

BID NUMBER PA-02660 REBID2  
TO: CITY OF LONG BEACH  
CITY MANAGER  
ATTN: CITY CLERK  
333 West Ocean Boulevard, Plaza Level  
Long Beach, California 90802



**INVITATION TO BID**  
Saxle LNG DUMP TRUCKS

CONTRACT NO. 29817

- 1. COMPLETE CONTRACT:**  
This Invitation to Bid, together with THE NOTICE INVITING BIDS, the entire Bid (including Specifications), or any items(s) thereof, the signature page, Instructions to Bidders, General Conditions, Special Conditions, Bid Section, Addendums, and when required, CONTRACTOR'S BOND shall become the Contract upon its acceptance by the City Manager or designee on behalf of the City of Long Beach, Contractor will be provided with a copy of the executed Contract. All materials or services provided by the Contractor shall comply with the City Charter, and all applicable Federal, State and City Laws.
- 2. SERVICES TO BE PROVIDED BY THE CONTRACTOR:**  
Contractor shall upon acceptance of this bid by the City, furnish the goods and services herein specified according to the terms and conditions set forth herein.
- 3. AMOUNT TO BE PAID:**  
The City shall pay Contractor for the goods or services as described in the section entitled "PAYMENT" in the Instructions to Bidders.
- 4. CHOICE OF ALTERNATE PROVISIONS; OPTIONS; NOTIFICATION:**  
When alternative provisions are requested, or options are offered, Contractor will be notified as to which provision, or option, is being accepted at the same time that he is notified that he is the successful Bidder.
- 5. DECLARATION OF NON-COLLUSION:**  
The undersigned certifies or declares under penalty of perjury that this bid is genuine and not sham or collusive, or made in the interest or on behalf of any person or entity not herein named; that the Bidder has not directly or indirectly induced or solicited any other Bidder to submit a sham bid, or any other person or entity to refrain from bidding, and that the Bidder has not in any manner sought by collusion to secure to himself any advantage over other Bidders.

**BIDDER MUST COMPLETE AND SIGN BELOW:**  
(Signature of Corporate Officers or persons authorized to sign bids and contracts on behalf of the Contractor – refer to page 2 Instructions Concerning Signatures.)

EXECUTED AT: Whittier CA ON THE 25th DAY OF July, 2006  
CITY STATE MONTH

COMPANY NAME: Peck Road Truck Center TIN: [REDACTED]  
(FEDERAL TAX IDENTIFICATION NUMBER)

STREET ADDRESS: 2450 Kella Ave. CITY: Whittier STATE: CA ZIP: 90601

PHONE: 562-692-7267 FAX: 562-692-0664

S/ [Signature] Owner  
(SIGNATURE) (TITLE)

Art Fraser ArtFraser@PeckRoad.com  
(PRINT NAME) (EMAIL ADDRESS)

S/ [Signature] General Manager  
(SIGNATURE) (TITLE)

Jeff Jennings JeffJennings@PeckRoad.com  
(PRINT NAME) (EMAIL ADDRESS)

**ALL SIGNATURES MUST BE NOTARIZED FOR ALL COMPANIES LOCATED OUTSIDE THE STATE OF CALIFORNIA.  
NO OUT-OF-STATE BID WILL BE CONSIDERED UNLESS A NOTARIAL ACKNOWLEDGMENT IS ATTACHED.  
NOTARIES ARE NOT REQUIRED FOR CALIFORNIA BIDDERS.**

IN WITNESS WHEREOF the City of Long Beach has caused this contract to be executed as required by law as of the date stated below.

THE CITY OF LONG BEACH  
BY [Signature]  
Director of Financial Management

11/27/06  
Date

APPROVED AS TO FORM 11/20, 2006  
ROBERT E. SHANNON  
CITY ATTORNEY  
[Signature]  
Senior Deputy

**BID NUMBER PA-02660 REBID2**

The City of Long Beach is committed to provide maximum opportunities for Disadvantaged, Minority, Women, Long Beach and Other Business Enterprises (DBEs, MBEs, WBEs, LBBEs and OBEs) to compete successfully in supplying our needs for products and services.

The following information is submitted regarding the bidder:

Legal Form of Bidder:  
 Corporation State of CA  
 Partnership State of \_\_\_\_\_  
                    General Limited  
 Joint Venture  
 Individual DBA \_\_\_\_\_  
 Limited Liability Company State of \_\_\_\_\_

Composition of Ownership (more than 51% of ownership of the organization): **OPTIONAL**  
Ethnic (Check one):  
     Black                       Asian                       Other Non-white  
     Hispanic                    American Indian        Caucasian  
Non-ethnic Factors of Ownership (check all that apply):  
     Male                       Yes - Physically Challenged        Under 65  
     Female                    No - Physically Challenged        Over 65  
Is the firm certified as a Disadvantaged Business:       Yes                       No  
Has firm previously been certified as a minority-owned and/or woman-owned business enterprise by any other agency?  
    Yes                       No  
Name of certifying agency: \_\_\_\_\_

**INSTRUCTIONS CONCERNING SIGNATURES**

Please use the proper notary form, which applies to your type of organization on all bid documents, attachments and bonds requiring a signature by officers of your company.

**NOTE: FAILURE TO COMPLY MAY RESULT IN DISQUALIFICATION OF YOUR BID.**

**INDIVIDUAL (Doing Business As)**

- a. The only acceptable signature is the owner of the company. (Only one signature is required.)
- b. The owner's signature must be notarized if the company is located outside of the state of California.

**PARTNERSHIP**

- a. The only acceptable signature(s) is/are that of the general partner or partners.
- b. Signature(s) must be notarized if the partnership is located outside of the state of California.

**CORPORATION**

- a. Two (2) officers of the corporation must sign.
- b. Each signature must be notarized if the corporation is located outside of the state of California.

OR

- a. The signature of one officer or the signature of person other than an officer is acceptable if the bid is accompanied by a certified corporate resolution granting authority to said person to execute contracts on behalf of the corporation.
- b. Signature(s) must be notarized if the corporation is located outside of the state of California.

**LIMITED LIABILITY COMPANY**

- a. The signature on the bid must be a member or, if the Articles provide for a manager, must be the manager. (Only one signature is required.)
- b. Signature must be notarized if the company is located outside of the state of California.

**THIS INFORMATION IS AVAILABLE IN AN ALTERNATIVE FORMAT BY CONTACTING 562-570-6362.**

# CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of \_\_\_\_\_

County of \_\_\_\_\_

On \_\_\_\_\_ Before me, \_\_\_\_\_  
DATE NAME, TITLE OF OFFICER - E.G. "JANE DOE, NOTARY PUBLIC"

Personally appeared \_\_\_\_\_  
NAME(S) OF SIGNER(S)

personally known to me - OR -  proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

**WITNESS** my hand and official seal.

\_\_\_\_\_  
SIGNATURE OF NOTARY

## OPTIONAL

Though the data below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent reattachment of this form.

### CAPACITY CLAIMED BY SIGNER

### DESCRIPTION OF ATTACHED DOCUMENT

- INDIVIDUAL
- CORPORATE OFFICER  
Secretary/Treasurer  
TITLE(S)
- PARTNER(S)  LIMITED  GENERAL
- ATTORNEY-IN-FACT
- TRUSTEE(S)
- GUARDIAN/CONSERVATOR
- OTHER:

"Invitation to Bid"  
TITLE OR TYPE OF DOCUMENT

\_\_\_\_\_  
NUMBER OF PAGES

July 25, 2006  
DATE OF DOCUMENT

**SIGNER IS REPRESENTING:**  
NAME OF PERSON(S) OR ENTITY(IES):  
PeckRoad Truck Center

\_\_\_\_\_  
SIGNER(S) OTHER THAN NAMED ABOVE

## INSTRUCTIONS TO BIDDERS

### 1. PREPARATION OF BID:

The preparation of the bid, including visits to the Site prior to submittal of the bid, shall be at the expense of Bidder. All prices and notations must be typewritten or written in ink. Any markings in pencil shall not form part of the bid and shall be disregarded by the City. Any changes or corrections in the bid must be initialed in ink by the person signing the bid. Bidder shall state brand name or make of each item bid. If not bidding on item as described, the manufacturer's name and catalog number of the substitute must be given. Bidder shall also attach specifications and furnish other data to be given. Bidder shall also attach specifications and furnish other data to establish the suitability of the substitute. Bidder shall quote separately on each item. Bidder shall quote his lowest price and best delivery date as no changes are permitted after the bid opening. Cash discounts offered for payment within 14 days or less will not be considered when evaluating bids. No telephonic, telegraphic or fax bids are acceptable.

**NOTE: ALL PAGES OF THE INVITATION TO BID MUST BE RETURNED.**

### 2. EXAMINATION OF BID:

Bidder is responsible for examining the Invitation to Bid and submitting its bid complete and in conformance with these instructions.

### 3. CONDITIONS OF WORK:

Bidder shall carefully examine the Site to become fully informed regarding all existing and expected conditions and matters, which could affect performance, cost or time of the Work.

### 4. DISCREPANCIES IN BID DOCUMENTS:

If Bidder finds discrepancies in or omissions from the Invitation to Bid, if the intent of the invitation is not clear, or if provisions of the Specifications restrict Bidder from bidding, he may request in writing that the deficiency(s) be modified. Such request must be received by the City Purchasing Agent at least five (5) working days before bid opening date. Bidders will be notified by Addendum of any approved changes in the Invitation to Bid.

### 5. ORAL STATEMENTS:

The City of Long Beach shall not be bound by oral statements made by any employee or agent concerning this Invitation to Bid. If Bidder requires specific information, Bidder must request it in writing and obtain a reply in writing from the City.

### 6. BRAND NAMES AND SPECIFICATIONS:

The detailed specifications and/or brand names stated are descriptive only and indicate quality, design, and construction of items required. Offers will be considered to supply articles substantially the same as those described herein but with minor variations. Bidders must describe variations in the bid. Substitute items must be equal in quality, utility and performance. The phrase "or approved equal" throughout the specifications means that the City in its sole and absolute discretion shall make the final determination whether or not the substitute items are equal.

### 7. AWARD:

Bid shall be subject to acceptance by the City for a period of three (3) months unless a lesser period is prescribed in the quotation by Bidder. The City reserves the right to award all items to one Bidder, or to award separate items or groups of items to various Bidders, or to increase or decrease the quantities of any item. Bidder may submit alternate prices or name a lump sum or discount conditional on two or more items being awarded to him.

City's purchases of goods and services are based on the City's actual needs and requirements. The City is obligated under this contract/purchase order to purchase and pay for only those goods and services that the City needs and requires, and that the City actually orders and receives. Any dollar amount identified as a "not to exceed" amount in any City document is not a guaranteed payment amount to any contractor or service provider. Furthermore, the City may determine that its needs and requirements may be met by City labor or by a second contractor or service provider, even after an award is made to one contractor or service provider. An award is not a promise or guarantee of exclusivity.

Bidders are cautioned that comments and statements, whether oral or written, made by City employees regarding the validity of bids, the waiver of deviations from Specifications, the possibility or probability of an award being made to a particular bidder, and other similar matters are NOT binding on the City. Bidders should not order materials, obtain financing or take other actions based on such comments and statements. Only authorization of a contract by the City Council or issuance of a Purchase Order is conclusive and binding on the City with respect to this bid and its resulting contract or Purchase Order. However, prior to authorization by the City Council or issuance of the Purchase Order, bidders may rely on: (1) approval of an "equal" or "substitute" item which will be issued in writing, and (2) written notice of intent to award by the City Council, which is often issued prior to the authorization by the City Council so that a bidder can order materials that have a long lead time.

### 8. PAYMENT:

Payment terms are NET/30 unless Bidder otherwise quotes. All Cash Discounts shall be taken and computed from the date of delivery or completion and acceptance of the material, or from date of receipt of invoice, whichever occurs last. Invoices must be submitted as specified at the time of shipping authorization. Partial payments may be made by the City on delivery & acceptance of goods and on receipt of goods and on receipt of Contractor's invoice.

In the event the Contract to be awarded hereunder, including specifications and other documents incorporated therein by reference, provides for the withholding of moneys by the City to ensure performance of such Contract, Contractor may deposit with the City, as a substitute for said withheld moneys, securities listed in Section 16430 of the California Government Code or bank or savings and loan certificates of deposit, or both, equivalent to the amount withheld, provided Contractor requests permission to make such substitution and bears all expenses in connection therewith.

### 9. SAFETY APPROVAL:

Where required by City Regulations, any items delivered must carry Underwriters Laboratories Approval or City of Long Beach City Safety Officer approval. Failure to so comply will be cause to reject Bid. Also, any equipment must conform with the Safety Orders of the California Division of Industrial Safety and OSHA regulations.

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**INSTRUCTIONS TO BIDDERS**

**10. PUBLIC WORK AND PREVAILING WAGES:**

In the performance of public work under any Contract, the Contractor shall comply with provisions of Standard Specifications for Public Works Construction, latest edition, and City of Long Beach Amendments thereto. Where labor is required for public work as part of this Contract, Contractor shall pay no less than the prevailing wages set by the Director of the Department of Industrial Relations of the State of California. Copy of wage schedule can be obtained from the City Engineer.

The Director of Public Works of the City by and on behalf of the City Council has obtained from the Director of the Department of Industrial Relations of the State of California the general prevailing rate of per diem wages, and the general prevailing rate of holiday and overtime work in the locality in which the public work is to be performed for each craft, classifications or type of workers needed to execute the Contract, and the same is on file with the City Engineer, 9<sup>th</sup> floor, City Hall, 333 W. Ocean Boulevard, Long Beach, California 90802. It shall be mandatory upon the Contractor to whom the Contract is awarded, and his Subcontractors to pay not less than the said prevailing rate of wages to all workers employed by the Contractor or said Subcontractors in the execution of the Contract.

**11. RIGHT TO REJECT:**

City reserves the right to reject at any time any or all bids, or parts thereof, and to waive any variances, technicalities and informalities which do not impair the quality, utility, durability or performance of the items.

**12. SAMPLES:**

Samples of items when requested or required must be furnished to the city free of expense to the City and, if not destroyed by tests, will upon request be returned at Bidder's expense.

**13. PRICES:**

Prices shall be in accordance with those extended to other governmental agencies. In case of error in extension of prices, unit price will govern. All prices must be firm for the Contract term unless the City specifically provides for adjustment.

**14. CITY'S POLICY FOR MINORITY AND WOMEN-OWNED BUSINESSES:**

The City of Long Beach is committed to provide maximum opportunities for Disadvantaged, Minority, Women, Long Beach and Other Business Enterprises (DBEs, MBEs, WBEs, LBEs, and OBEs) to compete successfully in supplying our needs for products and services.

Please visit <http://www.longbeach.gov/diversity> for more information on the City's Diversity Outreach Program.

**SUBCONTRACTORS**

To assist the City in maintaining records of its Minority and Women Outreach Program, Bidder is requested to provide the following information. Answers are optional, and failure to answer will not disqualify bid. If additional space is required, bidder shall attach a separate sheet.

The following Minority- or Woman-owned subcontractors are to be utilized to provide equipment, material, supplies and/or services for this Contract requirement:

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

Commodity/Service Provided: \_\_\_\_\_

Circle appropriate designation: MBE WBE

Ethnic Factors of Ownership: (more than 51%)

Black ( ) American Indian ( )  
Hispanic ( ) Other Non-white ( )  
Asian ( ) Caucasian ( )

Certified by: \_\_\_\_\_

Valid thru: \_\_\_\_\_

Dollar value of participation: \$ \_\_\_\_\_

**15. BID SUBMITTAL AND WITHDRAWAL OF BIDS:**

Each Bid must be delivered to the location and received on or before the due date and time stated herein. Bids will not be accepted after the date and time stated herein. Bids may be withdrawn without prejudice providing the written request is received by the City Clerk no later than the time set for opening bids. Withdrawals will be returned to Bidder unopened. Failure to respond to three (3) Invitations to Bid without reason may constitute cause to remove Bidder's name from the bidding list.

**SUBMIT TO:**

CITY OF LONG BEACH  
**CITY CLERK**  
333 W OCEAN BLVD/PLAZA LEVEL  
LONG BEACH CA 90802

**BID DUE DATE:** August 09, 2006

**TIME:** 11:00 am

IF BIDDER HAS ANY QUESTIONS REGARDING THIS INVITATION TO BID PLEASE CONTACT THE FOLLOWING CITY PERSONNEL.

**A. COMMERCIAL (TERMS AND CONDITIONS, ETC)**

Andre T. Clark 562-570-8020  
BUYER TELEPHONE NUMBER

**B. TECHNICAL (SPECIFICATIONS, DRAWINGS, ETC.)**

John SeEVERS 562-570-5408  
DEPARTMENT CONTACT TELEPHONE NUMBER

**16. BID OPENING PROCEDURES:**

All bids will be publicly opened and read at the date and time specified in Instructions to Bidders, Item 15.

It is our policy not to release price information on these bids until the department has reviewed them and award has been approved by City Council and the City Attorney. At that time, the information becomes public. You are welcome to review the results at that time by calling the buyer that handled that bid and setting up an appointment. Due to the large volume of bids received, bid results will not be given out by phone and information will not be faxed.

After the Purchasing Division has analyzed the bids, the name of the apparent low bidder will be posted on the Internet for a period of one month, together with the rankings of the top three bidders. These rankings will not contain price information.

**CAUTION:** Only the City Council has authority to make an award, and a contract is not in effect until the City Council makes an award and contract documents (including insurance and bonds) are signed, submitted and approved.

Bid protest procedures may be obtained from the Buyer. Protests must be submitted within seven (7) calendar days after the date of the bid opening.

**INSTRUCTIONS TO BIDDERS**

**17. INTER-AGENCY PARTICIPATION:**

IF OTHER AGENCIES EXPRESS AN INTEREST IN PARTICIPATING IN THIS BID, WOULD YOU SUPPLY THE SAME ITEMS.

YES   X   NO       

(If yes, any agency electing to participate in this bid will order its own requirements without regard to the City of Long Beach. The City of Long Beach assumes no liability or payment guarantee on any units sold to participating agencies.)

**18. AMERICANS WITH DISABILITIES ACT:**

Contractor shall have and be allocated the sole responsibility to comply with the Americans with Disabilities Act of 1990 ("ADA") with respect to performance hereunder and contractor shall defend, indemnify and hold the City, its officials and employees harmless from and against any and all claims of failure to comply with or violation of the ADA as said claim relates to this contract.

## **CONTRACT – GENERAL CONDITIONS**

1. Acceptance of the offer contained in this Contract is expressly limited to the terms and conditions of such offer as herein stated.
2. No charges for taxes, transportation, boxing, packaging crating or returnable containers will be allowed and paid by the City unless separately stated hereon. All sales, use excise or similar taxes to be paid by the City must be itemized separately hereon and on invoices. The City is exempt from payment of Federal Excise Tax under Certificate No. 85-73 0502K and none shall be charged to the City.
3. The City's obligation to pay the sum herein stated for any one fiscal year shall be contingent upon the City Council of the City appropriating the necessary funds for such payment by the City in each fiscal year during the term of this Contract. For the purposes of this section a fiscal year commences on October 1 of the year and continues through September 30 of the following year. In the event that the City Council of the City fails to appropriate the necessary funds for any fiscal year, then, and in that event, the Contract will terminate at no additional cost or obligation to the City.
4. Contractor shall deliver the materials, equipment, supplies or services, or cause the work to be performed, within the time and in the manner specified in the Contract. Times and dates stated herein are of the essence. If at any time Contractor has reason to believe that deliveries will not be made as scheduled, written notice setting forth the cause of the anticipated delay shall be given immediately to the City. Deliveries must be prepaid. C.O.D. shipments will not be accepted.
5. The City reserves the right at any time to make changes in drawings and specifications, in methods of shipment and packaging and in place of delivery as to any articles covered by this Contract. In such event there will be made an equitable adjustment in price and time of performance mutually satisfactory to Contractor and the City; but any claim by the Contractor for such an adjustment must be made within thirty days of such change.
6. Contractor warrants that the goods, machinery, or equipment delivered or the work performed hereunder shall conform to the specifications, drawings, samples or other description specified by the City and shall be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, in good working order and free from defect or faulty workmanship for a period of ninety days. When defective goods, machinery, or equipment or faulty workmanship is discovered which requires repair or replacement pursuant to this warranty, Contractor shall provide all labor, materials, parts and equipment to correct such defect at no expense to the City.
7. Contractor shall defend, indemnify and hold the City, its officials and employees harmless from any and all loss, damage, liability, demands, claims, causes of action, costs and expenses (including reasonable attorney fees) for injuries to persons (including death) or damage or destruction of property connected with or arising from the negligent acts or omissions of Contractor, its officers, agents and employees in the performance of this Contract.
8. The City reserves the right to terminate this Contract at any time in whole or in part even though Contractor is not in default hereunder. In such event there will be made an equitable adjustment of the terms that is mutually satisfactory to the City and Contractor. Upon receipt of any notice of such termination, Contractor shall, unless such notice otherwise directs, immediately discontinue all work on the Contract and deliver, if and as directed, to the City all completed and partially completed articles, work in process and materials purchased or acquired for performance of the Contract. The provisions of this section shall not limit or affect the right of the City to terminate this Contract immediately upon written notice of breach.
9. The City reserves the right to cancel this Contract or any part thereof and reject delivery of goods if delivery is not undertaken and completed when specified and in accordance with specifications. Contractor shall be charged for any direct losses, but not any consequential damages, sustained by the City by reason of such delay or failure, excepting losses caused by a delay for reasons beyond Contractor's reasonable control. Direct losses shall include any costs to the city in excess of the Contract price of obtaining goods from other sources similar to those cancelled or rejected hereunder.
10. The City shall pay to Contractor the price(s) specified in the Contract on delivery of the materials, equipment, supplies, or services and acceptance thereof by the City Manager or his designee, or upon completion of the work to be performed and accepted thereof, as specified in the Contract. Defective articles or articles not in accordance with the City's specifications shall be held for Contractor's instructions at Contractor's risk, and if Contractor so directs will be returned at Contractor's expense.
11. No return or exchange of material, equipment or supplies shall be permitted without written approval of the City Purchasing Agent.
12. All royalties for patents, or changes for the use of patents, which may be involved in any article to be furnished under this Contract shall be included in the Contract price.
13. In cases where a price subject to escalation has been agreed upon, the price escalation shall be shown as a separate item on the invoice. Unless an escalator clause has been shown as a specific part of this Contract Contractor shall not be entitled to reimbursement for costs incurred due to escalation.
14. All materials, supplies and equipment provided under this Contract shall be in full compliance with the Safety Orders and Regulations of the Division of Industrial Safety of the State of California, Title 8, California Code of Regulations (CAL/OSHA) and all applicable OSHA regulations as well as all other applicable California Code of Regulations. Contractor shall indemnify and hold the City, its officials, and employees harmless for, of and from any loss, including but not limited to fines, penalties and corrective



## CONTRACT – GENERAL CONDITIONS

measures, the City may sustain by reason of Contractor's failure to comply with said laws, rules and regulations in connection with the performance of this Contract.

15. Contractor shall keep confidential and not disclose to others or use in any way to the detriment of the City confidential business or technical information that the City may disclose in conjunction with this Contract or Contractor may learn as a result of performing this Contract.
16. This Contract shall not be assigned in whole or in part, nor any duties delegated without the City's prior written approval.
17. The remedies herein reserved shall be cumulative and additional to any other remedies at law or in equity. The waiver of any breach of this Contract shall not be held to be a waiver of any other or subsequent breach. The City's failure to object to provisions contained in any communication from Contractor shall not be deemed an acceptance of such provisions or a waiver of the provisions of this Contract.
18. This Contract shall not be amended or modified, except by written agreement signed by the parties and expressly referring to this Contract.
19. Contractor shall indemnify, hold harmless and defend the City, its officials and employees from any damage, claim, loss, cost, liability, cause of action, or expense, including reasonable attorney's fees, whether or not reduced to judgment, arising from any infringement or claimed infringement of any patent, trademark or copyright, or misappropriation of confidential information or trade secrets of any third party and based on the manufacture, sale or use of goods, machinery, or equipment supplied hereunder.
20. Contractor shall furnish further itemization and breakdown of the Contract price when requested by the City.
21. Contractor, in the performance of any work or the furnishing of any labor under this Contract, shall be considered as an independent contractor. Contractor, his agents and employees shall not be considered as employees of the City.
22. Contractor and subcontractor(s) shall not discriminate against any person in the performance of this Contract and shall comply with applicable federal, state and city equal employment opportunity laws, ordinances, rules and regulations. Contractor and subcontractor(s) shall not discriminate against any employee or applicant for employment or against any subcontractor on the basis of race, color, religion, national origin, sex, sexual orientation, AIDS, HIV status, age, disability, or handicap, subject to federal and state laws, rules and regulations.
23. Contractor shall comply with all applicable federal, state and local laws pertaining to the subject matter hereof.
24. Contractor shall submit samples of all documents that Contractor may require City to execute to complete this transaction. By accepting these samples as part of the bid or by awarding the contract to a Contractor who has submitted said samples, the City does not agree to the terms stated in said samples. This invitation to Bid and Contractor's bid shall take priority over said samples and this invitation and Contractor's bid shall become the contract between the City and the Contractor.
25. All quantities stated herein are only ESTIMATES. The City reserves the right to increase or decrease these estimated quantities based on its actual needs and funds available.
26. The City reserves the right to exercise, at its option, an increase in expenditures by ten (10) percent annually, but the City does not guarantee such an increase.
27. Contractor shall cooperate with the City in all matters relating to taxation and the collection of taxes, particularly with respect to the self-accrual of use tax. Contractor shall cooperate as follows: (i) for all leases and purchases of materials, equipment, supplies, or other tangible personal property totaling over \$100,000 shipped from outside California, a qualified Contractor shall complete and submit to the appropriate governmental entity the form in Appendix "A" attached hereto; and (ii) for construction contracts and subcontracts totaling \$5,000,000 or more, Contractor shall obtain a sub-permit from the California Board of Equalization for the Work site. "Qualified" means that the Contractor purchased at least \$500,000 in tangible personal property that was subject to sales or use tax in the previous calendar year.

