

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## SPECIFICATIONS & INFORMATION



**ONE (1) OR MORE LIGHT DUTY AIR/LIGHT/REHAB APPARATUS**

**FIRE CHIEF ERIC HICKS**

**KING COUNTY FIRE DISTRICT #20**

**12424 76<sup>TH</sup> AVE S.**

**SEATTLE, WASHINGTON 98178**

**PROJECT MANAGER CAPTAIN TRACY WYCKOFF**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## BID SPECIFICATIONS AND INSTRUCTIONS TO BIDDERS

### ADVERTISEMENT FOR BIDS KING COUNTY FIRE DISTRICT #20

Sealed bids will be received by the undersigned at the office of King County Fire District 20 up to 6:00 p.m. on January 11, 2019, for one (1), new UL Rated Air Unit Apparatus and Equipment, as outlined in the District's specifications, after which time bids will no longer be accepted. The sealed bids will be opened be publicly and read aloud at that time.

The contract may be awarded at the February 11<sup>th</sup>, 2019 regular Fire Commissioners meeting at the 12424 76<sup>th</sup> Ave. S, at 7:00 PM or at a later date.

Bid documents can be downloaded from the King County Fire District 20 website at <https://www.king20fire.org/public-works-projects/>. Bid documents can also be obtained at the Fire District office located at 12424 76<sup>th</sup> Ave. S.

Bid packages shall be submitted at the office of King County Fire District 20 in a sealed envelope marked: Sealed Bid for Air Unit Apparatus, along with the bid date and time of the bid opening.

King County Fire District #20 reserves the right to reject any or all bids, to waive minor irregularities in any bids or in the bidding procedure and to accept the lowest responsible bid that meets or exceeds the specifications and is deemed to be in the best interest of King County Fire District 20 and the citizens residing therein. This may or may not be the bid with the lowest bid price.

KING COUNTY FIRE DISTRICT #20

DATED December 3, 2019

By

Eric Hicks

King County Fire District #20 Chief

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## Contents

GENERAL INSTRUCTIONS .....	10
PROJECT OVERVIEW.....	10
MATERIAL AND WORKMANSHIP.....	11
COOPERATIVE PURCHASING.....	11
REFERENCES.....	12
BID SECURITY.....	5
PERFORMANCE BOND.....	12
BIDDING REQUIREMENTS .....	13
EXCEPTIONS & CLARIFICATIONS TO SPECIFICATIONS.....	14
WRITTEN PROPOSAL SPECIFICATIONS .....	15
SPECIAL CONDITIONS.....	15
PRICE, PAYMENT, AND DELIVERY.....	15
PREPAYMENT DISCOUNT OPTIONS.....	17
CONTRACT AWARD.....	17
LIABILITY.....	18
MATERIAL AND WORKMANSHIP.....	18
TECHNICAL INFORMATION .....	19
LIABILITY INSURANCE.....	19
INTERNET IN-PROCESS SITE .....	20
ENGINEERING DRAWINGS .....	20
VEHICLE STABILITY .....	22
ROLLOVER STABILITY.....	22
FIRE APPARATUS PERFORMANCE .....	23
HIGHWAY PERFORMANCE .....	23
SERVICEABILITY .....	23
FIRE APPARATUS DOCUMENTATION .....	23
OPERATIONS AND SERVICE DOCUMENTATION.....	25
NFPA REQUIRED DOCUMENTATION FORMAT - USB FLASH DRIVE .....	26
FIRE APPARATUS SAFETY GUIDE.....	26

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

STATEMENT OF EXCEPTIONS .....	26
CARRYING CAPACITY .....	27
TESTING.....	29
ROAD TEST .....	29
LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST .....	30
TEST SEQUENCE .....	30
1. RESERVE CAPACITY TEST .....	30
2. ALTERNATOR PERFORMANCE TEST .....	30
TEST AT IDLE.....	30
TEST AT FULL LOAD .....	31
3. LOW VOLTAGE ALARM TEST .....	31
LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST .....	31
DOCUMENTATION .....	31
UL 120/240 VAC CERTIFICATION.....	32
DOCUMENTATION .....	33
DIELECTRIC VOLTAGE WITHSTAND TEST .....	33
WARRANTY.....	34
GENERAL LIMITED WARRANTY - TWO (2) YEARS.....	34
LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS .....	34
STRUCTURAL WARRANTY - TEN (10) YEARS .....	35
UNDERCOAT WARRANTY .....	35
PAINT LIMITED WARRANTY - TEN (10) YEARS.....	35
GRAPHICS LIMITED WARRANTY .....	35
OVERALL HEIGHT REQUIREMENT .....	35
OVERALL LENGTH REQUIREMENT.....	36
OVERALL WIDTH .....	36
ANGLE OF APPROACH .....	36
ANGLE OF DEPARTURE.....	36
PRE-CONSTRUCTION CONFERENCE .....	36
FINAL INSPECTION CONFERENCE.....	36

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

DELIVERY AND DEMONSTRATION.....	37
SPECIFICATION ADDENDA.....	37
REGISTRATION .....	37
CONTRACT EXTENSION PROVISION .....	38
PURCHASER AUTHORIZED CONTACT .....	38
SUBMISSION OF BID PROPOSALS.....	38
<b>MANDATORY BID PROPOSAL FORM</b> .....	40
<b>ONE FORM REQUIRED FOR EACH APPARATUS PROPOSED</b> .....	40
<b>SERVICE CENTER LOCATION</b> .....	41
<b>RECEIPT OF ADDENDA</b> .....	41
<b>EXCEPTIONS TO SPECIFICATIONS:</b> .....	44
CAB CHASSIS SPECIFICATION .....	47
CAB TO AXLE DIMENSION .....	60
CHASSIS MODIFICATIONS .....	60
LUBRICATION AND TIRE DATA PLATE .....	60
VEHICLE DATA PLATE .....	60
OVERALL HEIGHT, LENGTH DATA PLATE (US) .....	61
PERSONNEL CAPACITY .....	61
SEAT BELT WARNING - FAMA06/07.....	61
EQUIPMENT MOUNTING FAMA10 .....	62
FIRE SERVICE TIRES - FAMA12.....	62
HELMET WARNING - FAMA15.....	62
CLIMBING METHOD - FAMA23 .....	62
REAR STEP CROSSWALK WARNING - FAMA24.....	62
FINAL STAGE MANUFACTURER VEHICLE CERTIFICATION .....	62
FRONT BUMPER & GRILL GAURD.....	63
FRONT TOW PROVISIONS .....	63
AIR INTAKE SYSTEM .....	63
EXHAUST TAILPIPE MODIFICATION.....	63
RADIO ANTENNA INSTALLATION .....	64

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

SEATING MODIFICATION.....	64
SEAT BELT COLOR AND MOUNTING .....	64
SEAT BELT WEB LENGTH - COMMERCIAL CAB.....	64
IGNITION KEY .....	65
SIX (6) – LED TIRE PRESSURE VISUAL INDICATORS.....	65
HELMET STORAGE.....	65
CAB MIRRORS, DRIVER ADJUSTABLE .....	65
MUDFLAPS .....	65
ROAD EMERGENCY SAFETY KIT .....	66
FUEL FILL .....	66
BODY DESIGN .....	66
EXTERIOR ALUMINUM BODY .....	67
DRIP RAILS.....	68
ROOF CONSTRUCTION .....	68
BODY SUBFRAME .....	69
BODY MOUNTING .....	69
10" REAR STEP BUMPER .....	70
REAR TOW EYES .....	70
GROUND LIGHTS .....	70
WHEEL WELL EXTERIOR PANEL.....	70
DIEFORMED BEADED EDGE BODY FENDERS .....	70
WHEEL WELL LINERS.....	71
BODY PAINT SPECIFICATIONS .....	72
BODY PAINT PREPARATION .....	72
PAINT PROCESS.....	72
PAINT - ENVIRONMENTAL IMPACT.....	73
FASTENERS.....	73
ELECTROLYSIS CORROSION CONTROL .....	73
PAINT FINISH - SINGLE COLOR .....	74
BODY UNDERCOATING.....	74

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

UNDERCOAT WARRANTY .....	74
PAINT WARRANTY .....	74
COMPARTMENT INTERIOR FINISH .....	74
REFLECTIVE STRIPE REQUIREMENTS.....	75
GRAPHICS PROOF.....	75
REFLECTIVE STRIPE - CAB SIDE .....	75
REFLECTIVE STRIPE - CAB FRONT .....	76
REFLECTIVE STRIPE - CAB DOOR INTERIOR .....	76
REFLECTIVE STRIPE - BODY SIDES.....	76
CHEVRON REFLECTIVE STRIPE - REAR SIDES PANELS.....	76
LETTERING.....	77
EXTERIOR COMPARTMENT DOORS.....	77
ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM).....	77
ROM DOOR BOTTOM RAIL.....	78
BODY HEIGHT MEASUREMENTS .....	78
BODY WIDTH DIMENSIONS.....	79
STREETSIDE COMPARTMENT - FRONT (S1).....	79
COMPARTMENT LAYOUT .....	79
STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2).....	80
COMPARTMENT LAYOUT .....	81
STREETSIDE COMPARTMENT - REAR (S3) .....	82
COMPARTMENT LAYOUT .....	83
CURBSIDE COMPARTMENT - FRONT (C1) .....	84
COMPARTMENT LAYOUT .....	84
CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2) .....	85
COMPARTMENT LAYOUT .....	85
CURBSIDE COMPARTMENT - REAR (C3).....	86
COMPARTMENT LAYOUT .....	86
REAR COMPARTMENT - CENTER (RC1) .....	87
PLASTIC FLOOR AND SHELF TILE .....	88

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

LOWER SIDE BODY PROTECTION - RUB RAIL .....	88
REAR ROLL-OUT AWNING .....	89
AWNING HOUSING COLOR .....	89
ROOF ACCESS HATCH COVER.....	89
LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC.....	90
12 VOLT MULTIPLEX CONTROL CENTER.....	93
WELDON CERTIFICATION .....	95
MULTIPLEX SYSTEM INTERFACE DISPLAY .....	95
CAB CONSOLE.....	96
MAP LIGHT .....	97
BATTERY SYSTEM .....	97
BATTERY SWITCH .....	98
BATTERY SOLENOID .....	98
BATTERY CONDITIONER .....	98
SHORE POWER INLET .....	98
ENGINE COMPARTMENT LIGHT .....	99
CAB HAZARD WARNING LIGHT .....	99
BACK-UP ALARM .....	99
REAR VIEW CAMERA .....	100
SEON GUARDIAN SYSTEM WITH 5-CHANNEL DVR .....	100
TAIL LIGHTS .....	100
MIDSHIP MARKER/TURN SIGNAL.....	101
MARKER LIGHTS .....	101
CAB STEP LIGHTS / GROUND LIGHTS .....	101
LICENSE PLATE LIGHT .....	101
ELECTRONIC SIREN .....	101
SIREN SPEAKERS.....	103
SIDE LED SCENE LIGHTS.....	103
REAR LED SCENE LIGHTS .....	103
TRAFFIC ADVISOR LIGHTS .....	104



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

WARNING LIGHT PACKAGE .....	104
UPPER LEVEL OPTICAL WARNING DEVICES.....	105
GTT OPTICOM .....	105
LOWER LEVEL OPTICAL WARNING DEVICES .....	106
LINE VOLTAGE ELECTRICAL SYSTEM .....	108
ONAN PTO GENERATOR.....	108
GENERATOR BONDING .....	108
GENERATOR ENGAGEMENT.....	108
WARRANTY PERIOD .....	110
GENERATOR SPLASH GUARD .....	110
GENERATOR MOUNTING .....	110
MANUALS AND SCHEMATICS.....	110
POWER-TAKE-OFF GENERATOR DRIVE .....	110
ENGINE SPEED CONTROL .....	111
LOADCENTER.....	111
GENERATOR MONITORING PANEL .....	111
SHORE POWER INLET - BATTERY CHARGER .....	112
LINE VOLTAGE ELECTRICAL SYSTEM .....	112
GENERAL REQUIREMENTS .....	112
EQUIPMENT PAYLOAD WEIGHT ALLOWANCE .....	120
EQUIPMENT .....	120
REMAINING NFPA MINOR EQUIPMENT BY PURCHASER .....	120

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **GENERAL INSTRUCTIONS**

**King County Fire District #20, herein referred to as the “Purchaser”, shall receive sealed proposals up to 5:00 PM PDT on 01/11/2019 for supplying one (1) or more, new UL Rated Air Unit Apparatus and Equipment, as outlined in the following specifications. No bid proposal shall be considered except those submitted on the bid proposal form supplied by the Purchaser.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

The Purchaser reserves the right to accept or reject any or all bids, and to accept the bid deemed to be in the best interest of the Purchaser. The Purchaser is not bound to accept the lowest price submitted. The Bidder whose bid most closely meets the Purchaser’s specifications and demonstrates the qualities desired by the Purchaser shall be chosen as the successful provider.

## **PROJECT OVERVIEW**

It is the intent of these specifications to secure competitive bids to provide for the construction and delivery the apparatus described in detail within the following specifications. These bid specifications detail the requirements for general design criteria of the unit desired, the chassis, body, and electrical systems and equipment to be supplied. These bid specifications are not designed to be proprietary or restrictive; however, they are intended to demonstrate the high quality and value desired by the Purchaser.

In evaluating the proposals, these major items shall be considered: commitment to delivery, length and terms of warranties, manufacturers’ locations and regional track records for performance, location of post-delivery service and parts, compliance with bid specifications, completeness of the bid, price and information supplied, etc.

The National Fire Protection Association “Standard for Automotive Fire Apparatus, “Latest Edition”, is hereby adopted and made a part of these specifications, the same as if it were written out in full detail, with the exception of the section dealing with "Equipment Recommended for Various Types of Apparatus". Bidders shall provide the equipment requested herein and the buyer shall supply the rest before the apparatus is put into service. It is the intent of the purchaser to purchase an apparatus that meets 100% of the minimum standards defined and outlined in NFPA 1901-2016 Edition. There are to be no exceptions to this requirement.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The units proposed shall closely meet the specific requirements and intent of the requirements as specified herein. All items of the specifications shall conform to the character of the proposed equipment, and the purpose for which it is intended.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## MATERIAL AND WORKMANSHIP

All equipment provided shall be guaranteed to be new and of current manufacture, and unless specified otherwise, shall meet all requirements of these specifications and prevailing NFPA documents and be in condition at time of delivery for use as specified for this type of apparatus.

Does your bid comply with this requirement? Yes ( ) No ( )

All workmanship shall be of the highest quality and accomplished in a professional manner so as to insure a functional apparatus with an aesthetic appearance.

Does your bid comply with this requirement? Yes ( ) No ( )

All materials used shall be of the highest quality available. Second rate or poor-quality components are not desired by the Purchaser. The Purchaser shall be the sole judge of quality materials and workmanship.

Does your bid comply with this requirement? Yes ( ) No ( )

The construction must be rugged, and ample safety factors must be provided to carry the loads specified and to meet both the on and off-road requirements and speed conditions as set forth under the "Performance Tests and Requirements" section.

