminum with a nominal thickness of .125 inch. The exterior skins shall be constructed of .125 inch aluminum plate.

All cab and crew doors shall be of substantial weight for the optimum strength and rigidity for the best performance in all cab crash testing. Any cab with front and crew doors manufactured of less than the material thickness of .125 inch in both the extrusion and exterior skin shall not be considered.

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.

The piano style hinge and hidden flush mounted door is the most favorable construction keeping dirt and debris out of the hinge allowing for optimum operation throughout the lifetime of the door.

Proposals offering door hinge thickness any less than stated shall not be considered.

Proposals including doors that do not comply with the flush mounting as described or those including exposed hinges shall not be considered.

CAB ENTRY DOOR TYPE

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

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 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have sixteen (16) programmable outputs to supply warning and load switching requirements. Outputs one (1) through twelve (12) shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output thirteen (13) shall be designated to activate a fast idle system. Output fourteen (14) shall provide a low voltage warning for an isolated battery. Output fifteen (15) is a user configurable output and shall be programmable for activating between 10.50 and 15.00 volts. Output sixteen (16) shall provide a low voltage alarm that activates at the NFPA required 11.80 volts. The TSM shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode. The TSM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection.

DATA RECORDING SYSTEM

The chassis shall have a Class One Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

- ☐ 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 in the officer side under seat storage compartment. The power and ground studs shall be circuit protected with a 40 amp breaker. The studs shall be .375 inch diameter and be capable of carrying up to a 40 amp battery direct load.

EXTERIOR ELECTRICAL TERMINAL COATING

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

Inter-Canyon Fire Rescue

Rescue Pumper

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 425 HP. The Cummins ISL 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 ISL 425 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 425 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1200 foot pounds of torque at 1300 RPM with 543 cubic inches of displacement. The Cummins ISL 425 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.

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 which shall be pre-set to operate when the engine is at a specified 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 automatically re-engage when the brake is released, or when the transmission is placed in neutral.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

A Jacobs engine compression brake, for the six (6) cylinder engine shall be provided. The engine compression brake shall actuate the vehicles 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 0% accelerator when in operation mode.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.
- ☐ There is no active ABS event.

The compression brake shall be controlled through an off/low/high rocker switch on the dash.

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.

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The harness shall contain connectors for a Class 1 pressure governor/ throttle system as well as a multiplexed gauge. Separate circuits shall be included for pump controls, "pump engaged" and "OK to Pump" indication lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/ hand throttle controls and dash display which shall incorporate "pump engaged" and "OK to Pump" indication lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

ENGINE PROGRAMMING REMOTE THROTTLE

The engine ECM discreet wire remote throttle circuit will be turned on for use with a discreet wire based pump controller.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

ENGINE PUMP HEAT EXCHANGER

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

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 officer 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 galvanized 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 officer 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 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 outboard position providing maximum space for frame mounted components such as midship pumps.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

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 automatically select a four (4) speed operation. The fifth 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 198 vocational package in consideration of the duty of this apparatus as a Pumper. 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.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

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 | 142 |
| J | Fire Truck Pump Mode (4th Lockup) | 122 / 123 |
| C | Range Indicator | 145 (4th) |
| G | PTO Enable Output | 130 |
| | Signal Return | 103 |

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

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.

TRANSFER CASE

The front axle shall be driven by an ArvinMeritor MTC-4210 series two-speed transfer case.

The following controls shall be provided for the T-Case:

- 4x4 / 4x2 Selector switch.
- High / Low gear range selector switch.

The following indicator lights shall show the status of the T-Case:

- 4x4 Mode indicator light.
- 4x2 Mode indicator light.
- "High" gear range indicator light.
- "Low" gear range indicator light.

TRANSFER CASE DRIVEN PTO

The transfer case shall include a no slip power take off shaft. The shaft shall exit to the rear of the unit and include a 1710 yoke. The transfer case shall have a 1.00:1 ratio and shall rotate the same direction as the engine.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

TRANSFER CASE DRIVEN PTO CONTROL

The transfer case shall include three (3) toggle switches and six (6) lights. One (1) toggle switch with two (2) lights shall indicate whether a four wheel drive application is engaged and one (1) toggle switch with two (2) lights which shall be for High/ Low activation. One (1) toggle switch including a guard which is red in color shall be for pump activation with one (1) light indicating pump engagement and one (1) light indicating "Ok to Pump". These switches and lights shall be located on the panel within the dash.

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-XGFJP-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 oclock position.

PTO CONTROL

The left hand power take off shall be controlled by the transmission. The power take off shall be activated by an on/off rocker switch which contains an integral light which shall illuminate upon a positive engagement of the power take off. This switch shall be located on dash.

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

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[®].

MIDSHIP PUMP / GEARBOX

A mid-ship split shaft pump shall be installed by the apparatus manufacturer. The chassis manufacturer shall not provide any driveline provisions for the pump installation.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

PUMP SHIFT CONTROLS

One (1) pump shift control panel shall be mounted on the drivers dash panel. The following shall be provided on the panel: a three (3) position locking toggle switch; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline. One (1) label indicating pump instructions and the transmission shift selector position used for pumping shall be provided and located so it can be read from the drivers position per NFPA **16.10.1.3**. The road mode shall be selected when the switch is in the up position and pump mode shall be selected when the switch is in the down position.

The center switch position shall exhaust air from both pump and road sides of pump gear box shift cylinder.

PUMP SHIFT CONTROL PLUMBING

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 1/4 NPT fittings on the solenoid for attaching the customer installed pump. The air supply shall be pressure protected from service brake system.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator with a thermostatically controlled integral heater as a primary filter. The fuel filter shall have a drain valve.

An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.

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

FUEL LINES

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

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

FUEL TANK

The fuel tank shall have a capacity of fifty (50) gallons and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 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 offset with the right fill port located in the middle position and the left fill port located in the rearward position on the fuel tank.

FRONT AXLE

The front axle shall be an ArvinMeritor MX-16-120 single reduction drive type. 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.

The steer axle shall provide durable off road mobility and shall be rated at 17,000 pounds.

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 AXLE DIFFERENTIAL LUBRICATION

The front axle differential shall be lubricated with oil.

FRONT WHEEL BEARING LUBRICATION

The front axle wheel bearings shall be lubricated with grease.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 three (3), 54.00 inch long and 4.00 inch wide taper leaf springs with 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 17,000 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 drivers 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.

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 50 degrees to the left and right.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 85.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

The completed apparatus shall be rechecked for proper alignment once the chassis has been fully loaded and before being placed in service.

REAR AXLE

The rear axle shall be a Meritor model number RS-24-160. The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industrys demands. The axle shall include rectangular shaped, hot-formed housings for extra strength and rigidity. The axles shall also include torsion flow axle shafts that feature a surface hardness which resists fatigue and a resilient core which absorbs shock. There shall be unitized pinion seals within the axle helping to prevent leakage and harmful road contaminants from entering the axle components. The axle shall include a rigid differential case for high axle strength and reduced maintenance.

The axle shall include single reduction gearing and shall have a rated capacity of 24,000 pounds.

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 AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

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 65 MPH +/-2 MPH at governed engine RPM.

REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

FRONT TIRE

The front tires shall be Michelin 385/65R-22.5 18PR "J" tubeless radial XZY3 mixed service tread.

The front tire stamped load capacity shall be 18,740 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The front tire US Fire Service Intermittent Usage load capacity shall be 20,000 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

REAR TIRE

The rear tires shall be Michelin 11R-22.5 16PR "H" tubeless radial XZY3 mixed service tread.

The rear tire stamped load capacity shall be 24,020 pounds per axle with a speed capacity of 65 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 65 miles per hour when properly inflated to 120 pounds per square inch.

TIRE PRESSURE INDICATOR

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at each 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 manufacturers receipt of the voucher for installation by the customer.

FRONT WHEEL

The front wheels shall be Accuride hub piloted, 22.50 inch X 12.25 inch steel wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

REAR WHEEL

The rear wheels shall be Accuride hub piloted, heavy duty, 22.50 inch X 8.25 inch steel wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

WHEEL PAINT

Each of the steel wheels shall be pretreated in a zinc phosphate bath, coated with an acrylic cathode electro deposited white primer base coat (E-Coat). The E-Coat shall exceed 336 hours under industry standard ASTM salt spray testing.

The wheels shall then be finish painted the same as the primary/lower color of the cab by the chassis manufacturer.

WHEEL TRIM

Stainless steel wheel simulator kits shall be provided for the front wheels and for the rear wheels shipped loose with the chassis for installation by the apparatus builder

Each wheel simulator kit shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel simulator shall meet D.O.T. certification. They shall simulate the look of polished aluminum wheels and come complete with stainless steel hub covers and lug nut covers.

WHEEL GUARDS

The rear dual wheels shall include a plastic isolator approximately 0.04" thick installed between the inner and outer wheel to help prevent corrosion caused by metal to metal contact.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 controlled service brake application during an unlikely event including primary air supply loss.

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.

FRONT BRAKES

The front brakes shall be Meritor 16.5" x 6" S-cam drum type.

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type.

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.

In addition to the mechanical rear brake engagement, the front service brakes will also engage via air pressure, providing additional braking capability.

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.

FRONT BRAKE SLACK ADJUSTERS

The front brakes shall include Meritor automatic slack adjusters shall be installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

REAR BRAKE SLACK ADJUSTERS

The rear brakes shall include Meritor automatic slack adjusters shall be installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

FRONT BRAKE DUST SHIELDS

The front axle shall be equipped with brake dust shields.

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 30/30 brake chambers which 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 shoes against the brake drum. The TSE Type 30 brake chamber shall offer a 30.00 square inch effective area.

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.

MOISTURE EJECTORS

An automatic moisture ejector with a manual drain provision shall be installed on the wet tank of the air supply system. Manual cable actuated drain valves shall be installed on all remaining reservoirs of the air supply system. The actuation pull cables shall be coiled and tied at each drain valve. The supplied cables when extended shall be sufficient in length to allow each drain to be activated from the side of the apparatus.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

WHEELBASE

The chassis wheelbase shall be 170.00 inches.

REAR OVERHANG



The chassis rear overhang shall be 58.00 inches.

FRAME

The frame shall consist of single 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, 10.25 inch web X 3.50 inches deep upper and lower flanges X 0.38 inches thick. The high strength low alloy steel shall have a Tensile Elastic Limit of 110,000 psi. Each single rail shall be rated by a Resistance Bending Moment (RBM) minimum of 1,830,400 inch pounds and have a minimum section modulus of 16.64 cubic inches calculated by the radius method. The outside dimension frame shall measure 34.25 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.

Frame rails will be manufactured such that bolt attachment holes are specific for each component and shall not include any unnecessary holes.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

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" high and 99" wide.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 24.00 inches ahead of the cab.

FRONT BUMPER EXTENSION WIDTH

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

FRONT BUMPER APRON

The 24.00 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 horn shall be a trumpet style and shall include a chrome finish on the inside and a black painted finish on the outside of the trumpet.

AIR HORN LOCATION

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

Inter-Canyon Fire Rescue

Rescue Pumper

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 HOOKS

Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed below the front bumper, forward position and bolted directly to the outside of each chassis frame rail with grade 8.00 bolts.

CAB TILT SYSTEM

The entire cab shall be capable of tilting 45.00 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 AUXILIARY PUMP

A manual cab tilt pump module shall be attached to the rear surface of the driver side battery box.

CAB TILT LIMIT SWITCH

A cab tilt limit switch shall be installed. The switch will effectively limit cab's travel when being tilted. The final adjustment of the switch shall be performed by the apparatus manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc.

CAB TILT CONTROL RECEPTACLE

The cab tilt 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 6-pin Deutsch connector that includes a cap. The remote control pendant shall also include 20.00 feet of cable which also includes a mating connector.

Inter-Canyon Fire Rescue

Rescue Pumper

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 distance from the driver and officer to the windshield shall be a minimum of 42.00 inches at the furthest seated position. This distance shall ensure the safety of the driver and officer from intruding objects in the unlikely event of a head on collision.

The glass utilized for the windshield a standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and maintenance costs. All proposals offering windshields not in compliance with the minimum measurement of surface area stated above and are not fully interchangeable shall not be considered.

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 manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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 have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS REAR DOOR RH

The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

GLASS TINT REAR DOOR RH

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS REAR DOOR LH

The rear left hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

GLASS TINT REAR DOOR LH

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

GLASS SIDE MID RH

The cab shall include a window on the officers 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 RH

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS SIDE MID LH

The cab shall include a window on the drivers 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 LH

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

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 36,000 BTU of cooling and 45,000 BTU 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 heating controls, and air conditioning if included, shall be located on the climate control unit.

A/C CONDENSER LOCATION

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

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

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.

INTERIOR TRIM VINYL COLOR

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

REAR WALL INTERIOR

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

INTERIOR ABS TRIM COLOR

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

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

TRIM CENTER DASH

The main center dash area shall be constructed of durable vacuum formed ABS composite.