In completing the form and obtaining the permit(s), Contractor shall use the address of the Work site as its business address and may use any address for its mailing address. Copies of the form and permit(s) shall also be delivered to the Purchasing Agent. The form must be submitted and the permit(s) obtained as soon as Contractor receives a notice of award. Contractor shall not order any materials or equipment over \$100,000 from vendors outside California until the form is submitted and the permit(s) obtained and, if Contractor does so, it shall be a material breach of the Agreement. In addition, Contractor shall make all purchases from its Long Beach sales office and the Long Beach sales office of its vendors if those vendors have a Long Beach office and all purchases made by Contractor under this Agreement which are subject to use tax of \$500,000 or more shall be allocated to the City of Long Beach. Contractor shall require the same form and permit(s) from its subcontractors.

Contractor shall not be entitled to and by signing this Contract waives any claim or damages for delay against City if Contractor does not timely submit these forms to the appropriate governmental entity. Contractor may contact Eugene Fong at 562-570-5023 for assistance with the form.

## CONTRACT - GENERAL CONDITIONS

28. The California Integrated Waste Management Act (Public Resources Code, Sec. 40000 et seq.) requires governmental entities to achieve 50% diversion of waste. In conjunction with the City's Integrated Resources Bureau, the City is currently developing an Environmentally Preferable Product (EPP) procurement plan. These guidelines enable the City Purchasing Agent to greatly expand procurement programs by moving beyond a singular consideration of "recycled-content". EPP procurement facilitates the purchase of products that qualify within a broad range of "environmentally preferable" criteria, such as: minimal packaging; energy savings; non-toxic; manufactured from sustainably-harvested materials. Contractor shall monitor products that fall within the EPP guidelines and document all criteria that qualifies the product as an EPP. Documentation from the manufacturer will be acceptable and may be required during the term of the Contract.

29. THE FOLLOWING ADDITIONAL CONDITIONS APPLY ONLY IN CASES WHERE THE CONTRACTOR IS TO PERFORM WORK ON CITY PROPERTY:

- A. If at any time during the progress of the Work, Contractor shall allow any indebtedness to accrue for labor, equipment, or materials, or which may become a claim against the City, Contractor shall immediately upon request from the City pay such claim or indebtedness or cause such lien to be dissolved and discharged by giving a bond or otherwise and, in case of his failure so to do, the City may withhold any money due Contractor until such claim or indebtedness is paid or may apply such money toward the discharge thereof; or in such event the City may, at its option, declare this Contract to be terminated, take possession and control of the Work, and complete the same or cause the same to be completed according to the specifications. Contractor shall pay to City the difference between the Contract price and the actual cost to the City in completing or causing the Work to be completed.
- B. Contractor shall carry on the Work at his own risk until the same is fully completed and accepted and shall, in case of any accident, destruction or injury to the Work or materials before its final completion and acceptance, repair or replace the Work or materials so injured, damaged and destroyed, at his own expense and to the satisfaction of the City. When materials and equipment are furnished by others for installation or erection by Contractor, Contractor shall receive, unload, store and handle same at Site and become responsible therefore as though such materials and equipment were being furnished by Contractor under the Contract.
- C. Contractor shall procure and maintain at Contractor's expense for the duration of the Contract the following insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the Contract by Contractor, his agents, representatives, employees or subcontractors:

- (1) Comprehensive General Liability: \$1,000,000 combined single limit for each occurrence or \$2,000,000 General Aggregate for bodily injury, personal injury and property damage, including products and completed operations coverage.

The City, its officials, employees and agents shall be named as additional insured's as respects: liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of Contractor; premises owned, leased or used by Contractor.

- (2) Automobile Liability: \$500,000 combined single limit per accident for bodily injury and property damage covering owned, non-owned and hired vehicles.
- (3) Workers' Compensation as required by the California Labor Code and employers Liability limits of \$1,000,000 per accident.

Any self-insurance program and self-insured retention must be separately approved in writing by the City.

Each insurance policy shall be endorsed to state that coverage shall not be cancelled by either party or reduced in coverage except after thirty (30) days prior written notice to the City.

Acceptable insurance coverage shall be placed with carriers admitted to write insurance in California or carriers with a rating of or equivalent to A: VIII by A. M. Best & Company. Any deviations from this rule shall require written approval from the City's Purchasing Agent.

All coverage's for subcontractors shall be subject to the requirements stated herein and shall be maintained at no expense to the City.

Contractor shall furnish the City with certificates of insurance and original endorsements providing coverage as required above. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.

Before any of Contractor's or Subcontractor's employees shall do any work on City's property, Contractor shall furnish the City with the required certificates evidencing that such insurance is being maintained. Such certificates shall specify the date when such insurance expires. Such insurance shall be maintained until after the Work under the Contract has been completed and accepted.

**CONTRACT - GENERAL CONDITIONS**

Such insurance as required herein or in any other documents to be considered a part hereof shall not be deemed to limit the Contractor's liability under this contract.

- D. Contractor shall defend, indemnify and hold harmless the City, its officials and employees from and against any liability for claims for bodily injury and property damage arising out of negligent acts, omissions or errors of any employee of the Contractor at the Site.
- E. Contractor shall list the name and location of the place of business of each subcontractor who will perform work, labor, or services for Contractor, or who specially fabricates and installs a portion of the work or improvement in an amount in excess of one-half of one percent of Contractor's total contract cost. The subcontractor list shall be submitted with contractor's bid.

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p><b>Instructions:</b></p> <p>State comments and or exceptions in the blank spaces provided for each section regarding the vehicle or equipment offered corresponding to the specifications set forth. FAILURE TO COMPLETE ALL BLANK SPACES SHALL OTHERWISE BE DETERMINED AS VENDOR MEETING SPECIFICATIONS MINIMUMS.</p>			
<p><b>General:</b></p> <p>It is the intent of the following specifications to describe a new Three Axle dump truck:</p> <ul style="list-style-type: none"> <li>➤ The body, finish and fittings shall be the latest model, shall not have been used in demonstrator or other service, and shall be <u>factory standard</u> in all respects not in conflict with the following specific requirements. All work and material furnished shall be subject to the approval of the Fleet Services Bureau.</li> <li>➤ These specifications indicate minimum requirements for the needs of the City of Long Beach as concerns this equipment. However, it shall in all respects meet standards and safety requirements established for equipment of this type by the appropriate State and Federal Agencies.</li> <li>➤ Evidence of compliance with requirements of these specifications shall be based on manufacturer's data sheets applicable to this equipment. Such data sheets shall be included with and made a part of this bid.</li> <li>➤ Bidders shall state the time required for delivery, and bids shall include delivery to the City of Long Beach at 2600 Temple Ave., Long Beach Ca. 90806-2209.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>		
<p><b>Brand Names:</b></p> <p>Whenever in the specifications any material or process is indicated or specified by patent or proprietary name and/or by name of manufacturer, such specifications shall be used for the purpose of facilitating descriptions of the material and/or process desired and shall be deemed to be followed by the words "or approved equal".</p> <p>The Contractor may offer any material or process which shall be equal in every respect to that so indicated or specified, provided however, that if the material, process or article offered by the Contractor is not, in the opinion of the City of Long Beach, equal in every respect to that specified, then the Contractor must furnish the material, process or article specified or one that in the opinion of the City of Long Beach is the</p>			

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p>equal thereof in every respect.</p> <p>If bidder desires to bid an "approved equal" item, the bidder shall submit a request to do so to the City in writing no later than seven working days before bid opening. The request shall include all data necessary to substantiate that the item is equal. The City will notify the bidder, in writing, of approval or disapproval of the equal item no later than three working days before bid opening.</p>			
<p><b>Conditions:</b></p> <ul style="list-style-type: none"> <li>➤ All steel and aluminum materials used in vehicle construction shall be finished with a two-part epoxy polyamide processes to prolong the resistance of the vehicle assembly and attached components to corrosion. ✓</li> <li>➤ The design of the complete unit shall embody the latest approved automotive engineering practices and the workmanship must be of the highest quality in its respective field. The Contractor shall be responsible for the integrity of the completed unit. The unit shall be completely equipped as specified and be ready for immediate service upon delivery. ✓</li> <li>➤ The unit shall comply with the latest editions of the California Vehicle Code, California Code of Regulations, SAE Standards, Federal Motor Vehicle Safety Standards, DOT Standards, provisions of Cal/OSH0A, and ANSI Z245.1 Safety Standards. The omission from the specifications of any standard feature as shown in the manufacturer's brochure shall not alleviate the Contractor from the responsibility of furnishing a dump body truck with all of the manufacturer's latest improvements in current production unless specifically deleted in the specifications. The complete unit(s) and all components shall be standard production items unless otherwise specified. ✓</li> </ul>			<p>See Attached "Engineering Standard"</p>

**DETAILED SPECIFICATIONS**

**LNG, THREE AXLE DUMP TRUCK**

Description	Comply		Comments and Exceptions
	Yes	No	
<p>2007 Model Year dump truck with a cabover cab, three-axle with a 16-foot body. Set back front axle, left-hand drive only, with dump type body attached to the truck frame.</p>	✓		
<p><b>Certified GVWR:</b> Shall be at least 56,000 pounds.</p>	✓		
<p><b>Wheelbase:</b> Shall not exceed 212 to 233 inches. Must encompass all California State Laws.</p>	✓		
<p><b>Vehicle Lengths:</b></p> <ul style="list-style-type: none"> <li>➤ Overall length of complete truck shall not exceed 340" inches. ✓</li> <li>➤ Cab / Axle: Shall be between 100 and 148 inches useable ✓</li> <li>➤ Bumper to Back of Cab: Shall be between 83 and 114 inches. ✓</li> </ul>		✓	67.9"
<p><b>Width:</b> Unit shall not exceed maximum legal California width of 106-inches including tarping system.</p>	✓		

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

**Comments and Exceptions**

<b>Engine:</b>	Comply Yes No		
<ul style="list-style-type: none"> <li>➤ Shall meet 2006 EPA/CARB emission certification. Shall be a dedicated LNG powered, turbo charged engine with at least 320-horse power @ 2,300 RPM, 1,000 FT-LB of torque at 1,400 r.p.m. with a minimum of 8.9 liters displacement. ✓</li> <li>➤ Acceptable engine manufacturers or approved equal:                             <ul style="list-style-type: none"> <li>Detroit Diesel</li> <li>Cummins ✓</li> <li>Caterpillar</li> <li>Mack</li> </ul> </li> <li>➤ Engine shall be compatible with the transmission and driveline and shall be certified by the manufacturer as a specific acceptable combination for heavy-duty service. ✓</li> <li>➤ Engine shall be equipped with electronic controls, and charged air cooler. ✓</li> <li>➤ Engine shall also be equipped with full flow type, spin on oil filter with magnetic drain plug, spin on water filter and must be equipped with a 30 second warning before shut down for low oil pressure or high coolant temperature. ✓</li> </ul>			
<p><b>Engine Air Cleaner:</b></p> <ul style="list-style-type: none"> <li>➤ Shall be an approved type by the engine manufacturer for engine size specified. Shall be at least 12" or larger dry type or approved equal. ✓</li> <li>➤ Air cleaner shall be the dry type, Farr, Donaldson or approved equal. ✓</li> <li>➤ System shall have a restriction indicator visible to operator in vehicle cabin. ✓</li> </ul>			<p>Restriction Indicator mounted on air clean housing, indicator light on dash.</p>

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

**Comments and Exceptions**

	Comply		
	Yes	No	
<p><b><u>Engine Cooling System:</u></b></p> <ul style="list-style-type: none"> <li>➤ Radiator shall have a minimum area of at least 1,100 square inches and shall be largest, heaviest duty, shutter less, increased capacity system available for the vehicle engine and transmission combination.</li> <li>➤ Cooling system shall be field-tested and certified by the manufacturer for heavy-duty service and shall include a spin-on type filter with conditioner. The filter base shall have a shut-off valve(s) as needed to service the filter without draining the system.</li> <li>➤ Cooling fan shall be a hydrostatic or air controlled clutch type, high water temperature triggered.</li> <li>➤ All coolant hoses shall be premium EPDM type, such as Gates Green Stripe or Gates Blue Stripe or approved equal, with constant torque stainless steel adjustable hose clamps, Gates PowerGrip SB thermoplastic clamps or approved equal.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>		
<p><b><u>Alternator:</u></b></p> <p>Shall be brushless type, one hundred thirty five ampere capacity rated alternator with integral solid-state regulator.</p>	<p>✓</p>		
<p><b><u>Starter:</u></b></p> <p>Delco Remy 42 MT 400 starter or approved equal with over-crank protection, with magnetic switch for solenoid at or near starter motor or approved equal. Installed with 00 minimum size cables.</p>	<p>✓</p>		
<p><b><u>Engine Exhaust System:</u></b></p> <ul style="list-style-type: none"> <li>➤ Shall be right side, vertical cab mounted, quiet design type with an angled discharge "J" Pipe. Overall height of exhaust exit shall be extended 6" above dump body.</li> <li>➤ All exhaust piping shall be <b>grade 409 stainless steel.</b></li> <li>➤ Stainless steel band type exhaust clamps</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p>		



**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
shall be used wherever possible. <b>No flex joints accepted.</b>		✓	Stainless flex joints are included.
<b>Transmission:</b> <ul style="list-style-type: none"> <li>➤ Shall be an electronic shift converter type with at least five speeds forward and one in reverse with cast aluminum oil pan with magnetic drain plug. Transmission oil cooler inside radiator and external oil filter, spin on type. ✓</li> <li>➤ Transmission shall be equipped with an oil level sensor to allow fluid level to be displayed in dash. ✓</li> <li>➤ Transmission shall include a Power Take-off drive (PTO) option ✓</li> <li>➤ Floor type solid linkage shift selector type shall be installed, <u>push button type shifter shall be acceptable only upon approval of the City.</u> ✓</li> <li>➤ The chassis manufacturer prior to delivery of the cab and chassis to the dump body manufacturer shall program the transmission E.C.U. ✓</li> </ul>			Tunnel mounted push button or "T Handle" shifter available
<b>Drive Shafts:</b> Shall be needle bearing type of adequate size, Meritor or approved equal Main Driveline with full round yokes minimum. Shaft slip joints shall be Spicer "Glide-Cote" type or approved equal. All drivelines shall have take-apart flanges. ✓			
<b>Steering:</b> Shall meet the following minimums: <ul style="list-style-type: none"> <li>➤ Shall be factory left-hand with integral valving. ✓</li> <li>➤ Power steering pump shall be gear driven with a steering gearbox shall be at least 20,000 pound rating. ✓</li> </ul>			
<ul style="list-style-type: none"> <li>➤ Acceptable manufacturers or approved</li> </ul>			

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
equal: Ross Sheppard, or Saginaw brand TRW > Steering wheel shall be able to adjust up, down, and telescope in and out to accommodate drivers of different statures.	✓  ✓		
<b>Axles:</b> > <b>Front Axle:</b> 18,000-pound minimum, Arvin Meritor or approved equal drop single axle. > <b>Rear Drive Axles:</b> 40,000-pound minimum rating with a magnetic drain plug, RT-40-145 R-Series tandem rear axle or approved equal. > <b>Axle Gear Ratio:</b> The gear ratios shall be that this 56,000-pound G.V.W. rated truck can obtain a maximum road speed of 65 MPH at governed engine RPM and can start on a 20% grade when fully loaded. Vehicle shall be capable of pulling a 10% grade at a speed of 15 – 20 MPH fully loaded. A computerized projected engineering performance curve sheet prepared by the engine and transmission manufacturer shall be provided with the bid.	✓  ✓  ✓		
<b>Suspension:</b> > <b>Front:</b> 18,000 pound flat leaf springs at minimum 4" X 50" inch, graphite impregnated with bronze bushings and front shock absorbers. > Capacities shall equal axle ratings minimum. > Spring Hangers, if applicable, shall be cast iron or fabricated steel.  > <b>Rear:</b> Heavy-duty rubber bolster spring tandem axle suspension, Haulmax or Hendrickson HN-462, system, or approved equal, 46,000 lb. capacity, with transverse mounted torque rods for both	✓  ✓ ✓  ✓		

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

axes.	Comply		Comments and Exceptions
	Yes	No	
<b>Brakes:</b>			
Shall meet the following minimums:			
<b>Service Brakes:</b>			
➤ Dual full air, as required to comply with FMVSS in effect at time of manufacture.	✓		
➤ WABCO 4S/4M or approved equal ABS with traction control enhancement with drum type S-cam on all 3 axles. Wedge type is not acceptable on any axle.	✓		
➤ Shall have minimum CFM capacity between 15 -19 CFM, shall be water-cooled and engine oil lubricated air compressor with a Bendix D2 governor, or approved equal governor.	✓		
➤ Rockwell automatic slack adjusters, or approved equal.	✓		
➤ Air dryer shall be an automatic drain system, "Bendix" type, or approved equal.	✓		
➤ Low air pressure warning light, air gauge, and buzzer in cab. Location must be approved by City.	✓		
➤ All air tanks shall be primered steel with automatic drain valves on all air tanks.	✓		
➤ Automatic air shut off valves shall protect systems from leakdown.	✓		
➤ ABS trouble shooting connector shall be installed in the vehicle cabin under the left side of the dashboard. Contractor shall provide service manual, electronic testing equipment, electric and air schematics per build on each truck delivered.	✓		
➤ Heavy-duty brake package.	✓		
<b>Emergency Brake:</b>			
➤ Shall be Anchorlock spring type, or approved equal.	✓		
➤ Anti-compound brake valve shall protect brake system when emergency system is applied.	✓		
➤ System shall have a separate reservoir of	✓		

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p>a capacity to provide at least three complete releases of the emergency brakes.</p> <ul style="list-style-type: none"> <li>➤ System shall be controlled by a Bendix PP-1, or approved equal, push/pull valve, easily accessible, at operator's station.</li> <li>➤ System shall hold the vehicle when fully loaded and manned on a 20% grade.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p>		
<p><b><u>Wheels:</u></b></p> <p>Shall be certified by the manufacturer for use with this vehicle.</p> <ul style="list-style-type: none"> <li>➤ Front: Two, ten tapered hole, hub pilot type, 5-hole ventilated, steel wheels to accept 315/80-R22.5 tubeless tires.</li> <li>➤ Rear: Eight, ten tapered hole, hub pilot type, 5-hole ventilated or approved equal, steel wheels to accept 315/80-R22.5 tubeless tires.</li> <li>➤ One assembled spare front and rear wheel and tire shall be provided for each unit delivered.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>		
<p><b><u>Tires:</u></b></p> <p>Minimums</p> <ul style="list-style-type: none"> <li>➤ Front: Two, 315/80-R22.5 premium grade, steel radial ply casing construction, Michelin XZY2, balanced, tubeless type or approved equal.</li> <li>➤ Rear: Eight, 315/80-R22.5 premium grade, steel radial ply casing construction Michelin XZY2 tubeless type or approved equal.</li> </ul>	<p>✓</p> <p>✓</p>		<p>XZY3 Front &amp; Rear</p>

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

**Comments and Exceptions**

Comply  
Yes No

	Comply Yes	No	Comments and Exceptions
<p><b>Chassis Frame:</b></p> <p>Shall meet the following minimums:</p> <ul style="list-style-type: none"> <li>➤ All non-removable or welded frame components shall be primer painted. ✓</li> <li>➤ Front of cab shall be equipped with towing air connections (service and emergency). ✓</li> <li>➤ Single rail frame, minimum 2,430,000 in/lb RBM per rail <b>without</b> reinforcement, or greater if required by the manufacturer. Shall be of sufficient strength to withstand the heavy strains of off-highway dump truck service. ✓</li> <li>➤ Cutting of frame in any way to accept engine or other components is an unacceptable construction method unless authorized by the OEM and approved by the City of Long Beach. ✓</li> </ul>			
<p><b>Additional Truck Chassis Equipment:</b></p> <ul style="list-style-type: none"> <li>➤ Kysor or approved equal "tem—pressure" shut down protection system complete with signal light and alarm bell. ✓</li> <li>➤ Air horn ✓</li> <li>➤ Rear mounted pintle hook, 25T Premier # 580 or approved equal, adequately braced to withstand load rating with chain eyes, mounted 30" above ground. ✓</li> <li>➤ Air brake trailer control lines shall be plumbed to rear of frame. "Glad hands" and a trailer brake control shall be provided. Lines shall be plumbed to service and supply. ✓</li> <li>➤ Back-up alarm, electric, with motion detector, Cal OSHA approved. ✓</li> <li>➤ Front bumper shall be ¼" steel, painted, with tow hook cutouts tow hooks shall be mounted in cutouts. ✓</li> </ul>			

**DETAILED SPECIFICATIONS**

**LNG, THREE AXLE DUMP TRUCK**

	Comply		Comments and Exceptions
	Yes	No	
<ul style="list-style-type: none"> <li>➤ Tow hooks shall be frame mounted and of sufficient strength to permit lifting and towing of a fully loaded vehicle without damage to cab assembly or components. ✓</li> <li>➤ Air lines for towing shall be plumbed from service and supply to the front bumper with "Amflo" or approved equal brand quick disconnects. ✓</li> <li>➤ Mudguards shall be provided and installed, to comply with law, and prevent water, mud, and debris from getting on batteries, fuel tank, cab, or rear body steps. Mudguards, properly braced, shall be installed forward of the rear axle and at front axle, as applicable. ✓</li> <li>➤ Engine and transmission computerized electronic diagnostic testing equipment with software for appropriate engine and transmission shall be provided with each unit delivered. The manufacturer shall provide diagnostic training before first unit is delivered. ✓</li> </ul>			
<p><b>Fuel Tank:</b></p> <ul style="list-style-type: none"> <li>➤ Chart Industries HLNG-150, LNG fuel tank or approved equal. Right and left side mounted as far forward as possible. Step side with safety tread, DOT approved for use with LNG. ✓</li> <li>➤ Shall include in cab gas detection system. ✓</li> <li>➤ Easily accessible fill with body configuration. ✓</li> <li>➤ Three Hundred gallon total LNG capacity, with stainless steel bracketing mounted as far forward as possible. ✓</li> </ul>		✓	One LNG Fuel Tank recommended (see attached)
<p><b>Electrical:</b></p> <p>Shall meet the following minimums:</p> <ul style="list-style-type: none"> <li>➤ Complete system with heavy-duty wiring installed in compliance with SAE codes. ✓</li> <li>➤ Twelve volt, negative ground system. ✓</li> </ul>			

DETAILED SPECIFICATIONS

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<ul style="list-style-type: none"> <li>➤ All electrical wiring connectors to be automotive double-seal, with wiring in split convoluted loom. ✓</li> </ul>	✓		
<ul style="list-style-type: none"> <li>➤ All soldered wiring connections to be potted with rubberized covering. Crimp type connectors shall be protected with shrink-wrap. <b><u>Unprotected wiring in any application is unacceptable.</u></b> ✓</li> </ul>	✓		
<ul style="list-style-type: none"> <li>➤ All electrical limit switches shall be epoxy impregnated to minimize effects of excess moisture. ✓</li> </ul>	✓		
<ul style="list-style-type: none"> <li>➤ System shall be protected with an adequate number of circuit breakers to <i>evenly distribute the electrical load</i>. Fuses unacceptable. ✓</li> </ul>	✓		
<ul style="list-style-type: none"> <li>➤ All wiring shall be loomed and routed the simplest, most direct and most protected way possible with separate accessory and body functions to be frame mounted in a waterproof junction box. <b><u>No splicing shall be allowed by dump body installer.</u></b> Wiring shall be supported or clamped at intervals not to exceed thirty inches. ✓</li> </ul>	✓		
<ul style="list-style-type: none"> <li>➤ One 12V cigarette type accessory terminal shall be centrally located in the cab on the dash and individually protected by circuit breakers (for radios). ✓</li> </ul>	✓		
<ul style="list-style-type: none"> <li>➤ Trailer electrical connector shall be Phillips or approved equal 15—600 wired in clockwise sequence of (1) ground, (2) stoplight, (3) tail light, (4) left turn signal, (5) right turn signal, and (6) blank. Number (2) stoplight shall be wired to the "cold" side of stoplight switch. All wires shall be encased in nonmetallic flexible loom and well supported by frame clips. Trailer plug terminal points shall be potted at trailer plug. ✓</li> </ul>	✓		
<ul style="list-style-type: none"> <li>➤ <b><u>Manufacturer shall provide color-coded</u></b></li> </ul>			

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p><u>wiring diagram per build with each unit delivered.</u></p> <ul style="list-style-type: none"> <li>➤ <b>Battery(s):</b> Shall meet the following minimums. All Batteries shall be frame mounted outside of frame rails as far forward as practical or in a location agreed upon by the City of Long Beach and body builder, in a steel or anodized aluminum box on left or right side, and protected from corrosion and road debris. Battery box cover or liner shall be constructed of a non-metallic material. Battery box shall be primer painted before applying final color coat.</li> <li>➤ Each battery shall be 1950 CCA group 31, heavy-duty maintenance free type, Delco, Gould or approved equal. (3 each)</li> <li>➤ Battery cut-off switch shall be provided on drivers side floor of vehicle cabin.</li> <li>➤ All electrical schematics shall be provided with each unit.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p></p> <p></p> <p>✓</p> <p></p>	<p>Numbered wiring schematic provided.</p> <p><b>Battery Box Mounted</b></p>
<p><b>Lighting:</b></p> <ul style="list-style-type: none"> <li>➤ <b>All exterior cab and body lighting shall be LED type.</b></li> <li>➤ Where practical all lighting and reflectors shall be mounted in rubber flush mounts.</li> <li>➤ All wiring shall be number coded, waterproof, mechanically protected and concealed in channel and/or sealed in conduit. Any time a wire passes through metal, the hole shall have a rubber grommet.</li> <li>➤ Rear stop and directional lights shall be mounted at least 60" in height on rear of hopper with appropriate bracketry and protection.</li> <li>➤ Additional stop lights mounted on the rear frame / bumper assembly below the dump bed.</li> <li>➤ Vehicle shall be equipped with a mid-body turn signals and front and rear</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	