Does your bid comply with this requirement? Yes ( ) No ( )

All aluminum welding shall follow (American Welding Society) requirements for AWS D1.2/D1.2M:2003 Structural Welding Code for any type structure made from aluminum structural alloys. All sheet metal welding shall follow (American Welding Society) AWS D9.1M/D9.1:2006 Structural Welding code for Arc/Braze requirements of non-structural materials. All pressure pipe welding shall follow (American Society of Mechanical Engineers) ASME IX/ ASME B31:2010 requirements to the qualification of procedures in welding and brazing, in accordance with the ASME Boiler and Pressure Vessel Code and the ASME B31 Code for Pressure Piping. Flux core arc welding to use alloy rods, type 7000, (American Welding Society) AWS standards A5.20-E70T1. The manufacturer shall be required to have an American Welding Society certified welding inspector in plant during testing operations within working hours to monitor weld quality.

Does your bid comply with this requirement? Yes ( ) No ( )

Employees classified as welders shall be tested and certified to meet American Welding Society and American Society of Mechanical Engineers welding codes.

Does your bid comply with this requirement? Yes ( ) No ( )

## COOPERATIVE PURCHASING

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Purchaser allows cooperative purchasing between public agencies (political subdivisions) per RCW 39.34, Interlocal Cooperative Act within the State of Washington. Additionally, other States which allow reciprocal agreements such as the State of Oregon may also purchase apparatus off this proposal, in accordance with the terms and conditions submitted herein.

Public agencies which have filed an Intergovernmental Cooperative Agreement with the Purchaser and which are actively participating may purchase from Purchaser's contracts, provided that the Contractor has agreed to such participation. Each Contractor shall indicate on the proposal submittal form if their organization shall honor other public agency orders in accordance with contract terms and conditions in addition to orders from the Purchaser.

**King County Fire District #20 does not accept any responsibility for purchase orders issued by other public agencies.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

## REFERENCES

List up to five municipal Fire Departments for whom your company has most recently manufactured and delivered units of the type described in these specifications. Units shall be those which are currently in normal fire service use having no defects causing the apparatus to give unsatisfactory service attributable to workmanship, materials, or construction techniques. No exceptions shall be allowed to this requirement.

SEE FORM BELOW:

Municipality \_\_\_\_\_ Contact \_\_\_\_\_ Phone \_\_\_\_\_

Municipality \_\_\_\_\_ Contact \_\_\_\_\_ Phone \_\_\_\_\_

Municipality \_\_\_\_\_ Contact \_\_\_\_\_ Phone \_\_\_\_\_

Municipality \_\_\_\_\_ Contact \_\_\_\_\_ Phone \_\_\_\_\_

Municipality \_\_\_\_\_ Contact \_\_\_\_\_ Phone \_\_\_\_\_

**Does your bid comply with this requirement? Yes ( ) No ( )**

## PERFORMANCE BOND

A 100% Performance Bond shall be supplied within thirty days of bid award, if the Purchaser elects to take advantage of any prepayment offerings. The signatures of both buyer and Bidder on the contract shall construe awarding of the bid. The prime apparatus builder shall provide the performance bond.

Any bonds supplied by the dealer or representative or chassis manufacturer shall not be acceptable. **The cost of the bond shall be clearly stated on the bid form and shall be included in the bid price listed.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **BIDDING REQUIREMENTS**

Any manufacturer submitting a proposal or bid, to these specifications; shall meet the following conditions. Exceptions to these conditions shall not be allowed under any circumstances.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The manufacturer of the apparatus herein specified; shall be wholly owned (100%) and managed by a Company, Corporation, and/or Parent Company that is wholly based, and permanently resides in the United States of America.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The Company, Corporation, and/or Parent Company, and all assets belonging to such; shall be wholly owned and managed (100%) by the entities specified above.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Any proposal, bid, or response to these specifications by any foreign based, owned, or managed (in part or in whole) Company, Corporation, and/or Parent Company; may be cause for rejection.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Each Bidder shall provide satisfactory evidence of their ability to construct the unit and supply service, parts, and technical assistance for the equipment bid. Bidder shall state the location of the factory at which the complete apparatus shall be constructed. Bidder shall also state the location where Dealer provided post-delivery service is available.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The Purchaser seeks bids from qualified Bidders offering either OEM or Dealer operated and controlled complete service facilities within a reasonable distance from the Purchaser. After delivery support and service is of extreme importance to the Purchaser. Bidder shall include the location, information, photos and capabilities of their local service center and personnel available.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Bidder's local facilities should include mobile service capability for "on site" apparatus service.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of ten years.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## EXCEPTIONS & CLARIFICATIONS TO SPECIFICATIONS

Each Bidder shall indicate compliance with these specifications by checking the bid compliance question where it appears in each section of the bid. Checking "Yes" in that section shall mean full compliance with all portions of the paragraph. Checking "No" shall mean an exception or clarification is being taken to all or part of that paragraph. Where it is specifically stated "**NO EXCEPTIONS**," none shall be allowed and may cause rejection of the bid.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The buyer is aware that all Bidders may have to take some exceptions, therefore; **BIDDERS THAT TAKE NO EXCEPTIONS SHALL BE REQUIRED TO MEET EVERY PARAGRAPH TO THE FULLEST EXTENT, SHOULD THEIR BID BE ACCEPTED.** It is the intent of the purchaser to receive bids that do not require telephone calls or other communications to ascertain what a Bidder is intending to supply.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Upon delivery, the apparatus shall be inspected against THESE specifications, and not those supplied by the Bidder with their proposal. Deviations shall not be acceptable unless they were noted, as exceptions at the time of bid and the apparatus shall be rejected until said deviations are corrected to the satisfaction of the Purchaser.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Decisions regarding equal to or better than, shall be the sole responsibility of the recipient of the Bids, rather than those companies submitting bids. All deviations, regardless of significance, must be explained in the "Exceptions to Specifications" section of the bid.

**Does your bid comply with this requirement? Yes ( ) No ( )**

When exceptions are not taken but inconsistencies are noted in the submitted detailed specifications, the bid may be subject to rejection.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Exceptions shall be referenced to the paragraph, page number and item description of these Specifications where the item appears, and drawings or photographs and technical information about the exception shall be provided with the bid. Any exceptions taken may be considered during the bid evaluation process. The Purchaser shall be the sole judge as to the acceptability of any of the items listed as exceptions, and the decision of the Purchaser shall be final. **NO EXCEPTIONS.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Bids with no exceptions may be given preference over those with exceptions, regardless of the Cost differential.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **WRITTEN PROPOSAL SPECIFICATIONS**

Each bid shall be accompanied by a detailed description (Bidder's bid) of the work and equipment it proposes to furnish. This requirement shall apply to any proposal submitted, including any stock or demonstrator apparatus proposed.

It is the intent of these specifications to provide for the delivery of a complete and soundly engineered vehicle equipped as specified. Minor details of construction and materials, where not otherwise specified, are left to the discretion of the Bidder who shall be solely responsible for the design and construction of all features.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Some items in these specifications have been specified by brand name or model number. These items have been carefully selected because of their quality, reliability, and the availability of local replacement. In order for bids to be considered responsive, equipment specified or Purchaser-approved "equals" shall be contained in bid proposals.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The Purchaser shall be the sole judge of the acceptability of any item proposed as an "equal" to any specified item. Supporting technical information, literature, samples, and other support material shall be provided by the Bidder with bid items not in accordance with specifications.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **SPECIAL CONDITIONS**

No bid shall be considered unless the Bidder can meet the special conditions listed below.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The Bidder shall be the authorized distributor of the apparatus bid and shall provide a notarized statement declaring such with the bid. Bids not complying with this requirement are not acceptable.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **PRICE, PAYMENT, AND DELIVERY**

All bid prices shall be F.O.B. the Purchaser's location in Seattle, WA, at the address listed for this bid. The apparatus shall be transported under it's own power to the location of the Purchaser. **A credit may be offered**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

**for delivery of each unit as listed on the Bid Proposal Page, however delivery to the purchaser's location shall be included in the listed proposal prices-No Exceptions.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

**All prices quoted shall be valid for a period of not less than Forty-Five (45) days after bids are opened.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

All bids shall be submitted on the enclosed bid form provided with these specifications. The form shall be completely filled out and signed by the company representative with the appropriate authority to bind the company to the bid, or the bid may be rejected as unresponsive. **NO EXCEPTIONS.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

The total price on the specified bid shall include all items and components as listed in these specifications. Listing any items contained in these specifications as an extra cost item, unless otherwise specified, shall automatically be cause for rejection.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Bidders shall state the maximum delivery time based on the number of actual calendar days from date of receipt of order from the Purchaser, regardless of the cab and chassis production and delivery date.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The Purchaser reserves the right to assess the seller a one-hundred dollar (\$200.00) per day liquidated damages assessment for each day that exceeds the maximum delivery time stated by the Bidder.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Before final acceptance of the unit, it shall be tested in the presence of an authorized representative of the Purchaser. The Purchaser reserves the right to perform actual performance tests to evaluate the unit, prior to acceptance. Testing shall be done with the assistance of the Bidder.

**Does your bid comply with this requirement? Yes ( ) No ( )**

In the event the unit fails to meet the test requirements on first trials, second trials may be made within thirty (30) days of the date of the first trials. Housing or storing the unit on the Purchaser's property shall not constitute acceptance of the unit until testing is completed.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Payment in full shall occur within 30 days after the completed unit has been evaluated, tested, and accepted at the purchaser's location to the full satisfaction of the Fire Chief or his designee.



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## DELIVERY TIMELINE

Delivery time shall be no more than 240 days from time of agreement (in calendar days).

## PREPAYMENT DISCOUNT OPTIONS

Bidders are encouraged to offer prepayment discounts in their proposals, **however; the bid price shall not include any requirement of prepayment and any discounts shall be offered as available options only, listed on a separate sheet within the proposal and the cost of a 100% Performance Bond shall be added.**

Does your bid comply with this requirement? Yes ( ) No ( )

## CONTRACT AWARD

All bids submitted shall be good for a minimum of 45 days, during which time bid securities submitted with the proposals shall be held by the purchaser. Criteria for the award shall include, but not be limited to, the following:

- Cost
- Apparatus Performance and Safety Levels / Considerations
- Completeness of proposal
- Accuracy of accompanying data
- Past performance of Bidder
- Compliance with the detailed specifications
- Compliance with purchaser's request(s) for personnel qualifications or certifications
- Exceptions and clarifications
- Financial stability of Bidder
- Local representation of the manufacturer
- Serviceability of the proposed apparatus
- Service capabilities of the Bidder's local representative
- Compliance with NFPA Pamphlet 1901 (newest edition)
- Any other factors the purchaser deems relevant

## EVALUATION CRITERIA

The lowest total cost shall be awarded 75 points the second lowest total cost shall be awarded 70 points, etc.

The remaining criteria shall be used to award up to a maximum of 25 points.

After the evaluation and award process is complete, all Bidders shall be notified of the results and securities shall be returned.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

The Purchaser reserves the right to reject any or all proposals deemed by the Purchaser to be unresponsive. Contract shall be awarded and purchase order issued to the Bidder most closely meeting the Purchaser attached specifications, based upon the above stated criteria of the Purchaser.

The Purchaser reserves the right to waive any informalities, irregularities and technicalities in procedure. The purchaser is not bound to accept the lowest priced bid proposal.

Bidders shall execute a contract with the Purchaser substantially in form provided as **Exhibit A**. Any exceptions to the contract form must be specifically noted and may be taken into consideration by Purchaser in awarding the bid.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **LIABILITY**

The Bidder, if their bid is accepted, shall defend any and all suits and assume all liability for the use of any patented device or article forming part of the apparatus or any appliance furnished under the contract.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **MATERIAL AND WORKMANSHIP**

Unless otherwise specified or proposed, all equipment provided shall be guaranteed to be new and of current manufacture, and unless specified otherwise, shall meet all requirements of these specifications and prevailing NFPA documents and be in condition at time of delivery for use as specified for this type of apparatus.

**Does your bid comply with this requirement? Yes ( ) No ( )**

All workmanship shall be of the highest quality and accomplished in a professional manner so as to insure a functional apparatus with an aesthetic appearance.

**Does your bid comply with this requirement? Yes ( ) No ( )**

All materials used shall be of the highest quality available. Second rate or poor-quality components are not desired by the Purchaser. The Purchaser shall be the sole judge of quality materials and workmanship.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The construction must be rugged, and ample safety factors must be provided to carry the loads specified and to meet both the on and off-road requirements and speed conditions as set forth under the "Performance Tests and Requirements" section.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **TECHNICAL INFORMATION**

Bidder shall provide free of charge upon request technical information, graphs, charts, photographs, engineering diagrams, steering geometry, instruction guides, or other documentation as requested to show that the equipment offered fully complies with these specifications.

**Does your bid comply with this requirement? Yes ( ) No ( )**

After award if the bid, if applicable to the apparatus selected, the contractor shall provide detailed colored engineering drawings for use at the pre-construction conference. These drawings shall include, but not limited to, the overall dimensions, wheelbase, and overall length of the proposed apparatus shall be required with the bid. The drawing shall include right, left, and rear views of the apparatus.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The apparatus shall be designed, and the equipment mounted with due consideration to the distribution of load between the front and rear axles, so all specified equipment with a full complement of personnel can be carried without damage to the apparatus. Weight balance and distribution shall be in accordance with the State of Washington and all Federal laws.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The front to rear weight distribution of the fully loaded vehicle will be within the limits set by the chassis manufacturer. The front axle loads will not be less than the maximum axle loads specified by the chassis manufacturer, under full load and all other loading conditions.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The difference in weight on the end of each axle, from side to side, when the vehicle is fully loaded and equipped shall not exceed 7 percent.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **LIABILITY INSURANCE**

The manufacturer shall furnish with the bid a certificate of insurance for;

Workman's Compensation and Employer's Liability Insurance covering for all employees.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

General Liability (each occurrence) of \$1,000,000.00. General Aggregate coverage of \$2,000,000.00. Products Completed / Operations Aggregate coverage of \$2,000,000.00. Medical Expense coverage of \$5,000 (any one person). Personal Injury of \$1,000,000.00.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Automobile liability of \$1,000,000.00 combined single limit (each accident), including any auto, all owned autos, scheduled autos, hired autos, non-owned autos, and garage liability.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Excess Umbrella Liability coverage of not less than \$4,000,000.00 each occurrence, Aggregate of \$4,000,000.00. Garage Keepers Liability coverage of \$4,000,000.00 combined limit.