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 trim shall consist of a vacuum formed ABS composite module, which contains a glove compartment with a hinged locking door and a Mobile Data Terminal (MDT) provision. The glove compartment size shall be 13.50 inches wide X 6.25 inches high X 5.50 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.

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.

CAB PAINT INTERIOR DOOR TRIM

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

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

INTERIOR GRAB HANDLE "A" PILLAR

A rubber covered 11.00 inch grab handle shall be provided on the inside of the cab on the hinge post at the driver and officer doors. The handle shall assist personnel in exiting and entering 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.

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.

SWITCHES CENTER PANEL

The center dash panel shall include twelve (12) rocker switch positions in a single row across the top 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 eight (8) switches. There shall be six (6) switches across the top of the panel and two (2) staggered on the left hand portion of the panel. Five (5) of the top row of switches shall be rocker type and the left one (1) shall be the headlight switch. The remaining switches shall consist of one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated 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 RIGHT PANEL

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

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

SEAT BELT WARNING

A Class One seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The VDR will provide visual indication of seats which were belted in incorrect sequence or when a seat is occupied without the seat belt being fastened.

The visual indicator located on the instrument panel shall illuminate and the audible alarm shall sound when the park brake is released and a seat is occupied without the corresponding seatbelt being fastened. The visual indicator shall illuminate and the audible alarm shall also sound when the park brake is released and a seat has been belted in the incorrect sequence. The system shall provide visual and audible warning when any seat is occupied (sixty pounds minimum), the corresponding seat belt remains unfastened, and the park brake is released. Once activated, the visual and audible indicators shall remain active until all occupied seats have the seat belts fastened in the correct sequence.

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 SVI. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

SEAT DRIVER

The driver's seat shall be a Seats Inc. 911 series. The seat shall feature a tapered, padded seat cushion. The seat shall feature two-way manual fore and aft adjustment with 6.00 inches of travel.

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 buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

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

This model of seat shall have successfully completed the static load tests set forth 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 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

SEAT BACK DRIVER

The drivers seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured, adjustable head rest.

SEAT OFFICER

The officer's seat shall be a Seats Inc. 911 ABTS series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

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 this 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 OFFICER

The officers seat back shall include a Ziamatic brand Load and Lock™ walk away self contained breathing apparatus (SCBA) bracket. The walk away bracket shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of fire truck cabs. The bracket shall consist of a back plate and a short back plate, both of which shall be thermoplastic coated for trouble free service. The bracket shall feature two (2) high cycle double coated clips which shall not mar the cylinders.

The bracket shall accommodate and secure all types of self-contained breathing apparatus cylinders. Each bracket shall include a model LLS strap assembly which shall meet the NFPA 1901-03 standard for SCBA retention and shall be easily adjustable. The seat back shall include a removable padded vinyl cover which shall be provided over the SCBA cavity.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a Seats Inc. 911 ABTS series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

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 REAR FACING OUTER

The crew area shall include a seat back in the rear facing outer position which shall include a Ziamatic brand Load and Lock™ walk away self contained breathing apparatus (SCBA) bracket. The mechanical walk away bracket shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of fire truck cabs. The bracket shall consist of a back plate and a short back plate, both of which shall be thermoplastic coated for trouble free service. The bracket shall feature two (2) high cycle double coated clips which shall not mar the cylinders.

The bracket shall accommodate and secure all types of self-contained breathing apparatus cylinders. Each bracket shall include a model LLS strap assembly which shall meet the NFPA 1901-03 standard for SCBA retention and shall be easily adjustable. The seat back shall include a removable padded vinyl cover which shall be provided over the SCBA cavity.

SEAT MOUNTING REAR FACING OUTER

The rear facing outer seat shall be mounted facing the rear of the cab.

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 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

SEAT CREW FORWARD FACING CENTER

The crew area shall include a seat in the forward facing center position which shall be a Seats Inc. 911 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 crew area shall include a seat back in the forward facing center position which shall include a Ziamatic brand Load and Lock™ walk away self contained breathing apparatus (SCBA) bracket. The mechanical walk away bracket shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of fire truck cabs. The bracket shall consist of a back plate and a short back plate, both of which shall be thermoplastic coated for trouble free service. The bracket shall feature two (2) high cycle double coated clips which shall not mar the cylinders.

The bracket shall accommodate and secure all types of self-contained breathing apparatus cylinders. Each bracket shall include a model LLS strap assembly which shall meet the NFPA 1901-03 standard for SCBA retention and shall be easily adjustable. The seat back shall include a removable padded vinyl 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, .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 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 drivers 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 FRP composite with a black matt finish. All doors shall include keyed alike locks that are designed to prevent accidental lockout.

The interior latches shall be black flush paddle type, which are incorporated into an upper door panel.

DOOR LOCKS

Each cab entry door shall include a manually operated door lock. The each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

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 single vision mirror heads model 613285 shall be provided and installed on 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 mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an 8.00 inch convex mirrors with a stainless steel back, model 980-4, installed below the flat glass to provide a wider field of vision. The flat mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The convex mirrors shall be manually adjustable. The flat mirror glass 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a rocker switch in the mirror control panel on the drivers side dash.

EXTERIOR TRIM REAR CORNER

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless steel plate shall be affixed to the cab using two sided adhesive tape.

TRIM REAR WALL EXTERIOR

The exterior rear wall of the cab shall include 3003-H22 aluminum tread plate which shall be 0.072 inches thick. This plate shall cover the entire rear wall of the cab.

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. The two-piece liners 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.

CAB EXTERIOR MODEL NAMEPLATE

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

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.

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.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 BOX COVER

Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

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.

ALTERNATOR

The starting system shall include a 270 amp Leece Neville 12 volt alternator. The alternator shall include a self-excited 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 its 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 red cover.

HEADLIGHTS

The cab front shall include (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.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver 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 respective door as well as rocker switched.

STEP LIGHTS

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

Each light shall produce 21 candle power of illumination and draw 1.5 amps.

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.

FRONT SCENE LIGHTS

The front of the cab shall include two (2) Fire Research Focus model FCA800-S75 contour roof mount lights installed on the brow of the cab.

Each lamp head shall have one (1) quartz halogen 750 watt 120 volt bulb. The bulb shall draw 6.3 amps and generate 19,600 lumens. Each lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. Each lamp head shall be no more than 4.75 inches in height X 11.50 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHT LOCATION

There shall be two (2) scene lights mounted to the front brow of the cab inboard of the outer front marker lights.

FRONT SCENE LIGHTS ACTIVATION

The front scene lights shall be pre-wired to be activated by the OEM.

INTERIOR OVERHEAD LIGHTING

The cab shall include a two-section incandescent dome lamp with a red and white 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 white portion of each lamp shall be activated by opening the respective door and both the red and white portions 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CAB SPOTLIGHTS

The cab shall include two (2) Unity 325 series spotlights. The spotlights shall be mounted one (1) on each side of the cab just above the outer end of the windshield. The spotlights shall feature a 12 volt, 50 watt halogen lamp with 160,000 candle power output in a 6.00 inch diameter chrome plated plastic head and a rubber grip control handle.

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 in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up, when the master switch is activated.

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.

ALTERNATING HEADLIGHT SWITCH

The flashing headlights shall be activated through a rocker switch on the main switch panel. The rocker switch shall be clearly labeled for identification.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include dual Code 3 Oscilaser halogen warning lights which shall offer a simple and reliable rotating motion or an up and down movement while oscillating from side to side, both with a parabolic reflector for maximum output. The lights shall be mounted to the front fascia of the cab within a chrome bezel in the inboard position.

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 via rocker switch on the main panel. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Code 3 45BZ LED 3.00 inch X 7.00 inch intersection warning lights, one (1) each side, which shall offer multiple flash patterns.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 AND INTERSECTOR WARNING SWITCH

The side and intersector warning lights shall be controlled via rocker switch on the main panel. This switch shall be clearly labeled for identification.

SIREN CONTROL HEAD

A Code 3 Micro Com2 200 watt remote dual amplifier control head shall be provided and mounted on the dash in the switch panel in a location specific to the customers needs. The siren shall feature remote switching for horn ring (if a horn ring siren selector switch is ordered), air horn available at any time, wail, yelp, hi-lo, radio broadcast, public address, noise canceling microphone, park kill, instant "ON", adjacent backlighting and scroll mode.

HORN RING SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control to either the air horn or the electric horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position which is in accordance with FMVSS requirement.

AIR HORN ACTIVATION

The air horn actuation shall be accomplished by the steering wheel horn button 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 not less than 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 Enunciator Module that contains the following indicator lights. All indicator lights shall contain LED lamps.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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).

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

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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

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.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

AS BUILT WIRING DIAGRAMS

The cab and chassis shall include one (1) complete set of wiring schematics and option wiring diagrams.

WARRANTY - CAB AND CHASSIS

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.

OPERATORS AND PARTS LIST MANUAL

There shall be one (1) chassis operator's manual which includes a parts list. Also, wiring and air plumbing diagrams shall be provided as well as a list of any parts or equipment that is shipped loose with the vehicle. All standard wiring and plumbing diagrams shall be created specifically to the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUALS

There shall be one (1) set of engine operation and maintenance manuals and one (1) set of transmission operation manuals specific to the models ordered included with the final vehicle in the ship loose items.

CAB/CHASSIS PREPAYMENT

The specified cab/chassis shall be prepaid by Inter-Canyon Fire Department within 30 days of invoice. Inter-Canyon Fire Department understands that if payment is made after 30 days, additional interest charges may apply.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

BUMPER COMPARTMENTS

The bumper extension shall have three (3) compartments and shall be as large as possible. The center compartment shall be used for storage of 100' of 1-3/4" pre-connected hose. The compartment doors shall be 1/8" NFPA compliant aluminum tread plate with stainless steel hinges and single point lift/turn latches. Each compartment door shall have a spring hold open device.

Rubber bumpers and chains shall be provided as required to prevent the doors from hitting the cab.

AIR HORN(S)

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

FRONT TOW PROVISIONS

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

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

EXHAUST

The exhaust system shall be as provided by cab/chassis manufacturer. No other alternation or modifications are required.

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.

CELLULAR PHONE ANTENNA INSTALLATION

There shall be one (1) cellular phone antenna mount provided and installed on the cab roof. The end of cellular antenna shall be routed to a location determined by the Inter-Canyon Fire Department.

Due to multiple configurations of antenna whips, the Manufacturer shall provide the antenna base, and Inter-Canyon Fire Department shall provide the whip.

RADIO/ANTENNA INSTALLATION

There shall be one (1) Inter-Canyon Fire Department supplied radio(s) with antenna installed in the cab within easy reach of driver. The location of radio shall be determined by the Inter-Canyon Fire Department at the pre-construction meeting.

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

12 VDC ACCESSORY PLUG

There shall be two (2) 12 volt accessory plug(s) furnished and installed in the cab area. One (1) accessory plug shall be located in the center dash panel, and one (1) accessory plug shall be located inside of the rear cab cabinet.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

HELMET STORAGE

Six (6) OnScene Solutions Talon model helmet storage bracket(s) shall be provided and installed in the cab driving or crew area. The helmet mounting will comply with the 9G NFPA requirements. Helmet brackets shall be mounted on the completed unit, locations as per the Inter-Canyon Fire Department.

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.

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 Inter-Canyon 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

REAR CAB AREA LAYOUT

INTERIOR CABINET - COUNTER HEIGHT



There shall be one (1) interior counter height cabinet(s) provided in rear crew area behind engine tunnel. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a gray hammer tone powder coat paint finish for a hard durable surface. The cabinet shall be designed to match the previous Rescue Pump unit (SVI #593).

- One (1) 12 volt terminal block(s) installed to provide 12 VDC power for equipment supplied by the Inter-Canyon Fire Department. Exact location shall be determined at the pre-construction meeting.
- One (1) 120 VAC, 20 amp duplex, straight-blade receptacle (NEMA 5-20R). Outlet shall be wired to both shore power and generator.
- The above cabinet(s) shall have double vertically hinged aluminum door(s) and painted with a hammer tone powder coat paint finish to match cabinet color choice.
- There shall be one (1) vertically adjustable shelf in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

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".

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 Inter-Canyon 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 Inter-Canyon 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.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

BODY SUBFRAME

To assure proper body alignment and clearance, the body subframe shall be constructed directly on the chassis.

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 4" x 1/4" aluminum tubes, the same width as the chassis frame rails, NO EXCEPTION. Welded to this tubing shall be crossmembers of 2" x 4" x 1/4" aluminum. These crossmembers shall extend the full width of the body to support the compartments. Crossmembers 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 crossmembers 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

BODY MOUNTING

The body subframe shall be fastened to the chassis frame with a minimum of four (4) 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.

14" 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 12" 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 rear bumper.

WHEEL WELL EXTERIOR PANEL

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

DIEFORMED BEADED EDGE BODY FENDERS

A die formed beaded edge shall be provided along the radius of the wheel well opening for a finished appearance.