**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p>identification lights.</p> <ul style="list-style-type: none"> <li>➤ Flashing beacon shall be Whelen or approved equal, with tree limb protection, mounted on top, forward of center of cab roof. Unit shall be installed on cab with "Nutsert" type retainers. No exceptions. Unit must clear cab shield and must be clearly visible from 360 degrees. Minimum 1-inch diameter "light on" indicator mounted in the cab in plain view of driver.</li> <li>➤ <b>Headlights:</b> Shall be High Intensity Discharge (HID) light assemblies.</li> <li>➤ <b>Reflectors:</b> All reflectors shall be 3" minimum diameter.</li> <li>➤ <b>License Plate:</b> There shall be provision for mounting the front and rear license plate with the rear license plate properly illuminated.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>		
<p><b>Vehicle Cab:</b>                      Shall meet the following minimums:</p> <ul style="list-style-type: none"> <li>➤ Current production, cabover type, two-man cab. Cab shall be at least 89" inches wide with mud flaps at rear of front wheels. Cab shall be same manufacturer as frame rails.</li> <li>➤ Additional optional steps and handholds shall facilitate cab entry and vehicle inspection.</li> <li>➤ Instrument panel shall include at least the following control and indicator gauges:                      Fuel gauge, water temperature, oil pressure, oil temperature, engine hour meter and trip integral within driver display, tachometer, speedometer, air pressure, voltmeter, oil pressure activated headlights, dome lights, dash lights, ignition switch with key, heater/defroster, air conditioning, windshield wipers, emergency brakes, hydraulic PTO switch with indicator light, turn signals, horn, hazard lights, night working lights etc.</li> <li>➤ Instruments shall be Stewart Warner "Delux" or approved equal.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>		(Single-work light switch)

DETAILED SPECIFICATIONS

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
➤ Warning light(s) at dash shall show hydraulic pump engaged and dump body hydraulic system in operation mode. Location of indicator shall be clearly visible by operator or in a location approved by the City.	✓		
➤ Conventional doors, right and left sides, with structural steel adjustable hinges with hardened steel pins and grab handles.	✓		
➤ Vehicle shall be equipped with R-134A factory air conditioning with recirculation switch with adequate cooling capacity to cool the cabin to 20 degrees lower than ambient temperature.	✓		
➤ Minimum 30,000 BTU fresh air heater and integral defroster.	✓		
➤ Main fresh air inlet shall have recirculation filters.	✓		
➤ Full width windshield(s) and rear cab window(s). All glass except front windshield shall be tinted to darkest gradient allowable in California.	✓		
➤ Sun visors, right and left sides.	✓		
➤ Driver's and passengers seat shall be Bostrom mid-back air suspension or approved equal utilizing truck air.	✓		
➤ All seats shall be equipped with three point seat belts with retractors and adjustable D rings. Adequate knee and elbow room shall be engineered into the cab design.	✓		
➤ Cab sound deadening shall be sufficient so occupants inside of cab shall not be subjected to over 85 DBA per SAE J336A, or Cal OSHA General Orders under full throttle load acceleration. Any sound deadening material used in engine areas shall be resistant to absorption of oil and water and be fireproof.	✓		
➤ Upholstery shall be heavy-duty vinyl. Any sound deadening material used in cab interior shall be matching colors.	✓		

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<ul style="list-style-type: none"> <li>➤ Rubber floor mats.</li> <li>➤ Left and right hand door mirrors shall be 6" X 16" 78-03-8 KD or 7010 Signal Stat head "Retract" type or approved equal. Additionally an 8" convex mirror shall be mounted on both right and left side below standard mirror.</li> <li>➤ Electric dual windshield wipers.</li> <li>➤ Reflector flare kit mounted in cab, Grote #71422, or approved equal.</li> <li>➤ 10# ABC fire extinguisher.</li> <li>➤ Shall be equipped with an AM/FM/CD radio with clock and two cab-mounted speakers.</li> <li>➤ Cab shall be warranted by manufacturer for a minimum of one year after the City of Long Beach in-service date.</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> </ul>	<p>Non-slip flooring</p>
<p><b>Dump Body:</b></p> <ul style="list-style-type: none"> <li>➤ The chassis manufacturer shall provide an electrical junction box(s) outside of the vehicle interface module for all dump body electrical connections. The junction box(s) shall have all circuits clearly identified. All chassis to body electrical connections must be made inside of the junction box(s).</li> <li>➤ Dump body hydraulic system pump shall not be engaged until engine is at idle and then operated when transmission is in gear. The chassis manufacturer shall install the programming option and group that best match the application described in the specifications.</li> <li>➤ Shall comply with all applicable Cal OSHA and Federal Regulations, be standard production.</li> <li>➤ All steel dump body components shall be primer painted with Dupont Coriar 824S Epoxy Polyamide primer or an approved equal before final color coat is applied.</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> </ul>	<p>N/A</p>

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p><b>Dump installation shall include at least all of the following:</b></p> <ul style="list-style-type: none"> <li>➤ Shall be 12.4 cubic yard minimum water level capacity.</li> <li>➤ Body shall be mounted as far forward as possible and shall be at least sixteen feet long and eight feet wide. Sides shall be at least 10 gauge thick HT steel, thirty-six inches high with sideboard provision. Tailgate top hinge to be 48 inches high. Body may be larger than specified if space between cab and front of dump body is excessive.</li> <li>➤ Dump body shall be an all welded construction of steel sections. All body welding fillets shall have good penetration, good fusion, good appearance, and shall not display cracks or undercutting.</li> <li>➤ All body areas shall be adequately reinforced to allow continuous operation with maximum loads and prevent excessive wear and deformation.</li> <li>➤ Body material shall be at least ten-gauge HT steel.</li> <li>➤ Hoist well housing shall be ¼ inch HT steel</li> <li>➤ Bed material shall be certified as to thickness and tensile strength.</li> <li>➤ Body floor 1/4 inch T—1 or approved equal. Sides, front and tailgate to have 3/16" gauge MT horizontal or vertical side bracing. There shall be a tie down rail, full body length. No debris shall collect on side surfaces of the bed. Body interior sides shall be radiused at floor. Radius shall be at least four inches.</li> <li>➤ Longitudinal body members shall be six inch minimum structural channels with four inch hard wood runners.</li> <li>➤ Adequate safety blocks or supports shall be provided and permanently installed underneath dump body.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p>✓</p> <p></p>	<p>No Tube Style Longs</p>

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<ul style="list-style-type: none"> <li>➤ Body tailgate shall be double acting type with spreaders apron, chains and holders. Facing shall have vertical or horizontal bracing.</li> <li>➤ Tail gate latch control shall be in truck cab, air operated, with a warning light.</li> <li>➤ Bed in up position warning light shall be installed in cabin in a location that is clearly visible to operator or in a location approved by the City.</li> <li>➤ Body shall have a 1/4 cab shield to fit truck cab used and cover at least 1/3 of cab itself.</li> <li>➤ Body to have turn signals built into rear vertical posts (LED type).</li> <li>➤ Dump body shall have automatic electric canvas covers for loose loads. "Pull Tarps" or approved equal.</li> <li>➤ All hoses shall be installed and protected in such a way as to prevent damage.</li> <li>➤ Body shall be warranted bumper to bumper by manufacturer for a minimum of five years after the City of Long Beach in-service date.</li> <li>➤ Prior to completion of dump body by the manufacturer, the tailgate ditch door positioning shall be specified by the City of Long Beach on each dump body installed. The ditch door positioning options include:                             <ul style="list-style-type: none"> <li>▪ Three ditch doors, L/H side, R/H Side and Center</li> <li>▪ One ditch door, L/H side</li> <li>▪ One ditch door, R/H side</li> <li>▪ One ditch door, center</li> <li>▪ One ditch door, center with "Dura-Patch" or approved equal Tube</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> </ul>	<ul style="list-style-type: none"> <li></li> <li></li> <li></li> <li></li> <li></li> <li></li> <li></li> <li></li> <li>✓</li> <li></li> </ul>	
<p><b><u>Dump Controls:</u></b></p> <p>Shall be equipped with interior controls. Lever type, no cables.</p>	<ul style="list-style-type: none"> <li>✓</li> </ul>		

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p><b>Hydraulic Tank and System:</b></p> <ul style="list-style-type: none"> <li>➤ Dump hoist ram shall be multi-stage mounted in the body. Minimum classification 100 with a 50 degree dump angle. ✓</li> <li>➤ Pump shall be a single stage Commercial P-51, or approved equal, steel constructed, driven off the transmission capable of 28 GPM at 1200 RPM. (Aluminum housing or components not acceptable). ✓</li> <li>➤ Maximum operating pressure shall be 2,500 p.s.i. ✓</li> <li>➤ Hydraulic system shall incorporate adjustable relief valves to protect all components. ✓</li> <li>➤ All hydraulic tubes shall be securely clamped to prevent vibration, abrasion, and excessive noise. All hydraulic hoses shall conform to S.A.E. standards for designed pressure. Bends shall not be less than recommended by S.A.E. standards. Flat spots in hoses shall not be acceptable. ✓</li> <li>➤ All high-pressure hoses shall be sheathed with fabric protective covering. ✓</li> <li>➤ The return line filter shall also include an in-cab filter by-pass monitor, which shall alert the operator or service personnel when the filter is in need of replacement. ✓</li> <li>➤ A hydraulic pump shutdown system shall also be included which shall prohibit prolonged operation of the hydraulics when the filter is in the by-pass mode. ✓</li> <li>➤ All hydraulic schematics shall be provided per built unit. ✓</li> <li>➤ Hydraulic pump shall be warranted by manufacturer for a minimum of two years after the City of Long Beach in-service date. ✓</li> </ul>			
<p><b>Hydraulic Reservoir:</b></p>			

N/A

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<ul style="list-style-type: none"> <li>➤ Hydraulic reservoir shall be a minimum of 22 gallons with internal access for repair or cleanout. Tank shall have protected sight glass with temperature indicator built into sight glass.</li> <li>➤ Tank shall have a shut-off valve on the suction side.</li> <li>➤ A high-pressure filter shall be installed on the discharge side of the pump.</li> <li>➤ Hydraulic oil cooler shall be installed in the system.</li> <li>➤ A 16-micron filter shall be in the return line.</li> <li>➤ System shall have a 100-micron mesh suction strainer with magnet.</li> <li>➤ Shall have drain at bottom of tank.</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> <li>✓</li> </ul>		
<p><b>Hydraulic Control valves:</b></p> <p>Shall be electric over hydraulic.</p>	<ul style="list-style-type: none"> <li>✓</li> </ul>		
<p><b>Paint:</b></p> <p><b>PRE-PAINT INSPECTION</b></p> <p>Prior to painting and after Epoxy Polyamide primer application, the City of Long Beach will send three inspectors to the manufacturer's plant for a final pre-delivery inspection to verify that the dump truck has been manufactured and is in compliance with the City of Long Beach's specifications. All expenses shall be paid for by the manufacturer including food, lodging and travel.</p> <p><b>Cab:</b></p> <ul style="list-style-type: none"> <li>➤ The cab including wheels and frame shall be primer painted with Dupont Corlar 824S Epoxy Polyamide primer or an approved equal.</li> <li>➤ The cab including wheels, frame, and any bright metal or chromed accessories, shall be painted standard manufacturer's white. All surfaces shall receive at least a four mil. thickness coating of Dupont 2000 or approved equal per requirements of the South Coast Air Quality Management</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>✓</li> <li>✓</li> </ul>		

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<p>District of California. Dupont Corlar 824S Epoxy Polyamide primer or an approved equal shall be used under all polyurethane enamel topcoats.</p> <p><b>Dump Body:</b></p> <ul style="list-style-type: none"> <li>➤ The dump body excluding any bright metal or chromed accessories shall be primer painted with Dupont Corlar 824S Epoxy Polyamide primer or an approved equal.</li> <li>➤ Dump body shall be painted standard manufacturer's white. All surfaces shall receive at least a four mil. thickness coating of Dupont 2000 or approved equal per requirements of the South Coast Air Quality Management District of California.</li> </ul> <p><b>Frame:</b></p> <ul style="list-style-type: none"> <li>➤ The frame shall be primer painted with Dupont Corlar 824S Epoxy Polyamide primer or an approved equal. The frame shall be painted with Sikkens, or approved equal, gloss black acrylic enamel with hardener.</li> </ul>	<p>✓</p> <p>✓</p> <p>✓</p>		
<p><b>Compliance:</b></p> <p>The vehicle purchased shall meet all applicable sections of the U.S. Code of Federal Regulations (CFR), including Design and Vehicle Certification, Federal Motor Vehicle Safety Standards (FMVSS), U.S. Environmental Protection Agency (EPA) exhaust emission discharge regulations applicable to the design and manufacture of this size and type Heavy Automotive Vehicle.</p> <p><b>Compliance Cont.:</b></p> <p>The vehicle shall also meet all applicable laws and regulations of the State of California. This shall include, but not limited to, the California Code of Regulations (CCR), Title 13, Motor Carrier Safety Regulations, and regulations of Southern California Air Quality Management District, California Vehicle Code and the</p>	<p>✓</p> <p>✓</p>		



**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
California Air Resources Board (CARB).			
<p><b>Vehicle Welding:</b></p> <p>All welding procedures used throughout the construction of the entire vehicle, including materials, qualifications and training of personnel, shall be within all applicable Guidelines and Standards of both the American Society for Testing and Materials (ASTM) and the American Welding Society (AWS). Structural welding of steel shall meet AWS D1.1-83 and structural welding of aluminum shall meet AWS D 1.2-83. Contact surfaces of all welded materials shall be clean, and free of grease, paint, rust and scale. Rough edges shall be ground to a smooth finish after all welding on the vehicle. A copy of the manufacturer's "Mill Specification Report" shall be provided with bid package. <b>No Exceptions</b></p>	✓		
<p><b>Warranty:</b></p> <ul style="list-style-type: none"> <li>➤ Manufacturer shall identify a single point warranty repair facility approved by the City of Long Beach within a 50-mile radius of Long Beach City Hall. Such single point warranty facility shall be capable of handling all warranties on equipment including chassis, engine, transmission and all related components. ✓</li> <li>➤ The Contractor shall guarantee the complete apparatus furnished under these specifications against defects in material and workmanship for a period of 3 years after date unit is placed in service. The Contractor shall repair or replace any such item(s) necessary during the warranty period at its own cost and expense, without cost to the City. ✓</li> <li>➤ Warranty shall begin when the City of Long Beach places the unit in service. ✓</li> <li>➤ All transportation of vehicles for warranty repairs shall be at the expense of the manufacturer unless prior agreement is approved for each instance with the City of Long Beach. ✓</li> <li>➤ Hydraulic cylinders shall have a 5-year unconditional warranty. ✓</li> <li>➤ Transmission warranty shall be 5 years. ✓</li> </ul>			Peck Road Truck Center

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
<ul style="list-style-type: none"> <li>➤ The frame and fasteners shall have a lifetime warranty.</li> <li>➤ Prior to delivery of the first vehicle manufacturer shall provide a complete listing of all serialized components.</li> <li>➤ Manufacturer shall include part numbers for all consumables to include belts, filters and hoses.</li> </ul>	Yes ✓	No ✓	7 Years
<p><b>Warranty Performance:</b></p> <ul style="list-style-type: none"> <li>➤ The Contractor shall provide service within one working day after notification by telephone.</li> <li>➤ If the Contractor does not acknowledge after two working days, it shall be assumed as approval for the City to repair the vehicle or obtain warranty outside vendor repair facility. The City shall be reimbursed by the Contractor an area average hourly rate for labor</li> <li>➤ Inclusive of transportation and parts replaced one for one; repairs from component manufacturers.</li> <li>➤ The vehicle manufacturer shall furnish all warranty documentation to the City.</li> <li>➤ Defective parts shall be labeled and retained by the City until parts are replaced. Contractor shall return all defective parts to their supplier.</li> <li>➤ Outside vendor repair facility parts and labor billing shall go directly to manufacturer.</li> </ul>	✓  ✓  ✓  ✓  ✓		
<p><b><u>Plans and Engineering Conference:</u></b></p> <p>Within 30 days after the Contract has been awarded, the manufacturer shall participate in an engineering meeting at which time the entire specification for the equipment shall be reviewed by both the manufacturer and the City of Long Beach Fleet Manager so both parties fully understand how the equipment shall be made. This meeting shall be held at a mutually agreed time at the City of Long Beach Fleet Services Office located at 2600 Temple Ave., Long Beach,</p>	✓		

**DETAILED SPECIFICATIONS**

LNG, THREE AXLE DUMP TRUCK

	Comply		Comments and Exceptions
	Yes	No	
California 90806. All expenses shall be paid by the Contractor including Food, lodging, and travel for the Contractor's or manufacturer's representative.	✓		
<p><b>Legals:</b></p> <ul style="list-style-type: none"> <li>➤ Contractor shall furnish a certified weight slip with each completed vehicle. ✓</li> <li>➤ Must meet all requirements of the South Coast Air Quality Management District (SCAQMD), at the time of bid award. ✓</li> <li>➤ Must comply with all Federal and State regulations and must meet all standards of safety for this type of equipment. ✓</li> <li>➤ Contractor must supply to City of Long Beach a certified weight distribution analysis that verifies the legal payload of vehicle is in compliance with the California bridge law. ✓</li> </ul>			
<p><b>Training:</b></p> <p>Within 45 days after receipt of the first vehicle by the City of Long Beach Contractor shall provide the following:                      One full day of training to all vehicle operators. Prior to receipt of the first vehicle by the City of Long Beach and no later than 30 days before delivery Contractor shall provide the following:                      One full day of preventative maintenance and specialized repair training of the vehicle and installed equipment to all Fleet Services personnel assigned to the vehicle type.</p>	✓		
<p><b>Specialty Tools and Repair Manuals:</b></p> <p>Contractor shall supply any specialty tools, computer software, computer hardware, service manuals, parts manuals, bumper to bumper color coded air, electrical, and hydraulic schematics as per build, with each truck delivered.</p>	✓		
<p><b>Liquidated Damages:</b></p> <p>The first unit shall be delivered within 180 days after the issuance of the purchase order. Time is</p>	✓		

**DETAILED SPECIFICATIONS**

**LNG, THREE AXLE DUMP TRUCK**

	Comply		Comments and Exceptions
	Yes	No	
of the essence. Failure to deliver on time shall subject Contractor to liquidated damages in the amount of \$125 per day per vehicle.	✓		
Upon delivery of the first unit all others shall follow at a rate of one unit per week until order is complete.	✓		

PA02006 CITY OF LONG BEACH  
REBID 2 SPECIFICATIONS  
LNG, THREE AXLE DUMP TRUCK

**BID SECTION**

---

WE ARE PLEASED TO SUBMIT THIS BID IN ACCORDANCE WITH THE CITY OF LONG BEACH INVITATION TO BID, SPECIFICATIONS AND TERMS AND CONDITIONS TO FURNISH AND DELIVER THREE (3) 3 AXLE DUMP TRUCKS FOB DESTINATION CITY OF LONG BEACH.

---

**FOR THE PURCHASE OF THREE (3) 3 AXLE DUMP TRUCKS**

\$ 163,699.00 COST PER VEHICLE INCLUDING OPTIONS

\$ 13,505.00 SALES TAX

\$ 177,204.00 TOTAL COST PER VEHICLE INCLUDING ALL TAXES

**YOU MUST STATE THE MAKE AND MODEL YOU ARE BIDDING. FAILURE TO DO SAY MAY DISQUALIFY YOUR BID**

---

Delivery: 180 calendar days after receipt of order (if time shown is more than 180 calendar days after receipt of order, the bid may be rejected).

Can you comply with all specifications listed herein: yes  or  no

Failure to comply with all specifications may disqualify your bid

**Time is of the essence for delivery. Failure to deliver on the date stated is a material breach of the contract. The parties agree that damages for delay would be difficult to calculate. Therefore, liquidated damages in the amount of \$ 125.00 per day will be withheld from final payment.**

**ESTIMATED DATE OF DELIVERY OF COMPLETED VEHICLE** Feb. 27, 2007

(Based on P.O. receive by 8-15-06)

August 1, 2006

**ADDENDUM NO. 1**

TO: **ALL BIDDERS**

RE: **BID NO. PA-02006 REBID SPECIFICATION OF LNG, THREE AXLE DUMP TRUCK SERVICES**

All bids will remain sealed in the City Clerk's Office until the extended close date. All potential bidders have the right to retrieve their bid and resubmit prior to the new bid closure date and time. No action is required of potential bidders who have already submitted a bid and do not wish to exercise their right to retrieve.

**Addendum No. 1 is issued to extend the bid close date and make the following clarifications:**

1. **Bid due date has been extended to 11:00 a.m., Thursday, August 9, 2006.** Bids must be submitted to the City Clerk's Office, City Hall, Plaza Level, 333 West Ocean Blvd, Long Beach, CA 90802
2. **Clarification: Page 21, Fuel Tank – One LNG Fuel tank is adequate to allow a standard chassis configuration for the battery box and (dump body) Hydraulic tank mounting. A local dump will typically have a 70 or 80 gallon diesel fuel tank, and we expect to supply that much diesel equivalent with one LNG fuel tank.**

Any additional questions must be submitted in writing or by email no later than noon on Friday, August 4, 2006. Answers to these questions will be distributed to all potential bidders by Monday, August 7, 2006. Questions should be submitted to Andre Clark, Buyer – fax no. 562-570-5099 or email [atclark@longbeach.gov](mailto:atclark@longbeach.gov) and copy [daramos@longbeach.gov](mailto:daramos@longbeach.gov)

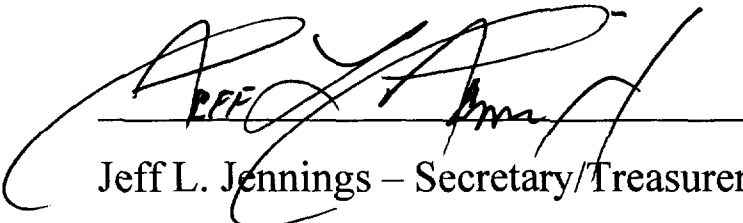
S/s Jana Vargas   
City Purchasing Agent

# PECK ROAD TRUCK CENTER



July 25, 2006

A meeting of the Board of Directors of Peck Road Ford Truck Sales, Inc. dba Peck Road Truck Center was held on this 25<sup>th</sup> day of July 2006. The directors hereby resolve Arthur W. Fraser as Owner and Jeff L. Jennings as General Manager are authorized to sign on behalf of the Corporation any and all documents which may occur during the course of business, including, but not limited to bids and transactions with the City of Long Beach, California.

  
\_\_\_\_\_  
Jeff L. Jennings – Secretary/Treasurer

Seal Affixed

Prepared for:  
John Seevers  
City of Long Beach  
2600 Temple  
Long Beach, CA 90806  
Phone: 562 570-5406

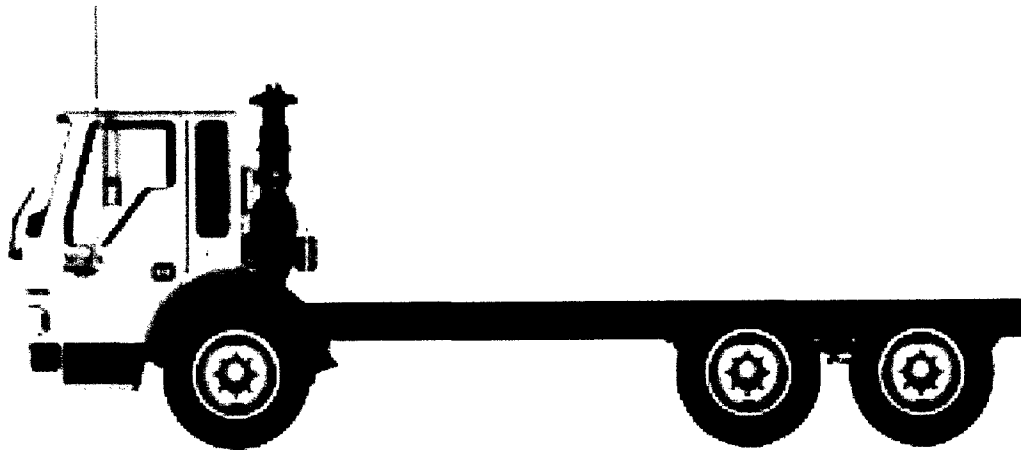
Prepared by:  
Jon Ennis  
PECK ROAD TRUCK CENTER  
2450 KELLA AVE.  
WHITTIER, CA 90601  
Phone: 562 692-7267  
E-Mail: jonennis@peckroad.com

*A proposal for  
City of Long Beach*

*Prepared by  
PECK ROAD TRUCK CENTER  
Jon Ennis*

*July 25, 2006*

**CONDOR LOW CAB FORWARD CHASSIS**





Prepared for:  
 John Seevers  
 City of Long Beach  
 2600 Temple  
 Long Beach, CA 90806  
 Phone: 562 570-5406

Prepared by:  
 Jon Ennis  
 PECK ROAD TRUCK CENTER  
 2450 KELLA AVE.  
 WHITTIER, CA 90601  
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## S P E C I F I C A T I O N   P R O P O S A L

Description	Retail Price
<b>Price Level</b>	
CONDOR PRL-42E (EFF:01/10/06)	STD
<b>Data Version</b>	
SPECPRO21 DATA RELEASE VER 001	N/C
<b>Vehicle Configuration</b>	
CONDOR LOW CAB FORWARD CHASSIS	\$149,869.00
2007 MODEL YEAR SPECIFIED	STD
SET BACK AXLE - TRUCK	STD
TRAILER TOWING PROVISION AT END OF FRAME FOR TRUCK	\$680.00
LH PRIMARY STEERING LOCATION	STD
<b>General Service</b>	
TRUCK/TRAILER CONFIGURATION	N/C
DOMICILED, USA 50 STATES (WITH CALIFORNIA)	STD
UTILITY/REPAIR/MAINTENANCE SERVICE	N/C
GOVERNMENT BUSINESS SEGMENT	N/C
FIXED LOAD COMMODITY	STD
TERRAIN/DUTY: 100% (ALL) OF THE TIME, IN TRANSIT, IS SPENT ON PAVED ROADS	STD
MAXIMUM 8% EXPECTED GRADE	STD
SMOOTH CONCRETE OR ASPHALT PAVEMENT - MOST SEVERE IN-TRANSIT (BETWEEN SITES) ROAD SURFACE	STD
CATEGORY III ON/OFF-HIGHWAY WARRANTY	STD
EXPECTED FRONT AXLE(S) LOAD : 20000.0 lbs	
EXPECTED REAR DRIVE AXLE(S) LOAD : 40000.0 lbs	
EXPECTED GROSS VEHICLE WGT CAPACITY : 60000.0 lbs	
EXPECTED GROSS COMBINATION WEIGHT : 80000.0 lbs	