**Does your bid comply with this requirement? Yes ( ) No ( )**

All insurance policies must be;

- Maintained for the life of the contract,
- Must provide ten (10) days' notice before cancellation,
- Must cover all operations of the contractor, or anyone employed by them.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **INTERNET IN-PROCESS SITE**

The manufacturer shall post and maintain a website where the purchaser will be able to view digital images of their apparatus as its being built. 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 completion of unit.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ENGINEERING DRAWINGS**

The evaluation of bids shall also be based on design, engineering reliability, and completeness of drawings. No Bidder's proposal shall be considered unless complete engineering drawings to these specifications are submitted with the request for proposal package. Failure to submit factory prepared blueprints with bid shall result in automatic rejection. Submission of "bid drawings" are in addition to "production drawings" which must be submitted for King County Fire District #20 approval prior to construction. Bid drawings shall allow the King County Fire District #20 the ability to fully evaluate required product.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The engineering drawings shall be produced on computer aided design (CAD) equipment to assure critical tolerance and detail only available with CAD equipment. The drawings shall be on "D" size paper, 24" x 36" in size, and views must be 1/4" = 1' - 0" scale. This shall allow the King County Fire District #20 the ability to

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

compare drawings of all manufacturers on an "equal" basis. The drawings shall be completed only by the body manufacturer and must be exactly to King County Fire District #20 specifications. Submission of "similar to" drawings or "statements referring to later submission of drawings after award of contract" shall be automatically rejected.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Since the request for proposal package will require extensive evaluation by King County Fire District #20, all Bidders must submit exactly the same engineering drawings at the same scale, on the same size paper. For easy comparison of drawings, they must be on a 24" x 36" sheet as follows:

- All items shown on the drawing will be pre-designed with regards to layout and functionality prior to the completion of the BID DRAWING.
- Two (2) 24" x 36" color drawings will be supplied with the bid proposal. Black and white or blue line drawings will not be accepted.
- There shall be five (5) views of the truck with the doors closed (Top, Left, Right, Front, Rear), four (4) views of the truck with the doors open (Top, Left, Right, Rear) and four (4) views of any walk-in area (Top, Left, Right, Rear).
- All compartment door openings and usable space shall be clearly shown in inches.
- The trucks overall length, height, width, wheelbase and cab-to-axle dimensions shall be clearly shown.
- The angles of approach and departure shall be shown in the maximum loaded condition to the nearest degree.
- All lighting packages will be clearly shown on the drawing and verified accurate per the most current NFPA standards (when applicable).
- The exterior view shall show all scene lights, marker lights, speakers, horns, exhaust, tow points, exterior outlets, windows, winch receivers, tow hitches, exterior ladders and any other item important to the function of the vehicle.
- The open view shall show all trays, shelves, air system components, hydraulic components, tool boards, storage modules and any other items important to the function of the vehicle.
- The interior view for all walk-in areas shall show all seating positions, desks, cabinets, windows, tech equipment, radio locations and any other item important to the function of the vehicle.
- Any changes to the BID drawing will require a revision which will be clearly annotated in the upper right hand side of the drawing showing the revision number, reason for the revision, date and who made the changes.

**Does your bid comply with this requirement? Yes ( ) No ( )**

- Purchaser's name.
- Body size and material type.
- Chassis manufacturer and model number.
- Unit description.
- Wheelbase (WB) , Cab-to-axle (CA) distance.
- Overall length (OAL), Overall width, (OAW), Overall height (OAH).
- Scale, date, drawn by, drawing number and sheet number.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## 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.

Does your bid comply with this requirement? Yes ( ) No ( )

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.

Does your bid comply with this requirement? Yes ( ) No ( )

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 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.

Does your bid comply with this requirement? Yes ( ) No ( )

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **FIRE APPARATUS PERFORMANCE**

The fire apparatus shall meet the requirements of this standard at elevations of 2000 ft (600 m) above sea level.

The fire apparatus shall meet all the requirements of this standard while stationary on a grade of 6 percent in any direction.

The fire apparatus shall meet the requirements of this standard in ambient temperature conditions between 32°F (0°C) and 110°F (43°C).

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **HIGHWAY PERFORMANCE**

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) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
- 2) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
- 3) Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **FIRE APPARATUS 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 documents:

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- 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
- c) Electrical system voltage and alternator output in amps
- d) Battery make, model, and capacity in cold cranking amps (CCA)
- e) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
- f) Ratios of all driving axles
- g) Maximum governed road speed
- h) Pump make, model, rated capacity in gallons per minute (where applicable), maximum discharge pressure capability rating, and serial number
- i) Pump transmission make, model, serial number, and gear ratio (where applicable)
- j) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number (where applicable)
- k) Water tank certified capacity in gallons or liters (where applicable)
- l) Foam tank (if provided) certified capacity in gallons (liters) (where applicable)
- m) Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms) (where applicable)
- n) Paint manufacturer and paint number(s)
- o) Company name and signature of responsible company representative
- p) 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)

**Does your bid comply with this requirement? Yes ( ) No ( )**

- 2) Siren manufacturer's certification of the siren (*see 13.9.1.1*)
- 3) Certification of compliance of the optical warning system (*see 13.8.16*)
- 4) Written load analysis and results of the electrical system performance tests (*see 13.14.1 and Section 13.15*)
- 5) Certification of slip resistance of all stepping, standing, and walking surfaces (*see 15.7.4.5*)
- 6) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability (*see 16.2.4.1*)
- 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 (*see 16.2.4.2*)
- 8) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications (*see 16.3.1*)
- 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 (*see 16.3.2.2*)
- 10) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test (*see 16.5.2.2*)



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- 11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 16.5.2.1, the pump manufacturer's certification of the hydrodynamic test
- 12) If the apparatus has a fire pump, the certification of inspection and test for the fire pump (see 16.13.1.1.5 or 16.13.1.2.4 as applicable)
- 13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test (see Section 17.13)
- 14) When the apparatus is equipped with a water tank, the certification of water tank capacity (see Section 18.6)
- 15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device (see Section 19.24)
- 16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911
- 17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy (see 20.10.4.2) and the final installer's certification the foam proportioning system meets this standard (see 20.11.2)
- 18) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests (see Section 21.9)
- 19) If the apparatus has a line voltage power source, the certification of the test for the power source (see 22.15.7.2)
- 20) If the apparatus is equipped with an air system, air tank certificates (see 24.5.1.2), the SCBA fill station certification (see 24.9.6), and the results of the testing of the air system installation (see 24.14.5 and 24.15.4)
- 21) Any other required manufacturer test data or reports

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **OPERATIONS AND SERVICE DOCUMENTATION**

The contractor shall deliver with the fire apparatus 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

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- 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
- 20) One copy of the latest edition of FAMA's *Fire Apparatus Safety Guide*

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **NFPA REQUIRED DOCUMENTATION FORMAT - USB FLASH DRIVE**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **FIRE APPARATUS SAFETY GUIDE**

A Fire Apparatus Safety Guide published by Fire Apparatus manufacturer's Association shall be provided with delivered vehicle. This manual includes essential safety information for fire fighters, fire chiefs, apparatus mechanics, and fire department safety officers. The guide is applicable to municipal, wildland, and airport fire fighting apparatus manufactured on either custom or commercial chassis.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **STATEMENT OF EXCEPTIONS**

The final-stage manufacturer 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

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

describing each aspect of the completed apparatus that is not fully compliant with the requirements of this standard at the time of delivery.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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 manufacturer shall establish the estimated in-service weight during the design of the vehicle.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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 following:
  - a) The values shown for items 1 - 7
  - b) A purchaser-provided list of equipment to be carried with weights
  - c) A purchaser-specified miscellaneous equipment allowance

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

**Does your bid comply with this requirement? Yes ( ) No ( )**

The manufacturer shall engineer and design the fire apparatus such that the completed apparatus, 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

A final 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

The label shall show the height of the completed unequipped fire apparatus in feet and inches (meters), the length of the completed fire apparatus in feet and inches (meters), and the GVWR in tons (metric tons).

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Apparatus Type	Equip. Storage Area	Apparatus Size	Equipment Allowance	
			lb.	kg.
Special Service Fire Apparatus	Minimum of 120 cu ft (3.4 cu mt) of enclosed compartmentation.	10,000 lb to 15,000 lb (4,500 kg to 7,000 kg) GVWR	2,000	910
		15,001 lb to 20,000 lb (7,001 kg to 9,000 kg) GVWR	2,500	1,135

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

		20,001 lb to 30,000 lb (9,001 kg to 14,000 kg) GVWR	3,000	1,350
		30,001 lb to 40,000 lb (14,001 kg to 18,000 kg) GVWR	4,000	1,800
		40,001 lb to 50,000 lb (18,001 kg to 23,000 kg) GVWR	6,000	2,700
		50,001 lb to 60,000 lb (23,001 kg to 27,000 kg) GVWR	8,000	3,600
		60,001 lb and up (27,001 kg) GVWR	10,000	4,500

**Does your bid comply with this requirement? Yes ( ) No ( )**

**TESTING**

**ROAD TEST**

Road test shall be conducted in accordance with this section to verify that the completed apparatus is capable of compliance with Road-ability 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 Body Manufacturer shall road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

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

If the apparatus is equipped with a hydraulic brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 30 mph (48.2 km/hr) in a distance not

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

Does your bid comply with this requirement? Yes ( ) No ( )

## **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).

Does your bid comply with this requirement? Yes ( ) No ( )

## **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 ten (10) minutes. Failure of any of these tests shall require a repeat of the sequence.

Does your bid comply with this requirement? Yes ( ) No ( )

### **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 ten (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.

Does your bid comply with this requirement? Yes ( ) No ( )

### **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.

Does your bid comply with this requirement? Yes ( ) No ( )

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **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 two (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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## UL 120/240 VAC CERTIFICATION

The 120/240-volt electrical system shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1901 to perform as listed below;

**Does your bid comply with this requirement? Yes ( ) No ( )**

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 two (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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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

Voltage shall be maintained within  $\pm 10\%$  of the voltage stated on the power source specification label during the entire test. Frequency shall be maintained within  $\pm 3$  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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **DOCUMENTATION**

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

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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 one (1) minute. The testing shall be performed after all body work has been completed.

The test shall be conducted as follows:

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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 King County Fire District #20 on all warranty work.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **GENERAL LIMITED WARRANTY - TWO (2) YEARS**

The vehicle shall be free of defects in material and workmanship for a period of two (2) years or 36,000 miles (or 57,936 kilometers), whichever occurs first starting thirty (30) days after the original invoice date.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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 (or 96,561 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## STRUCTURAL WARRANTY - TEN (10) YEARS

The body shall be free of structural or design failure or workmanship for a period of not less than ten (10) years, or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date.

Does your bid comply with this requirement? Yes ( ) No ( )

## 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.

Does your bid comply with this requirement? Yes ( ) No ( )

## 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 not less than ten (10) years or 100,000 miles (or 160,934 kilometers), whichever occurs first, starting thirty (30) days after the original invoice date. **Pro-rated warranties will not be acceptable.**

Does your bid comply with this requirement? Yes ( ) No ( )

## GRAPHICS LIMITED WARRANTY

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

Does your bid comply with this requirement? Yes ( ) No ( )

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 King County Fire District #20 as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

Does your bid comply with this requirement? Yes ( ) No ( )

## OVERALL HEIGHT REQUIREMENT

There is no overall height (OAH) restriction for this vehicle.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## OVERALL LENGTH REQUIREMENT

There is no overall length (OAL) restriction for this vehicle.

Does your bid comply with this requirement? Yes ( ) No ( )

## OVERALL WIDTH

The overall width (OAW) of the body at drip rails shall be 102" (8' - 6"), and body shall be 100" (8' - 4").

Does your bid comply with this requirement? Yes ( ) No ( )

## ANGLE OF APPROACH

The angle of approach for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1901.

Does your bid comply with this requirement? Yes ( ) No ( )

## ANGLE OF DEPARTURE

The angle of departure for this vehicle shall not be less than eight (8) degrees when it is loaded to the estimated in-service weight as specified by the current edition of NFPA 1901.

Does your bid comply with this requirement? Yes ( ) No ( )

## PRE-CONSTRUCTION CONFERENCE

A pre-construction conference shall be required at the Contractor's factory for two (2) personnel from the King County Fire District #20 to finalize all construction details prior to manufacturing.

Does your bid comply with this requirement? Yes ( ) No ( )

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

Does your bid comply with this requirement? Yes ( ) No ( )

## FINAL INSPECTION CONFERENCE

A final inspection conference shall be required at the Contractor's factory for two (2) personnel from the King County Fire District #20 to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **DELIVERY AND DEMONSTRATION**

The Contractor shall be responsible for the delivery of the completed unit to the King County Fire District #20's 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 King County Fire District #20 regarding the operation, care and maintenance of the apparatus and equipment supplied at King County Fire District #20 location.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by King County Fire District #20.

After delivery of the apparatus, the King County Fire District #20 shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **SPECIFICATION ADDENDA**

Any specification addenda shall be issued by the Purchaser in written format to all prospective bidders. Neither verbal forms of addenda or otherwise will be issued or considered part of this specification no matter how minor. The Bidder shall acknowledge receipt of all written addenda on the provided price form and in the spaces provided in these documents.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REGISTRATION**

All necessary paperwork to register the apparatus with the State Department of Licensing as a motor vehicle shall be furnished at the time of delivery. This includes a "Manufacturer's Statement of Origin" (MSO) and State title application.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **CONTRACT EXTENSION PROVISION**

The Purchaser reserves the right to exercise the purchaser of additional apparatus from the final Contract for a period of up to Five (5) years if in the best interest of the Purchaser. Additional purchases shall based upon negotiated price adjustments following the Consumer Price Index and annual adjusted rate of inflation for emergency vehicles.

Does your bid comply with this requirement? Yes ( ) No ( )

## **PURCHASER AUTHORIZED CONTACT**

For questions regarding these specifications, Bidder's may contact Fire Chief Eric Hicks or Captain Tracy Wyckoff during normal office hours, Monday through Friday.

Does your bid comply with this requirement? Yes ( ) No ( )

## **SUBMISSION OF BID PROPOSALS**

Bidders shall submit their bid proposal in a sealed envelope or box clearly marked "BID FOR AIR UNIT" WITH THE TIME AND DATE on all visable sides addressed to:

**KING COUNTY FIRE DISTRICT #20  
12424 76<sup>th</sup> AVE S  
SEATTLE, WA 98178**

The Purchaser is not responsible for proposals that are delivered late. It is the responsibility of the Bidder to be sure the proposals are sent sufficiently ahead of time to be **RECEIVED NO LATER THAN 5:00 PM PDT on January 11<sup>th</sup>, 2018.**

## **BID PROPOSAL OPENING**

Bid proposals received shall be publicly opened & read aloud **on February 11<sup>th</sup>, 2018 at 1715 hours (5:15-P.M. PST) by the Fire Chief or his designate(s). Determination of the successful bidder will be made after careful review of all proposals received at a regular or special commissioner's meeting. Bidders will be notified of decision by the purchaser.**

At any time prior to the scheduled closing time for receipt of bids, any Bidder may withdraw such Bidder's proposal by providing written notice to the Purchaser at the addresses set forth above.

Bids shall only be accepted in hard copy (paper documents). Proposals submitted either by fascimile or electronic documents shall not be accepted and shall be not be considered however; support information requested by the Purchaser may be accepted at the Purchaser's discretion when required after the bid opening.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

**\*\*THIS FORM IS TO BE PLACED IN THE FRONT OF THE BIDDERS PROPOSAL\*\***  
**MANDATORY BID PROPOSAL FORM**  
**ONE FORM REQUIRED FOR EACH APPARATUS PROPOSED**

**KING COUNTY FIRE DISTRICT #20**  
**12424 76<sup>th</sup> AVE S**  
**SEATTLE, WA 98178**

**Bidder's Name and Address**

**Manufacturer's Name and Address**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Person(s) to Contact**

**Person(s) to Contact**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

After reviewing the attached specifications and information, we the above listed Bidder, hereby submit the following Bid Proposal to King County Fire District #20, Seattle, WA for the furnishing of one (1) or more, new UL Rated Air Unit Apparatus and equipment as specified in the attached specifications.