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 BOTTLE COMPARTMENTS

There shall be three (3) SCBA compartments located adjacent to the rear wheels. There shall be two (2) on the curbside and one (1) on the streetside of the apparatus body. Each compartment shall have a Cast Products aluminum door assembly with a positive catch latch. The compartment shall allow the storage of SCBA bottles up to 7-3/4" in diameter. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

Inter-Canyon Fire Rescue

Rescue Pumper

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.
2. Finish all exterior body seams as necessary, followed by a thorough sanding of all bare metal to be painted.
3. Re-clean bare metal using a solvent base wax & grease remover.
4. 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.
5. Primer Filler Coat - PPG Delfleet® Evolution urethane build primer to achieve total thickness of 3.0-6.0 mills DFT after sanding.
6. Basecoat (Color) - PPG Delfleet® Evolution High Solids Polyurethane Basecoat. Apply 1.0-3.0 mills DFT of basecoat color to achieve full hiding.
7. Clearcoat PPG Delfleet® Evolution polyurethane premium quality clearcoat with improved mar resistant finish. The clearcoat shall be applied to achieve a total dry film thickness of 2.0-3.0 mills.
8. 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

PAINT FINISH - SINGLE COLOR

The body shall be painted with a single color of PPG Delfleet® Evolution paint as described above.

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.

- 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.

Inter-Canyon Fire Rescue

Rescue Pumper

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 10 in. (254 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 white in color.

There shall be a 2" Scotchcal reflective stripe located above and a second 2" Scotchcal reflective stripe located below the main stripe.

- 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 white in color.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

REFLECTIVE STRIPE - BODY SIDES

A 10" 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 white in color.

There shall be a 2" Scotchcal reflective stripe located above and a second 2" Scotchcal reflective stripe located below the main stripe.

- This reflective stripe shall be blue in color.

The stripe shall extend from the chassis to the body where it will angle up and then extend straight back to the rear of the body.

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 yellow in color.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

LETTERING

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

There shall be six (6) 6-1/2" high reflective letters furnished and installed on the vehicle. The lettering shall state:

631 on unit 766
634 on unit 767

- This reflective lettering shall be white in color.

UPPER BODY SIDE LETTERING

There shall be six (6) 4-1/2" high reflective letters furnished and installed on the vehicle. The lettering shall state:

631 on unit 766
634 on unit 767

- This reflective lettering shall be white in color.

There shall be forty six (46) 7" high reflective letters furnished and installed on the vehicle. The lettering shall state:

INTER-CANYON FIRE RESCUE

- This reflective lettering shall be white in color.

REAR BODY LETTERING

There shall be three (3) 8" high reflective letters furnished and installed on the vehicle. The lettering shall state:

631 on unit 766
634 on unit 767

- This reflective lettering shall be white in color.

FRONT OF CAB LETTERING

There shall be twenty three (23) 2-1/2" high reflective letters furnished and installed on the vehicle. The lettering shall state:

INTER-CANYON FIRE RESCUE

- This reflective lettering shall be white in color.

There shall be six (6) 4-1/2" high reflective letters furnished and installed on the vehicle. The lettering shall be located on each side of the cab front radius corners and shall state:

631 on unit 766
634 on unit 767

- This reflective lettering shall be white in color.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CAB ROOF LETTERING

There shall be three (3) 20" high reflective letters furnished and installed on the vehicle. The lettering shall state:

631 on unit 766

634 on unit 767

- This reflective lettering shall be white in color.

SUPPLIED DECALS

The bidder shall install three (3) Inter-Canyon Fire Department supplied decal(s) on the vehicle, located per the approved graphics layout.

EXTERIOR COMPARTMENT DOORS

HINGED DOOR CONSTRUCTION

The exterior compartment doors shall be custom manufactured and built for each compartment. The compartment doors must be able to withstand years of rugged service and wear. For this reason, the compartment door design, metal thickness, and attachments must be strictly adhered to.

The compartment doors shall be all aluminum 3003H-14 alloy construction. The exterior panel shall be of 1/8" thickness smooth plate aluminum and the interior panel shall be of 1/8" thickness smooth plate aluminum. Lighter gauge material will NOT BE ACCEPTABLE in these areas. The double panel doors shall be 1-3/4" thick to completely enclose the door latching assembly. Doors shall have drain hole openings for drainage and ventilation.

The doors shall be flush mounted so that the outer surface is in line with the side body surface. Lap or bevel type constructed doors, doors framed with extrusions, or doors requiring rubber bumpers to prevent unnecessary contact are NOT ACCEPTABLE.

Compartment door openings shall be sealed with closed cell automotive type rubber molding to provide a weather resistant seal around door. In addition, rubber molding shall be provided along hinge to prevent moisture entry. Open cell foam type rubber moldings are NOT ACCEPTABLE.

Hinged compartment doors shall have 14 gauge stainless steel hinge, with 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary.

Drip rails shall be installed above all compartment door openings. Drip rails shall be completely removable for easy replacement if necessary.

The latching mechanism of hinged compartment doors shall include stainless steel 6" Hansen offset bent D-ring keyed handles. A gasket shall be placed between stainless steel handle and door. Door latches shall be a double catching two-point rotary slam latch, recessed inside the double panel door with striker plate.

All vertically hinged compartment doors shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door. Door checks that require unlatching by hand will NOT BE ACCEPTABLE. All horizontally hinged compartment door shall have a door check as specified with each door.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)

The apparatus shall be equipped with Robinson 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
- Magnetic door ajar system must be integrated in lift bar handle and the retainer block to signal open door. No mechanical switches or switches interior to the compartment shall be used
- 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 are 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.

EXTERIOR ROLL-UP DOOR FINISH - SATIN

The roll-up doors shall have a satin aluminum finish on the door slats and the door trim components.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

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 | 74.0" |
| 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 | 23.5" |

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

TWO (2) UPPER BODY COMPARTMENTS

There shall be two (2) compartments on streetside of body. Each of these compartments shall be 57.0" wide x 23.0" x 18.5" deep. The side compartments shall be open under each door sill to allow for long equipment.

Each compartment shall have a lift-up type compartment door hinged on the outboard side. Each door shall be fabricated from 3/16" NFPA compliant aluminum tread plate. Each door shall have one (1) grab handle mounted on the inside edge of the door overlap to assist in opening the door and to provide an obstruction free walking area across the door tops. 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. The gravity-driven, sealed, ball-style tilt switch shall be mounted to one of the cast aluminum mounting brackets to activate the door open indicator system and the interior compartment light. 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 compartment shall have a horizontally mounted OnScene Solutions LED Night Stik on the underside of the door that will be automatically activated when the door is opened and wired to the NFPA required hazard warning light provided in cab.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

ROOF ACCESS LADDER

The ladder shall be weld constructed of vertical aluminum extrusion tubing and aluminum grip surface ladder rungs with slip resistant tread grip pattern. It shall be set off from body 8 inches and mounted to body with chrome plated end stanchions bolted to the body with stainless steel bolts. The ladder shall NOT extend above the body roof. The location shall be on the rear streetside of the apparatus body.

ROOF ACCESS HANDRAIL(S)

There shall be two (2) handrail(s) mounted on top of body along the outer edges of the specified roof compartment doors to assist in roof access. The handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

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)

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 16.0" wide.

The approximate compartment door opening shall be 14.0" wide..

This compartment shall have vertically hinged box pan style doors fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring non-locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.

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 COMPONENTS

- There shall be vertically mounted aluminum shelf trac for shelving 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.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in lower compartment.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)

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 Robinson roll-up door with an exterior satin aluminum finish.

- There shall be NO keyed lock on this roll-up compartment door.

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 COMPONENTS

- There shall be vertically mounted aluminum shelf trac for shelving installation.
- There shall be one (1) adjustable shelf/shelves approximately 24" deep.
- One (1) vertically mounted OnScene Solutions LED Nightstik.
- One (1) 120/240 VAC load center.
- The 12 volt electrical distribution panel shall be located in the streetside over wheel well compartment.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

STREETSIDE COMPARTMENT - REAR (S3)

The interior useable compartment width shall be approximately 45.0" wide.

The compartment door opening shall be approximately 38.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- There shall be NO keyed lock on this roll-up compartment door.

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 COMPONENTS

- There shall be vertically mounted aluminum shelf trac for shelving installation.
- There shall be one (1) adjustable shelf/shelves approximately 24" deep.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Hannay ECR1618-17-18 cable reel(s) capable of storing 200' of 10/3 electric cable. The rewind switch for each reel shall be located adjacent to the reel it controls.
 - The cable reel shall be equipped with 200' 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) vertically mounted OnScene Solutions LED Nightstik.
- There shall be one (1) underbody slide-out step.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in lower compartment.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 16.0" wide.

The approximate compartment door opening shall be 14.0" wide..

This compartment shall have vertically hinged box pan style doors fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 1/8" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring non-locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.

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 COMPONENTS

- There shall be vertically mounted aluminum shelf trac for shelving 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.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in lower compartment.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)

The interior useable compartment width shall be approximately 39.0" wide.

The compartment door opening shall be approximately 32.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- There shall be NO keyed lock on this roll-up compartment door.

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 COMPONENTS

- There shall be vertically mounted aluminum shelf trac for shelving installation.
- The aft compartment wall above the hard suction storage compartment shall be modified to allow for an open area between compartments C2 and C3.
- One (1) vertically mounted OnScene Solutions LED Nightstik.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CURBSIDE COMPARTMENT - REAR (C3)

The interior useable compartment width shall be approximately 45.0" wide.

The compartment door opening shall be approximately 38.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- There shall be NO keyed lock on this roll-up compartment door.

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 COMPONENTS

- There shall be vertically mounted aluminum shelf trac for shelving installation.
- There shall be two (2) adjustable shelf/shelves approximately 14" deep.
- 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.
- There shall be one (1) underbody slide-out step.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in lower compartment.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

REAR COMPARTMENT - CENTER (RC1)

The rear center compartment shall be closed to both side rear compartments.

The rear center compartment shall start at the bottom of the body, between the frame rails, and shall be as high as the body permits. The frame shall extend to the back of the body, stopping just inside the door opening.

The interior useable compartment width shall be approximately 41.0" wide x 22.0" deep.

The compartment door opening shall be approximately 34.0" wide.

This compartment shall have a Robinson roll-up door with an exterior satin aluminum finish.

- There shall be NO keyed lock on this roll-up compartment door.

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 COMPONENTS

- There shall be vertically mounted aluminum shelf trac for shelving installation.
- There shall be one (1) SCBA cylinder storage module for three (3) bottles.
 - There shall be one (1) OnScene Solutions cargo straps provided to secure the stored equipment.
- Specified fire extinguishers shall be located on left side of compartment.
- One (1) vertically mounted OnScene Solutions LED Nightstik.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

HARD SUCTION COMPARTMENT

A hard suction storage compartment will be provided on curbside rear of body extending thru the back of Compts. C1, C2, and C3. An overlap style access door will be provided on rear body panel with stainless steel hinge, and 6" Hansen stainless steel D-ring handle.

Compartment will be capable of storing; two (2) 6" x 10' sections of hard suction hose.

Miscellaneous Body Options - 12'

LADDER LIFT SYSTEM, CURBSIDE

A Ziamatic 12 volt DC, 60 amp, HLAS (Horizontal Ladder Access System, Part no. 3097-500-000) shall be provided above the exterior side body compartments, on the curbside.

The lift system shall be electro-hydraulic with built-in electric safety latches and warning alarm when in operation. Access shall still be provided to compartments with system in lowered position. Flashing lights on ends shall produce a visual signal when the system is out of the stored position.

The ladder control panel shall be located on curbside pump panel. The ladder lift system shall be designed to store the specified ladder complement specified. The side of ladder storage area shall be enclosed with aluminum and painted the same color as body.

Storage shall be provided for the following SVI supplied ladders and Inter-Canyon Fire Department supplied pike poles;

- One (1) Duo-Safety 1225-A aluminum 35' 3-section ladder (15' 3" x 24" x 9 3/8")
- One (1) Duo-Safety 775-A aluminum 14' roof ladder (14' 2 1/2" x 19" x 2 3/4")
- One (1) Duo-Safety 585-A aluminum 10' folding ladder (11' 3 1/2" x 1 3/4" x 3 3/4")
- One (1) Duo-Safety 10 FP 10' pike pole
- One (1) Duo-Safety 8 FP 8' pike pole
- One (1) Duo-Safety 5 FP5-DH 5' pike pole with 'D' handle

Provisions shall be included on the ladder lift system to prevent the feet of the folding ladder from extending beyond the envelope of the lift structure and contacting the body side when closing.