Prepared for:  
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	Description	Retail Price
<b>Truck Service</b>		
	FRONT PLOW/END DUMP BODY	N/C
	EXPECTED EMPTY BODY WEIGHT : 4300.0 lbs	
	EXPECTED TRUCK BODY LENGTH : 14.0 ft	
	EXPECTED EMPTY BODY CG LOC FROM BODY FRT : 7.0 ft	
	REQUESTED CAB TO TRUCK BODY CLEARANCE : 2.5	
<b>Tractor Service</b>		
	NO TRAILER SPECIFIED	STD
<b>Engine</b>		
*	CUM L-GAS+ 320 HP @ 2300 RPM, ELEC N-GAS, 1000 LB/FT @ 1400 RPM	\$36,890.00
<b>Electronic Parameters</b>		
N	PTO/REMOTE PTO - YES	N/C
<b>Engine Equipment</b>		
*	CUSTOM EMISSION CERTIFICATION	N/C
	ENGINE MOUNTED OIL CHECK AND FILL	STD
*	ONE PIECE VALVE COVER	STD
	VERTICAL SNORKEL AND DONALDSON HIGH CAPACITY AIR CLEANER MOUNTED HORIZONTALLY BACK OF CAB	STD
	STATIONARY VERTICAL AIR INTAKE SNORKEL	STD
	DONALDSON ONE-STAGE HIGH CAPACITY AIR CLEANER	STD
	AIR INTAKE PIPING - CLEANER TO ENGINE	STD
	PLAIN BONNET AIR INTAKE HOOD/CAP	STD
*	DR 12V 135 AMP 35-SI ALTERNATOR	\$226.00
	(3) ALLIANCE 1231 GROUP 31 12V MF 3300 CCA THREADED STUD BATTERIES	\$139.00
	STEEL BATTERY BOX FRAME MOUNTED LH, LOWERED 5"	STD
	FRAME GROUND RETURN FOR BATTERY CABLES; GROUND CABLE FROM LH AND RH FRAME TO ENGINE	STD
	NON-METALLIC BATTERY BOX COVER	STD
*	FLAMING RIVER BATTERY SHUTOFF SWITCH WITH LOCK PROVISION MOUNTED AFT SIDE OF BOX OUTBOARD OF FRAME	\$263.00
	POLY-V BELTS WITH AUTOMATIC TENSIONER FOR FAN DRIVE	STD
*	CUMMINS ENCORE ENGINE ELECTRONICS	N/C



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Description	Retail Price
NO CLUTCH	N/C
NO CLUTCH RELEASE BEARING LUBE	STD
STANDARD AIR COMPRESSOR GOVERNOR	STD
TEFLON COMPRESSOR DISCHARGE LINE	STD
* ELECTRONIC ENGINE INTEGRAL SHUTDOWN PROTECTION SYSTEM	STD
SINGLE VERTICAL EXHAUST WITH PAINTED STACK RIGHT SIDE	STD
FLEXIBLE STAINLESS STEEL EXHAUST PIPING	STD
STANDARD EXHAUST SYSTEM LENGTH	STD
SINGLE STAINLESS STEEL VERTICAL MUFFLER	\$92.00
SINGLE STATIONARY OUTBOARD OF RAIL MOUNTED MUFFLER	STD
VERTICAL CURVED TAILPIPE(S), RH (SINGLE EXHAUST) OR RH AND LH SIDES (DUAL EXHAUST)	\$19.00
STAINLESS STEEL MUFFLER/TAILOPIPE SHIELD WITH TURBO HEAT SHIELD/CAGE	\$56.00
HORTON DRIVEMASTER ON/OFF FAN DRIVE	STD
AUTOMATIC FAN CONTROL WITHOUT DASH SWITCH	STD
* CUMMINS SUPPLIED FLEETGUARD COALESCING FILTER (LOW PRESSURE) CNG	N/C
* COMBINATION FULL FLOW/BYPASS OIL FILTER	N/C
* FLEETGUARD COOLANT FILTER - RAIL MOUNTED	\$179.00
1164 SQUARE INCH COPPER/BRASS RADIATOR	STD
REMOTE MOUNTED SURGE TANK	STD
ANTIFREEZE TO -34F, ETHYLENE GLYCOL PRE-CHARGED SCA HEAVY DUTY COOLANT	STD
GATES BLUE STRIPE COOLANT HOSES	STD
CONSTANT TENSION HOSE CLAMPS FOR COOLANT HOSES	STD
HEAVY DUTY CHARGE AIR COOLER	STD
HEAVY-DUTY RADIATOR MOUNTING	STD
RADIATOR DRAINCOCK	STD
ALUMINUM FLYWHEEL HOUSING	N/C
* DELCO 12V 42MT/OCP 450 SERIES STARTER WITH THERMAL PROTECTION	\$159.00
FLYWHEEL HOUSING REAR ENGINE SUPPORT	STD
<b>Transmission</b>	
ALLISON 3000 RDS AUTOMATIC TRANSMISSION WITH PTO PROVISION	STD

**Transmission Equipment**



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Description	Retail Price
WTEC CALIBRATION - 5 SPEED HS/RDS (PACKAGE 114)	N/C
TRANSMISSION VEHICLE INTERFACE CONNECTOR WIRED TO TRANSMISSION ECU	STD
MAGNETIC PLUGS, ENGINE DRAIN, TRANSMISSION DRAIN, AXLE(S) FILL AND DRAIN	STD
DASH MOUNTED ELECTRONIC CONTROL T-HANDLE SHIFT LEVER	\$245.00
WATER TO OIL TRANSMISSION COOLER	STD
TRANSMISSION REAR SUPPORT LEAF SPRING	STD
TRANSMISSION OIL CHECK AND FILL WITH ELECTRONIC OIL LEVEL CHECK	STD
<b>Front Axle and Equipment</b>	
MFS-20-133A FL1 20,000# SINGLE FRONT AXLE	STD
MERITOR 16.5X6 Q+ CAST SPIDER CAM FRONT BRAKES, DOUBLE ANCHOR, FABRICATED SHOES	STD
NON-ASBESTOS FRONT BRAKE LINING	N/C
GUNITE CAST IRON FRONT BRAKE DRUMS	STD
CHICAGO RAWHIDE SCOTSEAL FRONT OIL SEALS	STD
VENTED FRONT HUB CAPS - OIL	STD
STANDARD SPINDLE NUTS FOR ALL AXLES	STD
HALDEX LONG STROKE FRONT BRAKE CHAMBERS	STD
MERITOR AUTOMATIC FRONT SLACK ADJUSTERS	(\$17.00)
STANDARD KING PIN BUSHINGS	STD
TRW TAS-65 POWER STEERING WITH RCS65 AUXILIARY GEAR	STD
VICKERS V20 POWER STEERING PUMP	\$90.00
4 QUART POWER STEERING RESERVOIR	STD
<b>Front Suspension</b>	
20,000# FLAT LEAF FRONT SUSPENSION	STD
GRAPHITE BRONZE BUSHINGS WITH SEALS - FRONT SUSPENSION	STD
FRONT SHOCK ABSORBERS	STD
<b>Rear Axle and Equipment</b>	
RT-40-145 R-SERIES TANDEM REAR AXLE @ 40,000#	STD
5.29 REAR AXLE RATIO	N/C
IRON REAR AXLE CARRIER WITH OPTIONAL HEAVY DUTY AXLE HOUSING	STD
17N MERITOR MAIN DRIVELINE WITH FULL ROUND YOKES	STD



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Description	Retail Price
17N MERITOR INTERAXLE DRIVELINE WITH FULL ROUND YOKES	STD
INTERAXLE AND/OR DIFFERENTIAL LOCKOUT WITH INDICATOR LIGHT	STD
PETROLEUM BASED LUBE ENGINE/TRANSMISSION/AXLE	STD
MERITOR 16.5X7 Q+ CAST SPIDER CAM REAR BRAKES, DOUBLE ANCHOR, FABRICATED SHOES	STD
NON-ASBESTOS REAR BRAKE LINING	N/C
STANDARD BRAKE CHAMBER LOCATION	STD
GUNITE CAST IRON REAR BRAKE DRUMS	STD
CHICAGO RAWHIDE SCOTSEAL REAR OIL SEALS	STD
ANCHORLOK LIFESEAL LONG STROKE 2-DRIVE AXLES SPRING PARKING CHAMBERS WITH ORANGE ALERT	\$102.00
HALDEX AUTOMATIC REAR SLACK ADJUSTERS	STD
<b>Rear Suspension</b>	
HENDRICKSON HAULMAAX REAR SUSPENSION @ 46,000#	\$1,649.00
HENDRICKSON HAULMAAX - 9.5" RIDE HEIGHT	N/C
54" AXLE SPACING	STD
HENDRICKSON HN AND HAULMAAX SERIES STEEL BEAMS WITH BAR PIN	N/C
FORE/AFT AND TRANSVERSE CONTROL RODS	STD
REAR SHOCK ABSORBERS - TWO AXLES (TANDEM)	\$147.00
<b>Brake System</b>	
WABCO 4S/4M ABS WITH TRACTION CONTROL ENHANCEMENT	\$493.00
REINFORCED NYLON, FABRIC BRAID AND WIRE BRAID CHASSIS AIR LINES	STD
FIBER BRAID HOSE FRONT SERVICE BRAKE	STD
FIBER BRAID HOSE REAR SERVICE BRAKE	STD
FIBER BRAID PARKING BRAKE HOSE	STD
STANDARD BRAKE SYSTEM VALVES	STD
STD U.S. FRONT BRAKE VALVE	STD
RELAY VALVE WITH 5-8 PSI CRACK PRESSURE NO REAR PROPORTIONING VALVE	STD
BW AD-9 BRAKE LINE AIR DRYER WITH HEATER	STD
AIR DRYER MOUNTED OUTBOARD ON LH RAIL	N/C
STEEL AIR BRAKE RESERVOIRS MOUNTED INSIDE RAIL	STD
(1) 700 CU. IN. AUXILIARY AIR TANK, INLET CHECK VALVE, PRESSURE PROTECTED SUPPLY	\$96.00



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	Description	Retail Price
	BW DV-2 AUTO DRAIN VALVE WITH HEATER ON WET TANK, DV-2 WITHOUT HEATER ON ALL OTHER TANKS	\$480.00
*	EXTERNAL CHARGING SCHRADER VALVE	\$83.00
<b>Trailer Connections</b>		
*	AIR CONNECTIONS AND ANCHOR COUPLINGS TO FRONT OF FRAME FOR TOWING	\$161.00
	PLUMBING FOR AUXILIARY AIR TANK WITH PROTECTED SUPPLY	N/C
	PRIMARY CONNECTOR/RECEPTACLE CENTER PIN POWERED THROUGH IGNITION	N/C
	SAE J560 7-WAY PRIMARY TRAILER CABLE RECEPTACLE MOUNTED END OF FRAME	N/C
<b>Wheelbase &amp; Frame</b>		
	5425MM (214") WHEELBASE	N/C
*	7/16" X 3-11/16" X 11-1/8" STEEL FRAME (11.11MM X 282.6MM/.437" X 11.13")110KSI	\$1,538.00
	NO LINER REQUESTED	
	1525MM (60") REAR FRAME OVERHANG	N/C
	FRAME OVERHANG RANGE: 51" TO 60"	N/C
	1" BOLT-ON FRONT FRAME SPACER	STD
	UNDERSLUNG CROSSMEMBER	STD
	SQUARE END OF FRAME	STD
*	REAR TOW HOOKS	\$66.00
*	REQUESTED MIN UNLADEN TOW HITCH HEIGHT : 0.0	
	30" ABOVE GROUND	
*	REQUESTED MAX UNLADEN TOW HITCH HEIGHT : 0.0	
	HEAVY DUTY FRONT CLOSING CROSSMEMBER	STD
	STANDARD CROSSMEMBER BACK OF TRANSMISSION	STD
	STANDARD MIDSHIP #1 CROSSMEMBER(S)	STD
	STANDARD REARMOST CROSSMEMBER	STD
	HEAVY DUTY SUSPENSION CROSSMEMBER	STD
	STANDARD WEIGHT REAR SUSPENSION CROSSMEMBER	STD
<b>Chassis Equipment</b>		
	NO LH OR RH BACK OF CAB ACCESS	STD
	8" PAINTED STEEL BUMPER - HD 1/4"	STD
	FRONT TOW HOOKS - FRAME MOUNTED	STD
	BUMPER MOUNTING FOR SINGLE LICENSE PLATE	STD



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	Description	Retail Price
	NO MUDFLAP BRACKETS	STD
	NO REAR MUDFLAP	STD
	FENDER MOUNTED FRONT MUDFLAPS	\$71.00
	GRADE 8 THREADED HEX-HEADED FRAME FASTENERS	N/C
<b>Fuel Tanks</b>		
*	CUSTOM RH FUEL TANK	\$29,740.00
	CHART INDUSTRIES HLNG-150 FUEL TANK	
N	27" DIAMETER FUEL TANK(S)	STD
*	STEEL FUEL TANK BRACKET(S)	\$290.00
•	PLAIN ALUMINUM/PAINTED STEEL FUEL/HYDRAULIC TANK(S) WITH PAINTED BANDS	STD
*	FUEL TANK(S) FORWARD	STD
	PLAIN STEP FINISH	STD
•	CNG/LNG PARKER HANNIFIN TYPE LH FILLER RECEPTACLE AND DUST CAP	\$3,123.00
•	NO FUEL TANK DRAIN VALVES	N/C
•	FUEL LINES WITH NATURAL GAS CHECK VALVE, REGULATOR AND SHUTOFF SOLENOID WITH MACROTECH VENT FILL PIPE CON. ROUTED TO UPRIGHT	\$1,462.00
*	STAINLESS STEEL HIGH PRESSURE TUBING WITH FLEXIBLE STEEL WIRE REINFORCED NYLON LOW PRESSURE NATURAL GAS FUEL HOSE	N/C
<b>Tires</b>		
	315/80R22.5 20 PLY RADIAL FRONT TIRES	STD
	MICHELIN XZY-3 315/80R22.5 20 PLY RADIAL FRONT TIRES	(\$16.00)
	315/80R22.5 20 PLY RADIAL REAR TIRES	N/C
	MICHELIN XZY-3 315/80R22.5 20 PLY RADIAL REAR TIRES	\$2,656.00
*	MICHELIN XZY-3 315/80R22.5 20 PLY RADIAL SPARE TIRE	\$780.00
*	MICHELIN XZY-3 315/80R22.5 20 PLY RADIAL ADDITIONAL SPARE TIRE	\$780.00
<b>Hubs</b>		
	GUNITE IRON FRONT HUBS	STD
	GUNITE IRON REAR AXLE HUBS	N/C
<b>Wheels</b>		
*	ACCURIDE 29039 22.5X9.00 10-HUB PILOT 5.25 INSET 5-HAND STEEL DISC FRONT WHEELS	STD



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	Description	Retail Price
*	ACCURIDE 29300 22.5X9.00 10-HUB PILOT 5-HAND STEEL DISC REAR WHEELS	\$1,320.00
	FRONT WHEEL MOUNTING NUTS	STD
	REAR WHEEL MOUNTING NUTS	STD
•	ACCURIDE 29300 22.5X9.00 10-HUB PILOT 5-HAND STEEL DISC SPARE WHEEL	\$322.00
*	ACCURIDE 29039 22.5X9.00 10-HUB PILOT 5.25 INSET 5-HAND STEEL DISC ADDITIONAL SPARE WHEEL	\$278.00
<b>Cab Exterior</b>		
	68" BBC LOW CAB FORWARD ALUMINUM CAB	STD
•	RH CAB DOOR WITH 90 DEGREE DOOR STRAP	N/C
*	LH CAB DOOR WITH 90 DEGREE DOOR STRAP	(\$22.00)
	RUBBER CAB MOUNTS	STD
	HYDRAULIC CAB TILT MECHANISM WITH MANUAL PUMP, LOCATED RH SIDE BOC OVER FENDER	STD
	HYDRAULIC CAB LATCH	STD
	BLACK POLYURETHANE QUARTER FENDER BEHIND FRONT WHEEL	STD
	2" FENDER EXTENSIONS	STD
	INTERIOR AND EXTERIOR GRAB HANDLES FOR CAB ACCESS ON DRIVER AND PASSENGER SIDES	STD
	TWO GRAB HANDLES MOUNTED ON FRONT OF CAB BELOW WINDSHIELD	STD
	PAINTED CAB MOUNTED GRILLE WITH QUICK RELEASE LATCHES	STD
•	AMERICAN LAFRANCE CONDOR NAME PLATES	STD
	TUNNEL/FIREWALL LINER	STD
	HADLEY ROUND AIR HORN, SINGLE BASE; 2 TRUMPETS DUAL TONE 12.5/10.25" MOUNTED BEHIND GRILLE	\$114.00
	SINGLE ELECTRIC HORN	STD
	ALL LOCKS KEYED THE SAME	STD
	REAR LICENSE PLATE MOUNT END OF FRAME	\$27.00
	DUAL RECTANGULAR HALOGEN HEADLIGHTS	STD
*	(5) AMBER MARKER LIGHTS	STD
	WIRING HARNESS ONLY TO END OF FRAME FOR STOP, TAIL, TURN SIGNALS	STD
*	STANDARD FRONT WITH SURFACE MOUNTED SIDE AUXILIARY TURN SIGNAL	STD
	MID BODY TURN SIGNALS SPECIFIED	
	DUAL STAINLESS STEEL WEST COAST MIRRORS	STD
	DOOR MOUNTED MIRRORS	STD





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Description	Retail Price
LH/RH 8" BRIGHT FINISH CONVEX MIRRORS MOUNTED UNDER PRIMARY MIRRORS	STD
• STANDARD SIDE/REAR REFLECTORS	STD
• REAR REFLECTIVE DEVICE	N/C
FIXED CAB MOUNTED STEPS RH/LH FOR CAB ENTRY	STD
20"X36" TINTED CENTER AND (2) 34"X8" TINTED OUTBOARD REAR WINDOWS	\$327.00
TINTED DOOR GLASS	STD
RH AND LH ELECTRIC POWERED WINDOWS	STD
8"X34" TINTED VERTICAL UPPER SIDE WINDOWS LH AND RH	\$422.00
TINTED WINDSHIELD	STD
ONE GALLON WINDSHIELD WASHER RESERVOIR LOCATED TO INBOARD SIDE OF UPRIGHT	STD
<b>Cab Interior</b>	
GRAY STANDARD INTERIOR	STD
ABS UPPER AND BALANCE PAINTED ALUMINUM LH DOOR TRIM	STD
ABS UPPER AND BALANCE PAINTED ALUMINUM RH DOOR TRIM	STD
SLIP RESISTANT FLOORING	STD
FORWARD ROOF MOUNTED CONSOLE	STD
LH/RH DOOR STORAGE POCKETS INTEGRATED INTO MOLDED DOOR PANELS	STD
(2) CUP HOLDERS LH AND RH INTEGRAL WITH ENGINE TUNNEL COVER	STD
(2) ROOF MOUNTED WINDSHIELD FANS	\$125.00
• 10 LB. FIRE EXTINGUISHER WITH MOUNTING BRACKET	\$156.00
HEATER, DEFROSTER AND AIR CONDITIONER	\$1,965.00
STANDARD HVAC DUCTING	STD
MAIN HVAC CONTROLS WITH RECIRCULATION SWITCH AND MANUAL AIR CONDITIONER ON/OFF SWITCH	N/C
STANDARD PLUMBING WITH SHUTOFF VALVES	\$26.00
SANDEN COMPACT AIR CONDITIONER COMPRESSOR	N/C
RADIATOR MOUNTED AIR CONDITIONER CONDENSER	N/C
BINARY CONTROL, R-134A, WITH RECEIVER DRIER	N/C
CAB INSULATION WITH ADDITIONAL NOISE AND THERMAL TREATMENT	STD



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Description	Retail Price
AUTO SELF-RESET CIRCUIT BREAKERS AND FUSES	STD
12V NEGATIVE GROUND ELECTRICAL SYSTEM WITH SCHEMATIC MANUAL	STD
DOOR ACTIVATED CENTER DOME LIGHT WITH LIGHT MOUNTED SWITCH	STD
CAB DOOR LATCHES WITH MANUAL DOOR LOCKS	STD
(1) 12V POWER SUPPLY IN DASH	\$37.00
TRIANGULAR REFLECTORS WITH FLARES MOUNTED BEHIND DRIVER ON CAB BACKWALL	\$71.00
BOSTROM TALLADEGA 910 MID BACK AIR SUSPENSION DRIVER SEAT	\$111.00
BOSTROM TALLADEGA 910 MID BACK AIR SUSPENSION PASSENGER SEAT	\$325.00
FLAT VINYL, DRIVER SEAT	STD
FLAT VINYL, PASSENGER SEAT	STD
3 POINT ADJUSTABLE D-RING RETRACTOR DRIVER AND PASSENGER SEAT BELTS	STD
ADJUSTABLE TILT AND TELESCOPING STEERING COLUMN	STD
2-SPOKE 18" (450MM) BLACK STEERING WHEEL(S)	STD
DRIVER/PASSENGER INTERIOR SUN VISORS	STD
<b>Instruments &amp; Controls</b>	
CONDOR STANDARD GAUGE PACKAGE	STD
BLACK GAUGE BEZELS	STD
INTEGRAL GAUGES MOUNTED IN INSTRUMENT PANEL CLUSTER	STD
GRAY CENTER INSTRUMENT PANEL	STD
LOW AIR PRESSURE LIGHT AND BUZZER	STD
2" PRIMARY AND SECONDARY AIR PRESSURE GAUGES	STD
ENGINE COMPARTMENT MOUNTED AIR RESTRICTION INDICATOR WITH GRADUATIONS, WITH WARNING LIGHT IN DASH	\$45.00
ECCO MODEL 917 AUTOMATIC SELF-ADJUSTING BACKUP ALARM WITH REVERSE MOTION SENSOR	\$334.00
KEY OPERATED IGNITION SWITCH AND INTEGRAL START POSITION; 4 POSITION OFF/RUN/START/ACCESSORY	STD
INTEGRATED SPEEDOMETER MESSAGE CENTER LCD DISPLAY, DATA LINKED	STD
DIAGNOSTIC INTERFACE CONNECTOR, 9 PIN, SAE J1587/1708/1939, LOCATED BELOW DASH	\$34.00
2" ELECTRIC FUEL GAUGE	STD



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Description	Retail Price
ELECTRICAL ENGINE COOLANT TEMPERATURE GAUGE	STD
2" TRANSMISSION OIL TEMPERATURE GAUGE	STD
TRIP HOUR METER INTEGRAL WITH SPEEDOMETER MESSAGE CENTER (SMC)	STD
DASH MOUNTED ILLUMINATED ROCKER SWITCH PTO CONTROL WITH INDICATOR LIGHT, 12V, WITHOUT NEUTRAL INTERLOCK	\$142.00
ELECTRIC ENGINE OIL PRESSURE GAUGE	STD
F/L XTA-2300 AM/FM/WB CD RADIO BY DELPHI	\$877.00
ROOF/OVERHEAD CONSOLE MOUNTED RADIO	N/C
(2) RADIO SPEAKERS (CAB ONLY)	N/C
AM/FM FLEXIBLE COMPOSITE ANTENNA MOUNTED ON LH FRONT A-PILLAR	N/C
NO CB RADIO/PROVISION	STD
NO CB ANTENNA, BRACKET OR LEAD	STD
ELECTRONIC MPH SPEEDOMETER WITH SECONDARY KPH SCALE, WITHOUT ODOMETER	STD
ELECTRONIC TACHOMETER 3000 RPM	STD
IGNITION SWITCH CONTROLLED ENGINE STOP	STD
ONE EXTRA SWITCH IN DASH	\$30.00
BW TP-3 TRACTOR PROTECTION VALVE MOUNTED INSIDE LH RAIL, BACK OF CAB	N/C
TRAILER BRAKE VALVE, HAND CONTROL	N/C
VOLTMETER; LOW VOLTAGE WARNING LIGHT AND BUZZER	STD
DUAL ELECTRIC MOTOR WINDSHIELD WIPER WITH DELAY	STD
MARKER LIGHT SWITCH INTEGRAL WITH HEADLIGHT SWITCH	STD
ONE VALVE PARKING BRAKE SYSTEM (PP1) OFFSET TOWARDS DRIVER POSITION	STD
SELF CANCELING TURN SIGNAL SWITCH WITH DIMMER, HEADLAMP FLASH, WASH/WIPE/INTERMITTENT	STD
NON-POLARITY SENSITIVE ELECTRONIC FLASHER	STD
<b>Design</b> PAINT: ONE SOLID COLOR	STD
<b>Color</b> CAB COLOR A: B91776 WHITE PPG DELTA	STD
CHASSIS PAINT: N0006EA WHITE ELITE SS	\$381.00
FRONT WHEEL PAINT: N0006EA WHITE ELITE SS	\$182.00
REAR WHEEL PAINT: N0006EA WHITE ELITE SS	\$728.00



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 2450 KELLA AVE.  
 WHITTIER, CA 90601  
 Phone: 562 692-7267  
 E-Mail: jonennis@peckroad.com

Description	Retail Price
BUMPER PAINTED SAME AS CHASSIS	STD
CAB INTERIOR PAINT: NONE	STD
RUST PREVENTION COATING ON UNDERSIDE OF CAB	STD
<b>Special Narrative Instructions</b>	
* CUMMINS B5.9G+/C8.3G+ CM556 J1939/1587 ECU S/W VERSION 10.01	N/C

**Sales Programs**

**TOTAL VEHICLE SUMMARY**

**Adjusted List Price**

Adjusted List Price \*\* \$240,948.00

**ITEMS NOT INCLUDED IN ADJUSTED LIST PRICE**

**Other Factory Charges**

RAW MATERIAL SURCHARGE	\$1,600.00
DELIVERY & ORDER PROCESSING CHARGE	\$1,425.00

**Extended Warranty**

EXTENDED VEHICLE WARRANTY 2 YEARS OR 100,000 MILES/160 000 KM	\$1,927.00
ALLIANCE BATTERY EXTENDED WARRANTY 2 YEAR/100,000 MILE/160 000 KM	\$35.00
TOWING EXTENDED/ROADSIDE SERVICE WARRANTY 2 YEARS/UNLIMITED	\$250.00
<b>Total Extended Warranty (Local Currency)</b>	<b>\$2,212.00</b>

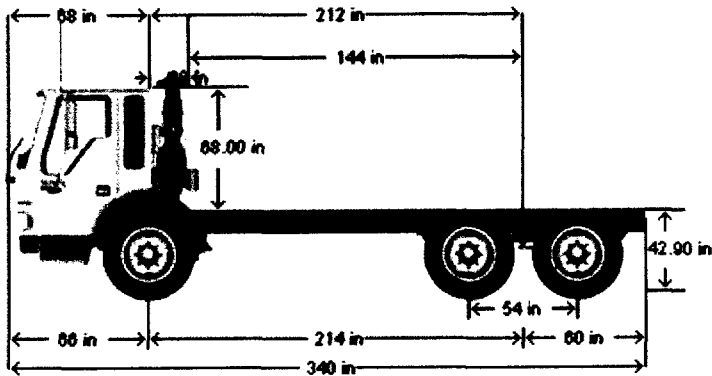
(\*\*) Prices shown do not include taxes, fees, etc... "Net Equipment Selling Price" is located on the Quotation Details Proposal Report.