Complete Air Unit Apparatus cost, less tax: \$ \_\_\_\_\_  
 Washington State Sales Tax @ Seattle rate: \$ \_\_\_\_\_  
**Total Price, FOB SEATTLE, WA Including tax: \$ \_\_\_\_\_**

Delivery time shall be \_\_\_\_\_ days from time of agreement (in calendar days).

Factory Inspection trips included per specification?	<b>Comply Yes ( ) No ( )</b>
Are there any exceptions to the specifications?	<b>Comply Yes ( ) No ( )</b>
Proof of insurance included?	<b>Comply Yes ( ) No ( )</b>
F.O.B. to the Purchaser?	<b>Comply Yes ( ) No ( )</b>
Credit for customer pickup at factory?	<b>\$ _____</b>
Optional pre-repayment discount options listed?	<b>Comply Yes ( ) No ( )</b>
100% Performance Bond Included in Price?	<b>Comply Yes ( ) No ( )</b>

Service Center distance from Seattle, WA in miles \_\_\_\_\_

Signature of Authorized Officer of Bidder:

Signature \_\_\_\_\_ Date \_\_\_\_\_

Printed Name \_\_\_\_\_ Date \_\_\_\_\_



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## SERVICE CENTER LOCATION

Name & Location (Address) of Authorized Service Center:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact: \_\_\_\_\_

Phone #: \_\_\_\_\_

## RECEIPT OF ADDENDA

The Bidder shall acknowledge receipt of all written addenda below:

Addenda # \_\_\_\_\_ Date Received: \_\_\_\_\_ Authorized

Signature: \_\_\_\_\_

Addenda # \_\_\_\_\_ Date Received: \_\_\_\_\_ Authorized

Signature: \_\_\_\_\_

Addenda # \_\_\_\_\_ Date Received: \_\_\_\_\_ Authorized

Signature: \_\_\_\_\_

Addenda # \_\_\_\_\_ Date Received: \_\_\_\_\_ Authorized

Signature: \_\_\_\_\_

**THIS FORM IS TO BE PLACED IN THE FRONT OF THE BIDDERS PROPOSAL**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## NON-COLLUSION AFFIDAVIT

STATE OF WASHINGTON

COUNTY OF KING

The undersigned, being duly sworn, on oath deposes and says that the person, firm, association, co-partnership or corporation herein named has not either directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in the preparation and submission of a proposal to the Owner for consideration in the award of a contract on the improvements described as follows for King County Fire District #20, Seattle, WA:

Supply One (1) or more, new, NFPA COMPLIANT Air Unit Apparatus & Equipment per plans and specifications

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Type Name

\_\_\_\_\_  
Title

Sworn to before me, this \_\_\_\_\_ day of \_\_\_\_\_, 2016.

Notary Public  
in and for the State of \_\_\_\_\_  
Residing at \_\_\_\_\_  
My Commission Expires \_\_\_\_\_

**THIS FORM IS TO BE PLACED IN THE FRONT OF THE BIDDERS PROPOSAL**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## EXCEPTIONS TO SPECIFICATIONS:

Exceptions to these specifications shall be noted below. All exceptions taken shall be recorded per the guidelines defined above. Each exception shall be noted by page number and item header. If additional space is required for exceptions, then the Bidder shall use additional paper as necessary, however the same format shall be used.

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Page #: \_\_\_\_\_

Header: \_\_\_\_\_

Exception: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **CAB CHASSIS SPECIFICATION**

### **Base Vehicle**

2019 Ford F-550 4x4 Super Cab 168" WB Chassis

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **Packages**

660A Order Code 660A

*Includes:*

- *Wheels: 19.5" Argent Painted Steel*

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **Powertrain**

99T Engine: 6.7L 4V OHV Power Stroke V8 Turbo Diesel B20

*Includes Diesel Exhaust Fluid (DEF) tank, Intelligent Oil-Life Monitor, manual push-button engine-exhaust braking and split-shaft calibration compatibility.*

*Includes:*

- *Dual 78-AH 750 CCA Batteries*

44W Transmission: TorqShift 6-Speed Automatic

*(6R140). Includes SelectShift.*

X8L Limited Slip w/4.88 Axle Ratio

68M GVWR: 19,500 lb Payload Plus Upgrade Package

*Includes upgraded frame, rear-axle and low deflection/high capacity springs. Increases max RGAWR to 14, 706. Note: See Order Guide Supplemental Reference for further details on GVWR.*

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **Wheels & Tires**

THB Tires: 225/70Rx19.5G BSW Traction (THB)

*Includes 4 traction tires on the rear and 2 all-season tires on the front.*

*Optional spare is 225/70Rx19.5G BSW all-season.*

64Z Wheels: 19.5" Argent Painted Steel

512 Spare Tire, Wheel & Jack

Required in Rhode Island.

*Excludes carrier.*

*Includes:*

- *6-Ton Hydraulic Jack*

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **Seats & Seat Trim**

1 Cloth 40/20/40 Split Bench Seat

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

*Includes center armrest, cupholder, storage and driver's side manual lumbar.*

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Other Options**

PAINT Monotone Paint Application

168WB 168" Wheelbase

96V XL Value Package

**Does your bid comply with this requirement? Yes ( ) No ( )**

Selected Options

### **Code Description**

*Includes:*

- 4.2" Center-Stack Screen

- Radio: AM/FM Stereo/MP3 Player

*Includes 6 speakers.*

- SYNC Communications & Entertainment System

*Includes enhanced voice recognition with 911 Assist, 4.2" LCD center stack screen, AppLink, 1 smart-charging USB port and steering wheel audio controls.*

- XL Decor Group

- Chrome Front Bumper

- Steering Wheel-Mounted Cruise Control

**Does your bid comply with this requirement? Yes ( ) No ( )**

90L Power Equipment Group

*Deletes passenger side lock cylinder. Includes upgraded door-trim panel.*

*Includes:*

- Accessory Delay

- Advanced Security Pack

*Includes SecuriLock Passive Anti-Theft System (PATS) and inclination/intrusion sensors.*

- Trailer Tow Mirrors w/Power Heated Glass

*Includes manual telescoping, heated convex spotter mirror and integrated clearance lamps/turn signals.*

- MyKey

*Includes owner controls feature.*

- Power Front & Rear Side Windows

*Includes 1-touch up/down driver/passenger window.*

- Power Locks

- Remote Keyless Entry

41H Engine Block Heater

61J 6-Ton Hydraulic Jack

62R Transmission Power Take-Off Provision



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

*Includes transmission mounted live drive and stationary mode PTO.*

98R Operator Commanded Regeneration (OCR)

67B Dual Extra Heavy-Duty Alternators (Total 377-Amps)

872 Rear View Camera & Prep Kit

Upfitters kit includes camera with mounting bracket, 14' jumper wire and camera mounting and aiming instructions

61J 6-Ton Hydraulic Jack

62R Transmission Power Take-Off Provision

*Includes transmission mounted live drive and stationary mode PTO.*

98R Operator Commanded Regeneration (OCR)

67B Dual Extra Heavy-Duty Alternators (Total 377-Amps)

872 Rear View Camera & Prep Kit

Upfitters kit includes camera with mounting bracket, 14' jumper wire and camera mounting and aiming instructions

Kit requires video display option to be added to unit.

Reference order guide for additional information. Related option content: 872, 585 and 96V.

*Includes cab wiring, frame wiring to the rear most cross member and electrochromic mirror with video display. Video displayed in 4" display.*

43C 110V/400W Outlet

*Includes 1 in-dash mounted outlet.*

585 Radio: AM/FM Stereo/MP3 Player

*Includes 6 speakers.*

*Includes:*

- SYNC Communications & Entertainment System

*Includes enhanced voice recognition with 911 Assist, 4.2" LCD center stack screen, AppLink, 1 smart-charging USB port and steering wheel audio controls.*

76C Exterior Backup Alarm (Pre-Installed)

*Custom accessory.*

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Fleet Options**

47J Fire/Rescue Prep Pkg w/EPA Special Emissions (LPO)

Requires valid FIN code.

*Includes 7,000 lbs. max front springs/GAWR rating for configuration selected. Incomplete vehicle package - requires further manufacture and certification by a final stage manufacturer. Ford urges Fire/Rescue Vehicle manufacturers to follow the recommendations of the Ford Incomplete Vehicle Manual and the Ford Truck Body Builders Layout Book (and pertinent supplements). Note 1: Stationary Elevated Idle Control (SEIC) has been integrated into the engine control module. Note 2: Engine calibration significantly reduces the possibility of depower mode when in stationary PTO operation. Note 3: Operator commanded regen allowed down to 30% of DPF filter full, instead of 100%. Note 4: Must*

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

meet the definition of an Emergency Vehicle, an Ambulance or Fire Truck per 40 CFR 86.1803.01 in the Federal Register. Note 5: California Code of Regulations allows for the sale of Federally certified emergency vehicles in California.

Includes:

- Dual Extra Heavy-Duty Alternators (Total 377-Amps)

- Operator Commanded Regeneration (OCR)

525\_ Steering Wheel-Mounted Cruise Control

942 Daytime Running Lamps (DRL) (LPO)

Requires valid FIN code.

The non-controllable 942 Daytime Running Lamps (DRL) replace the standard Daytime Running Lamps (DRL). Includes on/off cluster controllable.

17F XL Decor Group

Includes:

- Chrome Front Bumper

E4\_02 Vermillion Red

Requires Valid FIN Code

425 50-State Emissions System

**Does your bid comply with this requirement? Yes ( ) No ( )**

## Interior Colors

1S\_02 Medium Earth Gray

**Does your bid comply with this requirement? Yes ( ) No ( )**

## Dimensions

Exterior length: 253.3" \* Cab to axle: 60.0" \* Exterior width: 80.0" \* Exterior height: 82.0" \* Wheelbase: 168.0" \* Front track: 74.8" \* Rear track: 74.0" \* Turning radius: 24.0' \* Rear tire outside width: 93.9" \* Min ground clearance: 8.3" \* Front legroom: 43.9" \* Rear legroom: 33.5" \* Front headroom: 40.8" \* Rear headroom: 40.3" \* Front hiproom: 62.5" \* Rear hip room: 64.7" \* Front shoulder room: 66.7" \* Rear shoulder room: 65.8" \* Passenger volume: 116.0cu.ft. \* Cargo volume: 31.6cu.ft. \* Maximum cargo volume: 31.6cu.ft.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## Powertrain

Powerstroke 330hp 6.7L OHV 32 valve intercooled turbo V-8 engine with diesel direct injection \*

Recommended fuel : diesel \* federal \* TorqShift 6 speed automatic transmission with overdrive \* Rear-wheel drive \* Limited slip differential \*

Fuel Economy Cty: N/A \* Fuel Economy Highway: N/A \* Transmission PTO provision

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## Suspension/Handling

Front Mono-beam non-independent suspension with anti-roll bar, HD shocks \* Rear DANA 130 rigid axle leaf spring suspension with anti-roll bar, HD shocks \* Firm ride Suspension \* Hydraulic power-assist re-circulating ball Steering \* Front and rear 19.5 x 6 argnet steel wheels \* Front LT225/70SR19.5 GBSW AS rear LT225/70SR19.5 G BSW M+S \* Dual rear wheels

Does your bid comply with this requirement? Yes ( ) No ( )

## Body Exterior

4 doors \* Reverse opening left rear passenger \* Reverse opening right rear passenger \* Driver and passenger power remote heated, manual folding door mirrors with turn signal indicator \* Turn signal indicator in mirrors \* Black door mirrors  
\* Chrome bumpers \* Trailer harness \* Clearcoat paint \* Front and rear 19.5 x 6 wheels \* 2 front tow hook(s)

Does your bid comply with this requirement? Yes ( ) No ( )

## Convenience

Manual air conditioning with air filter \* Cruise control with steering wheel controls \* Power windows \* Driver and passenger  
1-touch up \* Driver and passenger 1-touch down \* Remote power door locks with 2 stage unlock and illuminated entry \*  
Manual tilt steering wheel \* Manual telescopic steering wheel \* Day-night rearview mirror with auto-dimming \* 911 Assist emergency SOS \* Wireless phone connectivity \* AppLink smart device integration \* 2 1st row LCD monitors \* Front cup holders \* Passenger visor mirror \* Full overhead console \* Driver and passenger door bins \* Rear door bins \* Upfitter switches

Does your bid comply with this requirement? Yes ( ) No ( )

## Seats and Trim

Seating capacity of 6 \* Front 40-20-40 split-bench seat \* 4-way driver seat adjustment \* Manual driver lumbar support \* 4-way passenger seat adjustment \* Center front armrest with storage \* 60-40 folding rear split-bench seat \* Cloth seat upholstery

Does your bid comply with this requirement? Yes ( ) No ( )

## Entertainment Features

AM/FM stereo radio \* SYNC external memory control \* Steering wheel mounted radio controls \* 6 speakers \* Streaming audio \* Fixed antenna

Does your bid comply with this requirement? Yes ( ) No ( )

## Lighting, Visibility and Instrumentation

Halogen aero-composite headlights \* Delay-off headlights \* Fully automatic headlights \* Variable intermittent front windshield wipers \* Light tinted windows \* Front reading lights \* Tachometer \* Compass \* Outside temperature display \* Camera(s) - rear \* Trip computer \* Trip odometer

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## Safety and Security

4-wheel ABS brakes \* Brake assist \* 4-wheel disc brakes \* Driveline traction control \* Dual front impact airbag supplemental restraint system with passenger cancel \* Dual seat mounted side impact airbag supplemental restraint system \* Safety Canopy System curtain 1st and 2nd row overhead airbag supplemental restraint system \* Remote activated perimeter/approach lighting \* Power remote door locks with 2 stage unlock and panic alarm \* Security system with SecuriLock immobilizer \* MyKey restricted driving mode \* Manually adjustable front head restraints \* 3 manually adjustable rear head restraints

Does your bid comply with this requirement? Yes ( ) No ( )

## Dimensions

### General Weights

Curb 8111 lbs. GVWR 19500 lbs.  
Payload 11760 lbs.

Does your bid comply with this requirement? Yes ( ) No ( )

### Front Weights

Front GAWR 7000 lbs. Front curb weight 4600 lbs.  
Front axle capacity 7000 lbs. Front spring rating 7000 lbs.  
Front tire/wheel capacity 7500 lbs.

Does your bid comply with this requirement? Yes ( ) No ( )

### Rear Weights

Rear GAWR 14706 lbs. Rear curb weight 3511 lbs.  
Rear axle capacity 14706 lbs. Rear spring rating 15000 lbs.  
Rear tire/wheel capacity 15000 lbs.

Does your bid comply with this requirement? Yes ( ) No ( )

### Trailing Type

Harness Yes Trailer sway control Yes

### General Trailing

5th-wheel towing capacity 23500 lbs. Gooseneck towing capacity 23500 lbs.  
Towing capacity 18500 lbs. GCWR 32000 lbs.

### Fuel Tank type

Capacity 40 gal.