SIDE BODY PROTECTION - RUB RAIL

There shall be side rub rails provided below the compartment door openings on both the streetside and curbside. The rub rail shall be fabricated from 6063 extruded aluminum, measuring approximately 2-3/4" high x 1-3/8" thick with tapered aluminum end caps. The rub rail shall be bolted to the body using stainless steel bolts and 1-1/2" diameter x 5/8" thick rubber mount isolators to prevent damage to the body. The rails shall incorporate LED clearance marker lighting recessed into the rail fascia to avoid damage to the light in case of impact. The rub rail shall have an accessory mounting track integrated into the backside of the rail to allow mounting of accessories such as ground lighting.

APPARATUS LABELS

Streetside pump panel drip rail shall be labeled, "NOT A STEP". The label shall be located on the far right (rearward) portion of the drip rail, adjacent to the specified fold-down steps.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

COMPARTMENT COMPONENTS DESCRIPTIONS

All interior compartment components shall be fabricated as follows:

ADJUSTABLE SHELVING HARDWARE

Adjustable shelving hardware shall be provided indicated in the numbered compartment list.

The shelving hardware shall include a minimum of four (4) aluminum shelf tracs mounted vertically on compartment side walls or vertical partitions. There shall be one (1) cast aluminum shelf bracket per vertical shelf trac to mount each shelf, tray, or adjustable storage module. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

ADJUSTABLE SHELF/SHELVES

Adjustable shelf/shelves shall be provided in exterior compartment as indicated in the numbered compartment list.

Shelves shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate with a 2" vertical flange along the front and rear edges. Shelves shall be designed to be used with flanges either in the upward position to hold various equipment on shelf, or in the downward position for sweep-out shelf surface.

All shelves shall be fully adjustable, from top to bottom of the compartment. There shall be at least four (4) vertical mounting channels and shelving hardware, two (2) each side of compartment. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

COMPARTMENT LIGHTING

Each enclosed equipment compartment greater than 4 ft³ (0.1 m³) in volume and having an opening greater than 144 in.² (92,900 mm²) shall have sufficient compartment lighting to provide a minimum of 2 fc (20 lx) at any location on the floor of the compartment without any shelves, dividers, or equipment in the compartment.

Compartments such as ladder tunnels, pike pole storage tubes, or underbody compartments designed around the volumetric requirements of specific equipment that can be removed without the use of article illumination shall not be required to have compartment lighting.

All compartments shall be equipped with OnScene Nightstik LED lights with the following minimum light requirements;

- Full Height Compartments, 63" Section (42 LED's)
- Wheel well Compartments, 36" Section (24 LED's)
- Rear Rescue Compartment, 63" Section (42 LED's)
- Low Compartments, 18" Section (12 LED's), Vertical
- Low Compartments, 36" Section (24 LED's), Horizontal

The OnScene Nightstik lights shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

ELECTRIC CORD REEL

Electric cord reel(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

The 120 volt cord reel(s) shall be Hannay with electric rewind, equipped with fully enclosed 45 amp, three (3) conductor collector rings.

The 12 volt reel rewind system shall be directly wired to the chassis battery system with heavy duty stranded copper wire, with guarded finger type rewind button located within easy reach of the operator.

Each reel shall have a Hannay 4-way roller assembly to permit cable to feed directly off the reel and away from compartment. Plastic roller assemblies are not acceptable.

The wiring from the generator system shall be through Carflex electrical weatherproof conduit, with stranded copper wiring. The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of wiring.

Cord Reel General Requirements

All permanently mounted cord reels shall be rated for continuous duty and installed to be accessible for removal, cord access, maintenance, and servicing.

The power rewind cord reel spool area shall be visible to the operator during the rewind operation, or the reel spool shall be encapsulated to prevent cord from spooling off the reel.

Rollers or guides shall be provided, where required, to prevent damage to the cord at reel spools or compartment openings.

Rewind Provision

Power rewind type reels shall have the control in a position where the operator can observe the rewinding operation. If a reel is in an enclosure or out of direct view, the cord entry point to the enclosure shall be visible to the operator of the reel control.

The rewind control or crank shall not be more than 72 in. (1830 mm) above the operator's standing position. The rewind control shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.

Cord

The reel shall be designed to hold 110 percent of the capacity needed for the intended cord length.

The wire size shall be in accordance with *NFPA 70*, Table 400.5(A), but in no case shall it be smaller than 12AWG. Electrical cord shall be Type SEOOW, Type SOOW, or Type STOOW.

A label that indicates the following information shall be provided in a visible location adjacent to any permanently connected reel:

- (1) Current rating
- (2) Current type
- (3) Phase
- (4) Voltage
- (5) Total cord length

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

UNDERBODY SLIDE-OUT STEP

There shall be underbody slide-out step(s) furnished and installed. Each platform shall be constructed from 9" deep "Diamond Back" non-slip vented aluminum stair treads. Step slide shall be securely held in both out and stored position, utilizing a heavy duty pneumatic cylinder. Each pneumatic cylinder shall be designed to have an over center location which will assist the step in both extension and retraction. Each step shall be designed to hold 500 lbs., and reinforced to prevent flexing or damage.

STEP / GROUND LIGHTS

Step and ground lights shall be OnScene Solutions 9" LED Nightstik and be placed at any entry door and step where personnel climb on or descend from the apparatus to ground level. OnScene LED lights shall have 6 LED lights per 9" light, and shall be rated at 100,000 hours of service. On Scene Solutions LED lights shall have a 5 year free replacement warranty.

All of the required step and ground lights shall be activated when the parking brake is set.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

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:

- (1) SAE J156, *Fusible Links*
- (2) SAE J553, *Circuit Breakers*
- (3) SAE J554, *Electric Fuses (Cartridge Type)*
- (4) SAE J1888, *High Current Time Lag Electric Fuses*
- (5) 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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:

- (1) The propulsion engine and transmission
- (2) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers
- (3) 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)
- (4) 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
- (5) The minimum optical warning system, where the apparatus is blocking the right-of way
- (6) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps
- (7) 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.

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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

12 VOLT DIAGNOSTIC RELAY CONTROL CENTER

The 12 volt power distribution shall be conveniently located with easy access for service. All relays and circuit breakers shall be plug-in type allowing for removal for repairs without necessitating soldering or tools. The sockets mounts for both the relays and circuit breakers shall be of a design that permits the use of standard automotive type components.

The 12 volt distribution panel shall utilize printed circuit boards mounted in high strength enclosure. Each printed circuit board shall be provided with twelve (12) heavy duty independent switching relays. Each relay shall have the ability to be configured either normally open or normally closed and be protected by a 20 amp automatic reset breaker. Each circuit will be provided with a LED for visual diagnostic.

Power distribution panel shall be located in apparatus body within a protected enclosure with removable or hinged cover.

ROCKER SWITCH PANEL

The 12 volt control switch panel shall be supplied and installed by the cab/chassis manufacturer.

ELECTRICAL SYSTEM MANAGER

The chassis shall contain an electrical system manager for:

- Monitoring chassis battery voltage
- Shedding pre-determined electrical circuits
- Sequencing pre-determined electrical circuits
- Automatically controlling chassis engine fast-idle
- Monitor master switch and parking brake applications
- Automatically control warning light modes ("Calling-For" and "Blocking Right of Way")
- Provide low voltage alarm
- Programmable control circuits
- Remote system status indicator panel

System manager shall perform all electrical functions required by current NFPA 1901 Standards.

The electrical system manager shall be supplied and installed by the cab/chassis manufacturer.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

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

The battery conditioner shall be supplied and installed by the cab chassis manufacturer.

ENGINE COMPARTMENT LIGHT

Engine compartment light(s) shall be supplied and installed by the cab chassis manufacturer.

Inter-Canyon Fire Rescue

Rescue Pumper

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.

TAIL LIGHT MODULES

Rear body tail lights shall be vertically mounted per Federal Motor Vehicle Safety Standards. The following lights shall be furnished:

- Two (2) Weldon 1010 LED Series turn signal lights with amber lens and black arrow
- Two (2) Weldon 1010 LED Series stop/tail lights with red lens
- Two (2) Weldon 1010 LED Series back-up lights with clear lens

Two (2) Cast Products 3-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 LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

LICENSE PLATE LIGHT

One (1) Arrow #437 chrome plated license plate light shall be installed on the rear of the apparatus 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

SIDE SCENE LIGHTS

There shall be two (2) Code 3 88Z26 (9" x 7") recess mounted, 50 watt, halogen scene lights provided on the upper body. Each light will have a 26 degree lens and chrome flange. They will be equally divided between the curbside and streetside.

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 12 volt control panel in the cab.

REAR SCENE LIGHTS

Two (2) Code 3 88Z26 (9"x 7")recess mounted, 50 watt, halogen scene lights with a 26 degree lens and chrome flange shall be provided on the rear of the apparatus body.

The lights shall be switched at the 12 volt control panel in the cab.

The rear scene lights shall also be activated when the apparatus is in reverse.

TRAFFIC DIRECTIONAL LIGHT

One (1) Whelen TA4437M Super LED eight (8) lights, split two-piece housing, traffic directional warning device with 30' control cable shall be located on upper rear body. The control head shall be located in the cab within easy reach of Driver.

- The traffic directional light shall be surface mounted on upper rear body.

DAVID CLARK INTERCOM SYSTEM

The following David Clark 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;

1. One (1) David Clark U3800 master station module furnished and installed. The module shall have adjustable volume controls for headsets, and sytem, system on/off controls, and two (2) headset jacks.
2. One (1) David Clark U3811 single radio interface module shall be provided at the Driver location in cab. A David Clark U3815 single radio interface module shall be provided for Officer location in cab. A David Clark U3805 radio cord junction module shall be provided in system. The interface shall be designed to work with the Fire Department supplied radio system.
3. Two (2) David Clark 3441 single receiver, slotted dome under helmet headset(s) shall be provided for Driver and Officer. Each headset shall have a single plug and shall have radio transmit capabilities. Each headset shall have:
 - Microphone on/off button
 - Noise canceling electret microphone
 - Adjustable headstrap
 - Flex-style boom which rotates for left or right dress
4. Two (2) David Clark 3442 under helmet headset(s) and U3801iintercom station (as required) shall be provided and installed. The U3800 master station shall be utilized for two (2) crew positions in rear of cab. Each headset shall have a single plug and shall have radio transmit capabilities. Each headset shall have:
 - Microphone on/off button
 - Noise canceling electret microphone
 - Adjustable headstrap
 - Flex-style boom which rotates for left or right dress

Inter-Canyon Fire Rescue

Rescue Pumper

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.

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 LIGHT

There shall be one (1) Code 3 MX769NFPA1 - 69" long lightbar permanently mounted on the cab roof.

The lightbar configuration (streetside to curbside) shall be:

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

Upper Level

| <u>Section</u> | <u>Components</u> | <u>Color</u> |
|----------------|--|--------------|
| 1 | 50 Watt Rotator 2-Step Cascade Mirror | Red |
| 2 | 50 Watt Rotator Wide "V" Mirror | Clear |
| 3 | 50 Watt Rotator Wide "V" Mirror | Clear |
| 4 | 50 Watt Rotator Wide "V" Mirror | Clear |
| 5 | 50 Watt Rotator 2-Step Cascade Mirror | Red |

Lower Level

| <u>Section</u> | <u>Components</u> | <u>Color</u> |
|----------------|--------------------|--------------|
| 1 | Intersection Light | Clear |
| 2 | Blank | Clear |
| 3 | Blank | Clear |
| 4 | Blank | Clear |
| 5 | Intersection Light | 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 12 volt control panel in the cab.

Light bar shall be supplied with two 50 watt alley lights. The lights shall be load managed to be shut off when in blocking mode and in an low voltage situation.

ZONES B AND D - SIDE WARNING LIGHTS

UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Code 3 model 85BZR (9" x 7") surface mount LED lights provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the 12 volt control panel in the cab.

UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Code 3 model 85BZR (9" x 7") surface mount LED lights provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the 12 volt control panel in the cab.

ZONE C - REAR WARNING LIGHTS

Two (2) Code 3 model 85BZR (9" x 7") surface mount LED lights shall be provided in the rear upper zone of the body. There shall be one (1) light mounted on each side, near the corners of the body. Each light shall have a red lens and a chrome finished flange.

The lights shall be switched at the 12 volt control panel in the cab.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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 provided and installed before the cab chassis arrives at the manufacturing facility. They shall be Code 3 lights to complete an NFPA compliant lower level warning light system.

The lights shall be switched at the 12 volt control panel in the cab.

ZONES B AND D - CAB INTERSECTOR LIGHT (CAB FRONT CORNERS)

The warning lights shall be provided and installed before the cab chassis arrives at the manufacturing facility. They shall be Code 3 lights to complete an NFPA compliant lower level warning light system.

The lights shall be switched at the 12 volt control panel in the cab.

ZONES B AND D - BODY INTERSECTOR LIGHT (BODY WHEELWELL AREA)

There shall be two (2) Code 3 model 45BZR (7" x 3") surface mount LED lights provided, one (1) each side. Each light shall have a red lens and a chrome finished flange.

The lights shall be switched at the 12 volt control panel in the cab.