Prepared for:  
 John Seevers  
 City of Long Beach  
 2600 Temple  
 Long Beach, CA 90806  
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## DIMENSIONS



### VEHICLE SPECIFICATIONS SUMMARY - DIMENSIONS

Model .....	FTLC
Wheelbase (545) .....	5425MM (214") WHEELBASE
Rear Frame Overhang (552) .....	1525MM (60") REAR FRAME OVERHANG
Cab Size (829) .....	68" BBC LOW CAB FORWARD ALUMINUM CAB
Exhaust System (016) .....	SINGLE VERTICAL EXHAUST WITH PAINTED STACK RIGHT SIDE



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**TABLE SUMMARY - DIMENSIONS**

Dimensions	Inches
Bumper to Back of Cab (BBC)	67.9
Bumper to Centerline of Front Axle (BA)	65.7
Min. Cab to Body Clearance (CB)	2.5
Back of Cab to Centerline of Rear Axle(s) (CA)	211.8
Effective Back of Cab to Centerline of Rear Axle(s) (Effective CA)	143.8
Back of Cab Protrusions (Exhaust/Intake) (CP)	29.7
Back of Cab Protrusions (Side Extenders/Trim Tab) (CP)	0.0
Back of Cab Clearance (CL)	68.0
Back of Cab to End of Frame	271.8
Cab Height (CH)	68.0
Wheelbase (WB)	214.0
Frame Overhang (OH)	60.0
Overall Length (OAL)	339.7
Rear Axle Spacing	54.0
Unladen Frame Height at Centerline of Rear Axle	42.9



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## GVWR

### VEHICLE SPECIFICATIONS SUMMARY - GVWR

Model .....	FTLC
Cab Size (829) .....	68" BBC LOW CAB FORWARD ALUMINUM CAB
Expected Front Axle(s) Load (lbs).....	20000.0
Expected Pusher Axle(s) Load (lbs).....	0.0
Expected Rear Axle(s) Load (lbs).....	40000.0
Expected Tag Axle(s) Load (lbs).....	0.0
Expected GVW (lbs).....	60000
Expected GCW (lbs).....	80000.0
Front Axle (400).....	MFS-20-133A FL1 20,000# SINGLE FRONT AXLE
Front Suspension (620).....	20,000# FLAT LEAF FRONT SUSPENSION
Front Hubs (418).....	GUNITE IRON FRONT HUBS
Front Disc Wheels (502).....	ACCURIDE 29039 22.5X9.00 10-HUB PILOT 5.25 INSET 5-HAND STEEL DISC FRONT WHLS
Front Tires (093).....	MICHELIN XZY-3 315/80R22.5 20 PLY RADIAL FRONT TIRES
Front Brakes (402).....	MERITOR 16.5X6 Q+ CAST SPIDER CAM FRONT BRAKES, DOUBLE ANCHOR, FABRICATED SHOES
Steering Gear (536).....	TRW TAS-65 POWER STEERING WITH RCS65 AUXILIARY GEAR
Rear Axle (420).....	RT-40-145 R-SERIES TANDEM REAR AXLE @ 40,000#
Rear Suspension (622).....	HENDRICKSON HAULMAAX REAR SUSPENSION @ 46,000#
Rear Hubs (450).....	GUNITE IRON REAR AXLE HUBS
Rear Disc Wheels (505).....	ACCURIDE 29300 22.5X9.00 10-HUB PILOT 5-HAND STEEL DISC REAR WHEELS
Rear Tires (094).....	MICHELIN XZY-3 315/80R22.5 20 PLY RADIAL REAR TIRES
Rear Brakes (423).....	MERITOR 16.5X7 Q+ CAST SPIDER CAM REAR BRAKES, DOUBLE ANCHOR, FABRICATED SHOES

### TABLE SUMMARY - GVWR



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	Front	Rear 1	Rear 2
<b>Axle Component Weight Ratings</b>			
Axes	20000	20000	20000
Suspension	20000	23000	23000
Hubs	20000	26000	26000
Brakes	20000	24999	24999
Wheels	20000	36000	36000
Tires	18180	33080	33080
Power Steering	22000	N/A	N/A
GAWR (per axle)	18180	20000	20000
GAWR (per axle system)	18180		40000
Expected Load (per axle system)	20000		40000
<b>Vehicle GVWR Summary</b>			
Calculated GVWR	58180		
Expected GVWR	60000		
All weights displayed in pounds			





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## GRADEABILITY

### VEHICLE SPECIFICATIONS SUMMARY - GRADEABILITY

Model .....	FTLC
Cab Size (829) .....	68" BBC LOW CAB FORWARD ALUMINUM CAB
Desired Gradeability at Peak Torque (%) .....	1.6
Desired Gradeability at Cruise Speed (%) .....	0.8
Desired Cruise Speed (mph) .....	65.0
Expected Front Axle(s) Load (lbs) .....	20000.0
Expected Pusher Axle(s) Load (lbs) .....	0.0
Expected Rear Axle(s) Load (lbs) .....	40000.0
Expected Tag Axle(s) Load (lbs) .....	0.0
Expected GVW (lbs) .....	60000
Expected GCW (lbs) .....	80000.0
Engine (101) .....	CUSTOM ENGINE
Peak Torque (lbs-ft) .....	N/A
RPM at Peak Torque .....	N/A
Peak Torque (Multi-torque High) (lbs-ft) .....	N/A
RPM at Peak Torque (Multi-torque High) .....	N/A
Multi-torque .....	CUSTOM
Transmission (342) .....	ALLISON 3000 RDS AUTOMATIC TRANSMISSION WITH PTO PROVISION
Rear Axle (420) .....	RT-40-145 R-SERIES TANDEM REAR AXLE @ 40,000#
Number of Speeds .....	1
Rear Axle Gear Ratio(s) .....	5.29 REAR AXLE RATIO
Rear Tires (094) .....	MICHELIN XZY-3 315/80R22.5 20 PLY RADIAL REAR TIRES
Revolutions per Mile .....	485
Trailer Width (') .....	0.0
Trailer Height (ground to top) (ft) .....	0.0
Body Width (') .....	96.0
Body Height (ground to top) (ft) .....	8.0
Road Surface (AB5) .....	SMOOTH CONCRETE OR ASPHALT PAVEMENT - MOST SEVERE IN-TRANSIT (BETWEEN SITES) ROAD SURFACE
Type of Trailer (AA2) .....	NO TRAILER SPECIFIED





*The City of Long Beach*

Bid PA-02660, Re-bid

## Bid Response Attachment

Additional Product Data

Allison SCAAN Report

Sterling Spec-Pro Chassis Specifications

Brochures





*The City of Long Beach*

Bid PA-02660, Re-bid

### **Freightliner / Sterling Primer and Topcoat Engineering Standard**

Freightliner requires all incoming components to meet the attached performance specification. Our cabs and chassis rails are primed with a two part epoxy electrodeposition coating which covers all exterior and interior surfaces. City regulations prohibit us from using the DuPont Corlar 824S product in our manufacturing facilities. The metal pretreatment and primer/topcoat system employed by Freightliner provides excellent corrosion protection, even in the tough Northeastern climates where winter time road salts are a great concern. This system has also been approved by the military.

See attached Engineering Standard for details



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**SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS****1 PURPOSE:**

To establish Freightliner LLC's performance requirements for primer and topcoat paints when used to coat metal surfaces.

**2 ABSTRACT:**

This standard defines the performance requirements for all types of painted finishes applied to metal substrates. This specification is not intended to limit or specify the processes used for painting. Any process providing quality parts that meet this specification will be approved.

**3 APPLICATION:**

All drawings of metallic component parts and assemblies requiring paint will specify the type of prime and/or topcoat, as identified in this standard. In those cases where paint is not required or not desired, there shall be no reference to paint made on the drawing.

**4 RESPONSIBILITIES:**

All personnel concerned with the design, review, procurement, manufacture or quality assurance of components and assemblies will ensure that the requirements of this standard are implemented. Engineering is responsible for documenting the determination whether to paint or not and which paint requirement applies.

**5 SPECIFICATION:**

**-101** Prime Paint, to be specified for cab decorative exterior components, which are visible appearance items and require a high degree of corrosion and weathering resistance. This finish is intended for topcoat during vehicle assembly.

**Minimum of 24 panels required for testing**

**-102** Prime Paint, to be specified for chassis and suspension components, non-decorative cab exterior parts requiring a high degree of corrosion and weathering resistance and for engine parts and those parts subject to oil exposure. This finish is intended for topcoat during vehicle assembly.

**Minimum of 30 panels required for testing**

**-103** Prime Paint, to be specified for cab interior parts requiring minimal corrosion resistance where a good appearance, may or may not be essential. This finish is intended for topcoat during vehicle assembly.

**Minimum of 21 panels required for testing**

# ENGINEERING STANDARD

**FREIGHTLINER**  
LLC

A DaimlerChrysler Company

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SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS

**-201** Topcoat, to be specified for cab decorative exterior components, which are visible appearance items and require a high degree of corrosion and weathering resistance. This finish may be recoated during vehicle assembly and must be compatible with standard Freightliner topcoats.

**Minimum of 35 panels required for testing**

**-202** Topcoat, to be specified for chassis and suspension components, or non-decorative cab exterior parts, requiring a high degree of corrosion and weathering resistance or for engines, engine parts and those parts subject to oil exposure.

**Minimum of 32 panels required for testing**

**-203** Topcoat, to be specified for cab interior parts requiring, minimal corrosion resistance.

**Minimum of 28 panels required for testing**

**-204** Superceded by –203

**-205** Combined with –202

## 6 GENERAL REQUIREMENTS:

### 6.1 SURFACE PREPARATION

6.1.1 Prior to painting, samples (or test plaques) are to be prepared per the proposed production process. All surfaces must be thoroughly cleaned to remove any accumulation of dirt, oil, grease and oxidation. After cleaning, the surface shall not contain any smut, and shall be water-break free. Any protective wrapping used prior to cleaning shall not be reused. Panels shall be wrapped in a clean media suitable to protect the panels from damage during transport. Acceptable cleaning methods include: hot alkaline cleaning, vapor degreasing, and grit or shot blasting. The cleaned components should be processed as soon as practical after cleaning to avoid any possibility of oxidation.

6.1.2 Chemical pretreatment is recommended for all classes of finishes. Acceptable chemical pretreatments include: microcrystalline zinc phosphate with a chrome sealer, acid wash primer, or an amorphous chromate conversion coating. It is recommended that a zinc phosphate be used on all zinc and steel substrates and a chromate conversion coating be used on all aluminum substrates.

### 6.2 PRIMER

6.2.1 The primer system used must contain corrosion inhibitors in order to meet the requirements stated within this specification. A thermal cure epoxy based primer system is preferred, but any primer that meets the performance requirements cited herein is acceptable.

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**SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS**

6.2.2 For parts specified as "prime only", (49-00023-101, -102, and -103), it is the supplier's responsibility to ensure the primer used is compatible with the topcoat systems used by Freightliner. Additionally, the primed parts must have a surface finish capable of meeting the appearance requirements in Paragraph 6.4 after top coating.

6.2.3 All primed parts must meet the performance and dry film thickness requirements cited in Table 1. (See end of document)

### 6.3 TOPCOAT

6.3.1 Preferred topcoat chemistries are polyurethane enamel, acrylic urethane enamel, and polyester melamines. Topcoats of different chemistries shall possess UV resistance comparable to that of an acrylic urethane when tested under identical conditions.

6.3.2 Top coated parts shall meet the appearance requirements for their respective class as indicated in paragraph 6.4.

6.3.3 All top coated parts must meet the performance and dry film thickness requirements cited in Table 2. (See end of document)

6.3.4 Dry film thickness requirements are provided as a reference only. The paint manufacturer recommended thickness for the product and process always takes precedence.

### 6.4 APPEARANCE

6.4.1 Cab exterior or interior visible components requiring good appearance shall have a surface finish free from any runs, sags, pits, scratches, stains, blemishes, or any other visible defects, which will detract from the overall appearance of the component. These conditions apply to both primed and primed/top coated parts.

6.4.2 Part mating surfaces with all classes of finishes must be free from any runs or sags that may be detrimental to the function of the part or which would prevent a properly fastened joint from being achieved.

6.4.3 The standard primer color shall be black or dark gray unless specifically noted otherwise on the engineering drawing or purchase order.

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SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS					

**6.5 MATERIAL GUIDELINES**

- 6.5.1 Testing shall be performed on standard test panels or on panels cut from finished parts. All test specimens must be aged 72 hours at 24 C ± 2° C and 50% ± 5% relative humidity prior to testing.
- 6.5.2 All test plaques must be flat panels measuring 4in x 8in or 4in x 12in (100mm x 200mm or 100mm x 300mm). The substrate shall be representative of the production material with respect to surface condition and base chemistry. Some standard test plaque configurations are listed below:

<u>Material</u>	<u>Standard</u>	<u>Nominal Thickness</u>	<u>Coating</u>
SAE 1010 CRS	ASTM D609, Method A	0.032" ± 0.005	None
5052-H32 Aluminum	ASTM B209	0.050" ± 0.005	None
SAE 1010 CRS	ASTM D609, Method A	0.032" ± 0.005	Electrolytic Zinc per F/L 48-25025-120
SAE 1010 CRS	ASTM D609, Method A	0.032" ± 0.005	Hot Dip Galvanized per F/L 48-0719-120

(Steel and aluminum test panels that meet the above requirements may be purchased from Advanced Coatings Technologies, Inc., P.O. Box 735, 273 Industrial Drive, Hillsdale, MI 49242).

**7 PHYSICAL TESTING**

All tests shall be conducted in accordance with the following procedures, unless noted otherwise on the engineering drawing or purchase order. Minimum passing criteria are listed in Tables 1 and 2.

**7.1 GLOSS**

Specular gloss shall be measured in accordance with the procedures cited in ASTM D523. The gloss rating of a finish shall be determined with a Gardner 60° Gloss Meter.  
**1 panel**

**7.2 DRY FILM THICKNESS**

Film thickness shall be measured in accordance with the procedures cited in ASTM D4138, or in accordance with the procedures cited in Freightliner ISO Work Instruction 09TE-K39. Dry film thickness requirements are provided in Tables 1 and 2 as a



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DATE ORIGINATED <b>04/08/91</b>	RELEASE NUMBER <b>PA2042-I3</b>	REVISION <b>L</b>	REVISION DATE <b>10/01/04</b>	STANDARD NO. <b>49-00023</b>	PAGE <b>5 OF 14</b>
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reference only. The paint manufacturer recommended thickness for the product and process always takes precedence.  
**2 panels**

**7.3 CROSSHATCH ADHESION TEST**

Adhesion testing shall be performed in accordance with ASTM D3359, Method B.  
**2 panels**

**7.4 GLOMETER TEST**

Gravelometer testing shall be performed according to ASTM D3170 at a temperature of -18°C. Test panels shall meet the requirements stated in Table 2. Provide complete rating of each chip size according to ASTM D3170. No C or D size chips are allowable.  
**2 panels**

**7.5 SOLVENT WIPE TEST**

The solvent wipe test shall be performed in accordance with ASTM D5402. Use Toluene as the solvent. Examine the pad after each cycle and count the number of cycles until paint first appears on the pad. Sample shall be rated per the following rating scale. It is not necessary to report film thickness after the test.  
**2 panels**

<u>Rating</u>	<u>Paint Surface</u>	<u>Paint Residue on Cloth</u>
0	No Change	None
1	Slight-Barely Observable	Trace Amount
3	Moderate-Readily Observable	Readily Noticeable
5	Severe-Very Observable	Saturated with Color

**7.6 CLEANING AGENTS**

Resistance to various cleaning agents shall be evaluated according to ASTM D5402 using the cleaners listed below. Examine the pad after each cycle and count the number of cycles until a change in the paint is noticeable or there is paint residue on the cloth. Use the rating scale listed in Section 7.5 Solvent Wipe.  
**2 panels**

- Cleaners:  
 Windex  
 DuPont 3939-S  
 Lysol Direct  
 Formula 409





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SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS					

**7.7 PENCIL HARDNESS TEST**

Testing shall be performed in accordance with ASTM D3363. The grade of the hardest pencil that will not scratch or cut the paint film shall be recorded.

**2 panels**

**7.8 BRITTLENESS TEST**

Scribe a “furrow” to the base metal with a quarter held in the fingers slightly off perpendicular to the surface, the flat side at right angles and tilted toward the direction of motion (quick stroke, heavy pressure). If the paint flakes beyond the width of the furrow, the finish is considered brittle.

**2 panels – may be performed on the same panels as Pencil Hardness Test.**

**7.9 SINGLE IMPACT TEST (STONE HAMMER)**

The test shall be conducted at 23° + 2°C and at -20°C + 2°C per Freightliner ISO Work Instruction 09TE-K46.

Use a transparent template with 2 mm<sup>2</sup> to 50 mm<sup>2</sup> cutouts, (see Figure A for example only – do not use for actual measurements). Report the actual area of the damage. Report whether impact area did penetrated the topcoat alone or the topcoat and primer.

**2 panels**

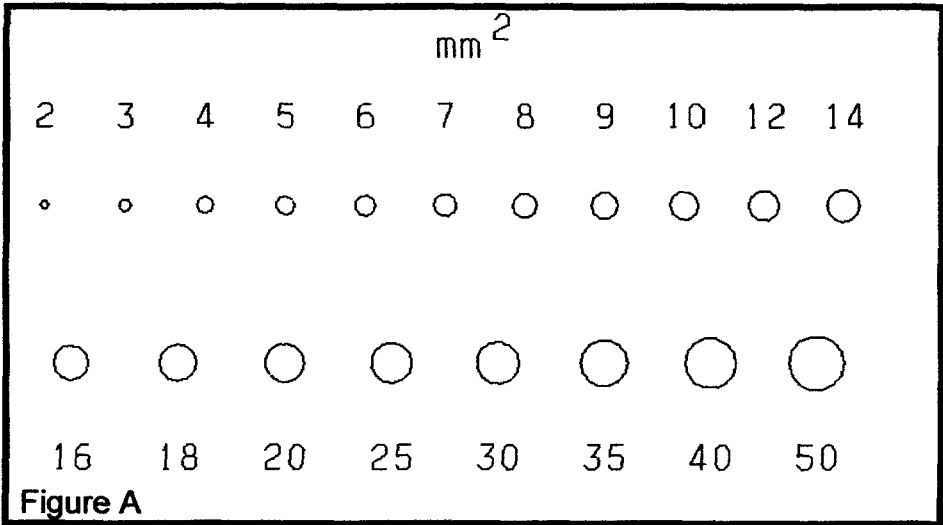


Figure A



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DATE ORIGINATED <b>04/08/91</b>	RELEASE NUMBER <b>PA2042-I3</b>	REVISION <b>L</b>	REVISION DATE <b>10/01/04</b>	STANDARD NO. <b>49-00023</b>	PAGE <b>7 OF 14</b>
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**7.10 FLEXIBILITY IMPACT TEST**

Testing shall be performed according to ASTM D2794 using a 5/8" diameter indenter. Do not test panels if they do not meet the thickness requirements of section 7.1.2. The panels shall be tested painted side up (direct). Paint shall exhibit no cracking at the minimum required values stated in Tables 1 and 2. (See end of document)

**2 panels**

**7.11 CYLINDRICAL MANDREL BEND**

The following procedure will be used in lieu of ASTM D1737, which has been discontinued.

Perform cylindrical mandrel bend (mandrel bend) test at 23°C. The mandrel shall have a diameter equal to four times the thickness of the substrate (before paint).

Test by wrapping the panel 180° around the mandrel in about 1 second. The sample shall be wrapped around the mandrel so that the painted surface is in tension (painted surface up).

The surface of the sample shall be examined with the naked eye for fracture of the substrate or cracking of the paint film in the flexed condition. The painted surface of the sample may show minimal cracking, defined as interrupted short line cracks with a maximum of four (4) uninterrupted line cracks in the flexed condition.

**2 panels**

**7.12 ABRASION RESISTANCE**

Abrasion resistance shall be performed in accordance with the procedures cited in ASTM D4060.

**2 panels**

**7.13 STAIN RESISTANCE**

Stain resistance shall be performed in accordance with the procedures cited in ASTM D1308, Method 3.1.2 for 24 hours. Testing shall include the following standard reagents:

- |           |                        |                    |
|-----------|------------------------|--------------------|
| Margarine | Coffee                 | Chewing Tobacco    |
| Mustard   | Pepsi/Coca-Cola        | Transmission Fluid |
| Ketchup   | Italian Salad Dressing |                    |

Reagents shall be cleaned from the surface by first wiping with plain water and then using a cloth saturated with DuPont 3939S and a light pressure for 1 minute.

**2 panels**

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**SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS**

## **8 ENVIRONMENTAL TESTING**

All environmental testing shall be scribed and evaluated for corrosion and blistering according to ASTM D1654. If blisters are apparent, their size and density shall be also noted according to ASTM D714.

### **8.1 OVEN AGING**

Oven age the test panels according the cycle shown below. After aging, two panels shall pass the Tape X-Cut Adhesion per ASTM D3359, Method A and Gravelometer per paragraph 7.4. Two additional panels shall pass the Humidity Test per paragraph 8.3. An air-circulating oven is recommended for oven aging. One panel shall be retained for comparison purposes.

**5 panels**

Cycle:	Oven Exposure at 180° F	168 hours
	Recovery	1 hour
	Humidity Exposure	750 hours – or – 24 hours (-103 and -203 only)

### **8.2 SALT SPRAY (FOG) TEST**

ASTM B117 Salt Spray testing shall be performed on panels scribed according to ASTM D1654. Test panels shall meet the requirements stated in Table 1 and 2.

Galvanized panels shall NOT be salt fog tested.

**2 panels**

### **8.3 HUMIDITY TEST**

Humidity testing according to ASTM D2247 shall be performed on two panels. At the completion of the exposure, the test panels shall be allowed a ten minute recovery at 24° + 2° C and 50% + 5% Relative Humidity. The paint shall be free of blistering or other appearance changes and shall pass the Tape X-cut Adhesion Test according to ASTM D3359, Method A.

For test durations longer than 500 hours, interim evaluations may be performed at 250 hour intervals. The interim evaluations shall be conducted in the same manner as the final evaluation at the completion of the exposure.

**2 panels**

# ENGINEERING STANDARD



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SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS

## 8.4 WATER IMMERSION TEST

Immerse two thirds of a painted test panel in distilled water according to ASTM D870. Maintain the water bath at 38° + 2° C. At the completion of the exposure, the test panels shall be allowed a ten minute recovery at at 24° + 2° C and 50% + 5% Relative Humidity. The paint shall be free of blistering or other appearance changes and shall pass the Tape X-cut Adhesion Test according to ASTM D3359, Method A. Report the final gloss reading per ASTM D523 within 24 hours of completion.

For test durations longer than 500 hours, interim evaluations may be performed at 250 hour intervals. The interim evaluations shall be conducted in the same manner as the final evaluation at the completion of the exposure.

**2 panels**

## 8.5 FILIFORM CORROSION

Testing shall be conducted in accordance with ASTM D2803 Procedure C. The initiation cycle shall be 24 hours in a neutral salt fog (per ASTM B117). Following initiation, the panels shall be rinsed with distilled water and exposed in a humidity cabinet operating at 104°F ± 3°F and 80% ± 5% Relative Humidity. The panels shall be evaluated for filiform corrosion each week. Testing shall be conducted for three weeks.

**2 panels**

## 8.6 ETHYLENE GLYCOL IMMERSION TEST

Immerse two-thirds of the painted panel in a 50-50 mixture by volume of ethylene glycol and water maintained at 23° ± 2°C for 96 hours. Immediately after removal, examine the surface for evidence of blistering. After a two hour recovery in ambient laboratory conditions, examine the surface for color change. The panel shall show no blistering or color change.

**2 panels**

## 8.7 ENGINE OIL IMMERSION TEST

Immerse two thirds of a painted specimen in a bath of current production engine oil, maintained at 71° ± 2°C for 24 hours. After a one hour recovery period, the panel must pass the Pencil Hardness Test according to paragraph 7.7.

**2 panels**

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SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS

### 8.8 DIESEL FUEL IMMERSION TEST

Immerse two-thirds of the painted panel in diesel fuel maintained at  $23^{\circ} \pm 2^{\circ}\text{C}$  for 96 hours. At the end of the immersion period, the test panel shall show no evidence of peeling, blistering, or any other change of appearance. After a one hour recovery period, the panel must pass the Pencil Hardness Test according to paragraph 7.7.

(Note: If severe discoloration is observed, a retest with fresh diesel fuel may be requested).

**2 panels**

### 8.9 CYCLE/ SCAB TEST

Test panels should be scribed in accordance with ASTM D 1654 and cycled through the exposure detailed below. At the completion of the test, panels shall be evaluated per ASTM D 1654.