### Off Road

Min ground clearance 8 "

### Interior cargo

Cargo volume 31.6 cu.ft. Maximum cargo volume 31.6 cu.ft.

### Rear Frame

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Height loaded 28 " Height unloaded 34 "

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Powertrain**

### *Engine Type*

Brand Powerstroke Block material Iron  
Cylinders V-8 Head material Aluminum  
Ignition Compression Injection Diesel direct injection  
Liters 6.7L Orientation Longitudinal  
Recommended fuel Diesel Valves per cylinder 4  
Valvetrain OHV Forced induction Intercooled turbo

### *Engine Spec*

Bore 3.90" Compression ratio 16.2:1  
Displacement 406 cu.in. Stroke 4.25"

### *Engine Power*

Output 330 HP @ 2,600 RPM Torque 750 ft.-lb @ 2,000 RPM

**Does your bid comply with this requirement? Yes ( ) No ( )**

### *Alternator*

Type Dual Amps 377

**Does your bid comply with this requirement? Yes ( ) No ( )**

### *Battery*

Amp hours 78 Cold cranking amps 750  
Run down protection Yes Type Dual

**Does your bid comply with this requirement? Yes ( ) No ( )**

### *Engine Extras*

Block heater Yes

**Does your bid comply with this requirement? Yes ( ) No ( )**

### *Transmission*

Electronic control Yes Lock-up Yes  
Overdrive Yes  
Speed 6 Type Automatic

### *Transmission Gear Ratios*

1st 3.974 2nd 2.318  
3rd 1.516 4th 1.149  
5th 0.858 6th 0.674

Reverse Gear ratios 3.128

### *Transmission Torque Converter*

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Stall ratio 1.90

*Transmission Extras*

Driver selectable mode Yes Sequential shift control SelectShift

PTO provision Yes

**Does your bid comply with this requirement? Yes ( ) No ( )**

*Drive Type*

Type Rear-wheel

*Drive Feature*

Limited slip differential Mechanical Traction control Driveline

Power take-off provision Yes

*Drive Axle*

Ratio 4.88

**Does your bid comply with this requirement? Yes ( ) No ( )**

*Exhaust*

Material Stainless steel System type Single

*Emissions*

CARB Federal

**Does your bid comply with this requirement? Yes ( ) No ( )**

*Fuel Economy*

Fuel type Diesel

**Does your bid comply with this requirement? Yes ( ) No ( )**

*Engine Retarder*

Type Yes

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Driveability**

*Brakes*

ABS 4-wheel ABS channels 3

Type 4-wheel disc Vented discs Front and rear

*Brake Assistance*

Brake assist Yes

*Suspension Control*

Ride Firm

*Front Suspension*

Independence Mono-beam non-independent Anti-roll bar Regular

*Front Spring*

Type Coil Grade HD

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## *Front Shocks*

Type HD

## *Rear Suspension*

Independence DANA 130 rigid axle Type Leaf

Anti-roll bar Regular

## *Rear Spring*

Type Leaf Grade HD

## *Rear Shocks*

Type HD

## *Steering*

Activation Hydraulic power-assist Type Re-circulating ball

## *Steering Specs*

# of wheels 2

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Exterior**

### *Front Wheels*

Diameter 19.5" Width 6.00"

### *Rear Wheels*

Diameter 19.5" Width 6.00"

Dual Yes

### *Spare Wheels*

Wheel material Steel

### *Front and Rear Wheels*

Appearance Argent Material Steel

### *Front Tires*

Aspect 70 Diameter 19.5"

Sidewalls BSW Speed S

Tread AS Type LT

Width 225mm LT load rating G

RPM 647

### *Rear Tires*

Aspect 70 Diameter 19.5"

Sidewalls BSW Speed S

Tread M+S Type LT

Width 225mm LT load rating G

RPM 645

### *Spare Tire*

Mount Frame mounted Type Full-size

### *Wheels*

Front track 74.8" Rear track 74.0"

Turning radius 24.0' Wheelbase 168.0"

Rear tire outside width 93.9"

### *Body Features*

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Front license plate bracket Yes Front splash guards Yes  
Body material Aluminum Side impact beams Yes  
Front tow hook(s) 2

## *Body Doors*

Door count 4 Left rear passenger Reverse opening  
Right rear passenger Reverse opening

## *Exterior Dimensions*

Length 253.3" Body width 80.0"  
Body height 82.0" Cab to axle 60.0"  
Axle to end of frame 47.2" Frame section modulus 17.2cu.in.  
Frame yield strength (psi) 50000.0 Frame rail width 34.2"  
Front bumper to Front axle 38.3" Cab to end of frame 107.2"  
Front bumper to back of cab 146.3"

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Safety**

### *Airbags*

Driver front-impact Yes Driver side-impact Seat mounted  
Overhead Safety Canopy System curtain 1st  
and 2nd row

Passenger front-impact Cancellable  
Passenger side-impact Seat mounted

### *Seatbelt*

Height adjustable

### *Security*

Immobilizer SecuriLock Panic alarm Yes  
Restricted driving mode MyKey

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Seating**

### *Passenger Capacity*

Capacity 6

### *Front Seats*

Split 40-20-40 Type Split-bench

### *Driver Seat*

Fore/aft Manual Reclining Manual  
Way direction control 4 Lumbar support Manual

### *Passenger seat*

Fore/aft Manual Reclining Manual  
Way direction control 4

### *Front Head Restraint*

Control Manual Type Adjustable

### *Front Armrest*

Center Yes



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Storage Yes

*Rear Seats*

Descriptor Split-bench Facing Front

Folding 60-40 Folding position Fold-up cushion

Type Fixed

*Rear Head Restraints*

Control Manual Type Adjustable

Number 3

*Front Seat Trim*

Material Cloth Back material Cloth

*Rear Seat Trim Group*

Material Vinyl Back material Carpet

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Convenience**

*AC and Heat Type*

Air conditioning Manual Air filter Yes

Underseat ducts Yes

*Audio System*

Radio AM/FM stereo Radio grade Regular

Seek-scan Yes External memory control SYNC

*Audio Speakers*

Speaker type Regular Speakers 6

*Audio Controls*

Steering wheel controls Yes Voice activation Yes

Streaming audio Bluetooth yes

*Audio Antenna*

Type Fixed

*LCD Monitors*

1st row 2 Primary monitor size (inches) 4.2

*Cruise Control*

Cruise control With steering wheel controls

*Convenience Features*

Retained accessory power Yes 12V DC power outlet 2

Emergency SOS 911 Assist Wireless phone connectivity Bluetooth

Back-up alarm Yes Smart device integration App link

Upfitter switches Yes

*Door Lock Activation*

Type Power with 2 stage unlock Remote Keyfob (front doors)

Integrated key/remote Yes

*Instrumentation Type*

Display Analog

*Instrumentation Gauges*

Tachometer Yes Engine temperature Yes

Turbo/supercharger boost Yes Transmission fluid temp Yes

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Engine hour meter Yes

*Instrumentation Warnings*

Oil pressure Yes

Engine temperature Yes

Battery Yes

Lights on Yes

Key Yes

Low fuel Yes

Door ajar Yes

Service interval Yes

Brake fluid Yes

*Instrumentation Displays*

Clock In-radio display Compass Yes

Exterior temp Yes Systems monitor Yes

Camera(s) - rear Yes

*Instrumentation Feature*

Trip computer Yes

Trip odometer Yes

*Steering Wheel Type*

Material Urethane

Tilting Manual

Telescoping Manual

*Front Side Windows*

Window 1st row activation Power

*Windows Rear Side*

2nd row activation

*Window Features*

1-touch down Driver and passenger 1-touch up

Driver and passenger

Tinted Light

*Front Windshield*

Wiper Variable intermittent

*Rear Windshield*

Window Fixed

**Does your bid comply with this requirement? Yes ( ) No ( )**

**Interior**

*Passenger Visor*

Mirror Yes

*Rear View Mirror*

Day-night Yes Auto-dimming Yes

*Headliner*

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Coverage Full Material Cloth

*Floor Trim*

Coverage Full Covering Vinyl/rubber

*Trim Feature*

Gear shift knob Urethane Interior accents Chrome

*Lighting*

Dome light type Fade Front reading Yes

Illuminated entry Yes

Variable IP lighting Yes

*Overhead Console Storage*

Storage Yes Type Full

*Storage*

Driver door bin Yes Front Beverage holder(s) Yes

Glove box Locking Passenger door bin Yes

Illuminated Yes

Instrument panel Bin

Dashboard Covered Rear door bins Yes

*Legroom*

Front 43.9" Rear 33.5"

*Headroom*

Front 40.8" Rear 40.3"

*Hip Room*

Front 62.5" Rear 64.7"

*Shoulder Room*

Front 66.7" Rear 65.8"

*Interior Volume*

Passenger volume 116.0 cu.ft.

**Does your bid comply with this requirement? Yes ( ) No ( )**

**Warranty**

*Basic*

Distance 36000 miles Months 36 months

**Does your bid comply with this requirement? Yes ( ) No ( )**

*Powertrain*

Distance 60000 miles Months 60 months

**Does your bid comply with this requirement? Yes ( ) No ( )**

*Corrosion Perforation*

Distance Unlimited miles Months 60 months

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## *Roadside Assistance*

Distance 60000 miles Months 60 months

Does your bid comply with this requirement? Yes ( ) No ( )

## **CAB TO AXLE DIMENSION**

Cab to axle will be 84".

Does your bid comply with this requirement? Yes ( ) No ( )

## **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

Does your bid comply with this requirement? Yes ( ) No ( )

### **VEHICLE DATA PLATE**

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

- Filter part numbers for the;

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- 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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **SEAT BELT WARNING - FAMA06/07**

A safety sign FAMA06 shall be visible from each seat that is not equipped with occupant restraint and therefore not intended to be occupied while the vehicle is in motion.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

A safety sign FAMA07, which warns of the importance of seat belt use, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **EQUIPMENT MOUNTING FAMA10**

A safety sign FAMA10, which warns of the need to secure items in the cab, shall be visible inside the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **FIRE SERVICE TIRES - FAMA12**

A safety sign FAMA12, which warns of the special requirements for fire service-rated tires, shall be visible to the driver entering the cab of any apparatus so equipped.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **HELMET WARNING - FAMA15**

A safety sign FAMA15, which warns not to wear helmets while the vehicle is in motion, shall be visible from each seat that is intended to be occupied while the vehicle is in motion.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **CLIMBING METHOD - FAMA23**

A safety sign FAMA23, which warns of the proper climbing method, shall be visible to personnel entering the cab and at each designated climbing location on the body.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REAR STEP CROSSWALK WARNING - FAMA24**

A safety sign FAMA24, which warns personnel not to ride on the vehicle, shall be located at the rear step areas and at any cross walkways.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **FINAL STAGE MANUFACTURER VEHICLE CERTIFICATION**

A final stage manufacturer vehicle certification label shall be provided and installed in the driver cab door jamb area.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **FRONT BUMPER & GRILL GAURD**

A Ranch Hand Legend series front bumper and grill guard shall be bolted in place of the OEM bumper. The bumper with grill guard shall be built from 4" schedule 40 pipe and diamond-plate steel to provide maximum protection and finished in a black powder coat paint finish. The bumper kit provided shall be for the specified chassis model and year.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **FRONT TOW PROVISIONS**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **AIR INTAKE SYSTEM**

An air filter shall be provided in the engine's air intake system by the body builder. Air inlet restrictions shall not exceed the engine manufacturer's recommendations.

The air inlet shall be equipped with a means of separating water and burning embers from the air intake system.

This requirement shall be permitted to be achieved by either of the following methods:

- Provision of a device such that burning particulate matter larger than 0.039 in. (1.0 mm) in diameter cannot reach the air filter element.
- Provision of a multi-screen ember separator capable of meeting the test requirements defined in the Parker Hannafin, Racor Division, publication LF 1093-90, *Ember Separation Test Procedure*, or an equivalent test.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **EXHAUST TAILPIPE MODIFICATION**

The exhaust tailpipe shall be modified from the stock location. 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Exhaust pipe discharge shall be directed away from any operator's position. Purchaser desires exhaust to be routed to the right side of the vehicle, ahead of the rear wheels.

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

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## RADIO ANTENNA INSTALLATION

There shall be one (1) radio antenna mounts provided and installed on the roof of the cab/chassis. The end of each radio antenna shall be routed to a location determined by the King County Fire District #20.

Does your bid comply with this requirement? Yes ( ) No ( )

Due to multiple configurations of antenna whips, the Body Manufacturer shall provide the antenna base, and King County Fire District #20 shall provide the whip.

Does your bid comply with this requirement? Yes ( ) No ( )

## SEATING MODIFICATION

The center portion of the 40/20/40 split bench seat shall be removed to accommodate the installation of the specified console.

Does your bid comply with this requirement? Yes ( ) No ( )

## SEAT BELT COLOR AND MOUNTING

Section 14.1.3.3 of the NFPA 1901 Standards, 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.

The seat belt webbing color requirement of 14.1.3.3 shall not apply to vehicles with a GVWR of 19,500 lb (8,845 kg) or less.

Does your bid comply with this requirement? Yes ( ) No ( )

## SEAT BELT WEB LENGTH - COMMERCIAL CAB

Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901 standards, 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 commercial chassis manufacturer will not be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

Per King County Fire District #20 specification for a commercial chassis, this emergency vehicle may not have seat belts of this required length. These belts may not provide sufficient length for large firefighters in bunker gear. This specification for an emergency fire apparatus for these seat belts shall be non-compliant to NFPA 1901 standards, effective at the time of order.



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## IGNITION KEY

If the vehicle is specified to have an ignition key it will be attached to steering column or dash with vinyl covered steel cable.

Does your bid comply with this requirement? Yes ( ) No ( )

## SIX (6) – LED TIRE PRESSURE VISUAL INDICATORS

Each tire valve stem shall be equipped with an LED Tire Alert (or equal), heavy duty valve cap LED indicator that indicates proper tire pressure. The LED Tire Alert valve cap is self-calibrating. When the cap is mounted on the valve stem the first time, it will memorize that tire pressure, and can be set to recognize a drop in pressure as little as 6 psi. It can be checked for functionality and battery condition by simply unscrewing the cap. If it is in working condition, it will immediately start blinking.

Does your bid comply with this requirement? Yes ( ) No ( )

## HELMET STORAGE

No helmet storage is required in the cab driving area.

Does your bid comply with this requirement? Yes ( ) No ( )

## HELMET STORAGE

No helmet storage is required in the cab crew area.

Does your bid comply with this requirement? Yes ( ) No ( )

## 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.

Does your bid comply with this requirement? Yes ( ) No ( )

## MUDFLAPS

There shall be 1/4" rubber mud flaps provided and installed behind each set of tires to prevent throwing road debris and lower road spray.

Does your bid comply with this requirement? Yes ( ) No ( )

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **ROAD EMERGENCY SAFETY KIT**

The completed unit shall be supplied with one (1) set of three (3) dual faced reflective triangles, and three (3) warning flares complete with storage case per DOT requirements.

One (1) 2.5 lb. ABC type vehicle fire extinguisher with bracket per DOT requirements shall be provided and mounted inside cab area.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **FUEL FILL**

There shall be one (1) chassis supplied fuel fill mounted in the streetside exterior wheel well panel, behind the rear axle. The fill shall have a permanent label with the text "DIESEL FUEL ONLY".