ZONES B AND D - BODY INTERSECTOR LIGHT (BODY REAR CORNERS)

There shall be two (2) Code 3 model 45BZR (7" x 3") surface mount LED lights provided, one (1) each side. Each light shall have a red lens and a chrome finished flange.

The lights shall be switched at the 12 volt control panel in the cab.

ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Code 3 model 85BZR (9" x 7") surface mount LED lights provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the 12 volt control panel in the cab.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

LINE VOLTAGE ELECTRICAL SYSTEM

ONAN HYDRAULIC GENERATOR

An Onan model CMHG 10000, hydraulic driven generator set shall be installed on the apparatus. The generator shall be rated at 10,000 watts at 120/240 VAC, 83/42 amps, single phase. Current frequency shall be stable at 60 hertz.

The power generating unit shall be modular unit, housed in stainless steel with an acoustical material added for maximum sound dampening. The module shall consist of the hydraulic motor, generator, blower, cooler, and all other necessary components.

For ease of maintenance, the only part of the system that shall require accessibility shall be the oil reservoir which shall be located as to facilitate periodic checks and the adding of hydraulic fluids.

A means shall be provided to activate the hydraulic generator system.

If the hydraulic generator system is not capable of output as stated on the power source specification label at all engine speeds, an automatic engine speed control system shall be provided.

If the apparatus is equipped with a fire pump driven by the chassis engine, the generator shall be capable of output as stated on the power source specification label with the engine at idle.

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 located in the drivers side pump operators panel.

This generator output display shall consolidate five (5) generator monitoring instruments into one device. The display case shall be waterproof and have dimensions not to exceed 4 1/4" high by 4 1/4" wide by 3 1/4" deep.

The following continuous displays shall be provided with super bright LED digits more than 1/2" high:

- Generator frequency in hertz
- Line 1 current in amperes
- Line 2 current in amperes
- Generator voltage in volts

The program shall support the accumulation of elapsed generator hours.

WARRANTY PERIOD

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the CMHG SERIES Hydraulic 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.

HYDRAULIC COMPONENTS

A hydraulic system filter and strainer shall be provided and shall be located in a readily accessible area.

Hydraulic hose shall meet the hydraulic pump manufacturer's recommendations for pressure, size, vacuum, and abrasion resistance. Hydraulic fittings shall meet the hydraulic pump manufacturer's recommendations for pressure, size, and the type of hose used.

Where the hydraulic hose comes into contact with other surfaces, the hose shall be protected from chafing.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

GENERATOR MOUNTING

The generator shall be mounted in the upper dunnage area above the pump module on rubber vibration isolators. The dunnage area shall be reinforced where necessary to hold weight of generator. A valve shall be provided on the generator oil drain outlet and piped to underside of generator compartment with flexible hose and plug. The drain shall be located where easily accessible for generator service.

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 by the cab chassis manufacturer. 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.

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 shall supply the 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 receptacle shall be 20 amp, twist-lock (NEMA L5-20R).

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

GENERAL REQUIREMENTS

Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60Hz, ± 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.

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 panelboard 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

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:

- (1) Voltmeter
- (2) Current meters for each ungrounded leg
- (3) Frequency (Hz) meter
- (4) 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

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 overcurrent 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 overcurrent devices shall be installed to protect the line voltage electrical system components.

Power Source Protection

A main overcurrent 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 overcurrent 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 overcurrent protection device, where so recommended by the power source manufacturer.

If the main overcurrent protection device is subject to road spray, the unit shall be housed in a Type 4-rated enclosure.

Branch Circuit Overcurrent Protection

Overcurrent 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 panelboard 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

Each overcurrent 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.

Panelboards

All fixed power sources shall be hardwired to a permanently mounted panelboard unless one of the following conditions exists:

- (1) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated overcurrent devices.
- (2) Only one circuit is hardwired to the power source, which is protected by an integrated overcurrent device.

The panel shall be visible and located so that there is unimpeded access to the panelboard controls. All panelboards 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:

- (1) 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)
- (2) 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:

- (1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
- (2) 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

Wiring Identification

Each line voltage circuit originating from the main panelboard 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.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

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.

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;

- (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

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

120/240 VAC SCENE LIGHTING

FRONT CAB-MOUNTED SCENE LIGHT(S)

Two (2) quartz floodlight(s) shall be provided on the front of the cab by the cab/chassis manufacturer. Each light shall be mounted in a brow-style mounting flange. 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.

Each light shall be wired directly to the electrical generator system with Carflex conduit and stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

- There 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.

SIDE UPPER RECESSED SCENE LIGHTS

Two (2) Fire Research Focus, model FCA200-S50, 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 9 3/4" 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 500 watt 120 volt bulb. The bulb shall draw 4.2 amps and generate 10,500 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.

- The above lights shall be controlled by two (2) switch(es) located on the streetside pump operators panel.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

COMMAND LIGHT - SHADOW RT TOWER

The apparatus shall be equipped with one (1) all-electric floodlight tower(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. NO EXCEPTIONS.

The light tower shall have four (4) weatherproof, 500 watt, 120 volt quartz halogen lights. Light heads shall be mounted in two (2) pairs, giving two (2) vertical lines of two (2) when the lights are in the upright position. The light tower shall have 355 degree rotation and capable of rotating either direction from a stowed position, NO EXCEPTIONS.

The light tower shall be capable of overhanging the side or back of the vehicle (depending on mounting location) to provide maximum illumination and a warning area adjacent to the vehicle, NO EXCEPTIONS. Positioning of the light bank shall be accomplished with maintenance free, heavy duty 12 volt linear actuators.

The light tower 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. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature.

Command Light controls shall include:

- Two (2) switches, one (1) for each light bank.
- One (1) switch for elevating lower 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.

The controls shall be located on the streetside pump operators panel.

The light tower shall have a full extension over 4' from mounted position and extend from nest position to full upright in 15 seconds. The overall size of nested light tower shall be approximately 21-1/2" wide x 48" long x 7-1/2" high, and weight approximately 65 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 one (1) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the delivered apparatus.

The light tower shall be mounted to roof of the custom cab which shall be reinforced as necessary to support weight of the light tower.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

HALE FIRE PUMP SYSTEM (PUMP MODULE ASSEMBLY)

PUMP ASSEMBLY

1. The pump shall be of size and design to mount on the chassis rails of a commercial and/ or custom truck chassis, and have the capacity of 1,500 gallons per minute as NFPA-1901 rated performance requirements.
2. The entire pump shall be assembled and tested at the pump manufacturer's factory.
3. The pump shall function by the utilization of a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.
4. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be tested at the pump manufacturer's facility to performance specifications as outlined by NFPA-1901 rated performance requirements. The pump shall be free from objectionable pulsation and vibration.
5. The pump body and related parts shall be constructed of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2,069 bar). All metal moving parts in contact with water shall be manufactured of high quality bronze or stainless steel. Any pump utilizing castings made of lower tensile strength cast iron not acceptable.
6. The pump body shall be horizontally split, on a single plane in two sections, for ease of removal of the impeller assembly. Wear rings and bearings associated with the pump body shall remove easily without disturbing the piping or mounting of the pump in chassis.
7. The pump body shall incorporate the discharge manifold system with a minimum of two (2) 4" (10.16 cm) port and seven (7) 3" (7.62 cm) ports.
8. The pump shall have one (1) double suction impeller. The pump body shall have two (2) opposed discharge volute cutwaters to eliminate radial unbalance.
9. The pump shaft shall be rigidly supported by three (3) bearings for minimum deflection. There shall be one (1) high lead bronze sleeve bearing to be located immediately adjacent to the impeller found on the side opposite of the gearbox. The sleeve bearing shall be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.
10. The pump shaft shall have only one (1) packing gland located on the inlet side of the pump. The pump shaft shall be of split design for ease of repacking. The packing gland shall be manufactured of a full-circle threaded design to exert uniform pressure on packing and to prevent "cocking" and uneven packing load when it is tightened. (No exceptions.) The pump shaft shall be adjusted easily by hand with rod or screwdriver without special tools or wrenches required. The packing rings shall be of a unique, permanently lubricated, long-life graphic composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion. (No exceptions.) A mechanical seal shall be provided in place of pump packing. There shall be only one (1) required on the suction (inboard) side of the pump. The mechanical seal must be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting.
11. The pump impeller shall have clearance rings manufactured of bronze, easy to remove, without replacing impeller or pump volute body. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
12. The pump shaft shall be manufactured of heat-treated, electric furnace, corrosion resistant stainless steel for longer shaft life. The pump shaft shall be sealed with a double-lip oil seal to keep road dirt and water out of gearbox.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

GEARBOX

1. The pump gearbox shall be of sufficient size to withstand up to 16,000 lb/ft (7,257 kg/m) of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.
2. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2- $\frac{3}{4}$ " (6.99 cm) in diameter, on both the input and output drive shafts. The drive shaft shall withstand the full torque of the engine.
3. All drive and pump gears shall be manufactured of the highest quality electric furnace chrome nickel steel. All bores shall be ground to size, teeth integrated and hardened, to create an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (There will be no exceptions.)
4. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.
5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat-treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
6. All apparatus built with automatic transmissions shall be provided three (3) green warning lights to indicate to the operator(s) when the pump has completed the shift from road to pump position. The warning lights will be located as stated: two (2) in the truck driving compartment and one (1) on the pump operators panel adjacent to the throttle control. For manual transmissions, one (1) green warning light will be provided for the driving compartment. All lights shall have appropriate identification/instruction plates.

CERTIFICATION

The pump will perform and meet the following tests to receive a Third Party Certification.

- 100% of rated capacity @ 150 PSI net pump press.
- 100% of rated capacity @ 165 PSI net pumps press.
- 70% of rated capacity @ 200 PSI net pump press.
- 50% of rated capacity @ 250 PSI net pump press

PRIMING PUMP

The priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump conforming to NFPA-1901 rated performance requirements. The pump body shall be manufactured of heat-treated anodized aluminum for wear and corrosion resistance.

The pump shall be capable of producing a minimum of 24 Hg vacuum at 2,000 feet (609.6m) above sea level. The electric motor shall be a 12 VDC totally enclosed unit.

The priming pump shall not require lubrication. The priming pump shall operate by a single pull control valve mounted on the pump operators panel. The control valve shall be manufactured of bronze construction.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

BALL VALVES

The valves including the ball shall be cast of 316 stainless steel with full flow capability. The valve shall have dual seats made of Acetate Resin with dual seals made of an internally lubricated rubber compound with a steel band.

The valves shall be of floating ball design with a flow pressure rating to exceed NFPA-1901 standards rating of 600 psi. The valve shall have lubrication capability from a supplied Zert fitting on the adapters for the valve body with the knowledge that lubrication is not required.

All 3.0"(7.62cm) discharge valves shall be supplied with a true slow close mechanism, which is required to be no less than 70 lb (31.8kg) of hand pressure over a three second throw. The valve shall also require a maximum actuation force of 75 lb (34 kg). The 2½" (6.35cm) side mounted swing handle valve shall also have a true locking mechanism, which shall be made of a cam and pin arrangement or a twist lock for true locking when the valve is gated. All side control valves will be supplied with push pull controls unless otherwise noted.

The valve shall be warranted for a period of ten (10) years on all stainless steel components, against defects in design and manufacturing processes. The wear items such as the seats, seals, and "O" rings shall have a warranty of two years on replacement parts only.

INTRUMENT PANEL

The Instrument Panel shall be black powder coated aluminum and contain the following:

- One (1) 4½" (11.43cm) Intake Master Gauge
- One (1) 4½" (11.43 cm) Discharge Master Gauge
- One (1) Pump Cooler Valve
- One (1) Engine Cooler Valve
- One (1) Intelli-Tank Water Level Gauge
- Two (2) Test Ports
- One (1) Panel Light Switch
- One (1) ENFO III
- One (1) Captain Pressure Governor
- One (1) Intelli-Tank Foam Level Gauge

PIPING AND MANIFOLDS

All the piping and pump body attached manifolding shall be stainless steel. The complete piping system shall be designed to direct mount all 1-½" or larger ball valves onto the pump body or stainless steel manifolds attached directly to the pump body.

All NHT pipe thread connections larger than ¾" connections shall be avoided in the construction of the plumbing system. The following valves shall have groove connection: rear discharge, tank fill, all 2" and 2-½" (5.08 and 6.35cm) pre connect valves. The tank to pump 3" (7.62 cm) valve shall have a hose barb connection.

TANK FILL

There shall be a 1-½"(3.81cm) pump to tank fill stainless steel valve. Valve shall be controlled at the side or top pump panel with a chrome handle.

PUMP COOLER AND ENGINE COOLER VALVE

An engine cooler and pump cooler valve shall be installed in the instrument panel. There shall be a turn valve installed thru the instrument panel and labeled.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

SUCTIONS

6" STEAMER INLETS

Two (2) 6" (15.24cm) steamer inlets will be provided, one (1) on the left side and one (1) on the right side. Both inlets shall have long handle chrome vented caps and a screen.