**2 panels**

#### Ten cycles consisting of:

1 hour	60°C in air circulating oven
1 hour	-20°C in cold cabinet
22 hours	Salt spray cabinet per Paragraph 8.2
96 hours	4 cycles comprising of:
	8 Hours: Humidity per Paragraph 8.3
	16 hours: 55% relative humidity @ 23°C
48 hours	55% relative humidity @ 23°C

## 9 CONFORMANCE REQUIREMENTS

- 9.1 All parts must be visually inspected and meet the appearance and color requirements cited in this document or on the engineering drawing.
- 9.2 The supplier shall demonstrate conformance with the performance requirements cited in Tables 1 and 2, respectively, for the finish specified. Testing shall be conducted on actual parts where feasible, otherwise representative test panels shall be used.
- 9.3 All changes must be approved by Freightliner Engineering
- 9.4 No changes may be made to the painting processes without prior written notification and approval.
- 9.5 Any significant change in the painting processes will require resubmission and requalification of the painting processes.

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**SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS**

**10 REFERENCES:**

ASTM B 117	Standard Method of Salt Spray (FOG) Testing.
ASTM B 209	Specification for Aluminum and Aluminum Alloy Sheet and Plate.
ASTM D 16	Standard Definitions of Terms Relating to Paint Varnish, Lacquers, and Related Products.
ASTM D 523	Test for Specular Gloss.
ASTM D 609	Preparation of Steel Panels for Testing Paint Varnish, Lacquer, and Related Products.
ASTM D 870	Water Immersion Test of Organic Coatings on Steel.
ASTM D 1308	Test for the Effect of Household Chemicals on clear and Pigmented Organic Finishes.
ASTM D 1654	Standard Method For Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
ASTM D 2247	Testing Coated Metal Specimens at 100% Relative Humidity.
ASTM D 2794	Test for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
ASTM D 3170	Test Method for Chip Resistance of Coatings.
ASTM D 3359	Method for Measuring Adhesion by Tape Test.
ASTM D 3363	Test Method for Film Hardness by Pencil Test.
DIN 55 995-A-A.	Testing of Paints, Varnishes, and Related Products
SAE J 400	Test for Chip Resistance of Surface Coatings.
ASTM D5402	Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs

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<b>SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS</b>					

**Table1: Prime Only Performance Requirements**

Test Description	Freightliner Specification Dash Number		
	-101	-102	-103
<b>Gloss</b>	<60	<60	<60
<b>Dry Film Thickness</b>			
Standard Primer	0.8 – 1.0	0.8 – 1.0	0.8 – 1.0
Flexible Primer	1.3 – 1.7	1.3 – 1.7	N/A
Flexible Primer Stand-alone	1.5 – 1.9	1.5 – 1.9	N/A
<b>Tape Adhesion</b>	5B	5B	5B
<b>Solvent Wipe, 5 double rubs</b>	0 or 1	0 or 1	0 or 1
<b>Pencil Hardness</b>	H – 4H	H – 6H	H – 4H
<b>Brittleness</b>	None	None	None
<b>Flexibility Impact</b>			
30 in-lbs for Aluminum	No Cracking	No Cracking	N/R
60 in-lbs for Steel			
<b>Cylindrical Mandrel Bend</b>			
23°C	Max of 4 uninterrupted line cracks	Max of 4 uninterrupted line cracks	N/R
<b>Oven Aging</b>			
Adhesion	No Visual Changes	No Visual Changes	No Visual Changes
Humidity – 24 hours	5A 9B	5A 9B	5A 9B
<b>Salt Spray</b>			
Adhesion	6A/9B @ 500 hrs. 5A	6A/9B @ 240 hrs. 5A	6A/9B @ 96 hrs. 5A
<b>Humidity</b>			
Adhesion	6A/9B @ 500 hrs. 5A	6A/9B @ 240 hrs. 5A	6A/9B @ 96 hrs. 5A
<b>Water Immersion</b>			
Adhesion	6A/9B @ 500 hrs. 5A	6A/9B @ 240 hrs. 5A	6A/9B @ 96 hrs. 5A
<b>Ethylene Glycol – 96 hours</b>			
Gloss	N/R	9B < 20pts difference from original	N/R
<b>Engine Oil – 24 hours</b>			
Gloss	N/R	9B < 20pts difference from original	N/R
<b>Diesel Fuel – 96 hours</b>			
Gloss	N/R	9B < 20pts difference from original	N/R
<b>Cycle Scab</b>	6A/9B @ 5 cycles	6A/9B @ 5 cycles	6A/9B @ 5 cycles
<b>Weathering Exposure</b>	Ratings of 8 or better on all visual inspection	Ratings of 8 or better on all visual inspection	Ratings of 8 or better on all visual inspection

# ENGINEERING STANDARD



A DaimlerChrysler Company

DATE ORIGINATED <b>04/08/91</b>	RELEASE NUMBER <b>PA2042-I3</b>	REVISION <b>L</b>	REVISION DATE <b>10/01/04</b>	STANDARD NO. <b>49-00023</b>	PAGE <b>13 OF 14</b>
<b>SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS</b>					

**Table 2: Topcoat Performance - Physical Test Requirements**

Test Description	Freightliner Specification Dash Number		
	-201	-202	-203
<b>Gloss</b>	>60, for reference only	>60, for reference only	Refer to 49-00091
<b>Dry Film Thickness</b>			
Standard Primer	0.8 – 1.0	0.8 – 1.0	0.8 – 1.0
Flexible Primer	1.3 – 1.7	1.3 – 1.7	N/A
Flexible Primer Stand-alone	1.5 – 1.9	1.5 – 1.9	N/A
Topcoat	1.8 – 2.2	1.8 – 2.2	1.8 – 2.2
<b>Tape Adhesion</b>	5B	5B	5B
<b>Gravelometer</b> No C or D size chips allowed	5A/6B	5A/6B	N/R
<b>Solvent Wipe</b> , 10 double rubs	0 or 1	0 or 1	0 or 1
<b>Cleaning Agents</b> , 25 double rubs	N/R	N/R	0 or 1
<b>Pencil Hardness</b>	H – 4H	H – 4H	H – 4H
<b>Brittleness</b>	None	None	None
<b>Single Impact</b>			
23°C	< 8mm <sup>2</sup> w/no corrosion	< 8mm <sup>2</sup> w/no corrosion	N/R
-20°C	<12mm <sup>2</sup> w/no corrosion	<12mm <sup>2</sup> w/no corrosion	
<b>Flexibility Impact</b>			
30 in-lbs for Aluminum	No Cracking	No Cracking	N/R
60 in-lbs for Steel			
<b>Cylindrical Mandrel Bend</b>			
23°C	Max of 4 uninterrupted line cracks	Max of 4 uninterrupted line cracks	N/R
<b>Abrasion Resistance</b>	N/R	N/R	1500 cycles/mil DFT
<b>Stain Resistance</b>	N/R	N/R	No Staining



# ENGINEERING STANDARD



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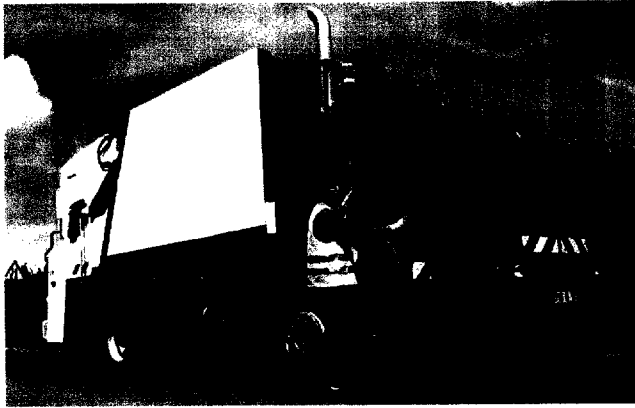
DATE ORIGINATED <b>04/08/91</b>	RELEASE NUMBER <b>PA2042-I3</b>	REVISION <b>L</b>	REVISION DATE <b>10/01/04</b>	STANDARD NO. <b>49-00023</b>	PAGE <b>14 OF 14</b>
<b>SUBJECT: SPECIFICATION – PAINTING OF METAL PARTS</b>					

**Table 2: Topcoat Performance Cont. - Environmental Test Requirements**

Test Description	Freightliner Specification Dash Number		
	-201	-202	-203
<b>Oven Aging</b>	No Visual Changes	No Visual Changes	No Visual Changes
Adhesion	5A	5A	5A
Gravelometer	5A/6B	5A/6B	N/R
Humidity – 24 hours	9B	9B	9B
<b>Salt Spray</b>	7A/9B @ 1000 hrs.	6A/9B @ 240 hrs.	6A/9B @ 96 hrs.
Adhesion	5A	5A	5A
<b>Humidity</b>	7A/9B @ 1000 hrs.	7A/9B @ 750 hrs.	6A/9B @ 240 hrs.
Adhesion	5A	5A	5A
<b>Water Immersion</b>	7A/9B @ 750 hrs.	6A/9B @ 500 hrs.	6A/9B @ 240 hrs.
Adhesion	5A	5A	5A
<b>Filiform Corrosion</b>	No filiform apparent	No filiform apparent	No filiform apparent
<b>Ethylene Glycol – 96 hours</b>	9B	9B	
Gloss	< 20pts difference from original	< 20pts difference from original	N/R
<b>Engine Oil – 24 hours</b>	9B	9B	
Gloss	< 20pts difference from original	< 20pts difference from original	N/R
<b>Diesel Fuel – 96 hours</b>	9B	9B	
Gloss	< 20pts difference from original	< 20pts difference from original	N/R
<b>Cycle Scab</b>	6A/9B @ 10 cycles	6A/9B @ 10 cycles	6A/9B @ 10 cycles
<b>Weathering Exposure</b>	Ratings of 8 or better on all visual inspection	Ratings of 8 or better on all visual inspection	Ratings of 8 or better on all visual inspection

Rev Level	Page	Release Number	Description	By	Date
L	12	PA2042+I3	Revised Table 1, for –102 for pencil hardness.	A. Plaxton	09/30/04

# EVERY ALTERNATIVE.



## CUMMINS WESTPORT HEAVY-DUTY 6-CYLINDER ALTERNATE FUEL ENGINES

**L GAS PLUS:** 8.9-liter, 320 hp,  
1000 lb-ft torque, LNG/CNG

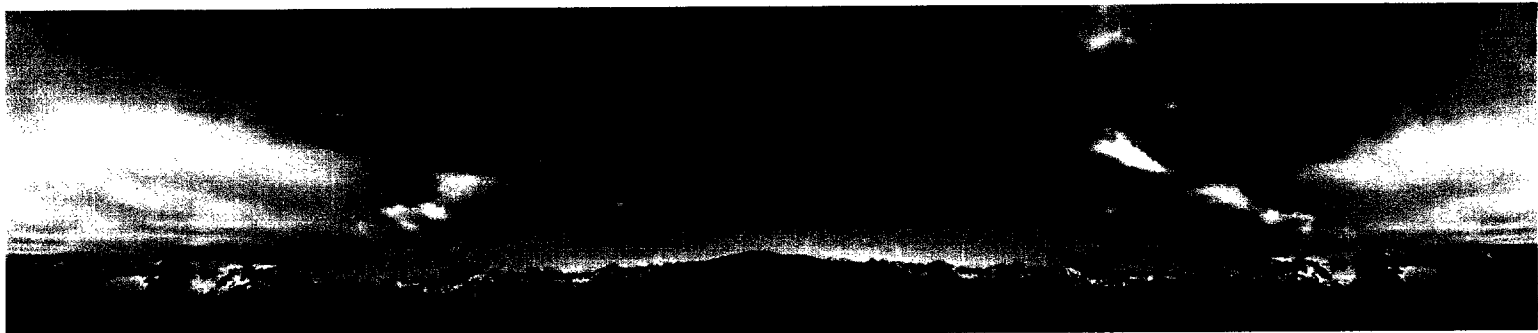
**C GAS PLUS:** 8.3-liter, 250-280 hp,  
660-850 lb-ft torque, LNG/CNG

**B GAS PLUS:** 5.9-liter, 195-230 hp,  
420-500 lb-ft torque, LNG/CNG

**B LPG PLUS:** 5.9-liter, 195 hp,  
420 lb-ft torque, HD-10 LPG

## Leading the Natural Gas Engine Technology.

Cummins Westport incorporates the newest technology in our alternative fuel engines to bring you reliable, durable power. Our heavy-duty engines integrate robust components into engines specifically designed for alternative fuels. Today, all Cummins Westport engines feature a sophisticated closed-loop lean-burn electronic engine control system, on board sensors and drive-by-wire technology to provide excellent performance over a wide range of operating conditions. When you need assistance, the global Cummins parts and service network is there to meet your service and training requirements.



# THE NATURAL EVOLUTION OF POWER.



## Clean-Burning Alternative Fuels.

Cummins Westport engines are certified to the toughest global emission standards. All engines are certified with a catalyst to U.S. EPA, CARB optional low nitrogen oxides (NOx, 1.8 g/bhp-hr) and particulate matter (PM, 0.01 g/bhp-hr) and also to Euro III standards.

## Why Alternative Fuels?

### ■ Low Emissions.

The major contributors to ground level pollution are hydrocarbons and NOx. Cummins Westport natural gas engines are operating today at 30% lower NOx and 90% lower PM than current standards. In fact, they meet 2010 PM standards today!

### ■ Community-Friendly and Quiet.

Another benefit to local neighbourhoods with an alternative-fueled truck is noise reduction. The natural gas engine at idle is 11.8 decibels quieter than a diesel. To put this in perspective — one diesel engine idling is louder than ten natural gas engines idling together. Your customers will notice the difference.

### ■ Accommodates Variable Fuel Qualities.

Cummins Westport engines are designed to handle the broadest range of fuel qualities, right down to Methane number 65. This reduces the risk of damaging knock and loss of performance that result from fuel quality fluctuations.

### ■ Lower Costs.

Durability and operating cost improvements with natural gas engines, and lower overall fuel costs provide the opportunity for lower life-cycle costs with natural gas.

### ■ Proven Products.

Thousands of vehicles around the world rely on Cummins Westport. Our low-emissions engines power urban transit and commuter buses, refuse trucks, yard hostles, sweepers, and more. Today, over 12,000 Cummins Westport alternative fuel engines are in service worldwide. With superior performance, exceptional reliability and low cost of ownership, the Cummins Westport product line delivers clean power with a clear advantage.

## 2007 Product Development.

Cummins Westport engines have been continually refined to provide improved efficiency, reliability and performance. In 2007, the next generation ISL G natural gas engine will debut. The ISL G incorporates new technologies to meet 2010 emissions standards at launch, with improved efficiency and performance. See our "Technology for 2007 Natural Gas Engine Emissions" brochure for more details.

## Warranty — Every Coverage.

For truck users, the C Gas Plus and L Gas Plus base engine warranty is 2 years or 250,000 miles (402, 336km), whichever comes first. Extended coverage is also available.

## Explore Every Alternative.

Contact your Cummins Westport representative or visit our website at: [www.cumminswestport.com](http://www.cumminswestport.com).



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Cummins has always been a pioneer in product improvement,  
thus specifications may change without notice.

# EVERY™ ALTERNATIVE.



## LATEST NEWS.

2006-03-30

**Cummins Westport  
Secures Order for 2  
CNG Engines in Ru**  
[\(click here for more informa](#)

**Cummins Westport  
Plus powers award-  
winning Russian bu**

Cummins Westport Inc. manufactures and sells the world's widest range of low-emissions alternative fuel engines for commercial transportation applications such as trucks and buses. Today Cummins Westport offers four lines of Lean Burn Spark Ignited (LBSI) vehicle engines from 150 to 320 horsepower and an LBSI propane vehicle engine with 195 horsepower. With over 12,000 engines (8,000 in North America), Cummins Westport engines are designed to meet the most stringent emissions regulations and provide reliable service.

In 2007 Cummins Westport will introduce the ISL G, a SEGR natural gas engine that meets EPA emission regulations for 20% lower NOx than current product, 34% more torque at idle, and improved fuel economy.

# EVERY ALTERNATIVE.



Cummins Westport is the industry leader in producing high-quality, economical natural gas engines to meet the growing demand for clean power worldwide. The benefits of Alternative Fuels and our proven technologies are:

- Ultra-low emissions
- Excellent torque, high fuel efficiency and reliable, robust performance
- Emerging economic advantages
- Added driver and passenger comfort with reduced engine noise
- Global customer support & service via the worldwide Cummins distribution and service network

**C Gas Plus** — Introduced with the third generation “Plus” control system in June 2001, the 250-280 horsepower C Gas Plus medium-duty truck and refuse truck applications, as well as urban and transit bus applications.

**B Gas Plus** — Introduced in 2002, and also featuring the “Plus” system drive by wire and enhanced controls and electronics with 195 - 230 horsepower offers excellent performance and reliability in medium-duty applications such as shuttles, buses, delivery trucks, step vans, yard spotters, and street sweepers.

**B Gas International** — This engine replaces the original B5.9G engine and is offered with ratings from 150 to 230 horsepower. Many of the improvements found in the B Gas Plus. The B Gas International has been designed for local assembly in both C and B markets to provide a low cost, high quality natural gas engine in these emerging markets.

**B LPG Plus** — This advanced version of the original B 5.9 LPG engine was introduced in May 2003, delivers 195 horsepower with improved controls, electronics, and reliability. The B LPG Plus is a great match for shuttles, buses, local pickup and delivery vans, yard spotters, recycling trucks, and street sweepers.

**L Gas Plus** — The 320 horsepower L Gas Plus features a variable geometry turbocharger that provides excellent low-end torque and transient response. Its state-of-the-art electronic control module (ECM) also works with the Cummins INSITE™ and QuickCheck™ tools for fast troubleshooting. Customers pick the L Gas Plus for heavy refuse trucks, dump and medium-duty trucks, heavy applications and articulated buses.

**What's New?** The ISL G natural gas engine will meet the 2010 EPA emission standards with nitrogen oxides (NOx) emissions of 0.2 gm/bhp-hr. This engine, available in ratings from 250 to 320 hp, combines the Cummins proven Exhaust Gas Recirculation (EGR) with a three way catalyst to offer improved efficiency and lower costs.

## Cummins Westport's Global Presence

Our products are available worldwide. For more detailed information on what's available in your area, please visit our [Contact Us](#) page.

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## The Clean Solution for Tough Applications


Cummins Westport L Gas Plus combines the advantages of clean-burning natural gas engines with more than enough power and torque for heavy duty refuse trucks, dump and medium-duty trucks, transit applications and articulated buses. In addition, the L Gas Plus has a variable geometry turbocharger that provides impressive low-end torque and transient response. And its industry-leading power-to-weight ratio delivers superior efficiency in many applications.

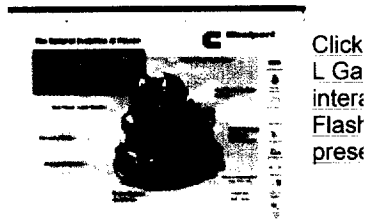
[CLICK HERE TO VIEW THE L GAS PLUS INTERACTIVE PRESENTATION](#)

### FEATURES

- Ultra-low emissions - certified to:
  - U.S. EPA 2005 standard
  - U.S. EPA 2004 transit bus standard
  - CARB optional Low-NOx and Low-PM
  - Euro V / EEV capable
- Proven "Plus" technology
- High-Energy Ignition System
- Holset Variable Geometry Turbocharger
- Superior Control Systems / Electronics

[download](#)  
Information Flyer / Spec Sheet  
(801 kb)





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### SPECIFICATIONS

Advertised Horsepower	320 hp	238 kW
Peak Torque	1000 lb-ft	1356 N•m
Governed Speed	2300 rpm	
Clutch Engagement Torque	450 lb-ft	610 N•m
Number of Cylinders	6	
Compression Ratio	10:1	
Oil System Capacity	6.3-7.3 U.S. gal	23.9-22.7 L
Net Weight w/ Std Accessories, Dry	1,500 lbs	681 kg
Fuel Type	CNG/LNG Methane number 65 or greater	



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

## 2005 Model Year Certificate of Conformity

Manufacturer: **Cummins Inc.**  
Certificate Number: **CEX-MHDD-05-02**  
Effective Date: **6/29/04**  
Date Issued: **6/29/04**



Merrylin Zaw-Mon, Director  
Certification and Compliance Division  
Office of Transportation and Air Quality

Pursuant to Section 206 of the Clean Air Act (42 U.S.C. section 7525), 40 CFR Part 86, and the Consent Decree (Civil Action No. 98-02546) entered and approved by the U.S. District Court for the District of Columbia on July 1, 1999, this certificate of conformity is hereby issued with respect to the test engines which represent the following motor vehicle engines, by engine family, and is subject to the terms and conditions prescribed in those provisions and the Consent Decree.

**Heavy Duty (MHDD) Natural Gas Engine Family: 5CEXH0540LBA**

This certificate of conformity covers only those new motor vehicle engines which conform, in all material respects, to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 86 and the Consent Decree.

This certificate of conformity covers those new motor vehicle engines produced by Cummins Engine Company during that production period of the model year stated on this certificate (model year as defined in 40 CFR Part 86).

This certificate of conformity is conditional upon compliance of said manufacturer with the provisions of 40 CFR 86.090-15, 86.091-15, 86.094-15 and other banking, averaging and trading provisions of 40 CFR Part 86 and the Consent Decree, including those applicable after model year production. Failure to comply with applicable sections of 40 CFR Part 86 (including 40 CFR 86.090-15, 86.091-15 and 86.094-15) or the Consent Decree may render this certificate void ab initio.

**Family NMHC+NOx emission limit: 1.4 g/BHP-hr**  
**Family PM emission limit: 0.01 g/BHP-hr**

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 86.096-7, 86.606, and 86.1006 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 86 including 40 CFR 86.095-30, or render the certificate void ab initio as specified in 86.096-7. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 86, including 40 CFR 86.095-30, 86.612, 86.096-7, and 86.1012.

**This certificate does not cover vehicles or engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate. This certificate does not cover vehicles or engines imported prior to the effective date of the certificate.**



Pursuant to the authority vested in the Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-02-003;

**IT IS ORDERED AND RESOLVED:** The engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZES (L)	FUEL TYPE <sup>1</sup>	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS <sup>2</sup>	ECS & SPECIAL FEATURES <sup>3</sup>
			CNG/LNG	Diesel	MHDD	
2005	5CEXN0540LBA	8.9	CNG/LNG	Diesel	MHDD	OC, HO2S, PCM,TBI, TC, CAC
ENGINE (L)		ENGINE MODELS / CODES (rated power, in hp)				
8.9		LG-320 / 8825;FR91030 (320)				
.		.				
.		.				
.		.				

<sup>1</sup> -not applicable; GVWR=gross vehicle weight rating; 13 CCR xyz=Title 13, California Code of Regulations, Section xyz; 40 CFR 86.abc=Title 40, Code of Federal Regulations, Section 86.abc; L=filter; hp=horsepower; kw=kilowatt;  
<sup>2</sup> CNG/LNG=compressed/liquefied natural gas; LPG=liquefied petroleum gas; E85=85% ethanol fuel; MF=multi fuel s.t.a. BF=bi fuel; DF=dual fuel; FF=flexible fuel;  
<sup>3</sup> L/MH HDD=light/medium/heavy heavy-duty diesel; UB=urban bus; HDQ=heavy duty Otto;  
 ECS=emission control system; TWC/OC=three-way/oxidizing catalyst; WU (prefix) =warm-up catalyst; DPP=diesel particulate filter; HO2S/O2S=heated/oxygen sensor; HAFS/AFS=heated/air-fuel-ratio sensor (a.t.a., universal or linear oxygen sensor); TBI=throttle body fuel injection; SPI/MFI=sequential/multi port fuel injection; DGI=direct gasoline injection; GCARB=gaseous carburetor; IDI/DDI=indirect/direct diesel injection; TC/SC=turbo/super charger; CAC=charge air cooler; EGR=exhaust gas recirculation; PAIR/AIR=pulsed/secondary air injection; SPL=smoke puff limiter; ECM/PCM=engine/powertrain control module; EM=engine modification; 2 (prefix)=parallel; (2) (suffix)=in series; (2004may26)

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.1 (urban bus) or 13 CCR 1956.8 (other than urban bus); 2) the EURO and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, in g/bhp-hr, for this engine family. "Diesel" CO, EURO and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [ ] are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR 1956.1 or 13 CCR 1956.8 are in parentheses.)

	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	0.5	0.5	.	.	.	.	15.5	15.5	.	.	.	.
FEL	.	.	.	.	1.4	1.4	.	.	0.01	0.01	.	.
CERT	0.00	0.00	.	.	1.2	1.0	0.4	0.3	0.01	0.002	.	.
NTE	0.625		.		1.75		10.375		0.0125		.	

<sup>4</sup> g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; EURO=Euro III European Steady-State Cycle; NTE=Not-to-Exceed; STD=standard or emission test cap; FEL=family emission limit; CERT=certification level; NMHC/NM=non-methane hydrocarbon; NOx=oxides of nitrogen; CO=carbon monoxide; PM=particulate matter; HCHO=formaldehyde;

**BE IT FURTHER RESOLVED:** Certification to the FEL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.

**BE IT FURTHER RESOLVED:** For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels) and 13 CCR 2035 et seq. (emission control warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this 4<sup>th</sup> day of August 2004.

Allen Lyons, Chief  
 Mobile Source Operations Division

# EVERY ALTERNATIVE.



## United States and Canada

	B Gas Plus B LPG Plus	C Gas Plus	L Gas Plus
		<b>All buses (except school bus)</b>	
<b>Basic</b>	2 years unlimited mileage, fan-flywheel	2 years unlimited mileage, fan-flywheel	2 years unlimited mileage, fan-flywheel
		No-charge – Extended Major Components, 3yr / 300,000 miles (482,804 km) or 10,800 hrs from date of delivery to first user	No-charge – Extended Major Components, 3yr / 300,000 (482,804 km) or 10,800 hrs from date of delivery to first user
<b>Extended</b>		5yr / 200,000 mile (321,869 km) & 5yr / 300,000 mile (482,804 km) Extended Coverage: Transit/Shuttle/Coach Bus Coverage	5yr / 200,000 mile (321,869 5yr / 300,000 mile (482,804 Extended Coverage: Transit/Shuttle/Coach Bus C
		For bus and coach customers: 5yr / 200,000 mile (321,869 km) and 5yr / 300,000 mile (482,804 km extended coverage plans for C / L Gas Plus engines, excluding maintenance items, may be purchased in the first 6 months of servi	
<b>Extended</b>	Extended Major Components Protection  6yr / 300,000 miles (482,803 km) on listed major castings / forgings	Extended Major Components Protection  6yr / 300,000 miles (482,804 km) on listed major castings / forgings	Extended Major Component Protection  6yr / 300,000 miles (482,804 listed major castings / forgin
		<b>Automotive</b>	
<b>Basic</b>	2 years unlimited mileage, fan-flywheel	2yr / 250,000 miles (402,336 km) fan-flywheel	2yr / 250,000 miles (402,336 fan-flywheel
<b>Extended</b>	Extended Major Components Protection Option  6yr / 300,000 miles on listed major castings / forgings	Extended Major Components Protection Option  6yr / 300,000 miles on listed major castings / forgings	Extended Major Component Protection Option  6yr / 300,000 miles on listec castings / forgings
<b>Extended</b>		Vocational  5yr / 150,00 mile (241,402 km) on internal components and major engine systems	Vocational  5yr / 150,00 mile (241,402 k internal components and ma engine systems
		Vocational truck users can cover major repair costs for C / L Gas Plus engines for all internal components and major engine systems with purchase of a 5yr / 150,000 mile (241,402 km) Vocational Plan.	