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The fabrication of the body shall be formed sheet metal. Formed components shall allow the King County Fire District #20 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 King County Fire District #20 from such repair and shall NOT be used.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Following construction of the subframe, which supports the apparatus body, the sheet metal portion of the

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

body shall be built directly on the subframe. The joining of the subframe and body shall be of a welded integral construction.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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, No Exceptions.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The front and rear corners of body shall be formed as part of the front or rear body panels. This provides a stronger body corner and finished appearance. The use of extruded corners, or caps will not be acceptable, No Exceptions.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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 pre-formed, then positioned in body and welded into final position.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **DRIP RAILS**

The body shall have drip rails over the side full height compartments. The drip rails shall be formed into the upper body panels providing a ridged lower panel and a flat upper body panel surface. The use of mechanically fastened, taped or glued on drip rails will not be acceptable. No Exceptions.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ROOF CONSTRUCTION**

The roof structure shall be integral with the body sheet metal construction and shall be an all welded assembly. The body roof structure shall be overlaid with not less than 3/16" aluminum 3003H-14 alloy tread plate and welded to roof structure and body sheet metal. All seams in roof material shall be fully and continuously welded to prevent entry of moisture.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

There shall be a total of four (4) 2" x 2" x 1/4" 6061-T6 alloy aluminum "C" channels running the length of body, two (2) on each outboard side. These "C" channels shall be used for roof support and in addition shall be used for mounting of any specified reels. This open "C" channel design along with special reel mounting clips allows for a universal location of any specified reels within each compartment.

**Does your bid comply with this requirement? Yes ( ) No ( )**

In between the two (2) center "C" channels running the length of body shall be 2" x 2" x 1/4" 6061-T6 alloy aluminum tubing running in between and welded in place on approximate 16" centers to support roof and/or walkway structure if specified.

**Does your bid comply with this requirement? Yes ( ) No ( )**

A 2" formed radius shall be provided along the body sides and utilized as a wiring trough. The use of aluminum extrusions in this area shall not be acceptable.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **BODY SUBFRAME**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

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 minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/4" aluminum. Smaller dimension, lighter gauge tubing or angle material subframe shall not be accepted.

**Does your bid comply with this requirement? Yes ( ) No ( )**

These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located on 16" centers, or as necessary to support walkway or heavy equipment.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **BODY MOUNTING**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

For optimum chassis frame and body life, the body subframe shall be fastened to the chassis frame with a minimum of four (4) 1/2" x 2" strap mounts, welded to the body subframe. The straps shall be bolted to the chassis frame work utilizing 1/2" Grade 8 bolts.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **10" REAR STEP BUMPER**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REAR TOW EYES**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **GROUND LIGHTS**

There shall be two (2) OnScene 8" Access LED lights installed below bumper capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Lighting shall be switchable but activated automatically when the vehicle park brake is set.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **WHEEL WELL EXTERIOR PANEL**

The exterior panel of the body wheel well enclosure shall be constructed from 1/8" aluminum smooth plate.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## 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.

Does your bid comply with this requirement? Yes ( ) No ( )

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **BODY PAINT SPECIFICATIONS**

### **BODY PAINT PREPARATION**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

The exterior (and interior, if painted) 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **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 the following paint process;

- 1) Clean bare metal with a wax and grease remover using low lint rags.
- 2) Inspect, straighten, and hammer high points, grind all seams, sharp edges, and welds. DA sand entire paintable surfaces using 24-180 grit dry paper. Plastic fill all low spots and DA sand fill areas using 36-180 grit dry paper. Apply pinhole filler and DA sand areas using 80-180 grit dry paper.
- 3) Re-clean bare metal using a wax and grease remover and low lint rags.
- 4) Within 24 hours, a PPG Delfleet® epoxy color primer with proper hardener for corrosion resistance using a pressure pot spray gun and applying 2-5 full wet coats or 1.5-8.0 dry mils max. achieving full hiding and allow to air dry 60 minutes @ 70°F or bake for 45 minutes @ 140°F degree.
- 5) Inspect, putty fill, and dry guild coat entire body surface and DA sand using 180-400 grit dry paper.
- 7) Re-clean bare metal using a wax and grease remover using low lint rags.
- 6) A PPG Delfleet® primer sealer with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 1 full wet coat or 1.0-2.0 dry mils achieving full hiding and allow to flash off in spray booth for minimum of 60 minutes @ 70°F.
- 7) A PPG Delfleet® FBCH basecoat (color) with proper hardener and dry additive shall then be sprayed using a pressure pot set @ 45-60 PSI and achieving full hiding or 1.5-2.0 wet mils and allow to flash off in spray booth 45-60 minutes before applying clearcoat.



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- 8) A PPG Delfleet® clearcoat with proper hardener and thinner shall be sprayed using a pressure pot spray gun and applying 2-3 full wet coats or 5.0 wet mils for a uniform gloss and allow to flash off in spray booth 10 minutes and bake for 120-140 minutes @ 125°F (surface temp.).
- 9) After cooling, DA sand heavy orange peel or runs using 1000 grit dry sand paper and final DA sand using 1500-2000 grit dry sand paper. Wipe off all surfaces to remove dust and debris. Buff unit as needed using 3M rubbing compound and a white wool pad and inspect until all sand scratches are removed.
- 8) Polish as needed using 3M Perfect-It-Polish and a black foam pad, repeat as necessary and inspect until all sand scratches are removed.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **FASTENERS**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ELECTROLYSIS CORROSION CONTROL**

The vehicle shall be assembled using ECK brand or similar corrosion control compound on all high corrosion potential areas.

**Does your bid comply with this requirement? Yes ( ) No ( )**

**ECK protects aluminum and stainless steel against electrolytic reaction, isolates dissimilar metals and gives bedding protection for hardware and fasteners. ECK contains anti-seizing lubricant for threads. ECK is dielectric and perfect for use with electrical connectors.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## PAINT FINISH - SINGLE COLOR

The body shall be painted with a single color of PPG Delfleet® Evolution per King County Fire District #20 approved paint spray out provided.

**Does your bid comply with this requirement? Yes ( ) No ( )**

A small touch-up bottle of paint shall be provided with completed vehicle.

- Paint Color: Match cab/chassis supplied paint color.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## 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. **Pro-rated warranties will not be acceptable.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

## COMPARTMENT INTERIOR FINISH

The interior of all exterior body compartments shall be a "Maintenance Free" smooth unpainted finish. All body seams shall be finished with a caulk sealant for both appearance and moisture protection.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **REFLECTIVE STRIPE REQUIREMENTS**

### **Material**

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 retro-reflection 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **Minimum Requirements**

A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

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

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **GRAPHICS PROOF**

A color graphics proof of the reflective striping layout shall be provided for approval by King County Fire District #20 prior to installation. The graphics proof shall be submitted to King County Fire District #20 on 8.5" x 11" sheets with front, sides, rear and plan views, each on one (1) sheet. In addition if there is any special art work an additional sheet shall be provided showing all details.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REFLECTIVE STRIPE - CAB SIDE**

The reflective stripe material shall be 4" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be white in color.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **REFLECTIVE STRIPE - CAB FRONT**

The reflective stripe material shall be 4" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be white in color.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REFLECTIVE STRIPE - CAB DOOR INTERIOR**

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

The stripe material shall be 3M Scotchcal 680.

- This reflective stripe shall be white in color.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REFLECTIVE STRIPE - BODY SIDES**

The reflective stripe material shall be 4" wide, 3M Scotchcal 680 series.

- This reflective stripe shall be white in color.

The stripe shall remain in a straight line from the front of the front of cab to the rear body.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The rear side panels of the body on each side of a rear stairway or compartment shall have a chevron style reflective stripe, extending from bumper height up to side compartment drip rail height. Each chevron panel shall be a full sheet and shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panel shall have a minimum 10 year warranty for material failure, and colorfastness.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The stripe material shall be 3M Diamond Grade.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **LETTERING**

No lettering shall be provided on the completed unit.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **EXTERIOR COMPARTMENT DOORS**

### **ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)**

The vehicle shall be equipped with R•O•M Series IV roll-up exterior compartment doors. The R•O•M roll-up doors shall be complete with the following features;

Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum. Shutter slats shall feature a double wall extrusion 0.315" thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats shall feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one-piece PVC extrusion; seal design will be such to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one-piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one-piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type 66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counter balance system. Counter balance system shall be 4" in diameter and held in place by two (2) heavy duty 18 gauge zinc plated plates. Counter balance system shall have two (2) over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system; no foam material of any kind shall be permitted or used in this area.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## ROM DOOR BOTTOM RAIL

All exterior compartment doors shall have the standard 3.0" tall bottom rail extrusion for easy one (1) hand opening and closing.

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## 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	69.0"
B	Bottom of Subframe to Bottom of Body	18.0"
C	Vertical Door Opening	
	-with roll-up door	60.5"
	-with hinged door	64.5"

### ABOVE REAR AXLE

	<u>Description</u>	<u>Dimension</u>
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	36.0"
	-with hinged door	40.0"

### BEHIND REAR AXLE

	<u>Description</u>	<u>Dimension</u>
E	Bottom of Subframe to Bottom of Body	15.0"
F	Vertical Door Opening	
	-with roll-up door	57.5"
	-with hinged door	61.5"

### GENERAL

	<u>Description</u>	<u>Dimension</u>
G	Bottom or Drip Rail to Top of Body	18.5"

(Dimensions are approximate and subject to change during construction or design process.)

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **BODY WIDTH DIMENSIONS**

The body shall be 96.0" wide, and 98.0" wide at drip rails. Interior compartment depth dimensions shall be approximately:

<u>Area Description</u>	<u>Dimension</u>
Transverse above subframe	91.0"
Compartment depth below subframe	21.0"

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **STREETSIDE COMPARTMENT - FRONT (S1)**

The interior useable compartment width shall be approximately 49.5" wide.

The compartment door opening shall be approximately 42.2" wide.

**Does your bid comply with this requirement? Yes ( ) No ( )**

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- There shall be one (1) SCBA cylinder storage module for 8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to prevent damage or abrasion to cylinders. In addition, there shall be rubber matting provided in the base of each storage tube for bottle protection and to prevent slipping.
- The SCBA cylinder module shall be capable of storing ten (10) SCBA cylinders up to 7.5" diameter.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- One (1) Hannay EFH1516-17-18 high pressure air hose reel(s) shall be provided in this compartment. Reel shall be designed to hold 110% of the capacity needed.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.
  - A label shall be provided in a visible location adjacent to reel with following information: (1) Utility air or breathing air, (2) Operating pressure, (3) Total hose length, (4) Hose size (ID).
    - The hose reel shall be equipped with 300' of 3/16" Parker 6,000 PSI, high pressure air hose. A molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Gray in color with a red color-coded end.
    - The fitting on the end of the high-pressure air hose reel shall be a CGA-347 high pressure fitting.
- The air supply shall be from the specified mobile breathing air system.
- The air supply for specified reel(s) shall be from the on-board specified mobile breathing air system. The reel shut-off valve, pressure regulator, and gauge shall be provided at the specified breathing air control panel, not exceeding 72" from ground.
- The fairlead roller shall be mounted directly to the reel.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- The 12-volt electrical distribution panel shall be located in the front lower compartment.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)**

The interior useable compartment width shall be approximately 59.5" wide.



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

The compartment door opening shall be approximately 52.2" wide.

**Does your bid comply with this requirement? Yes ( ) No ( )**

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- A Bauer model BP-13H-E3 air compressor with a recharging rate of 13.0 SCFM @ 6,000 PSI shall be provided, . Compressor skid shall include 13 HP, 3-phase soft start electric motor, P5 Securus purification system, electronic CO monitor with calibration kit, and fill station inter-connecting harness. Compressor module shall be approximately 53.5" L x 33.5" W x 37.5" H and weigh 700 pounds.
- An Appleton inlet and base shall be provided in compartment near compressor. The compressor shall have a 2/00 AWG SO cord with a matching Appleton plug for operating compressor from the on-board generator system. Another matching Appleton plug shall be provided with completed vehicle for operating the compressor from an in-house electrical system. All required building wiring shall be responsibility of King County Fire District #20.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- Air storage shall consist of three (3) ASME 491 SCF @ 6,000 PSI, (does not require hydrostatic testing) shall be provided on completed vehicle complete with gauges and valves. Each cylinder shall measure 9.6" diameter x 55" long, and weigh 400 lbs.

The manufacturer's test date (month and year) on each air tank shall be current within 12 months of the apparatus delivery date.

Air tanks shall be marked with a label that reads;

“High Pressure 6,000 PSI Breathing Air” or “High Pressure 41,368 kPa Breathing Air.”

- There will be a welded reinforcement above the body frame to carry specified DOT or ASME cylinders. The mounting of the cylinders will be with adjustable track and powder coated steel band straps to securely hold all cylinders in place.
- The Bauer compressor shall be free from defects in material and workmanship for a period of two (2) years. The foregoing warranty period shall be extended to five (5) years from the date of shipment from Bauer for Customers that are Municipal Fire Departments with respect to the compressor block (breathing air application), provided that such extended warranty period shall only apply to product parts with proof of proper maintenance being completed in accordance with published Bauer factory recommendations. To be eligible for this limited warranty to cover Customer's product, Customer must return a properly completed start-up/warranty registration form to Bauer within ninety (90) days from the date of start-up.
- Training and instruction shall be provided by compressor manufacturer at King County Fire District #20 location on proper use of complete air compressor system.
- The NFPA required air quality test shall be completed by manufacturer prior to delivery. Complete results of test shall be provided to King County Fire District #20 upon delivery.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **STREETSIDE COMPARTMENT - REAR (\$3)**

The interior useable compartment width shall be approximately 35.5" wide.

The compartment door opening shall be approximately 28.2" wide.

**Does your bid comply with this requirement? Yes ( ) No ( )**

This compartment shall have a R•O•M series IV roll-up door.

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

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
  - There shall be NO keyed lock on this roll-up compartment door.
  - One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
  - A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
- The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) SCBA cylinder storage module for 8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to prevent damage or abrasion to cylinders. In addition, there shall be rubber matting provided in the base of each storage tube for bottle protection and to prevent slipping.
- The SCBA cylinder module shall be capable of storing four (4) SCBA cylinders up to 7.5" diameter.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **CURBSIDE COMPARTMENT - FRONT (C1)**

The interior useable compartment width shall be approximately 49.5" wide.

The compartment door opening shall be approximately 42.2" wide.

**Does your bid comply with this requirement? Yes ( ) No ( )**

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) adjustable shelf/shelves approximately 46" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edges.
- The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) SCBA cylinder storage module for 8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from PVC pipe to prevent damage or abrasion to cylinders. In addition, there shall be rubber matting provided in the base of each storage tube for bottle protection and to prevent slipping.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- The SCBA cylinder module shall be capable of storing ten (10) SCBA cylinders up to 7.5" diameter.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)**

The interior useable compartment width shall be approximately 59.5" wide.

The compartment door opening shall be approximately 52.2" wide.