2-½" LEFT SIDE SUCTION

One (1) 2-½" (6.35 cm) stainless steel valve shall be installed on the left side of the pump panel. The valve shall be controlled at the streetside pump panel with a chrome handle. The valve shall come equipped with a chrome plug, chain, inlet strainer, one (1) 2-½" (6.35 cm) NHT chrome inlet swivel and one (1) ¾" bleeder/drain valve.

2-½" RIGHT SIDE SUCTION

One (1) 2-½" (6.35 cm) stainless steel valve shall be installed on the right side of the pump panel. The valve shall be controlled at the side with a chrome handle. The valve shall come equipped with a chrome plug, chain, inlet strainer, one (1) 2-½" (6.35 cm) NHT chrome inlet swivel and one (1) ¾" bleeder/drain valve.

4" RIGHT REAR MIV

One (1) 4" (10.16cm) inlet valve shall be installed on the right side of the pump panel. The inlet valve shall be a full flow butterfly type valve designed to mount on the fire pump between the suction tube extension and suction tube behind the pump compartment panel. The valve shall not interfere with other suction or discharge openings on the fire pump or with pump operating controls when properly mounted.

The valve body and related components that are in contact with water shall be manufactured of fine grained corrosion resistant bronze.

The butterfly disc shall be manufactured from 80,000 PSI minimum yield strength heat treated cast steel then coated with a durable nitrile rubber to provide a positive seal when the valve is closed.

A pressure relief valve shall be provided that is factory set to 125 PSI and field adjustable from 75 to 250 PSI. The pressure relief valve shall provide overpressure protection for the suction hose even when the intake valve is closed. An integral relief valve mounting pad shall be provided on the valve body. This mounting pad shall provide a Hale type 115 4-3/8 inch bolt circle flange for normal installation. The mounting pad shall have 2-½ inch female NPT threads to permit remote mounting of the relief valve without special adapters. The outlet of the pressure relief valve shall have 2-½ inch NHT threads to allow directing the discharge flow away from the pump operator position.

The inlet valve(s) shall be operated by a 12 VDC electric motor with remote capabilities or by a manual hand wheel located next to the suction tube.

Each valve shall be provided with panel placards indicating control operation. The placards shall have status lights to indicate whether the valve is open, closed or traversing from one position to another.

Each valve shall be provided with a gear actuator that will cycle the valve from OPEN to CLOSED position in no less than 3 seconds. The gear actuators shall be sealed units designed to provide reliable service in the harsh pump compartment environment. The ratio of the gear actuator shall be such that the hand wheel will close the valve in no more than 10 complete turns.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

The 12 VDC motor on the electric operated valve shall be provided with an automatic resetting, thermally compensated, overcurrent protection circuit breaker to protect the 12 VDC motor and apparatus electrical system. The electrical wiring for the valve shall be minimum 14 AWG, type SXL or GXL (SAE J1128) and shall be protected using 257 F minimum flame retardant, moisture resistant loom or braid. All electrical connections shall use sealed Packard Weather Pack connectors to provide extra protection from the harsh pump compartment environment to ensure long life and reliable operation.

The valve body shall have a $\frac{3}{4}$ inch female NPT threaded port on the top to allow installation of an NFPA compliant large diameter hose air bleeder valve. The air bleeder valve shall be mounted on the operator panel and be controllable by the pump operator. Air bleeder valve connections shall have a restriction no larger than $\frac{3}{4}$ inch to prevent water hammer when filling hose.

The valve body shall have a $\frac{1}{4}$ inch female NPT threaded port on the bottom to permit connection of an individual water drain valve.

A suction tube extension 7- $\frac{1}{4}$ inches wide shall be used to allow for the additional length of the inlet valve. The shorter suction tube extension, along with a 4, 6 or 9 inch suction tube, will keep the suction tube threads within the apparatus running boards while maintaining clearance for adapters.

A panel mounted manual override shall be provided to permit operation of the electric remote control valve in the event of abnormal operating conditions. The manual override shall be designed to permit operation of the valve without the use of special tools or disassembly of the pump compartment panel or valve.

The valve shall be equipped with o-ring seals for the mounting flanges. The o-ring seal groove shall be sized for proper squeeze of the o-ring for pressures in excess of 600 PSIG.

TANK TO PUMP

The tank to pump valve shall be 3" (7.62cm) inline, installed between the water tank and the pump. The valve shall be a quarter turn ball type, fixed pivot design and be constructed of stainless steel. The valve shall be controlled at the streetside pump panel with a chrome handle.

RELIEF VALVE

There shall be one (1) suction side stainless steel relief pump valve provided on the pump system.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

DISCHARGES

2-½" STREETSIDE DISCHARGES

Two (2) 2-½" (6.35cm) discharge with a stainless steel valves shall be located on the streetside pump panel. The valves shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2- ½" (6.35cm) NHT threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled at the streetside pump panel with a chrome handle. A 2-½" (6.35cm) white-faced, Interlube filled pressure gauge shall be installed on the panel near the control handle to indicate pressures from 0 to 400 P.S.I. The discharge shall also come equipped with a quarter-turn, ¾" drain valve.

3" CURBSIDE DISCHARGE

One (1) 3" (7.62cm) discharge with a stainless steel valve shall be located in the forward position on the curbside pump panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 3" (7.62cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 3"(7.62cm) NHT threads. One (1) chrome vented cap and chain shall also be supplied. The valve shall be controlled at the streetside pump panel with a chrome handle. One 2- ½" (6.35cm) white-faced, Interlube filled pressure gauge shall be installed on the panel near the control handle to indicate pressures from 0 to 400 P.S.I. The discharge shall also come equipped with a quarter-turn, ¾" drain valve.

2-½" CURBSIDE DISCHARGE

One (1) 2-½" (6.35cm) discharge with a stainless steel valve shall be located in the rearward position on the curbside pump panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2- ½" NHT threads. One (1) chrome cap and chain shall also be supplied. The valve shall be controlled at the streetside pump panel with a chrome handle. One (1) 2-½"(6.35cm) white-faced, Interlube filled pressure gauge shall be installed on the panel near the control handle to indicate pressures from 0 to 400 P.S.I. The discharge shall also come equipped with a quarter-turn, ¾" drain valve.

3" DECK GUN DISCHARGE

There shall be a 3"(7.62cm) deck gun discharge installed at the top of the pump. The valve shall be a quarter turn ball type of fixed pivot design and constructed of stainless steel. The valve shall be controlled at the streetside pump panel with a chrome handle. The valve shall be of the slow-close design so as not to allow the valve to open or close in less than 3 seconds. One (1) 2-½"(6.35cm) white-faced Interlube filled pressure gauge shall be installed in the operator's panel near the control handle to indicate pressures from 0 to 400 P.S.I. The discharge shall be equipped with a quarter-turn, ¾" drain valve.

2-1/2" CURBSIDE REAR DISCHARGE

One (1) 2-½" (6.35cm) discharge with a stainless steel valve shall be located on the right side rear of the pump manifold for extension to the curbside rear of the apparatus by the OEM. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½"(6.35cm) outlet shall terminate with a 2-½"(6.35cm) Victaulic connection. The valve shall be controlled at the streetside pump panel with a chrome handle. One (1) 2-½" (6.35cm) white-faced Interlube filled pressure gauge shall be installed on the panel near the control handle to indicate pressures from 0 to 400 P.S.I. The discharge shall come equipped with a quarter-turn, ¾" drain valve.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

CROSSLAY

Two (2) crosslays capable of storing up to 200' of 1- $\frac{3}{4}$ " double jacketed fire hose shall be installed on the front of the pump module for use from either side of the apparatus. Each crosslay shall have one (1) 2" (5.08cm) x 1- $\frac{1}{2}$ " (3.81cm) NHT male chicksan swivel located on either the streetside or curbside of the pump module. Each crosslay shall have one (1) 2" (5.08cm) stainless steel valve. The crosslay shall be controlled at the streetside pump panel with a chrome handle. There shall be a 2- $\frac{1}{2}$ " (6.35cm) individual line gauge and $\frac{3}{4}$ " quarter turn drain valve provided for each crosslay valve.

2" FRONT BUMPER JUMP LINE DISCHARGE

One (1) 2" (5.08cm) stainless steel valve. Valve shall be controlled at the side pump panel with a chrome handle. One (1) 2- $\frac{1}{2}$ " (6.35cm) white-faced Interlube filled pressure gauge shall be installed on the panel near the control handle to indicate pressures from 0 to 400 P.S.I. One (1) $\frac{3}{4}$ " quarter-turn drain valve provided.

2" REAR BUMPER JUMP LINE DISCHARGE

One (1) 2" (5.08cm) stainless steel valve. Valve shall be controlled at the side pump panel with a chrome handle. One (1) 2- $\frac{1}{2}$ " (6.35cm) white-faced Interlube filled pressure gauge shall be installed on the panel near the control handle to indicate pressures from 0 to 400 P.S.I. One (1) $\frac{3}{4}$ " quarter-turn drain valve provided.

VALVE CONTROLS SIDE

Class 1 locking push pull control rods shall be provided for valve actuation. The chrome plated zinc handles shall have a recessed area for 1" x 3" (2.54 x 12.70cm) identification tags. The controls shall be locked in any position.

WIRING HARNESS

The Class 1 electrical wiring harness shall be manufactured using GXL wire as SAE- J1128 rated performance requirements. The electrical wiring harness shall be covered by a black split convoluted loom, rated at a minimum of 275° F. All terminals shall meet the minimum pull test as required by the manufacturers pull test and crimp measurement data. All splices shall be manufactured using the ultra sonic splice process. The harness shall be 100% connected to a Dynalab circuit tester to insure continuity and correct assembly.

PRESSURE GOVERNOR

The kit shall be equipped with a Class 1 Captain pressure governor that is connected directly to the Electronic Control Module (ECM) mounted on the engine. The Captain is to operate as a pressure sensor governor (PSG).

ENFO III

The kit shall be equipped with a Class 1 ENFO III Engine Information Display for the pump operators panel. The ENFO III shall provide engine RPM, system voltage display and alarm, engine oil pressure display and alarm, and engine temperature display and alarm. The ENFO III is available in English and Metric, and utilizes SAE J-1587 data bus for its information, and does not require any additional sensors to be mounted.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

MASTER GAUGES

All Class 1 gauges shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The 4-½"(11.43cm) white-faced, Interlube filled pressure gauge shall indicate pressures from 0 to 400 P.S.I. for the discharge, and 30" to 400 P.S.I. for the suction. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem (no exceptions). A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. Two (2) 4-½" (11.43cm) master pump gauges shall be supplied and mounted next to each other, adjacent to the Captain pressure governor and engine instrumentation. The intake gauge shall be located to the left of the discharge gauge.

INDIVIDUAL DRAINS

All 2" (5.08cm) or larger discharge outlets shall be equipped with a ¾" ball valve drain valve or larger.

MASTER PUMP DRAIN

The pump shall be equipped with a Class 1 Master Pump 12 port drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all brass body with a stainless steel return spring.

U.L. TEST POINTS

Two (2) U.L. test plugs shall be mounted on the pump panel for testing of the vacuum and pressures.

TANK LEVEL GAUGE

The Class 1 tank level gauge shall indicate the liquid level on an easy to read display and show 9 levels of indication. Each tank level gauge system shall include:

One (1) pressure transducer shall be mounted on the outside of the tank. All sealed foam tanks require a second transducer.

One (1) set of weather resistant connectors, connecting to the digital display, to the pressure transducer and to the apparatus power.

DISCHARGE GAUGES

Individual Class 1 2-½(6.35 cm) line gauges for each 2" (5.08 cm) or larger discharge shall be provided and mounted adjacent to the discharge valve control handle. The gauges shall be white-faced, Interlube filled pressure gauges and handle pressures from 0 to 400 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. The cases shall be temperature compensated with an internal breathing diaphragm to permit filled cases and to allow a rigid lens with a distortion free viewing area. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an insulating Sub Z diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

CLASS A FOAM SYSTEM

The pump module shall be pre-configured for a body builder installed Foam Pro 2001.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

WARRANTY

The Hale pump shall be covered by the standard (5) year warranty; first two (2) years parts and labor, and three (3) thru five (5) years parts only.

BODY BUILDER FIRE PUMP SYSTEM ADDITIONS/MODIFICATIONS

DECK GUN/GENERATOR AREA MODIFICATION

The Class 1 pump module shall be modified by extending the sides upward to just below the Spartan 10" cab height. The design shall be a recessed tub for location of the hydraulic generator and deck gun/monitor. The tub interior surfaces shall be fabricated from NFPA compliant 3/16" aluminum tread plate. The exterior surfaces of unit shall be finish painted to match the body.

