

# City of Las Cruces<sup>®</sup>

PEOPLE HELPING PEOPLE

## Council Action and Executive Summary

Item # 21

Ordinance/Resolution# 12-13-446

For Meeting of \_\_\_\_\_  
(Ordinance First Reading Date)

For Meeting of September 3, 2013  
(Adoption Date)

Please check box that applies to this item:

QUASI JUDICIAL

LEGISLATIVE

ADMINISTRATIVE

**TITLE:** A RESOLUTION TO AWARD A CONTRACT TO CLEVER DEVICES OF WOODBURY, NEW YORK, FOR THE PURPOSE OF DEVELOPING AND IMPLEMENTING AN INTEGRATED COMPUTER AIDED DISPATCH/AUTOMATED VEHICLE LOCATION (CAD/AVL) SYSTEM FOR THE ROADRUNNER TRANSIT SERVICE, IN THE AMOUNT OF \$688,141.00, PLUS NEW MEXICO GROSS RECEIPTS TAX OF \$52,041.00, PLUS A CONTINGENCY OF \$34,818.00, FOR A TOTAL AWARD AMOUNT NOT TO EXCEED \$775,000.00.

### PURPOSE(S) OF ACTION:

Award contract.

<b>COUNCIL DISTRICT: ALL</b>		
<b>Drafter/Staff Contact:</b> Michael Bartholomew	<b>Department/Section:</b> Transportation/Transit	<b>Phone:</b> 541-2537
<b>City Manager Signature:</b>		

### BACKGROUND / KEY ISSUES / CONTRIBUTING FACTORS:

In 2009, the City of Las Cruces was awarded a grant under the American Recovery and Reinvestment Act (ARRA) through the Federal Transit Administration (FTA). This grant contained several projects including one to develop and implement an integrated Computer Aided Dispatch/Automated Vehicle Location (CAD/AVL) System for RoadRUNNER Transit.

To avoid undue impacts on the City's Information Technology Department, a hosted CAD/AVL System was sought. With a hosted product, the vendor keeps and maintains the necessary servers which are accessed by users via the internet. Request for Proposals (RFP) 12-13-446 for an Integrated CAD/AVL System for RoadRUNNER Transit was issued on April 26, 2013. Three vendors submitted proposals which were evaluated during two meetings, held on May 31

(Continue on additional sheets as required)

and June 11, 2013. The evaluation committee selected Clever Devices of Woodbury, New York, as the preferred provider.

The CAD/AVL System will allow numerous enhancements including data communication between transit vehicles (fixed route, Dial-a-Ride, and supervisor vehicles) and transit operations, a GPS-based vehicle location function that will locate and track buses in real time, provision of bus arrival times to waiting passengers, monitors at the Intermodal Transit Center that will show all bus locations, automated enunciators to announce key locations on bus routes for the visually impaired, and integration of farebox information with stop locations for better passenger tracking information.

This project will be funded 100% by the ARRA grant and taxable amounts of this contract will include labor and certain software expenses.

It should be noted that the ARRA appropriation was originally to expire on September 30, 2015; however, the Federal Office of Management and Budget issued a directive in 2011 to have all ARRA funds expended by September 30, 2013. The City has applied for a waiver to extend the ARRA funding deadline to allow the project to continue. As of the writing of this Resolution, the City has yet to be advised by the FTA if this waiver has been granted. However, the Purchasing Manager will only finalize this contract contingent on the waiver being granted by the FTA.

**SUPPORT INFORMATION:**

1. Resolution.
2. Exhibit "A", Purchasing Manager's Request to Contract.
3. Exhibit "B", Agreement with Clever Devices for CAD/AVL Services.