**Does your bid comply with this requirement? Yes ( ) No ( )**

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **COMPARTMENT LAYOUT**

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- One (1) 120/240 VAC load center.
- The generator gauge panel.
- Specified breathing air compressor and air storage system in center of compartment.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## CURBSIDE COMPARTMENT - REAR (C3)

The interior useable compartment width shall be approximately 35.5" wide.

The compartment door opening shall be approximately 28.2" wide.

Does your bid comply with this requirement? Yes ( ) No ( )

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

Does your bid comply with this requirement? Yes ( ) No ( )

## COMPARTMENT LAYOUT

- There shall be vertically mounted aluminum Shelf-Trac welded to compartment walls for specified component installation. Shelf-Trac extrusion shall have side extruded channels for use in mounting or securing special ancillary items, without need for drilling into body.
- There shall be one (1) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" 3003 aluminum sheet with a 2" vertical flange along the front and rear edge.
- The above component(s) shall have a smooth un-painted finish.
- There shall be one (1) SCBA cylinder storage module for 8" OD (maximum) SCBA bottles. The maximum length of the SCBA cylinder shall be 24.75". The module shall have an exterior shell fabricated from 1/8" (.125) 3003H-14 aluminum alloy sheet. The module shall have a 2" slope, front to back to prevent cylinders from sliding out. The SCBA cylinder storage tubing shall be fabricated from

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

PVC pipe to prevent damage or abrasion to cylinders. In addition, there shall be rubber matting provided in the base of each storage tube for bottle protection and to prevent slipping.

- The SCBA cylinder module shall be capable of storing four (4) SCBA cylinders up to 7.5" diameter.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REAR COMPARTMENT - CENTER (RC1)**

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

The rear center compartment shall start at the top of the body sub-frame and be as high as the side compartments, unless specified otherwise.

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

The compartment door opening shall be approximately 42.0" wide.

**Does your bid comply with this requirement? Yes ( ) No ( )**

This compartment shall have a R•O•M series IV roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door guard shall be provided below door roll area. Drip pan/door guard shall have thumb nuts making it easily removable without tools with a maintenance-free, un-painted finish. A plastic drain line shall be provided on each end of the drip pan to lower door threshold.
- A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

**Does your bid comply with this requirement? Yes ( ) No ( )**

- Two (2) OnScene Access LED, full height compartment lights, vertically mounted.
- One (1) Bauer model CFS5.5 2M, NFPA 1901 compliant containment type two (2) cylinder filling station with compressor controls rated for cylinder pressures up to 5,500 PSI shall be provided with proper reinforcement for weight of fill station and venting thru floor opening. Fill station will be approximately 35.5" wide x 50.25" high x 21" deep, and weigh approximately 863 lbs.
- Filling operation shall be controlled with manual controls mounted on front of fill station. An air flow selector valve to fill from either compressor or storage, and manual valves and gauges for each air storage cylinder (maximum of four (4)).
- An air storage refill port shall be provided on the fill station.
- One (1) high pressure air hose reel gauge(s), adjustable regulator(s), and fill control(s) shall be provided on front panel with outlet port located on the rear of the fill station.
- The fill station fill whip(s) shall terminate in a high pressure CGA-347 threaded connectors for 4,500 - 5,500 PSI air pack cylinders.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **PLASTIC FLOOR AND SHELF TILE**

All compartment floors, shelves, and trays shall be covered with Turtle Tile plastic interlocking grating.

- The plastic floor tile shall be red.
- The plastic edge trim shall be yellow.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **LOWER SIDE BODY PROTECTION - RUB RAIL**

OnScene Solutions rub rails shall be provided below the compartment door openings on both the streetside and curbside.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REAR ROLL-OUT AWNING**

The upper rear of truck shall be equipped with a Carefree Ltd Freedom wall mount awning. The box the awning is stored in is approximately 8' wide x 5-3/8" high x 5" deep and white in color. The awning shall be 8' wide with an extension length of 6-1/2'. The awning support arms are hidden inside the lead rail. The awning will be extended and retracted using a 12VDC motorized system with a manual override if power is lost.

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

- The awning fabric color shall be red.

The specified awning above shall be surface mounted to upper body side. The awning shall add approximately 5.75" to body width.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **AWNING HOUSING COLOR**

The awnings standard white housing color shall be re-painted to match upper body color.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ROOF ACCESS HATCH COVER**

One (1) roof access hatch cover shall be provided in the roof structure to allow for installation or removal of large equipment into the compartment area. The roof around the hatch opening shall be reinforced as necessary to prevent deflection in the roof area. The hatch cover shall overlap a 2" vertical lip on the body roof to prevent entry of moisture. It shall be sealed with automotive type rubber molding to provide a weather resistant seal.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The hatch cover shall have a lift-up type door hinged on the front side. The door shall be fabricated from 3/16" aluminum treadplate with a pair of pneumatic type cylinders mounted to hold the door in the open position. The door shall be mounted using a full length 14-gauge stainless steel hinge, with 1/4" stainless steel pin. A polyester barrier film gasket shall be placed between the stainless-steel hinge and any dissimilar metals as necessary to prevent corrosion.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### 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*.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### Wiring and Wire Harness Construction

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

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

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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 over-current protective devices. Such devices shall be readily accessible and protected against heat in excess of the over-current 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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:

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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)*.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## Low Voltage Electrical System Performance Test

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

Does your bid comply with this requirement? Yes ( ) No ( )

## 12 VOLT MULTIPLEX CONTROL CENTER

The apparatus shall be equipped with a Weldon V-MUX multiplexed 12-volt electrical system that will provide complete diagnostic capability, No Exception. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions.

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

Does your bid comply with this requirement? Yes ( ) No ( )

### **Outputs:**

The outputs shall perform all the following items without added modules to perform any of the tasks;

1. Load Shedding: The system shall have the capability to load shed with 8 levels any output. This means you can specify which outputs (barring NFPA restrictions) you would like to shed. Level 1 12.9v, Level 2 12.5V, Level 3 - 12.1V, Level 4 - 11.7V, Level 5 11.3V, Level 6 10.9V, Level 7 10.5, Level 8 10.1. Unlike conventional load shedding devices, you can assign a level to any or all outputs.
2. Load Sequencing: The system shall be able to sequence from 0 8 levels any output. With 0 being no delay and 1 being a 1 second delay, 2 being a 2 second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle and can help limit damage to your charging system.
3. Output Device: The system shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor - Field Effect Transistors); MOS-FETs are solid-state devices with no moving parts to wear out. A typical relay when loaded to spec has a life of 100,000 cycles. The life of a FET is more than *100 times* that of a relay.
4. Flashing Outputs: The system shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park, or any one of several combined interlocks. The flash rate can be selected at either 80, 160 or 200 FPM. This means any light can be specified with a multiplex truck with no need to add flashers. Flashing outputs can also be used to warn of problems or other unique idea you may come up with.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- 5. PWM: The modules shall have the ability to PWM at some outputs so that a headlight PWM module is not needed.
- 6. Diagnostics: An output should be able to detect either a short or open circuit. The system should be able report in “real time” a text based message that points the maintenance person to a specific output.

**Does your bid comply with this requirement? Yes ( ) No ( )**

**Inputs:**

- 1. The inputs shall have the ability to switch by a ground or batt signal.
- 2. The inputs shall be filtered for noise suppression via hardware and software so that RF or dirty power will not trick an input into changing its status.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **Auto-Throttle:**

The multiplex system shall be able to perform automatic high idle via a network gateway or by using an existing output on a module to provide the proper signals to an OEM Engine ECU. This task should be handled with existing inputs and outputs.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Displays:**

Displays shall be able to provide real time information regarding load shedding and system status, such as network traffic/errors or shorts and open circuits.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **System Network:**

The multiplex system shall contain a Peer-to-Peer network. A Master Slave Type network is not suitable for this type of unit. A Peer-to-Peer network means that all the modules are equal on the network; a Master is not needed to tell other nodes when to talk, **No Exceptions.**

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **System Reliability:**

The multiplex system shall be able to perform in extreme temperature conditions, from 40° to +85° C (-40° to +185° F.) The system shall be sealed against the environment, moisture, humidity, salt or fluids such as diesel fuel, motor oil or brake fluid. The enclosures shall be rugged to withstand being mounted in various locations or compartments around the vehicle. The modules shall be protected from over voltage and reverse polarity.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **WELDON CERTIFICATION**

A letter shall be provided with bid submittal that the Contractor has successfully completed the Weldon training requirements for Level 1 of the V-MUX Certified Supplier Program and is authorized to design, build, and service V-MUX electrical systems.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **MULTIPLEX SYSTEM INTERFACE DISPLAY**

One (1) Weldon V-MUX Vista IV multiplex system interface display(s) with push-button control shall be provided in cab easily accessible to driver and/or passenger. The full-color Vista interface display allows the user to control warning and scene lighting, HVAC controls (when specified), and view on-board diagnostics including service information. This display has a wide operating temperature range, automatic screen switching

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

in response to current conditions, and a sleep mode option to eliminate night glare. The following features shall be included;

- 2) 800 x 480 resolution
- 3) Four video ports
- 4) Flash updates with USB memory stick
- 5) Display inside and outside temperature (when specified)
- 6) Automatic climate control (when specified)
- 7) 100% Configurable (OEM Level)
- 8) Field re-programmable
- 9) Peer to peer network
- 10) On-board diagnostics / service information
- 11) Colors change to indicate button status
- 12) Video Ready for: Backup camera, Thermal camera, DVD, GPS...

The multiplex display shall be located in the cab center console for control of all master and emergency lights.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **CAB CONSOLE**

A center cab console shall be provided between the Driver's and Officer's seats. Console shall be as large as possible and fabricated of 1/8" smooth aluminum. A textured powder coat paint finish shall be provided for durability and finished appearance.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The rear portion of the console shall be provided with open top storage for notebooks or maps. Two (2) adjustable dividers shall be provided in the storage area. The forward portion of console shall be slanted for easy viewing of the specified multiplex display screen, and any siren or radio equipment and within easy access to both Driver and Officer. Two (2) cup holders shall be provided in console.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The final design of console shall be determined by the King County Fire District #20 at the pre-construction meeting.

The following options shall be provided in specified console. Final layout to be determined by King County Fire District #20 at pre-construction meeting.

There shall be one (1) communications radio and/or siren 3" filler plate(s) with black powder coat paint finish provided for future radio/siren location in specified console.

There shall be one (1) 12 VDC power plug(s) provided in specified console.

**Does your bid comply with this requirement? Yes ( ) No ( )**



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **MAP LIGHT**

There shall be one (1) 19" goose neck 12-volt map light(s) furnished and installed on the center console next to the Officer's position in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

An onboard battery conditioner or charger or a polarized inlet shall be provided for charging all batteries. Where an onboard conditioner or charger is supplied, the associated line voltage electrical power system shall be installed in accordance with Chapter 22.

One of the following master disconnect switches shall be provided:

- A master body disconnect switch that disconnects all electrical loads not provided by the chassis manufacturer
- A master load disconnect switch that disconnects all electrical loads on the apparatus except the starter

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 disconnect on" indicator light that is visible from the driver's position shall be provided.

Rechargeable hand lights, radios, and other similar devices shall be permitted to be connected to the electrical system ahead of the master disconnect switch.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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 5 seconds.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **BATTERY SWITCH**

The chassis ignition key shall activate a heavy-duty relay to provide 12 volt battery power to the vehicle. There shall be a green "BATTERY ON" pilot light that is visible from the driver's position.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **BATTERY SOLENOID**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **BATTERY CONDITIONER**

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **SHORE POWER INLET**

One (1) Kussmaul 120 VAC, 20-amp Super Auto-Eject shore power inlet(s) shall be provided. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged.

The protective ground from the shoreline inlet shall be bonded to the vehicle frame.

- 1) The outlet cover shall be yellow.
- 2) The shore power plug shall be located near the Driver door area.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **ENGINE COMPARTMENT LIGHT**

There shall be one (1) OnScene Severe Service LED light(s) mounted in the engine compartment with integral switch with a light output of at least 20 candlepower (250 lumens). The engine compartment light(s) shall operate only when the master battery switch is turned "On".

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **CAB HAZARD WARNING LIGHT**

A Truck-Lite red LED flashing light shall be provided and located in the driving compartment and be illuminated automatically whenever the vehicles parking brake is not fully engaged and any of the following conditions exist:

- Any passenger or equipment compartment door is not closed.
- Any ladder or equipment rack is not in the stowed position.
- Stabilizer system is not in its stowed position.
- Powered light tower is not stowed.
- Any other device permanently attached to the apparatus is open, extended, or deployed in a manner that is likely to cause damage to the apparatus if the apparatus is moved.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Compartments and equipment meeting all of the following conditions shall be permitted to be exempt from being wired to the hazard light:

- The volume is less than or equal to 4 ft<sup>3</sup> (0.1 m<sup>3</sup>).
- The compartment has an opening less than or equal to 144 in.<sup>2</sup> (92,900 mm<sup>2</sup>).
- The open door does not extend sideways beyond the mirrors or up above the top of the fire apparatus.
- All equipment in the compartment is restrained so that nothing can fall out if the door is open while the apparatus is moving.
- Manually raised pole lights with an extension of less than 5 ft (1.5 m).

The hazard light shall be labeled "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

An audible alarm shall be provided for the door ajar light.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **BACK-UP ALARM**

The body manufacturer shall furnish and install one (1) 107 dB(A) electronic back-up alarm. Back-up alarm to actuate automatically when the transmission gear selector is placed in reverse.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **REAR VIEW CAMERA**

There shall be one (1) ASA Voyager rear observation camera system provided and installed on completed unit. The system shall include one (1) model VCC150 high resolution CCD color camera installed on the rear body.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **SEON GUARDIAN SYSTEM WITH 5-CHANNEL DVR**

An FRC, powered by SEON, model SNA050-A00 InView 360 Trooper TL-HD5 5-CHANNEL DVR shall record up to (4) four video channels plus (1) one high-definition channel at 30 FPS (frames per second) on all channels simultaneously. The video resolution shall be 720 x 480 D1 on (4) four channels and 1280 x 720 HD progressive scan on the high definition channel. The DVR shall feature dual streaming technology that records (2) two information streams: (1) one for hi-resolution playback and (1) one for low resolution. It shall also feature a low frame streaming rate for real-time viewing over cellular networks, if equipped with optional hardware, and VMax Stream software service support. It shall support frame advance, FFD (fast-forward) and REV (Reverse) playback up to 32X. It shall support geo-fencing capability, which delivers alerts when a vehicle deviates from geographic boundary. The DVR shall include GPS receiver for recording of vehicle speed and location.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The DVR shall feature 500GB of main storage (HDD), and 32 GB of back up storage on SD card. It shall offer 3 Ethernet ports. The DVR shall have Smart-Temp technology providing automatic monitoring of DVR operational temperature and DVR control. It shall have Smart-Start technology to ensure the DVR is safeguarded against electrical spikes with vehicle start-up voltage protection. The DVR shall include a built-in 3-axis G-sensor. It shall operate from 8 to 32 VDC, shall have transient protection for 600 W for power input, and shall have 400W per signal input. The DVR shall measure 2.5”H x 7” W x 9.5” D. It shall weigh 5.3 lbs. The DVR shall operate from -22° F to 122° F and shall meet FCC emissions requirements. It shall be tested in accordance with SAE-1455 and MIL-STD 810 for vibration.