FOAM SYSTEM

The apparatus shall be equipped with an electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates and most Class B foam concentrates. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a digital electronic control display suitable for installation on the pump panel. Incorporated within the control display shall be a microprocessor that receives input from the system flowmeter(s), while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

Paddlewheel-type flowmeter(s) shall be installed in the discharges specified to be "foam capable." When the use of more than one flowmeter is required, an interface electronics module will be provided to totalize these flows and send the flow total to the microprocessor in the computer control display.

The digital computer control display shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:

- Provide push-button control of foam proportioning rates from 0.1% to 9.9%, in 0.1% increments
- Show current flow-per-minute of water
- Show total volume of water discharged during and after foam operations are completed
- Show total amount of foam concentrate consumed
- Simulate flow rates for manual operation
- Perform setup and diagnostic functions for the computer control microprocessor
- Flash a "low concentrate" warning when the foam concentrate tank(s) runs low
- Flash a "no concentrate" warning and shut the foam concentrate pump off, preventing damage to the pump, should the foam tank(s) empty

A 12-volt electric motor drive positive displacement foam concentrate pump, rated up to 2.5 gpm (9.5 L/min) @ 150 psi with operating pressures up to 400 psi (27.6 BAR), shall be installed in a suitable, accessible location. The system will draw a maximum of 40 amps @ 12 VDC or 21 amps @ 24 VDC. A pump motor electronic driver (mounted to the base of the pump) shall receive signals from the computer control display and power the 1/2 hp (0.40 Kw) electric motor directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water stream.

Full flow check valve shall be provided to prevent foam contamination of fire pump and water tank or water contamination of foam tank.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

Components of the complete proportioning system shall include:

- Operator control and display
- Paddlewheel flowmeter(s)
- Pump and electric motor/motor driver
- Wiring harnesses
- Low level tank switch
- Foam injection check valve
- Main waterway check valve

An installation and operation manual shall be provided for the unit, along with a one-year limited warranty by the manufacturer. The system must be installed and calibrated by a Certified FoamPro Dealer.

The system design shall have passed environmental testing which simulates heavy use on off-road mobile apparatus.

Testing shall have been conducted in accordance to SAE standards.

FOAM DISCHARGES

The following discharges shall be foam capable:

- One (1) 2-1/2" rear body discharge
- Two (2) 2" pump module cross lays
- One (1) 2" front bumper pre-connect discharge
- One (1) 2" rear bumper pre-connect discharge

INTAKE(S)

The completed apparatus shall have the following intake(s) added/modified by the body builder;

There shall be one (1) 4" gated intake provided on the curbside rear of the apparatus. The intake shall be extended from the MIV intake opening on the pump using Class 1 flexible hose and shall terminate at the rear of the apparatus in a 30 degree down-sweep elbow with 5" Storz adapter and 5" Storz plug and chain. A manual drain accessible from the side of the apparatus shall be provided at the rear of body.

DISCHARGE(S)

The completed apparatus shall have the following discharge(s) added/modified by the body builder;

REAR DISCHARGE(S)

There shall be one (1) 2-1/2" gated discharge(s) extended from pump module to the curbside rear of apparatus. Each discharge shall terminate in a down-sweep elbow with NHT threads. Each discharge shall include a chrome vented cap and chain.

FRONT DISCHARGE(S)

There shall be one (1) 2" gated discharge(s) extended from the pump module to the curbside rear of the front bumper. Each discharge shall terminate with a 2" x 1-1/2" chrome plated Chicksan swivel with NHT threads.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

MISCELLANEOUS DISCHARGE(S)

REAR BUMPER & PRE-CONNECT HOSE LAY

An aluminum tread plate cover shall be installed over the top of the rear step bumper to provide a compartment for storage of up to 100' of 1-3/4" double jacketed fire hose with nozzle. The cover shall be hinged at the rear to lift-up and expose the pre-connected hose load. There shall be one (1) 2" gated discharge extended from the pump module to the rear bumper. The discharge shall terminate with a 2" x 1-1/2" NHT male adapter. The hose connection shall be located in the hose lay for a straight connection.

Hose and nozzle shall be supplied by Inter-Canyon Fire Department.

CROSS LAY(S)



There shall be two (2) cross lay(s) provided with the completed pump module. Each cross lay shall be transverse of the module with access from either side. Two (2) removable hose trays shall be provided, one (1) for each cross lay, capable of extending out either side of the pump module with a roller mechanism to assist in removal.

Two (2) vinyl covers shall be provided, one (1) on each side of the apparatus, to prevent the hose load and nozzle from falling out during travel.

DECK GUN

There shall be one (1) 3" gated discharge located on the upper deck above the pump compartment. Piping shall rise high enough for a mounted deluge gun to be operated in a 360 degree circle to a lower angle of 15 degrees without being impeded by any part of the apparatus or equipment.

The discharge shall terminate with a 6-bolt flange with NHT threads.

DELUGE MONITOR

There shall be one (1) TFT manual Extenda-A-Gun, model XG18PL-PL with a Hurricane model XFI-PLNJ 1250 GPM monitor and model M-R1250SNJ automatic nozzle and model XF-SS10 stream straightener.

PUMP PANEL

The pump controls shall be mounted on an aluminum control panel which shall have a black powder coat painted finish. The panel shall be hinged, or bolted in place allowing it to be easily removed to gain access to plumbing components.

COLOR CODED LABELS

The completed unit shall have color coded labels for each discharge, intake, master gauge, and drain. Labels shall be manufactured from an acrylic poly material with the text of each label engraved in the top surface.

PUMP PANEL LIGHTING

All gauges and controls on the pump operators panel shall be adequately illuminated by a shielded light assembly with OnScene Solutions LED type lights. The lights shall be activated by a weather-proof type switch on the pump operators panel. This switch shall also activate any area step lighting.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

UPF POLY WATER TANK



The water tank capacity shall be approximately 550 U.S. gallons. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

The UPF Poly-Tank ® IIE shall be constructed of 1/2" thick PT2E™ polypropylene sheet stock. This material shall be a noncorrosive stress relieved thermoplastic, natural in color, and U.V. stabilized for maximum protection.

The booster tank shall be of a specific configuration and shall be so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removal.

The transverse swash partitions shall be manufactured of 3/8" PT2E™ polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend to the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and be welded to each other as well as to the walls of the tank.

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be located in the left front quarter of the tank. On all tanks that require a front suction, a 4" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to pre-vent air from being entrained in the water while pumping.

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

The tank lid shall be constructed of 1/2" thick PT2E™ polypropylene to incorporate a multi three-piece locking design that allows for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the lids shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

The UPF Poly-Tank IIE shall rest on the body cross members in conjunction with such additional cross members, as required by the tank manufacturer.

The tank shall be isolated from the cross members through the use of hard rubber strips with, a minimum Rockwell Hardness of 60 durometer. Additionally, the tank shall be supported around the entire perimeter and captured both front and rear as well as side to side to prevent the tank from shifting during vehicle operation.

Although the tank shall be designed on a free floating suspension principle, it shall be required that the tank have adequate hold down restraints to minimize movement during vehicle operation.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

The tank shall have a lifetime warranty from UPF.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

TANK FILL / VENT

The tank shall have a combination vent and manual fill tower marked "Water Fill." The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter.

The tower shall be located in the left front corner of the tank. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top, shall be fastened a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe that is designed to run through the tank, and shall be piped behind the rear wheels so as to obtain maximum traction.

There shall be an auxiliary tank vent piped to the rear of the tank to void trapped air and allow filling the tank to the maximum when filling on un level surfaces.

UPF TANK OVERFLOW

The tank shall be equipped with a minimum of a 6" schedule 40 polypropylene overflow / air vent pipe. The pipe shall be installed in the fill tower and extend through the tank and dump to the rear of the rear axle.

CLASS A POLYPROPYLENE FOAM CELL

There shall be one (1) 20 U.S. gallon polypropylene foam cell(s) incorporated into the polypropylene water tank.

There shall be one (1) pressure/vacuum vent installed on the foam tank.

There shall be one (1) drain hose connected to the foam cell. The drain shall have a 1/4 turn valve installed inside the pump house and it shall drain below the frame rail of the chassis.

HOSE BED STORAGE AREA

Hose bed storage area shall be located over water tank and body, and shall exit at the rear of the apparatus. The interior of storage area shall be free from all projections such as nuts, sharp angles, or brackets that may damage equipment.

The hose bed deck shall be constructed from 3"x3/4" hollow aluminum extrusions welded into a one-piece grid to allow ventilation and water drainage. The extrusions shall have an anodized radiused ribbed top surface. The deck will be completely removable for easy access to the booster tank. The booster tank fill tower shall be protected as necessary to prevent damage from equipment located in the storage area.

HOSEBED PARTITION(S)

There shall be one (1) adjustable aluminum hose bed partition(s) provided in the hose storage area. The partition(s) shall be 3/16" smooth aluminum with split aluminum tubing welded to the top and rear edges.

HOSEBED CAPACITY

Hose bed storage shall be 1,000' of 5" Jaffrey LDH on left side and 800' of 2-1/2" hose on right side.

VINYL HOSE BED COVER

A red marine grade vinyl cover shall be provided along the rear of the hose bed to prevent the hose load and nozzles from falling out of the apparatus while driving. The cover shall be designed to attach to the hinged hose bed covers and include "T" style snap fasteners along the sides and weighted bottom flap.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

ALUMINUM HOSE BED COVER

Hose bed storage area will be covered with a hinged aluminum cover with gas pistons to assist with opening. The cover shall be formed out of 1/8" NFPA treadplate with formed hat sections for bracing. The doors shall be designed to hinge outward from the outer edges and be supported from underneath by at least one adjustable hose bed divider.

The doors shall be engineered to support the weight of one person walking on top of the apparatus.

EQUIPMENT PAYLOAD WEIGHT ALLOWANCE

In compliance with NFPA 1901 standards, the pumper shall be designed for an equipment loading allowance of 2,000 lbs. of Inter-Canyon Fire Department provided loose equipment based on the pumper body having less than 250 cu. ft. of storage space.

EQUIPMENT

The following equipment shall be furnished with the completed pumper 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 ahead of the rear wheels, below the pump module, one (1) per side.
- One (1) Duo-Safety 1225-A series 35' 3-section extension ladder(s) shall be provided with the completed unit. Ladder mounting shall be per the itemized compartment list or specified by the Inter-Canyon Fire Department.
 - The ladder(s) shall be mounted on the specified ladder rack.
- One (1) Duo-Safety 775A series 14' aluminum roof ladder(s) shall be provided with the completed unit. Ladder mounting shall be per the itemized compartment list or specified by the Inter-Canyon Fire Department.
 - The ladder(s) shall be mounted on the specified ladder rack.
- One (1) Duo-Safety 585-A series 12' aluminum folding ladder(s) shall be provided with the completed unit. Ladder mounting shall be per the itemized compartment list or specified by the Inter-Canyon Fire Department.
 - The ladder(s) shall be mounted on the specified ladder rack.
- One (1) 10 LB. CO2 fire extinguisher(s) shall be provided with the completed apparatus.
 - The above specified fire extinguisher(s) shall be installed in compartment R1.
- One (1) 20 Lb. ABC dry chemical fire extinguisher(s) shall be provided with the completed apparatus.
 - The above specified fire extinguisher(s) shall be installed in compartment R1.
- One (1) 2-1/2 gallon pressurized water (Class A) fire extinguisher(s) shall be provided with the completed apparatus.
 - The above specified fire extinguisher(s) shall be installed in compartment R1.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

- Two (2) Streamlight LiteBox Vehicle Mounting Systems shall be provided. Each flashlight shall be orange in color. Each flashlight shall have a 12 volt DC charger and vehicle mount kit. Each flashlight shall have a 20 watt spotlight style bulb and reflector. The flashlights shall be wired to battery direct unless otherwise specified by the customer.
 - The flashlight(s) shall be mounted on the rear wall of cab between seat and side wall.
- Four (4) Streamlight #SL-20XP LED rechargeable flashlight(s) and charger(s) shall be provided. Each flashlight shall be orange in color. Each flashlight shall have a DC charger and storage sleeve. The flashlights shall be wired to battery direct unless otherwise specified by the customer.
 - The flashlight(s) shall be mounted on the rear wall of cab between seat and side wall.
- Inter-Canyon Fire Department supplied SCBA complying with NFPA 1981, *Standard on Open- Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, for each assigned seating position, but not fewer than two (2), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer, shall be provided on completed unit before placing vehicle in service.
 - The above specified SCBA air pack(s) shall be shipped loose with the completed unit.
- Inter-Canyon Fire Department supplied spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s).
 - The above specified SCBA spare air cylinder(s) shall be shipped loose with completed unit.
- Inter-Canyon Fire Department supplied NFPA required first aid kit shall be provided on completed unit before placing vehicle in service.
 - The above specified first aid kit(s) shall be shipped loose with completed unit.
- Inter-Canyon Fire Department supplied NFPA required traffic vest(s) shall be provided on completed unit before placing vehicle in service.
 - The above specified traffic vest(s) shall be shipped loose with completed unit.
- Inter-Canyon Fire Department supplied NFPA required traffic cones shall be provided on completed unit before placing vehicle in service.
 - The above specified traffic cones(s) shall be shipped loose with completed unit.
- Inter-Canyon Fire Department supplied NFPA required illuminated warning devices shall be provided on completed unit before placing vehicle in service.
 - The above specified illuminated warning device(s) shall be shipped loose with completed unit.
- Inter-Canyon Fire Department supplied automatic external defibrillator (AED) shall be provided on completed unit before placing vehicle in service.
 - The above specified AED(s) shall be shipped loose with completed unit.
- Two (2) 6" x 10' clear PVC suction hose shall be provided with completed unit.