**SOURCE OF FUNDING:**

<b>Is this action already budgeted?</b>	Yes	<input checked="" type="checkbox"/>	See fund summary below
	No	<input type="checkbox"/>	If No, then check one below:
	<i>Budget Adjustment Attached</i>	<input type="checkbox"/>	Expense reallocated from:
		<input type="checkbox"/>	Proposed funding is from a new revenue source (i.e. grant; see details below)
	<input type="checkbox"/>	Proposed funding is from fund balance in the _____ Fund.	
<b>Does this action create any revenue?</b>	Yes	<input type="checkbox"/>	Funds will be deposited into this fund: _____ in the amount of _____ for FY _____.
	No	<input checked="" type="checkbox"/>	There is no new revenue generated by this action.

(Continue on additional sheets as required)

**BUDGET NARRATIVE**

This project will be 100% funded by Federal Transit Administration ARRA funds. No local match is required.

**FUND EXPENDITURE SUMMARY:**

Fund Name(s)	Account Number(s)	Expenditure Proposed	Available Budgeted Funds in Current FY	Remaining Funds	Purpose for Remaining Funds
Transit ARRA Fund: 5922	59323080- 851200- 24310	\$775,000.00	\$776,396.39	\$1,396.39	The remaining funding is dedicated to a different ARRA project to purchase security cameras that is scheduled to be completed by September 30, 2013.

**OPTIONS / ALTERNATIVES:**

1. Vote "Yes"; this will approve the Resolution awarding a contract to Clever Devices of Woodbury, New York, for the purpose of developing and implementing an integrated CAD/AVL System for the RoadRUNNER Transit service, in the amount of \$688,141.00, plus New Mexico Gross Receipts Tax of \$52,041.00, plus a contingency of \$34,818.00, for a total award amount not to exceed \$775,000.00.
2. Vote "No"; this will not authorize the Resolution. Given the deadline, there will be no time to develop an alternate project before the federal funds expire.
3. Vote to "Amend"; this could allow Council to provide staff with further direction. This will extend the completion of this project past the deadline to utilize the federal funds.
4. Vote to "Table"; this could allow Council to postpone consideration of this Resolution, however, this action will extend the completion of this project past the deadline to utilize the federal funds.

**REFERENCE INFORMATION:**

1. N/A

(Continue on additional sheets as required)

**RESOLUTION NO. 12-13-446**

A RESOLUTION TO AWARD A CONTRACT TO CLEVER DEVICES OF WOODBURY, NEW YORK, FOR THE PURPOSE OF DEVELOPING AND IMPLEMENTING AN INTEGRATED COMPUTER AIDED DISPATCH/AUTOMATED VEHICLE LOCATION (CAD/AVL) SYSTEM FOR THE ROADRUNNER TRANSIT SERVICE, IN THE AMOUNT OF \$688,141.00, PLUS NEW MEXICO GROSS RECEIPTS TAX OF \$52,041.00, PLUS A CONTINGENCY OF \$34,818.00, FOR A TOTAL AWARD AMOUNT NOT TO EXCEED \$775,000.00.

The City Council is informed that:

**WHEREAS**, in 2009, the Federal Transit Administration (FTA) awarded the City a grant under the American Recovery and Reinvestment Act (ARRA) for several projects; and

**WHEREAS**, said grant will pay for 100% of the cost of a project to develop and implement an integrated Computer Aided Dispatch/Automated Vehicle Location (CAD/AVL) System; and

**WHEREAS**, the CAD/AVL System will offer a variety of improvements to the RoadRUNNER Transit fixed route and Dial-a-Ride services through real-time data communications between transit vehicles and transit operations that will enhance the transit user's interaction with transit services as well as provide detailed statistical information for transit planning; and

**WHEREAS**, the City sought and evaluated proposals for the CAD/AVL System in May 2013, which resulted in selection of Clever Devices of Woodbury, New York, as the preferred provider; and

**WHEREAS**, the City negotiated an agreement, attached hereto as Exhibit "B", with Clever Devices of Woodbury, New York, for the purpose of developing and implementing an integrated CAD/AVL System for the RoadRUNNER Transit service; and