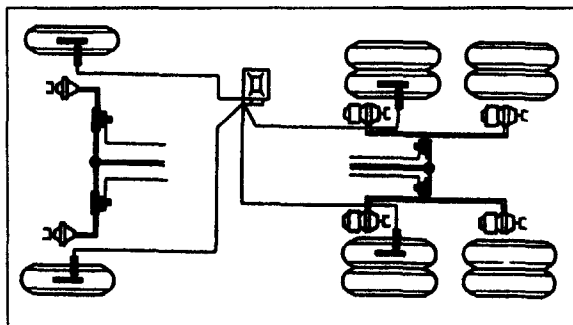
## Europe, International, Latin America, Australia

	<b>B5.9G B Gas Plus</b>	<b>C Gas Plus</b>	<b>L Gas Plus</b>
		<b>All buses (except school bus)</b>	
<b>Basic</b>	2 years unlimited mileage, fan-flywheel	2 years unlimited mileage, fan-flywheel  No-charge – Extended Major Components 3yr / 300,000 miles (482,804 km) or 10,800 hrs from date of delivery to first user	2 years unlimited mileage, fan-flywheel  No-charge – Extended Major Components 3yr / 300,000 miles (482,804 km) or 10,800 hrs from date of delivery to first user
<b>Extended</b>	none	none	none
		<b>Automotive (International)</b>	
<b>Basic</b>	1yr / 100,000 miles (160,935 km), fan-flywheel	1yr / 100,000 miles (160,935 km), fan-flywheel	1yr / 100,000 miles (160,935 km), fan-flywheel
<b>Extended</b>	none	none	none
		<b>Automotive (Latin America)</b>	
<b>Basic</b>	2 years unlimited mileage, fan-flywheel	2yr / 100,000 miles (160,935 km), fan-flywheel	TBA
<b>Extended</b>	none	none	
		<b>Automotive (Europe)</b>	
<b>Basic</b>	2 years unlimited mileage, kilometres or hours, fan-flywheel	2 years unlimited mileage, kilometres or hours, fan-flywheel	TBA
<b>Extended</b>	none	none	
		<b>Automotive (Australia, New Zealand)</b>	
<b>Basic</b>	1 year unlimited mileage, kilometres or hours, fan-flywheel	2yr / 100,000 miles (160,935 km), fan-flywheel	TBA
<b>Extended</b>	none	none	

**For additional details on any of these plans, please contact your local Cummins distributor or Cummins representative.**

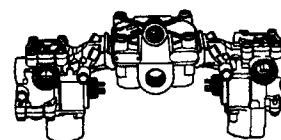
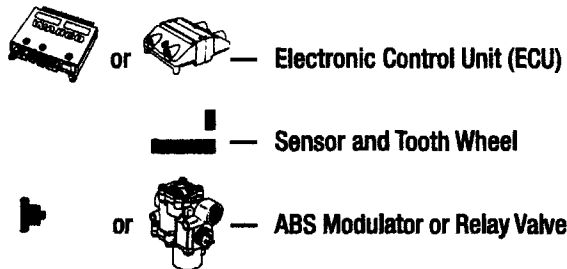
**Meritor WABCO Anti-Lock Braking System (ABS)**

**Tractor, Truck and Bus ABS**

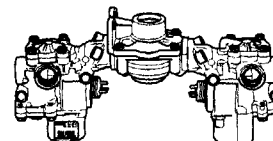


**Typical 4 Sensor/4 Modulator Valve ABS for Two- or Three-Axle Trucks**

Available Configurations	Components
4S/4M	4 sensors and 4 modulator valves
6S/4M	6 sensors and 4 modulator valves
6S/6M	6 sensors and 6 modulator valves



**Front Axle Valve Package (Optional)**



**Rear Axle Valve Package (Optional)**



**ATC Valve (Optional)  
Also Available on Rear Axle Valve Package**

**Options and Features**

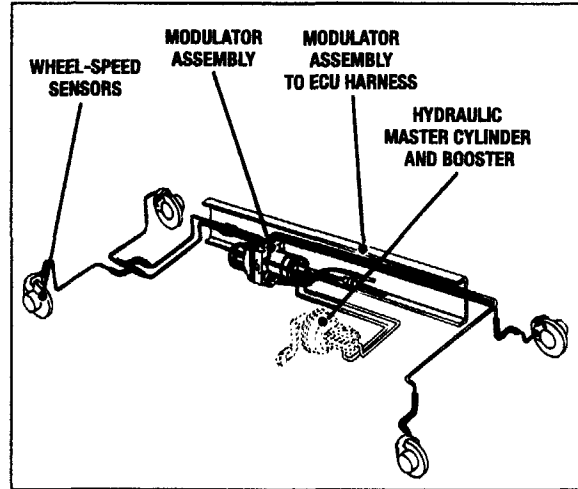
- Automatic Traction Control (ATC)
- Compatibility with MPSI's Pro-Link 9000, an industry-standard, hand-held diagnostic tool
- PC-based diagnostics with Meritor WABCO TOOLBOX Software for Windows® 95, 98 or NT
- SAE J1587/1708 diagnostics data link
- 12 volt or 24 volt power versions
- Metric or NPTF threads
- Interface capability with engine or driveline retarders

**PC-Based Diagnostics**

For pneumatic and hydraulic ABS with Meritor WABCO TOOLBOX Software (an RS232-to-J1708 converter box is required), the service technician can display system faults and wheel speed data, test individual components, verify installation wiring and more. Meritor WABCO TOOLBOX runs in Windows® 95, 98 and NT. The software includes a comprehensive self-help menu and user manual. To order TOOLBOX Software, call 800-535-5560. To order a RS232-to-J1708 converter box, call Kent-Moore at 800-328-6657.

**Meritor WABCO Hydraulic Anti-Lock Braking System (HABS)**

**Medium-Duty Trucks, Buses and Chassis**



**Typical 4 Sensor/4 Modulator Valve ABS for Two-Axle Trucks, Buses and Other Chassis**

Available Configurations	Components
4S/4M	4 sensors and 4 modulator valves

**Electronic Control Unit (ECU)**

- Compact design
- Monitors wheel speeds and system performance
- Performs with vehicle retarders

**Wheel Speed Sensors**

- Heavy duty
- High signal strength
- Completely sealed unit

**Modulator Assembly**

- Includes solenoid valves, pump motor and two accumulators
- Valves control pressure to each wheel
- Individually controls wheel speed

**Features**

- ABS Indicator light for system status and blink code information
- PC-based diagnostics with Meritor WABCO TOOLBOX Software for Windows® 95, 98 or NT
- SAE J1587/1708 diagnostics data link
- Interface capability with engine or driveline retarders

**Applications**

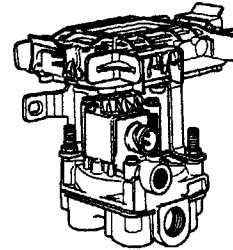
- School Buses
- Delivery Trucks
- Recreational Vehicles
- Fire/Emergency Vehicles

**Enhanced Easy-Stop™ Trailer ABS with PLC**

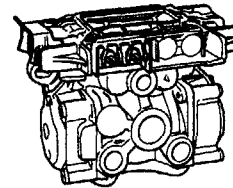
Meritor WABCO introduces the next generation of its popular Easy-Stop™ trailer anti-lock braking system (ABS). The enhanced system builds upon the proven, existing Easy-Stop™ design and provides fleets and owner-operators unparalleled trailer monitoring and control capabilities.

Benefits that include:

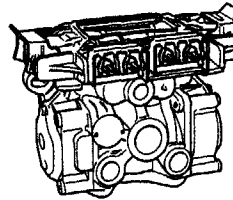
- Ground-breaking communication capabilities between tractor and trailer
- System configurations to meet virtually any trailer application — basic, standard and premium
- New integrated dual modulator valve design on the 2S/2M, 4S/2M and 3S/4M system that is lighter weight, requires less hardware and has fewer leak points
- Individually serviceable electronic control unit (ECU) and ABS modulator valves, saving maintenance time and money
- Notebook function allowing VIN, trailer number, major component part number, trailer maintenance information and free form text to be stored in the ECU — all accessible through Meritor WABCO's exclusive TOOLBOX PC Diagnostics
- Service interval indicator allowing a predetermined service interval to be stored within the system
- Tamper-proof electronic odometer for tracking trailer mileage
- Trailer diagnostics which can be conducted through the tractor ABS utilizing TOOLBOX PC Diagnostics

**Easy-Stop™ 2S/1M Basic**

- 2-sensor/1-ABS relay valve system
- Recommended for converter dolly and semi-trailer applications

**Easy-Stop™ 2S/2M Standard**

- 2-sensor/2-ABS relay valve system
- Recommended for single and tandem axle semi-trailer applications

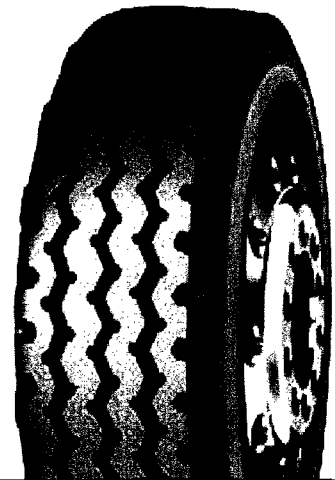
**Easy-Stop™ 2M Premium System**

- Can be configured to 2S/2M, 4S/2M or 4S/3M system
- Recommended applications for this premium system include tandem axle semi-trailers, multi-axle, or full trailers

# XZY®

## The all-position radial for on/off road service

- Offset block shoulder design promotes soft soil mobility
- Application specific compound to help resist aggressions from chipping and cutting
- Zig-zag groove angles help resist stone retention and drilling



### Specifications for Tread Design: XZY®

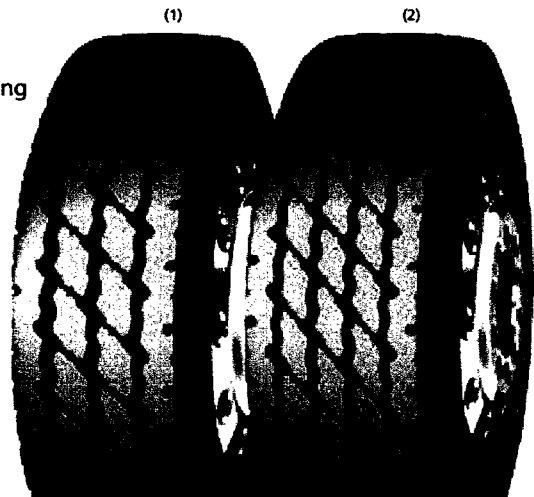
Size	Load Range	Catalog Number	Tread Depth 32nds	Max Speed (*) mph	Loaded Radius		Overall Diameter		Overall Width (†)		Approved Rims	Min. Dual Spacing (‡)		Revs per Mile	Max. Tire Load Single				Max. Tire Load Dual					
					in.	mm.	in.	mm.	in.	mm.		in.	mm.		in.	mm.	lbs.	psi	kg.	kPa	lbs.	psi	kg.	kPa
12.00R24 (1)	J	05256	23	65	22.4	568	48.1	1222	12.3	313	8.50, 7.50	13.9	354	431	9370	120	4250	830	8540	120	3875	830		

(1) For tube and flap information see Page 80 - 81.

# XZY®3

## The premium all-position radial designed for exceptional wear and traction in mixed on/off road service

- 24/32 of application specific compound featuring Michelin Co-Ex technology promotes maximized resistance against aggressions, long treadlife and enhanced casing life
- +11% increase in tread volume for increased durability and mileage (3)
  - + 5% in tread width (3)
  - + 4% in tread depth (3)
- Maximized soft soil and mud traction throughout the tire life as ribs and shoulder edges retain their aggressive notches
- Protectors in all grooves help provide optimized defense against stone drilling
- Extra thick sidewalls with protector ribs help resist damages from most shocks and impacts



### Specifications for Tread Design: XZY®3

Size	Load Range	Catalog Number	Tread Depth 32nds	Max Speed (*) mph	Loaded Radius		Overall Diameter		Overall Width (†)		Approved Rims	Min. Dual Spacing (‡)		Revs per Mile	Max. Tire Load Single				Max. Tire Load Dual					
					in.	mm.	in.	mm.	in.	mm.		in.	mm.		in.	mm.	lbs.	psi	kg.	kPa	lbs.	psi	kg.	kPa
11R22.5 (1)	G	84455	24	65	19.6	498	41.8	1061	11.3	288	8.25, 7.50	12.5	318	496	6175	105	2800	720	5840	105	2650	720		
11R22.5 (1)	H	80927	24	65	19.6	498	41.8	1061	11.3	288	8.25, 7.50	12.5	318	496	6610	120	3000	830	6005	120	2725	830		
12R22.5 (1)	H	47947	24	65	20.1	509	42.9	1089	11.4	290	8.25, 9.00	13.2	335	483	7390	120	3350	830	6780	120	3075	830		
315/80R22.5 (2,4)	L	40200	23	65	19.8	502	42.9	1089	12.5	318	9.00, 8.25	13.8	351	486	9090	130	4125	900	8270	130	3750	900		
11R24.5 (1)	G	47945	24	65	20.5	520	43.7	1110	11.3	288	8.25, 7.50	12.5	318	473	6610	105	3000	720	6005	105	2725	720		
11R24.5 (1)	H	79250	24	65	20.5	520	43.7	1111	11.4	289	8.25, 7.50	12.5	318	473	7160	120	3250	830	6610	120	3000	830		
12R24.5 (2)	H	47951	24	65	21.0	533	44.9	1140	11.5	291	8.25, 9.00	13.2	335	461	7830	120	3550	830	7160	120	3250	830		

(1, 2) Tread design as indicated above the tire pictures.

(3) When compared to Michelin® XZY-2® tire.

(4) For use with 8.25x22.5 wheels, see Page 87.

Note: Rim listed first is the measuring rim.

(\*) Exceeding the lawful speed limit is neither recommended nor endorsed.

(†) Overall widths will change 0.1 inch (2.5 mm) for each 1/4 inch change in rim width. Minimum dual spacing should be adjusted accordingly.

Michelin® tires and tubes are subject to a continuous development program. Michelin North America, Inc. reserves the right to change product specifications at any time without notice or obligations.

Please consult rim manufacturer's load and inflation limits. Never exceed rim manufacturer's limits without permission of component manufacturer.

Truck Tires

Steer / All-position Tires

SCAAN No. : 52569  
 Description : PECK ROAD  
 Date : 7/28/2006  
 User : Mary Ramos, Valley Power Systems  
 Application Review Status :  
 Output Units : US

ALLISON TRANSMISSION  
 INPUT SUMMARY

VOCATION

Service	Utility / Repair / Maintenance
Application	Dump Truck - On Highway
Configuration	Tractor Trailer
Vocation Number	46-10-20

VEHICLE PARAMETERS

*Description*

End User (and Region, Sub Region)	PECK ROAD (North America, Western)
Manufacturer (and Region, Sub Region)	Unknown (North America, Western)
Model	AMERICAN LAFRANCE - CONDOR
Description	DUMP TRUCK

*Area and Weight*

Power Packs	1
Height	8.00 (ft)
Width	8.00 (ft)
Standard Wind Resistance Coefficient ( No Deflector )	0.80
User Defined Resistance Coefficient ( No Deflector )	0.00
Weight ( Trailer, GCW )	56000 (lb)
Weight on Drive Wheels	70.00 (%)
Weight on Drive Wheels	39200 (lb)

*Tires*

Number of Tires	10
Manufacturer	
Tire Model & Size	
Tire Type	Standard Radial Tire
Revs	498 (revs/mi)
Radius	20.25 (in.)
Standard Surface Factor	1.0 Smooth Concrete
User Defined Surface Factor	0.0
Traction Limit Coefficient ( On-Road )	0.70
Traction Limit Coefficient ( Off-Road )	0.40

ENGINE

Engine Manufacturer	Cummins
Model	LG-320
Description	320hp / 1000lbft / 2300rpm
Certification Year	2004
Peak Torque/Speed	1000.0/1400 (lb-ft)/(rpm)
Peak Power/Speed	320.0/2300 (hp)/(rpm)
Governed Power/Speed	320.0/2300 (hp)/(rpm)
Engine Curve Reference	FR91036 & FR91310
No. Of Curves	Single
SCAAN File Number	2-1002

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.



## ACCESSORIES (Power at governed speed)

	Standard (hp)	User (hp)
Fan (clutch fan)	20.80	20.80
Air/Generator	1.60	1.60
Air Compressor	1.60	1.60
Steer Pump	1.60	1.60
Implement Drive	0.00	0.00
Air Conditioning	0.00	18.00

## TRANSMISSION

Manufacturer	Allison
Configuration	3000RDS w/Ret (1-5) (1-30004-12)
Converter	TC418 (Recommended) (1-418-1)
Retarder	MD/B, Medium Capacity - 4th Gen Controls (1-30001-2)
Shift Calibration	2300 rpm S3 Perf / Econ, Retarder, Std Preselects, (1-5) (1-3066-2300-2042)
Rating	On/Off Highway w/4th Gen Controls (1-30005-411)

## DRIVELINE

Propshaft	DriveAxles
Std Efficiency	98.60 (%)
Axle	6x4 On Hwy Single Red
Manufacturer	
Description	
Ratio Description	Single
Ratio	5.290
Std Efficiency	95.00 (%)
Overall Driveline	
Ratio	5.290
Std Efficiency	93.67 (%)

## GRADES

Std Acceleration	0.00 (%)
------------------	----------

## INERTIA

Engine (estimated)	1.5744 (lb-ft-sec <sup>2</sup> )
Tires/Wheels (estimated)	89.8359 (lb-ft-sec <sup>2</sup> )

## ENGINE DETAIL - Standard Accessories (AC On where applicable)

## Low And High Power

Speed (rpm)	Power (hp)	Torque (lb-ft)	Fan On/AC On Net Power (hp)	Fan On/AC On Net Torque (lb-ft)	Fan Off/AC On Net Power (hp)	Fan Off/AC On Net Torque (lb-ft)	
1000	108.0	567.0	103.3	542.3	105.0	551.3	
1200	209.3	916.0	203.1	888.8	206.0	901.7	
1300	234.9	949.0	227.7	920.1	231.5	935.2	
1400	266.6	1000.0	258.3	969.1	263.0	986.7	Peak Torque
1500	278.8	976.0	269.3	942.9	275.1	963.1	
1700	303.6	938.0	291.3	899.8	299.7	925.7	
1900	311.8	862.0	295.9	817.9	307.6	850.3	
2100	321.5	804.0	301.1	753.1	317.0	792.7	
2300	320.0	730.7	294.4	672.3	315.2	719.7	Peak Power And Governed
2600	0.0	0.0	-35.3	-71.2	-5.2	-10.5	No Load Governed

Peak Power point has been defined for the purposes of assessing Accessory Losses

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.

SCAAN No. : 52569  
 Description : PECK ROAD  
 Date : 7/28/2006  
 User : Mary Ramos, Valley Power Systems  
 Application Review Status :  
 Output Units : US

ALLISON TRANSMISSION  
 SCAAN SUMMARY  
 Based On Standard Parameters

Vocation: Utility / Repair / Maintenance, Dump Truck - On Highway, Tractor Trailer  
 End User: PECK ROAD (North America, Western)  
 Manufacturer: Unknown (North America, Western)  
 Model: AMERICAN LAFRANCE - CONDOR, DUMP TRUCK

Engine: Cummins LG-320 320hp / 1000lbft / 2300rpm  
 Engine Certification Year: 2004  
 Transmission: 3000RDS w/Ret (1-5)  
 Rating: On/Off Highway w/4th Gen Controls  
 Converter: TC418 (Recommended)  
 Retarder: MD/B, Medium Capacity - 4th Gen Controls

**Converter**

Check	Check Name	Recomm/Rating	Units	Min/Max	Actual	Overall Status
C1	Transmission/Converter Compatibility					OK
C2	Engine/Converter Compatibility					OK
C4	Engine Speed At Converter Stall		rpm		1990	
C5	Minimum Engine Speed	1500	rpm	Min	1990	OK
C7	Turbine Torque At Stall	1600	lb-ft	Max	1536	OK
C8	Converter Speed Ratio at 2300 rpm	0.800		Min	0.802	OK
C3	Converter Stall Torque Ratio				1.980	

**Transmission**

Check	Check Name	Recomm/Rating	Units	Min/Max	Actual	Overall Status
T1	Transmission/Vocation Compatibility					OK
T2	Transmission Compatible with Liquid Natural Gas Engines					OK
T10	Transmission / Engine Prewire Compatibility					OK
T17	Transmission Permitted in End User/Chassis Mfg Locations					OK
T15	Input Power(Gross)	370	hp	Max	321	OK
T14	Input Torque(Gross)	1100	lb-ft	Max	1000	OK
T3	Input Speed (Engine Governed Speed)	2000 / 2800	rpm		2300	OK
T11	Transmission Output Speed	3600	rpm	Max	2854	OK

**Vehicle/DriveLine**

Check	Check Name	Recomm/Rating	Units	Min/Max	Actual	Overall Status
V1	Vehicle Weight, GCW	80000	lbm	Max	56000	OK
V9	Minimum Required Driveline Ratio For Wheel Slip	5.578		Min	5.290	XX
V21	1st Range Converter Stall Gradeability		percent		28.5	
V13	1st Range 70% Converter Efficiency Net Gradeability		percent		21.7	
V14	1st Range 80% Converter Efficiency Gradeability	18.0	percent	Min	18.7	OK
V17	Maximum Geared Vehicle Speed At Engine Governed Speed		mph		69.9	
V18	Maximum Speed on 0.25% Grade	55.0	mph	Min	71.5	OK
V43	Heat Generated in 1st Range 70% Converter Efficiency		Btu/min		4126	
V44	Heat Generated in 1st Range 80% Converter Efficiency		Btu/min		2919	

OK: Acceptable  
 OK-1: OK based on pre-acceptance by Engineering  
 OK-2: OK based on Accepted Application Review  
 C: Consider - manufacturer to assess  
 XX: Questionable - may not be acceptable  
 XXX: Not Acceptable - rating or usage violation

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.

## Notes

Check	Comments
C5	(Net peak torque speed + allowable variation is 1400 + 100 rpm)
T11	Range 5L at 65.0 mph
V9	1st range at 0.15 speed ratio operation, 0.40 traction coefficient
V17	In 5 Lockup
V18	At 2353 rpm Engine Speed, Range 5L
V43	At 2071 rpm Engine Speed
V44	At 2129 rpm Engine Speed

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.

SCAAN No. : 52569  
Description : PECK ROAD  
Date : 7/28/2006  
User : Mary Ramos, Valley Power Systems  
Application Review Status :  
Output Units : US

ALLISON TRANSMISSION  
SCAAN SUMMARY  
Based On User Defined Parameters

Vocation: Utility / Repair / Maintenance, Dump Truck - On Highway, Tractor Trailer  
End User: PECK ROAD (North America, Western)  
Manufacturer: Unknown (North America, Western)  
Model: AMERICAN LAFRANCE - CONDOR, DUMP TRUCK

Engine: Cummins LG-320 320hp / 1000lbft / 2300rpm  
Engine Certification Year: 2004  
Transmission: 3000RDS w/Ret (1-5)  
Rating: On/Off Highway w/4th Gen Controls  
Converter: TC418 (Recommended)  
Retarder: MD/B, Medium Capacity - 4th Gen Controls

## Vehicle/DriveLine

Check	Check Name	Recomm/Rating	Units	Min/Max	Actual
V1	Vehicle Weight, GCW	80000	lbm	Max	56000
V9	Minimum Required Driveline Ratio For Wheel Slip	5.794		Min	5.290
V21	1st Range Converter Stall Gradeability		percent		27.3
V13	1st Range 70% Converter Efficiency Net Gradeability		percent		20.8
V14	1st Range 80% Converter Efficiency Gradeability	18.0	percent	Min	18.0
V17	Maximum Geared Vehicle Speed At Engine Governed Speed		mph		69.9
V18	Maximum Speed on 0.25% Grade	55.0	mph	Min	71.0
V43	Heat Generated in 1st Range 70% Converter Efficiency		Btu/min		4126
V44	Heat Generated in 1st Range 80% Converter Efficiency		Btu/min		2919

OK: Acceptable  
OK-1: OK based on pre-acceptance by Engineering  
OK-2: OK based on Accepted Application Review  
C: Consider - manufacturer to assess  
XX: Questionable - may not be acceptable  
XXX: Not Acceptable - rating or usage violation

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.

## Notes

Check	Comments
V9	1st range at 0.15 speed ratio operation, 0.40 traction coefficient
V17	In 5 Lockup
V18	At 2338 rpm Engine Speed, Range 5L
V43	At 2071 rpm Engine Speed
V44	At 2129 rpm Engine Speed

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.