Shall include:

- Four (4) CA 650TVL – Standard Definition Cameras (Included with 360 system)
- Four (4) CHWA – High Definition Cameras (Included with Guardian system)

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **TAIL LIGHTS**

Rear body tail lights shall be vertically mounted and located per Federal Motor Vehicle Safety Standards, FMVSS and Canadian Motor Vehicle Safety Standards CMVSS. The following lights shall be furnished;

- Two (2) Whelen M6 Series M6T amber LED turn lights
- Two (2) Whelen M6 Series M6BTT red LED stop/tail lights

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- Two (2) Whelen M6 Series M6BUW clear LED back-up lights with clear lens

Each light above shall be mounted in an M6FC chrome finish bezel.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **MIDSHIP MARKER/TURN SIGNAL**

Two (2) Whelen model T0A00MAR 2" round amber LED midship body clearance marker/turn signal lights shall be provided and installed, one (1) light on each side of the body, in forward wheel well of rear axle. Midship marker/turn lights shall be wired to the headlight circuit of the chassis.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **MARKER LIGHTS**

The body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) and Canadian Motor Vehicle Safety Standards (CMVSS) regulations. All body clearance lights shall be Truck-Lite Model 18 LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **CAB STEP LIGHTS / GROUND LIGHTS**

There shall be two (2) OnScene 8" Access LED light(s) installed on the vehicle capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

Lighting designed to provide illumination on areas under the driver and crew riding area exits shall be switchable but activated automatically when the exit doors are opened.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **LICENSE PLATE LIGHT**

One (1) Arrow #437 chrome plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ELECTRONIC SIREN**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

One (1) Whelen model 295HFSC9 electronic siren control with 200-watt output, dual full function, park kill, with removable microphone shall be provided and installed in cab within easy reach of Driver. Siren power shall be wired through the master warning light switch.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **SIREN SPEAKERS**

Two (2) Whelen model SA314A 100-watt aluminum, 6.4" x 6.1" x 3.1" deep siren speakers shall be provided and located behind grille or front bumper with natural aluminum finish, one (1) on street side, and one (1) on curb side. The solid-state siren speaker shall be vibration resistant. The SA314A shall comply with California Title XIII, Class A, and SAE J1849 requirements and with OSHA 1910.95 Guidelines regarding "Permissible Noise Exposure". All mounting hardware shall be stainless steel and covered by a two-year factory warranty.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **SIDE LED SCENE LIGHTS**

There shall be two (2) Whelen Pioneer Plus model PFP2 with dual Panel Super LED lights on the upper body sides. Light quantity shall be divided equally per side. Lights shall be 12 VDC, 12-amp, 168 watt, with 16,000 useable lumens.

**Does your bid comply with this requirement? Yes ( ) No ( )**

Each light shall be mounted in PBA203 mounting bracket, semi recessed into the apparatus body with chrome trim ring housing. The light mounts will provide either a straight out, 0 degree or a 15-degree downward angle.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REAR LED SCENE LIGHTS**

Two (2) Whelen M9 Series Model M9LZC, 9" x 7" surface mounted scene light(s) shall be provided on the upper rear body to light the work area. The M9LZC configuration shall consist of 24 clear Super-LEDs and a clear gradien optic polycarbonate lens with chrome flange. The M9LZC series light shall have 6,500 useable lumens each. The scene light is covered by a five-year factory warranty

**Does your bid comply with this requirement? Yes ( ) No ( )**

The above scene lights shall light to a level of at least 3 fc (30 lx), measured at 25 equally spaced points on a 2.5 ft (750 mm) grid with in a 10 ft x 10 ft (3 m x 3m) square to the rear of vehicle.

The lights shall be controlled at the multiplex display(s) in the cab.

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **TRAFFIC ADVISOR LIGHTS**

Traffic advisor lights shall be comprised of six (6) Whelen 500 series amber TIR6 Super LED lights with clear lens. Lights shall be individually mounted with chrome bezels to the rear face of the vehicle and evenly distributed, if split by a hose bed, or walkway.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The lights shall be controlled by the multiplexing system and provide; Left Arrow, Right Arrow, Center Out, and Wig-Wag patterns. The wig-wag light pattern shall be activated with the E-Master and can be switched to the other patterns at any time through the "TRAFFIC ADVISOR" menu on the Multiplex display.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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 (4) 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 (4) 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 (2) separate signaling modes during emergency operations. One (1) mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One (1) 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



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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 (2) 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.

Steadily burning, non-flashing optical sources shall be permitted to be used.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## ZONE A - FRONT WARNING LIGHTS

There shall be five (5) Whelen M9\*C series warning lights permanently mounted to the upper front exterior wall of the body.

The staggered light configuration (streetside to curbside) shall be:

<u>SECTION</u>	<u>INTERNAL COMPONENTS</u>	<u>LENS COLOR</u>
1	Whelen M9 Red/Clear	Clear
2	Whelen M9 Blue/Red	Clear
3	Whelen M9 Red/Red	Clear
4	Whelen M9 Blue/Red	Clear
5	Whelen M9 Red/Clear	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(s) shall be separately controlled at multiplex display in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## GTT OPTICOM

A GTT Opticom model 795H Infrared LED emitter light with built-in power supply shall be provided inside the specified light bar. Adding the Opticom LED may re-configure the standard light(s) in specified light bar. The LED technology uses less power, has a longer life, and non-visible to the human eye.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

The Opticom emitter light shall be activated with light bar and de-activated when the park brake is set and the vehicle is in blocking mode.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ZONES B AND D - SIDE WARNING LIGHTS**

### **UPPER REAR CORNER WARNING LIGHTS**

There shall be two (2) Whelen M9 series Red Linear Super-LED lights (M9RC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **UPPER FORWARD CORNER WARNING LIGHTS**

There shall be two (2) Whelen M9 series Red Linear Super-LED lights (M9RC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ZONE C - REAR WARNING LIGHTS**

There shall be two (2) Whelen M9 series Red Linear Super-LED lights (M9RC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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 1600 mm) above level ground.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ZONE A - FRONT WARNING LIGHTS**

There shall be two (2) Whelen M4 series Red Linear Super-LED lights (M4RC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

There shall be two (2) Whelen M4 series Red Linear Super-LED lights (M4RC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

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

There shall be two (2) Whelen M6 series Red Linear Super-LED lights (M6RC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)**

There shall be two (2) Whelen M6 series Red Linear Super-LED lights (M6RC) provided, one (1) each side. Each light shall have a clear lens and chrome flange.

The lights shall be controlled at the multiplex display(s) in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## LINE VOLTAGE ELECTRICAL SYSTEM

### ONAN PTO GENERATOR

The vehicle shall be equipped with an Onan Protec PTO generator system with a capacity of 20,000 watts at 120/208 VAC, three phase. Current frequency shall be stable at 60 hertz.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The transmission's PTO port and PTO, or the split shaft PTO, and all associated drive shaft components shall be rated to support the continuous duty torque requirements of the generator's continuous duty rating as stated on the power source nameplate.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO, the driving compartment speedometer shall register when the generator drive system is engaged.

Where the generator is driven by the chassis engine and transmission through a split shaft PTO and a chassis transmission retarder is furnished, it shall be automatically disengaged for generator operations.

The direct drive generator shall be mounted so that it does not change the ramp break-over angle, angle of departure, or angle of approach as defined by other components, and it shall not extend into the ground clearance area.

The direct drive generator shall be mounted away from exhaust and muffler areas or provided with a heat shield to reduce operating temperatures in the generator area.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### GENERATOR BONDING

A minimum of four (4) 16" x 2-gauge copper ground straps shall be bolted to body sub-frame and chassis sub-frame for proper bonding of high voltage system. The conductor shall have a minimum amperage rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated amperage on the power source specification label.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### GENERATOR ENGAGEMENT

A "Generator Engaged" indicator shall be provided in the driving compartment to indicate that the generator shift has been successfully completed.

An "OK to Operate Generator" indicator shall be provided in the driving compartment to indicate that the generator is engaged (if not always engaged), the transmission is in the proper gear (if required, automatic transmissions only), and the parking brake is engaged (if applicable).

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

An interlock system shall be provided to prevent advancement of the engine speed in the driving compartment or at any operator's panel unless the parking brake is engaged, and the transmission is in neutral or the output of the transmission is correctly connected to a pump or generator instead of the drive wheels.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

## **WARRANTY PERIOD**

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the Protec YDCR series PTO generators shall be free from defects in material and workmanship for a period of five (5) years or one thousand (1,000) hours, whichever comes first, from the date of delivery to the first purchaser.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **GENERATOR SPLASH GUARD**

A powder coat painted splash cover shall be installed to reduce the amount of road spray on the frame mounted PTO generator. A V-ring seal shall also be installed in the cover to provide additional protection against contaminants reaching the generator front seals.

**Does your bid comply with this requirement? Yes ( ) No ( )**

The generator shall be engaged at the driver's multiplex display in the cab.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **GENERATOR MOUNTING**

The generator shall be mounted between the chassis frame rails. The generator mounting brackets shall be fabricated using heavy duty steel tubing, or structural channel. The generator mounting shall be bolted and removable so that the generator can be lowered from under apparatus for service, if necessary. The generator case shall not extend below the bottom edge of the apparatus body.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **POWER-TAKE-OFF GENERATOR DRIVE**

There shall be a "Hot Shift" power-take-off (PTO) installed on the transmission PTO opening of the chassis. The "Hot Shift" PTO is provided to allow the engagement of the PTO at higher engine RPM speeds. The PTO output shall be connected to the generator through hollow tube type driveline with heavy duty universals.

**Does your bid comply with this requirement? Yes ( ) No ( )**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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 or via the V-Mux screen if so equipped.

The power supply to the PTO engagement control shall be wired to the parking brake and a neutral position transmission switch to prevent engagement unless the vehicle is stopped and transmission has been placed in neutral.

The installation of the engine, transmission, driven accessories (power takeoffs (PTO), etc.) shall meet the engine and transmission manufacturers' installation recommendations for the service intended.

Model part number shall be Chelsea 249 series.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **ENGINE SPEED CONTROL**

An engine speed auxiliary control device (high idle switch or throttle) shall be installed to maintain a stable cycle output from generator when the apparatus is parked.

An interlock shall prevent the operation of the engine speed auxiliary control device unless the parking brake is engaged and the transmission is in neutral or park, or the parking brake is engaged and the engine is disengaged from the drive wheels.

The engine shall be prevented from regulating its own engine speed during times when engine rpm control is critical for consistent apparatus functions such as generator, water pump, or aerial operation.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **LOADCENTER**

The load center shall be an Eaton BR Series specifically designed for protection and distribution of AC line voltage such as lighting and small motor branch circuits. The load center enclosure is made of 16-gauge galvanized sheet steel with a galvanized coating provided for corrosion protection. All trims used on BR load centers are chromate sealed and finished with an electro-disposition epoxy paint (ANSI-61) which exceeds requirements for outdoor and indoor applications. A combination surface/flush cover with integral door is supplied with indoor load centers rated from 100 through 400 amperes. All plug-in load centers are CSA listed to file LL98266. CSA Certified to C22.2 No.29, to load center type and CSA listing.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **GENERATOR MONITORING PANEL**

A Crompton Instruments Integra Ci3 digital meter package shall be provided to properly monitor the generator performance and load demand during operation. The electrical parameters can be viewed on a backlit LCD screen. The 15 screens are accessible via four buttons on the front panel allowing the user to scroll between various screens. The following shall be displayed full-time;

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- Generator frequency in hertz
- Line voltage, phase to neutral or phase to phase, in volts
- Line current in amperes
- Generator voltage in volts

In addition, an elapsed generator hours gauge shall be provided near the digital meter.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **SHORE POWER INLET - BATTERY CHARGER**

The above-mentioned shore power inlet, and battery conditioner shall be specified in the 12 volt section.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **LINE VOLTAGE ELECTRICAL SYSTEM**

### **GENERAL REQUIREMENTS**

#### **Stability**

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz,  $\pm 3$  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  $\pm 10$  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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### **Location Ratings**



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Grounding**

Grounding shall be in accordance with 250.34(A) and 250.34(B) of *NFPA 70*. Ungrounded systems shall not be used.

Only stranded or braided copper conductors shall be used for grounding and bonding.

The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts.

The neutral conductor shall be colored white or gray in accordance with 200.6, "Means of Identifying Grounded Conductors," of *NFPA 70*.

Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Bonding**

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum amperage rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated amperage 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Ground Fault Circuit Interrupters**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Instrumentation**

If the power source is rated at less than 3 kW, a "Power On" indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided.

If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator's panel:

- Voltmeter
- Current meters for each ungrounded leg
- Frequency (Hz) meter
- Power source hour meter

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Power Supply Assembly**

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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).

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Over-current Protection**

Manually re-settable over current devices shall be installed to protect the line voltage electrical system components.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Power Source Protection**

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.

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

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Branch Circuit Over-Current Protection**

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, "Protection of Conductors," of *NFPA 70*.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **Panelboards**

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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

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

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## 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.

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

## **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.

Does your bid comply with this requirement? Yes ( ) No ( )

## **Wiring Identification**

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

Does your bid comply with this requirement? Yes ( ) No ( )

## **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

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

### Wiring Schematics

An "As-Built" Wiring diagrams for line voltage systems shall be provided to include the following information;

- Pictorial representations of circuit logic for all electrical components and wiring
- Circuit identification
- Connector pin identification

# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

- Zone location of electrical components
- Safety interlocks
- Alternator–battery power distribution circuits
- Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **EQUIPMENT PAYLOAD WEIGHT ALLOWANCE**

In compliance with NFPA 1901 standards, the special service vehicle shall be designed for an equipment loading allowance per NFPA 1901.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **EQUIPMENT**

The following equipment shall be furnished with the completed special service vehicle;

- (a) 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.

**Does your bid comply with this requirement? Yes ( ) No ( )**

- (b) There shall be two (2) Zico SAC-44-E NFPA approved folding aluminum wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.

- The wheel chock(s) shall be mounted behind rear wheels, below body on street side.

**Does your bid comply with this requirement? Yes ( ) No ( )**

- (c) Two (2) Streamlight FireBox halogen flashlight(s) with shoulder strap shall be provided. Each flashlight shall be orange in color and have a 12-volt DC charger and vehicle mount kit. Each flashlight shall have an 8-watt, 150 lumen halogen spotlight style bulb and reflector with 2 ultra-bright LED taillights. The flashlight(s) shall be wired to battery direct unless otherwise specified by King County Fire District #20.

- The flashlight(s) shall be mounted on the completed unit in the lower area of compartment S1.

**Does your bid comply with this requirement? Yes ( ) No ( )**

## **REMAINING NFPA MINOR EQUIPMENT BY PURCHASER**

All other minor equipment not specified above, but required by NFPA 1901 for special service vehicles, section 10.9.3 shall be supplied and mounted by King County Fire District #20 before the unit is placed in emergency service.



# KING CO FPD #20-AIR/REHAB SPECIFICATIONS

Does your bid comply with this requirement? Yes ( ) No ( )

**END OF SPECIFICATION**