**WHEREAS**, said federal grant is scheduled to expire September 30, 2013; and

**WHEREAS**, the City has applied to the FTA for a waiver to extend the ARRA grant funding another 14 months.

**NOW, THEREFORE**, Be it resolved by the governing body of the City of Las Cruces:

**(I)**

**THAT** contingent on the Federal Transit Administration's approval of the waiver to extend the ARRA grant funding, the Transit CAD/AVL System is hereby awarded to Clever Devices of Woodbury, New York, for the purpose of developing and implementing an integrated Computer Aided Dispatch/Automated Vehicle Location CAD/AVL System for RoadRUNNER Transit, in the amount of \$688,141.00, plus New Mexico Gross Receipts Tax of 52,041.00, plus a contingency in the amount of \$34,818.00, for a total award amount not to exceed \$775,000.00.

**(II)**

**THAT** the Purchasing Manager is authorized to contract with Clever Devices of Woodbury, New York, as outlined in the signed Exhibit "A", Purchasing Manager's Request to Contract Form, attached hereto and made part of this Resolution.

**(III)**

**THAT** City staff is hereby authorized to do all deeds necessary in the accomplishment of the herein above.

**DONE AND APPROVED** this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

APPROVED:

\_\_\_\_\_  
Mayor

ATTEST:

\_\_\_\_\_  
City Clerk

(SEAL)

Moved by: \_\_\_\_\_

Seconded by: \_\_\_\_\_

VOTE:

Mayor Miyagishima: \_\_\_\_\_

Councillor Silva: \_\_\_\_\_

Councillor Smith: \_\_\_\_\_

Councillor Pedroza: \_\_\_\_\_

Councillor Small: \_\_\_\_\_

Councillor Sorg: \_\_\_\_\_

Councillor Thomas: \_\_\_\_\_

APPROVED AS TO FORM:

  
\_\_\_\_\_  
City Attorney

# CITY OF LAS CRUCES

## PURCHASING MANAGER'S REQUEST TO CONTRACT

For Meeting of: September 3, 2013

Resolution No.: 12-13-446

### Contract Purchase For Integrated CAD/AVL System for Transit

The Las Cruces City Council is provided the following information concerning this request:

**RFP SOLICITATION INFORMATION:**

- |    |                               |                                       |
|----|-------------------------------|---------------------------------------|
| 1. | RFP No./ Due Date:            | RFP No. 12-13-446 / May 24, 2013      |
| 2. | Description:                  | Integrated CAD/AVL System for Transit |
| 3. | Using Department:             | Transportation                        |
| 4. | Number of Reponses Solicited: | Thirty-seven                          |
| 5. | Number of Responses Accepted: | Three                                 |
| 6. | Award Recommendation To:      | Clever Devices of Woodbury, NY        |
| 7. | Total Award Amount:           | \$775,000.00                          |
| 8. | Contract Duration:            | TBD                                   |

**LOCAL PREFERENCE FACTOR**

Local Preference Factor Applied Per LCMC §24-100	No	X	LCMC §24-100 not applicable to this solicitation
	Yes		Made A Difference To Awards(s) Made No Difference To Bid Award(s)

**PROCUREMENT CODE COMPLIANCE:**

The City of Las Cruces Procurement Code was administered in the conduct of this procurement and approval to purchase is hereby requested pursuant to **Section 24-92.**

 8/13/13  
 Purchasing Manager Date

**CONFIRMATION OF FUND ENCUMBRANCE:**

REQUISITION or PURCHASE ORDER NUMBER:	TBD
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## PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT, made and entered into on this \_\_\_\_\_ 2013 by and between the City of Las Cruces, New Mexico, hereinafter called "CITY" and Clever Devices, of 300 Crossways Park Dr., Woodbury, NY 11797, hereinafter called "CONTRACTOR".

### 1. PROJECT DESCRIPTION

The CITY desires an integrated and hosted service employing Computer-Aided Dispatch (CAD) and Automatic Vehicle Location (AVL) technologies for Roadrunner Transit.