Inter-Canyon Fire Rescue

Rescue Pumper

Production Specification

- One (1) 6" NST barrel strainer with foot valve to match hard suction hose provided shall be provided with completed unit. Strainer shall be mounted in streetside pump module compartment.
 - The suction hose(s) shall be mounted in the streetside pump panel compartment.
- Inter-Canyon Fire Department supplied NFPA required fire hose and nozzles shall be provided on completed unit before placing vehicle in service.
- One (1) wrench holders with two (2) combination spanner wrenches, and one (1) hydrant wrench shall be provided with completed unit.
 - The above specified wrench holder(s) shall be mounted on streetside pump panel.

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 Inter-Canyon Fire Department.

**APPROVED***By James Weber at 7:46 am, Oct 26, 2010*

Change Order #1

Customer: **Inter-Canyon Fire Rescue**

Date: 10/26/2010

Dealer: **Max Fire Apparatus**SVI #: **766/767**

Change Order Description Addition of Hose Storage Module

Based on the following changes/modifications to the specification, (5) days will be added to the quoted delivery time.

Review each item for change description and price. Check the appropriate response for each item, sign and date form at bottom, and fax completed form to SVI Trucks at (970) 667-3343.

Prices shown above are per unit (ea truck) prices unless otherwise noted. All work to be performed under same terms and conditions as specified in original contract unless otherwise stipulated. Change Order documentation will override specification in cases of conflicting documentation.

| Item # | Spec Section | Item Description | Unit Cost (In US \$) | Change Accepted? |
|---------------------|----------------------------------|---|----------------------|--|
| 1 | CURBSIDE COMPARTMENT - REAR (C3) | Add one (1) five (5) hose storage module to the lower rear compartment area. Storage module to be fabricated from 3/16" aluminum sheet and designed to match module as built for previous unit. | \$485.00 | <input checked="" type="checkbox"/> YES |
| Change Order Total: | | | \$485.00 | |

| | |
|--------------------------------|----------------|
| Authorized Customer Signature: | Date Accepted: |
| Authorized Dealer Signature: | Date Accepted: |
| Authorized SVI Signature: | Date Accepted: |

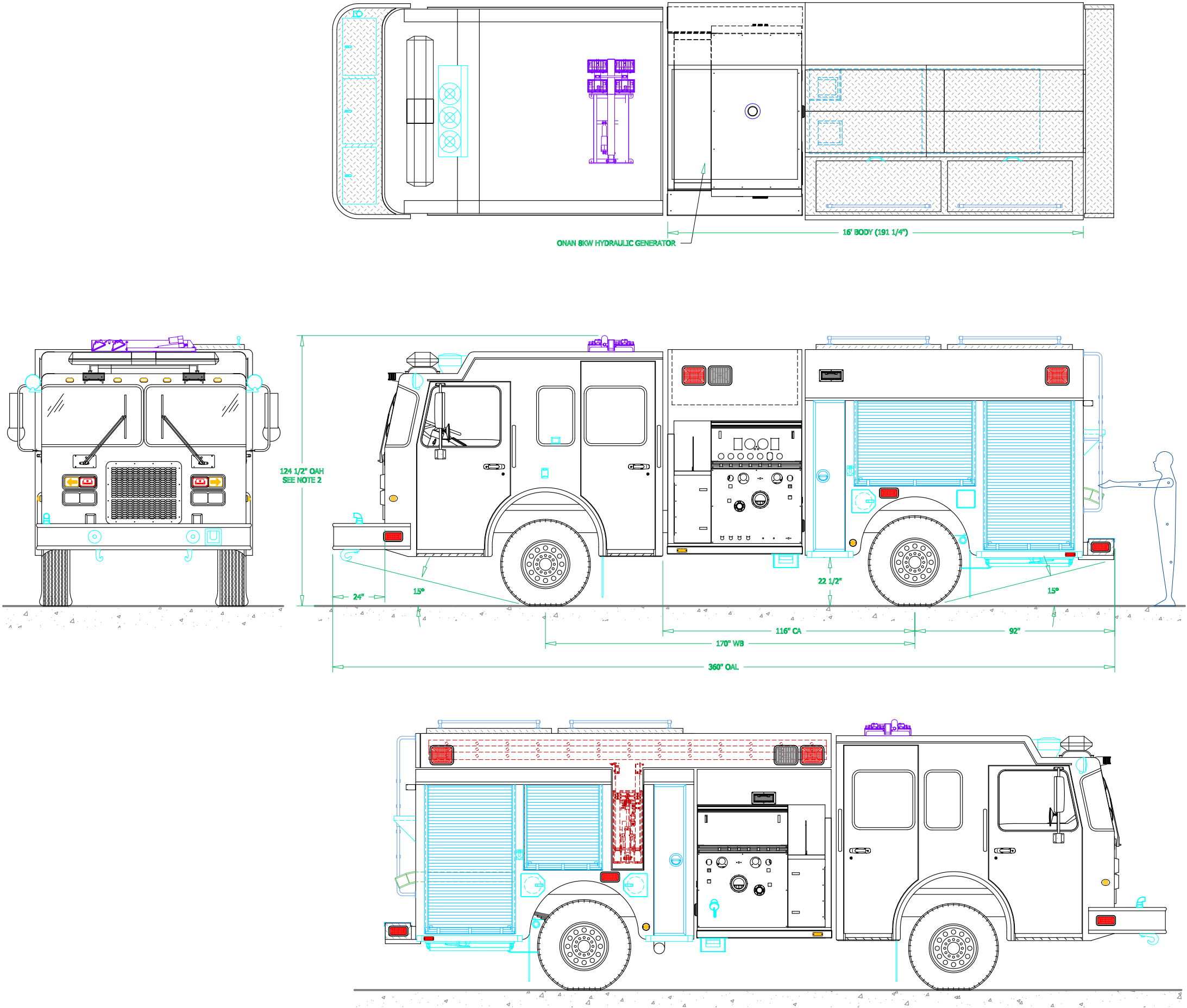
This change order is not valid until signed by all parties listed above.


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.

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

**INTER CANYON
FIRE DEPARTMENT**

| | |
|-------------------------|-------------------------------|
| BODY SIZE: 16' | UNIT TYPE: RESCUE PUMPER |
| BODY MATERIAL: ALUMINUM | TRUCK NO: - |
| CHASSIS TYPE: SPARTAN | WHEELBASE: SEE DWG |
| 4 X 4 MFD | CAB TO AXLE: SEE DWG |
| 4 DOOR | OVERALL LENGTH (OAL): SEE DWG |
| 10"RR | OVERALL WIDTH (OAW): SEE DWG |
| | OVERALL HEIGHT (OAH): SEE DWG |

DRAWN BY: HJR

DATE: November 15, 2006

SCALE: 1/4" = 1' - 0"

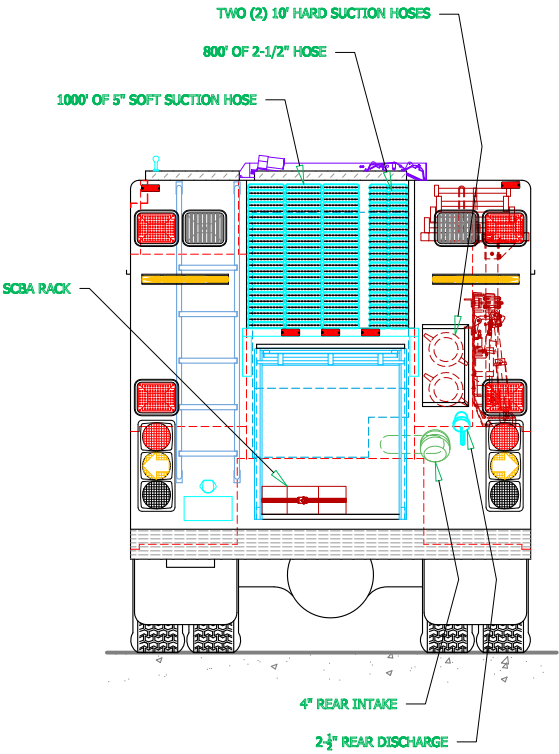
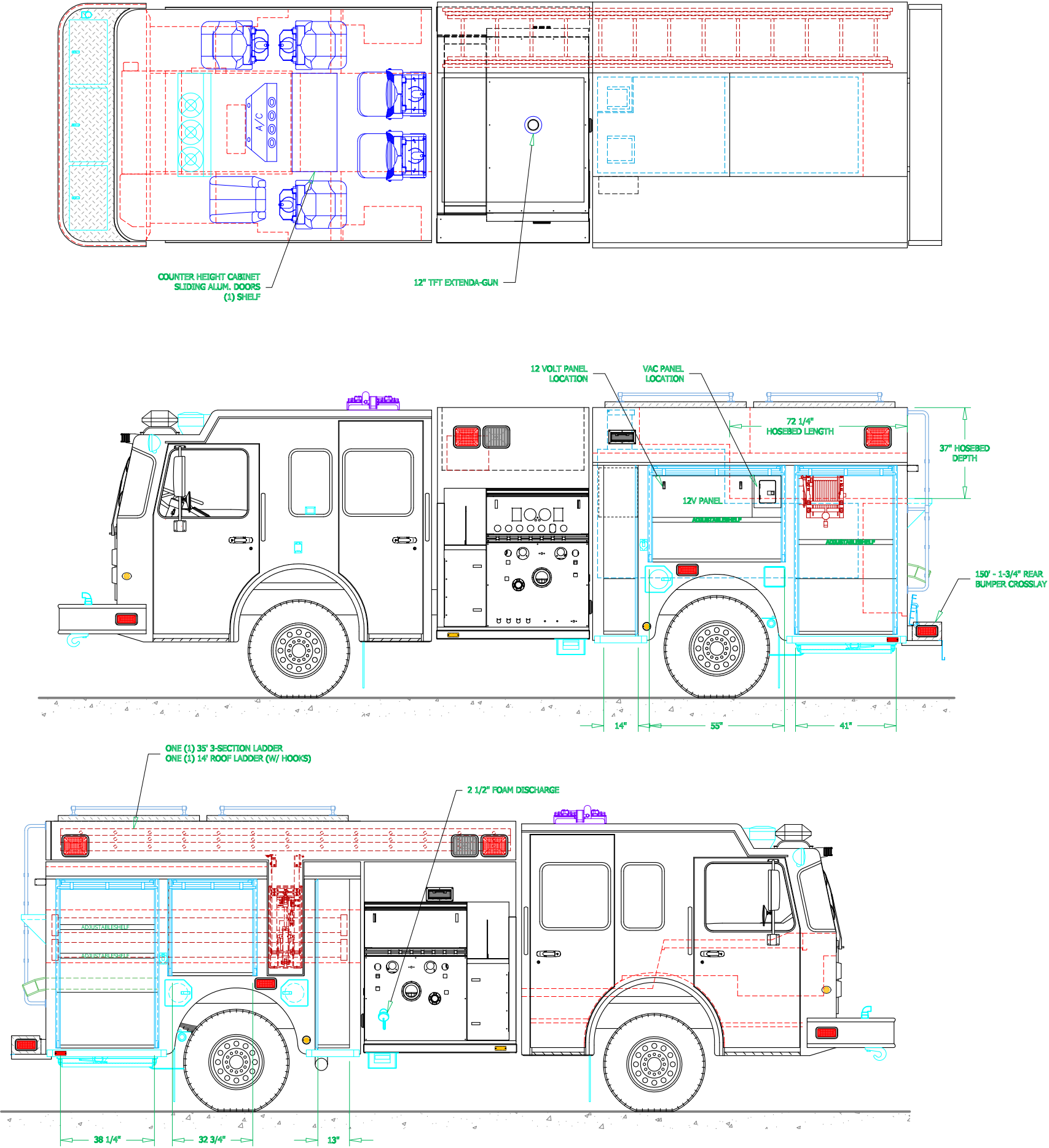
DRAWING NO: InterCanyon_CO_RP_PreCon1.dwg


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.





SVI FIRE & RESCUE TRUCKS
1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

**INTER CANYON
FIRE DEPARTMENT**

| | | |
|---|-------------------------|-----------------------|
| DRAWN BY: HJR | DATE: December 18, 2009 | SCALE: 1/4" = 1' - 0" |
| DRAWING NO: InterCanyon_CO_RP_PreCon1.dwg | | SHEET 2 OF 2 |