SCAAN No. : 52569  
Description : PECK ROAD  
Date : 7/28/2006  
User : Mary Ramos, Valley Power Systems  
Application Review Status :  
Output Units : US

**ALLISON TRANSMISSION  
CUSTOMER PERFORMANCE SUMMARY  
Based on Standard Parameters**

Vocation: Utility / Repair / Maintenance, Dump Truck - On Highway, Tractor Trailer  
End User: PECK ROAD (North America, Western)  
Manufacturer: Unknown (North America, Western)  
Model: AMERICAN LAFRANCE - CONDOR, DUMP TRUCK

Engine: Cummins LG-320 320hp / 1000lbft / 2300rpm  
Engine Certification Year: 2004  
Transmission: 3000RDS w/Ret (1-5)  
Rating: On/Off Highway w/4th Gen Controls  
Converter: TC418 (Recommended)  
Retarder: MD/B, Medium Capacity - 4th Gen Controls  
Weight: 56000 (lb) (GCW)  
Driveline Ratio : 5.290  
Tires: Standard Radial Tire, 498.0 (revs/mi)

Geared Speed: 69.9 (mph) 5L

Clutch Fan Status : Fan On  
Air Conditioning Status : No AC

**Gradeability**

Launch Gradeability	26.5(%)
Low Speed Gradeability	18.7(%) at 7.7(mph), 80(%) Conv Eff Grade
Maximum Speed On Grade	0.00(%) at 71.6(mph), 5L, Road Load Speed
	0.25(%) at 70.9(mph), 5L
	1.00(%) at 65.7(mph), 5L
	2.00(%) at 53.4(mph), 5L
	3.00(%) at 44.5(mph), 4L
	4.00(%) at 34.1(mph), 4L
	5.00(%) at 31.3(mph), 3L
	6.00(%) at 25.4(mph), 3L
	7.00(%) at 23.7(mph), 2L
	8.00(%) at 20.5(mph), 2L
	9.00(%) at 15.9(mph), 2C
	10.00(%) at 13.7(mph), 2C

**Acceleration (full throttle, brakes locked start)**

Time And Distance To Speed, 0(%) Grade	0-20 (mph)	in 7.3(sec) 132(ft)
	0-30 (mph)	in 14.9(sec) 414(ft)
	0-40 (mph)	in 26.3(sec) 1007(ft)
	0-50 (mph)	in 43.5(sec) 2156(ft)
	0-60 (mph)	in 69.2(sec) 4240(ft)

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.

SCAAN No. : 52569  
 Description : PECK ROAD  
 Date : 7/28/2006  
 User : Mary Ramos, Valley Power Systems  
 Application Review Status :  
 Output Units : US

**ALLISON TRANSMISSION  
 CUSTOMER PERFORMANCE SUMMARY  
 Based on User Defined Parameters**

Vocation: Utility / Repair / Maintenance, Dump Truck - On Highway, Tractor Trailer  
 End User: PECK ROAD (North America, Western)  
 Manufacturer: Unknown (North America, Western)  
 Model: AMERICAN LAFRANCE - CONDOR, DUMP TRUCK

Engine: Cummins LG-320 320hp / 1000lbft / 2300rpm  
 Engine Certification Year: 2004  
 Transmission: 3000RDS w/Ret (1-5)  
 Rating: On/Off Highway w/4th Gen Controls  
 Converter: TC418 (Recommended)  
 Retarder: MD/B, Medium Capacity - 4th Gen Controls  
 Weight: 56000 (lb) (GCW)  
 Driveline Ratio : 5.290  
 Tires: Standard Radial Tire, 498.0 (revs/mi)

Geared Speed: 69.9 (mph) 5L

Clutch Fan Status : Fan On  
 Air Conditioning Status : On

**Gradeability**

Launch Gradeability	25.3(%)
Low Speed Gradeability	18.0(%) at 7.6(mph), 80(%) Conv Eff Grade
Maximum Speed On Grade	0.00(%) at 71.2(mph), 5L, Road Load Speed
	0.25(%) at 70.5(mph), 5L
	1.00(%) at 63.9(mph), 5L
	2.00(%) at 51.1(mph), 5L
	3.00(%) at 42.6(mph), 4L
	4.00(%) at 33.7(mph), 3L
	5.00(%) at 29.8(mph), 3L
	6.00(%) at 23.9(mph), 2L
	7.00(%) at 22.5(mph), 2L
	8.00(%) at 17.2(mph), 2C
	9.00(%) at 14.8(mph), 2C
	10.00(%) at 12.5(mph), 2C

**Acceleration (full throttle, brakes locked start)**

Time And Distance To Speed, 0(%) Grade	0-20 (mph)	in 7.6(sec) 139(ft)
	0-30 (mph)	in 15.7(sec) 437(ft)
	0-40 (mph)	in 27.8(sec) 1066(ft)
	0-50 (mph)	in 46.3(sec) 2299(ft)
	0-60 (mph)	in 74.5(sec) 4590(ft)

This SCAAN information is subject to the SCAAN Disclaimer set forth elsewhere.

SCAAN No. : 52569  
 Description : PECK ROAD  
 Date : 7/28/2006  
 User : Mary Ramos, Valley Power Systems  
 Application Review Status :

Output Units : US

ALLISON TRANSMISSION  
VEHICLE FULL THROTTLE PERFORMANCE  
Based on Standard Parameters

Power Packs: 1

Transmission Input Ratio : 1.0000

Transmission Input Efficiency (%): 100.00

Clutch Fan Status : Fan On

Air Conditioning Status : No AC

Axle Ratio: 5.290

Auxiliary Gearing Ratio: 1.000

Reverse (R1C)

	Vehicle Speed (mph)	Engine Speed (rpm)	Tractive Effort (lb)	Drawbar Pull (lb)	Wheel Power (hp)	Net % Grade (%)	Transm Heat Rej (Btu/min)	
R1C	0.0	1990	21882	21645	0.0	41.9	12651	
R1C	2.0	2011	20385	20141	108.7	38.5	7751	
R1C	4.0	2067	17273	17023	184.2	31.9	4393	
R1C	4.1	2071	17119	16868	186.7	31.6	4286	70Percent
R1C	5.3	2129	14949	14693	212.9	27.2	3090	80Percent
R1C	6.0	2164	13849	13591	221.6	25.0	2647	
R1C	6.3	2181	13336	13076	224.6	24.0	2485	85Percent
R1C	8.0	2278	10824	10557	230.9	19.2	2062	
R1C	8.4	2300	10330	10061	230.4	18.3	2055	Governed
R1C	10.0	2388	6187	5910	165.0	10.6	1312	
R1C	11.6	2563	0	-286	0.0	-0.5	411	

Automatic (1C-2C-2L-3L-4L-5L)

	Vehicle Speed (mph)	Engine Speed (rpm)	Tractive Effort (lb)	Drawbar Pull (lb)	Wheel Power (hp)	Net % Grade (%)	Transm Heat Rej (Btu/min)	
1C	0.0	1990	15565	15328	0.0	28.5	12651	
1C	2.0	2009	14857	14614	79.2	27.0	9083	
1C	4.0	2032	13695	13444	146.1	24.7	6082	
1C	5.9	2071	12120	11862	190.5	21.7	4113	70Percent
1C	6.0	2074	12031	11772	192.5	21.5	4027	
1C	7.7	2129	10573	10307	217.1	18.7	2903	80Percent
1C	8.0	2140	10321	10054	220.2	18.2	2745	
1C	9.1	2181	9427	9155	228.9	16.6	2292	85Percent
1C	10.0	2217	8737	8460	233.0	15.3	2056	
1C	11.3	2268	7823	7539	235.2	13.6	1884	
2C	11.3	2074	6457	6172	194.1	11.1	3954	
2C	12.0	2086	6280	5991	200.9	10.8	3657	
2C	14.0	2121	5789	5489	216.1	9.8	2956	
2C	16.0	2161	5314	5001	226.7	9.0	2419	
2C	18.0	2201	4862	4535	233.4	8.1	2060	
2C	18.8	2220	4681	4348	235.1	7.8	1956	
2L	18.8	1542	4980	4647	250.1	8.3	290	
2L	20.0	1637	4869	4527	259.7	8.1	302	
2L	22.0	1801	4569	4211	268.0	7.5	315	
2L	23.9	1958	4244	3871	270.7	6.9	357	
3L	23.9	1480	3828	3454	244.1	6.2	275	
3L	24.0	1485	3822	3448	244.6	6.2	276	
3L	26.0	1609	3710	3318	257.2	5.9	281	
3L	28.0	1733	3573	3162	266.8	5.7	306	
3L	30.0	1856	3362	2931	269.0	5.2	328	
3L	32.0	1980	3179	2728	271.3	4.9	354	
3L	33.7	2086	3036	2566	272.9	4.6	398	
4L	33.7	1480	2727	2257	245.1	4.0	229	
4L	34.0	1493	2717	2244	246.4	4.0	233	

4L	36.0	1581	2660	2164	255.4	3.9	234	
4L	38.0	1668	2603	2084	263.8	3.7	262	
4L	40.0	1756	2514	1970	268.1	3.5	267	
4L	42.0	1844	2406	1836	269.5	3.3	293	
4L	44.0	1932	2306	1710	270.6	3.1	332	
4L	45.0	1974	2265	1656	271.6	3.0	336	
5L	45.0	1480	2014	1404	241.4	2.5	397	
5L	46.0	1514	1995	1371	244.7	2.4	408	
5L	48.0	1580	1962	1310	251.2	2.3	421	
5L	50.0	1646	1930	1248	257.3	2.2	452	
5L	52.0	1712	1891	1179	262.3	2.1	489	
5L	54.0	1778	1830	1086	263.5	1.9	497	
5L	56.0	1844	1769	992	264.1	1.8	534	
5L	58.0	1909	1709	899	264.3	1.6	591	
5L	60.0	1975	1660	816	265.6	1.5	608	
5L	62.0	2041	1611	731	266.3	1.3	649	
5L	64.0	2107	1560	644	266.2	1.2	707	
5L	66.0	2173	1499	546	263.8	1.0	722	
5L	68.0	2239	1438	446	260.7	0.8	767	
5L	69.9	2300	1381	353	257.3	0.6	837	Governed
5L	70.0	2305	1356	325	253.2	0.6	838	
5L	72.0	2370	997	-74	191.5	-0.1	865	
5L	74.0	2436	638	-475	125.9	-0.8	890	
5L	76.0	2502	278	-876	56.4	-1.6	915	
5L	77.5	2553	0	-1188	0.0	-2.1	935	

## 1st Lockup Hold (1C-1L)

	Vehicle Speed (mph)	Engine Speed (rpm)	Tractive Effort (lb)	Drawbar Pull (lb)	Wheel Power (hp)	Net % Grade (%)	Transm Heat Rej (Btu/min)	
1C	0.0	1990	15565	15328	0.0	28.5	12651	
1C	2.0	2009	14857	14614	79.2	27.0	9083	
1C	4.0	2032	13695	13444	146.1	24.7	6082	
1C	5.9	2071	12120	11862	190.5	21.7	4113	70Percent
1C	6.0	2074	12031	11772	192.5	21.5	4027	
1C	7.7	2129	10573	10307	217.1	18.7	2903	80Percent
1C	8.0	2140	10321	10054	220.2	18.2	2745	
1C	9.1	2181	9427	9155	228.9	16.6	2292	85Percent
1C	9.8	2207	8910	8634	232.2	15.6	2107	
1L	9.8	1496	9343	9067	243.4	16.4	380	
1L	10.0	1531	9266	8988	247.1	16.3	378	
1L	12.0	1837	8322	8034	266.3	14.5	429	
1L	14.0	2144	7216	6915	269.4	12.4	512	
1L	15.0	2300	6569	6262	263.1	11.3	571	Governed
1L	16.0	2450	2804	2491	119.7	4.5	541	
1L	16.7	2561	0	-318	0.0	-0.6	514	

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SCAAN No. : 52569  
Description : PECK ROAD  
Date : 7/28/2006  
User : Mary Ramos, Valley Power Systems  
Application Review Status :  
Output Units : US

ALLISON TRANSMISSION  
VEHICLE ACCELERATION PERFORMANCE  
Brakes Locked Start



Output Units : US

ALLISON TRANSMISSION  
VEHICLE FULL THROTTLE PERFORMANCE  
Based on Standard Parameters

Transmission Input Ratio : 1.0000  
Transmission Input Efficiency (%): 100.00

Power Packs: 1

Clutch Fan Status : Fan On  
Air Conditioning Status : No AC

Axle Ratio: 5.290  
Auxiliary Gearing Ratio: 1.000

*Reverse (R1C)*

	Vehicle Speed (mph)	Engine Speed (rpm)	Tractive Effort (lb)	Drawbar Pull (lb)	Wheel Power (hp)	Net % Grade (%)	Transm Heat Rej (Btu/min)	
R1C	0.0	1990	21882	21645	0.0	41.9	12651	
R1C	2.0	2011	20385	20141	108.7	38.5	7751	
R1C	4.0	2067	17273	17023	184.2	31.9	4393	
R1C	4.1	2071	17119	16868	186.7	31.6	4286	70Percent
R1C	5.3	2129	14949	14693	212.9	27.2	3090	80Percent
R1C	6.0	2164	13849	13591	221.6	25.0	2647	
R1C	6.3	2181	13336	13076	224.6	24.0	2485	85Percent
R1C	8.0	2278	10824	10557	230.9	19.2	2062	
R1C	8.4	2300	10330	10061	230.4	18.3	2055	Governed
R1C	10.0	2388	6187	5910	165.0	10.6	1312	
R1C	11.6	2563	0	-286	0.0	-0.5	411	

*Automatic (1C-2C-2L-3L-4L-5L)*

	Vehicle Speed (mph)	Engine Speed (rpm)	Tractive Effort (lb)	Drawbar Pull (lb)	Wheel Power (hp)	Net % Grade (%)	Transm Heat Rej (Btu/min)	
1C	0.0	1990	15565	15328	0.0	28.5	12651	
1C	2.0	2009	14857	14614	79.2	27.0	9083	
1C	4.0	2032	13695	13444	146.1	24.7	6082	
1C	5.9	2071	12120	11862	190.5	21.7	4113	70Percent
1C	6.0	2074	12031	11772	192.5	21.5	4027	
1C	7.7	2129	10573	10307	217.1	18.7	2903	80Percent
1C	8.0	2140	10321	10054	220.2	18.2	2745	
1C	9.1	2181	9427	9155	228.9	16.6	2292	85Percent
1C	10.0	2217	8737	8460	233.0	15.3	2056	
1C	11.3	2268	7823	7539	235.2	13.6	1884	
2C	11.3	2074	6457	6172	194.1	11.1	3954	
2C	12.0	2086	6280	5991	200.9	10.8	3657	
2C	14.0	2121	5789	5489	216.1	9.8	2956	
2C	16.0	2161	5314	5001	226.7	9.0	2419	
2C	18.0	2201	4862	4535	233.4	8.1	2060	
2C	18.8	2220	4681	4348	235.1	7.8	1956	
2L	18.8	1542	4980	4647	250.1	8.3	290	
2L	20.0	1637	4869	4527	259.7	8.1	302	
2L	22.0	1801	4569	4211	268.0	7.5	315	
2L	23.9	1958	4244	3871	270.7	6.9	357	
3L	23.9	1480	3828	3454	244.1	6.2	275	
3L	24.0	1485	3822	3448	244.6	6.2	276	
3L	26.0	1609	3710	3318	257.2	5.9	281	
3L	28.0	1733	3573	3162	266.8	5.7	306	
3L	30.0	1856	3362	2931	269.0	5.2	328	
3L	32.0	1980	3179	2728	271.3	4.9	354	
3L	33.7	2086	3036	2566	272.9	4.6	398	
4L	33.7	1480	2727	2257	245.1	4.0	229	
4L	34.0	1493	2717	2244	246.4	4.0	233	

4L	36.0	1581	2660	2164	255.4	3.9	234	
4L	38.0	1668	2603	2084	263.8	3.7	262	
4L	40.0	1756	2514	1970	268.1	3.5	267	
4L	42.0	1844	2406	1836	269.5	3.3	293	
4L	44.0	1932	2306	1710	270.6	3.1	332	
4L	45.0	1974	2265	1656	271.6	3.0	336	
5L	45.0	1480	2014	1404	241.4	2.5	397	
5L	46.0	1514	1995	1371	244.7	2.4	408	
5L	48.0	1580	1962	1310	251.2	2.3	421	
5L	50.0	1646	1930	1248	257.3	2.2	452	
5L	52.0	1712	1891	1179	262.3	2.1	489	
5L	54.0	1778	1830	1086	263.5	1.9	497	
5L	56.0	1844	1769	992	264.1	1.8	534	
5L	58.0	1909	1709	899	264.3	1.6	591	
5L	60.0	1975	1660	816	265.6	1.5	608	
5L	62.0	2041	1611	731	266.3	1.3	649	
5L	64.0	2107	1560	644	266.2	1.2	707	
5L	66.0	2173	1499	546	263.8	1.0	722	
5L	68.0	2239	1438	446	260.7	0.8	767	
5L	69.9	2300	1381	353	257.3	0.6	837	Governed
5L	70.0	2305	1356	325	253.2	0.6	838	
5L	72.0	2370	997	-74	191.5	-0.1	865	
5L	74.0	2436	638	-475	125.9	-0.8	890	
5L	76.0	2502	278	-876	56.4	-1.6	915	
5L	77.5	2553	0	-1188	0.0	-2.1	935	

## 1st Lockup Hold (1C-1L)

	Vehicle Speed (mph)	Engine Speed (rpm)	Tractive Effort (lb)	Drawbar Pull (lb)	Wheel Power (hp)	Net % Grade (%)	Transm Heat Rej (Btu/min)	
1C	0.0	1990	15565	15328	0.0	28.5	12651	
1C	2.0	2009	14857	14614	79.2	27.0	9083	
1C	4.0	2032	13695	13444	146.1	24.7	6082	
1C	5.9	2071	12120	11862	190.5	21.7	4113	70Percent
1C	6.0	2074	12031	11772	192.5	21.5	4027	
1C	7.7	2129	10573	10307	217.1	18.7	2903	80Percent
1C	8.0	2140	10321	10054	220.2	18.2	2745	
1C	9.1	2181	9427	9155	228.9	16.6	2292	85Percent
1C	9.8	2207	8910	8634	232.2	15.6	2107	
1L	9.8	1496	9343	9067	243.4	16.4	380	
1L	10.0	1531	9266	8988	247.1	16.3	378	
1L	12.0	1837	8322	8034	266.3	14.5	429	
1L	14.0	2144	7216	6915	269.4	12.4	512	
1L	15.0	2300	6569	6262	263.1	11.3	571	Governed
1L	16.0	2450	2804	2491	119.7	4.5	541	
1L	16.7	2561	0	-318	0.0	-0.6	514	

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SCAAN No. : 52569  
Description : PECK ROAD  
Date : 7/28/2006  
User : Mary Ramos, Valley Power Systems  
Application Review Status :  
Output Units : US

ALLISON TRANSMISSION  
VEHICLE ACCELERATION PERFORMANCE  
Brakes Locked Start

Based on Standard Parameters

Transmission Input Ratio : 1.0000  
 Transmission Input Efficiency (%): 100.00

Power Packs: 1

Clutch Fan Status : Fan On  
 Air Conditioning Status : No AC  
 Grade: 0.0 percent

Axle Ratio: 5.290  
 Auxiliary Gearing Ratio: 1.000

*Reverse (R1C)*

	Vehicle Speed (mph)	Time (sec)	Distance (ft)	Accel Rate (mph/sec)	Engine Speed (rpm)
R1C	2.0	0.3	0.4	7.249	2011
R1C	4.0	0.6	1.7	5.988	2067
R1C	6.0	0.9	4.6	4.691	2164
R1C	8.0	1.4	9.6	3.621	2278
R1C	10.0	2.1	19.0	1.982	2388

*Automatic (1C-2C-2L-3L-4L-5L)*

	Vehicle Speed (mph)	Time (sec)	Distance (ft)	Accel Rate (mph/sec)	Engine Speed (rpm)
1C	2.0	0.4	0.5	5.477	2009
1C	4.0	0.7	2.2	4.964	2032
1C	6.0	1.2	5.4	4.322	2074
1C	8.0	1.7	10.6	3.659	2140
1C	10.0	2.3	18.6	3.066	2217
1C	11.3	2.7	25.5	2.725	2268
2C	12.0	3.0	30.8	2.276	2086
2C	14.0	4.0	48.4	2.082	2121
2C	16.0	5.0	70.7	1.896	2161
2C	18.0	6.1	98.4	1.719	2201
2C	18.8	6.6	111.8	1.645	2220
2L	20.0	7.3	131.6	1.662	1637
2L	22.0	8.5	169.9	1.548	1801
2L	23.9	9.8	213.6	1.420	1958
3L	24.0	9.9	215.9	1.290	1485
3L	26.0	11.5	273.9	1.242	1609
3L	28.0	13.1	339.1	1.185	1733
3L	30.0	14.9	413.9	1.099	1856
3L	32.0	16.8	500.0	1.022	1980
3L	33.7	18.5	583.2	0.961	2086
4L	34.0	18.8	600.2	0.851	1493
4L	36.0	21.2	723.2	0.821	1581
4L	38.0	23.7	858.1	0.791	1668
4L	40.0	26.3	1006.7	0.748	1756
4L	42.0	29.1	1173.6	0.697	1844
4L	44.0	32.1	1361.7	0.649	1932
4L	45.0	33.6	1459.8	0.628	1974
5L	46.0	35.5	1591.1	0.524	1514
5L	48.0	39.4	1860.8	0.500	1580
5L	50.0	43.5	2155.6	0.477	1646
5L	52.0	47.9	2478.5	0.451	1712
5L	54.0	52.5	2838.7	0.415	1778
5L	56.0	57.5	3246.1	0.380	1844
5L	58.0	63.1	3710.6	0.344	1909
5L	60.0	69.2	4240.4	0.312	1975
5L	62.0	76.0	4847.9	0.280	2041
5L	64.0	83.6	5553.3	0.247	2107

5L	66.0	92.5	6396.0	0.209	2173
5L	68.0	103.1	7438.9	0.171	2239
5L	70.0	116.4	8789.4	0.130	2305

## 1st Lockup Hold (1C-1L)

	Vehicle Speed (mph)	Time (sec)	Distance (ft)	Accel Rate (mph/sec)	Engine Speed (rpm)
1C	2.0	0.4	0.5	5.477	2009
1C	4.0	0.7	2.2	4.964	2032
1C	6.0	1.2	5.4	4.322	2074
1C	8.0	1.7	10.6	3.659	2140
1C	9.8	2.2	17.5	3.119	2207
1L	10.0	2.3	18.6	2.951	1531
1L	12.0	3.0	30.1	2.645	1837
1L	14.0	3.8	45.8	2.278	2144
1L	16.0	5.0	72.5	0.895	2450

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Based on Standard Parameters

Power Packs: 1

Transmission Input Ratio : 1.0000  
 Transmission Input Efficiency (%): 100.00

Clutch Fan Status : Fan On  
 Air Conditioning Status : No AC  
 Grade: 0.0 percent

Axle Ratio: 5.290  
 Auxiliary Gearing Ratio: 1.000

*Reverse (R1C)*

	Vehicle Speed (mph)	Time (sec)	Distance (ft)	Accel Rate (mph/sec)	Engine Speed (rpm)
R1C	2.0	0.3	0.4	7.249	2011
R1C	4.0	0.6	1.7	5.988	2067
R1C	6.0	0.9	4.6	4.691	2164
R1C	8.0	1.4	9.6	3.621	2278
R1C	10.0	2.1	19.0	1.982	2388

*Automatic (1C-2C-2L-3L-4L-5L)*

	Vehicle Speed (mph)	Time (sec)	Distance (ft)	Accel Rate (mph/sec)	Engine Speed (rpm)
1C	2.0	0.4	0.5	5.477	2009
1C	4.0	0.7	2.2	4.964	2032
1C	6.0	1.2	5.4	4.322	2074
1C	8.0	1.7	10.6	3.659	2140
1C	10.0	2.3	18.6	3.066	2217
1C	11.3	2.7	25.5	2.725	2268
2C	12.0	3.0	30.8	2.276	2086
2C	14.0	4.0	48.4	2.082	2121
2C	16.0	5.0	70.7	1.896	2161
2C	18.0	6.1	98.4	1.719	2201
2C	18.8	6.6	111.8	1.645	2220
2L	20.0	7.3	131.6	1.662	1637
2L	22.0	8.5	169.9	1.548	1801
2L	23.9	9.8	213.6	1.420	1958
3L	24.0	9.9	215.9	1.290	1485
3L	26.0	11.5	273.9	1.242	1609
3L	28.0	13.1	339.1	1.185	1733
3L	30.0	14.9	413.9	1.099	1856
3L	32.0	16.8	500.0	1.022	1980
3L	33.7	18.5	583.2	0.961	2086
4L	34.0	18.8	600.2	0.851	1493
4L	36.0	21.2	723.2	0.821	1581
4L	38.0	23.7	858.1	0.791	1668
4L	40.0	26.3	1006.7	0.748	1756
4L	42.0	29.1	1173.6	0.697	1844
4L	44.0	32.1	1361.7	0.649	1932
4L	45.0	33.6	1459.8	0.628	1974
5L	46.0	35.5	1591.1	0.524	1514
5L	48.0	39.4	1860.8	0.500	1580
5L	50.0	43.5	2155.6	0.477	1646
5L	52.0	47.9	2478.5	0.451	1712
5L	54.0	52.5	2838.7	0.415	1778
5L	56.0	57.5	3246.1	0.380	1844
5L	58.0	63.1	3710.6	0.344	1909
5L	60.0	69.2	4240.4	0.312	1975
5L	62.0	76.0	4847.9	0.280	2041
5L	64.0	83.6	5553.3	0.247	2107

5L	66.0	92.5	6396.0	0.209	2173
5L	68.0	103.1	7438.9	0.171	2239
5L	70.0	116.4	8789.4	0.130	2305

## 1st Lockup Hold (1C-1L)

	Vehicle Speed (mph)	Time (sec)	Distance (ft)	Accel Rate (mph/sec)	Engine Speed (rpm)
1C	2.0	0.4	0.5	5.477	2009
1C	4.0	0.7	2.2	4.964	2032
1C	6.0	1.2	5.4	4.322	2074
1C	8.0	1.7	10.6	3.659	2140
1C	9.8	2.2	17.5	3.119	2207
1L	10.0	2.3	18.6	2.951	1531
1L	12.0	3.0	30.1	2.645	1837
1L	14.0	3.8	45.8	2.278	2144
1L	16.0	5.0	72.5	0.895	2450

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