### 2. SCOPE OF SERVICES

In a satisfactory and proper manner, the CONTRACTOR shall perform SERVICES, as proposed in response to the CITY'S RFP No.12-13-446, incorporated herein by reference and as set forth in Exhibit A, attached hereto and made a part of this Agreement.

The CONTRACTOR is authorized to extend the same terms and conditions of this Agreement to other governmental entities conditioned upon the procurement laws and regulations of those entities. The CITY shall not be a party nor have any liability relating to such extensions.

### 3. APPROPRIATIONS

The terms of this Agreement are contingent on sufficient appropriations and authorization being made by the City Council for the performance of this Agreement. If sufficient appropriations and authorizations are not made by the City Council, this Agreement shall terminate upon written notice given by the CITY to CONTRACTOR. The CITY'S decision as to whether sufficient appropriations and authorizations exist shall be accepted by CONTRACTOR and shall be final.

### 4. COMPENSATION

The CITY shall compensate CONTRACTOR for the performance of SERVICES under this Agreement an amount not to exceed \$688,141.00, plus applicable taxes. CONTRACTOR shall perform the SERVICES upon receipt of a purchase order from the CITY. The CITY cannot authorize costs to be incurred prior to such purchase order being submitted to the CONTRACTOR.

CONTRACTOR is responsible for payment of State of New Mexico Gross Receipts Tax levied on the amounts payable under this Agreement. CONTRACTOR agrees to comply with all federal and state tax payments and report all items of gross receipts as income from the operations of its business.

#### 5. DEVOTION OF ADEQUATE TIME

CONTRACTOR will devote the necessary hours each week to the performance of project that is required by the CITY and it will serve the CITY diligently and faithfully, and according to its best ability in all respects and will promote the best interests of the CITY.

#### 6. TERM AND SCHEDULE

CONTRACTOR shall perform the SERVICES in accordance with the time set forth as agreed upon by the CITY and CONTRACTOR in Exhibit B.

#### 7. EXTENSIONS, CHANGES, AND AMENDMENTS

This Agreement shall not be extended, changed, or amended except by instrument in writing executed by the parties. The CITY shall not be liable for payment of any extra services nor shall CONTRACTOR be obligated to perform any extra services except upon such written agreement. Such written approval shall indicate the date said extension, change, or amendment is effective and shall be signed by the parties to this Agreement. In the event that the parties cannot reach agreement as to a particular change, the issue shall be resolved pursuant to Article 21.

#### 8. CHANGES AND EXTRA SERVICES BY THE CITY

The CITY may make changes within the general scope of the SERVICES plus may also request CONTRACTOR to perform other extra services not incorporated within the Services set forth in this Agreement. If the CONTRACTOR is of the opinion that such change causes an increase or decrease in the cost and/or the time required for performing the changes or other services required by the City, CONTRACTOR shall so notify the CITY of that fact within five (5) business work days from the date of receipt of change by the CITY. The CITY shall provide written response to the CONTRACTOR within five (5) business work days from the date of receipt of CONTRACTOR'S written notification.

#### 9. CHANGES AND EXTRA SERVICES BY THE CONTRACTOR

In the event a condition is identified by the CONTRACTOR which, in the opinion of the CONTRACTOR, changes the services, costs, and/or time required for performance under this Agreement, the CONTRACTOR shall provide written notification to the CITY within five (5) business work days of such identification. The CITY shall respond in writing to such notification within five (5) business work days from the date of receipt of CONTRACTOR'S notification.

#### 10. DELAYS

In the event that performance of SERVICES is delayed by causes beyond reasonable control of CONTRACTOR, and without the fault or negligence of CONTRACTOR, the time and total compensation for the performance of the SERVICES may be equitably adjusted by written agreement to reflect the extent of such delay. CONTRACTOR shall provide the CITY with written notice of delay pursuant to Article 9 including therein a description of the delay and the steps contemplated or actually taken by

CONTRACTOR to mitigate the effect of such delay. The CITY will make the final determination as to reasonableness of delays.

#### 11. TERMINATION

This Agreement may be terminated by either party hereto upon fifteen (15) calendar days written notice in the event of substantial failure by the other party to perform in accordance with the terms of this Agreement through no fault of the terminating party. This Agreement may also be terminated by the CITY for its convenience or because the PROJECT has been permanently abandoned, but only upon fifteen (15) calendar days written notice to CONTRACTOR.

In the event of termination, CONTRACTOR shall be compensated for all services performed and costs incurred up to the effective date of termination for which CONTRACTOR has not been previously compensated.

Upon receipt of notice of termination from the CITY, CONTRACTOR shall discontinue the SERVICES unless otherwise directed and upon final payment from the CITY deliver to the CITY the required number of copies of all data, drawings, reports, estimates, summaries, and such other information and materials as may have been accumulated by CONTRACTOR in the performance of this Agreement, whether completed or in process.

#### 12. RECORDS AND AUDITS

CONTRACTOR will maintain records indicating dates, length of time, and services rendered. The CITY has the right to audit billings both before and after payment, and contest any billing or portion thereof. Payment under this Agreement does not foreclose the CITY'S right to recover excessive or illegal payments.

#### 13. DISCLOSURE AND OWNERSHIP OF DOCUMENTS, PRODUCTS, DESIGN, ELECTRONIC FILES

All technical data, electronic files, and other written and oral information not in the public domain or not previously known, and all information, electronic files, and data obtained, developed, or supplied by the CITY will be kept confidential and CONTRACTOR will not disclose to any other party, directly or indirectly, without the CITY'S prior written consent unless required by lawful order.

All technical data, electronic files, products developed, operational parameters, blueprints, and other information and work of the CONTRACTOR shall be the sole property of the CITY and shall be delivered to the CITY when requested and at the end of the Agreement.

#### 14. INDEPENDENT CONTRACTOR

CONTRACTOR represents that it has, or will secure, at its own expense, all personnel required in performing the SERVICES under this Agreement. Such personnel shall not be employees of, nor have any contractual relationship with the CITY. CONTRACTOR,

consistent with its status as an independent contractor, further agrees that its personnel will not hold themselves out as, nor claim to be officers or employees of the CITY by reason of this Agreement.

To the extent that CONTRACTOR employs any employees, CONTRACTOR shall be solely responsible for providing its own form of insurance for its employees and in no event shall CONTRACTOR's employees be covered under any policy of the CITY.

CONTRACTOR'S retention hereunder is not exclusive. Subject to the terms and provisions of this Agreement: (i) CONTRACTOR is able, during the Term hereof, to perform services for other parties; and (ii) CONTRACTOR may perform for its own account other professional services outside the scope of this Agreement.

CONTRACTOR is and shall be an Independent Contractor and shall be responsible for the management of its business affairs. In the performance of the work under this Agreement, CONTRACTOR will at all times be acting and performing as an Independent Contractor, as that term is understood for federal and state law purposes, and not as an employee of the CITY. Without limitation upon the foregoing, CONTRACTOR shall not accrue sick leave, jury duty pay, retirement, insurance, bonding, welfare benefits, or any other benefits, which may or may not be afforded employees of the CITY. CONTRACTOR will not be treated as an employee for purposes of: Workers' Compensation benefits; the Federal Unemployment Tax Act; Social Security; other payroll taxes, federal or any state income tax withholding; or the employee benefit provisions described in the Internal Revenue Code of 1986, as amended. Neither the CITY, nor its agents or representatives, shall have the right to control or direct the manner, details or means by which CONTRACTOR accomplishes and performs its services. Nevertheless, CONTRACTOR shall be bound to fulfill the duties and responsibilities contained in the Agreement.

#### 15. NO JOINT VENTURE OR PARTNERSHIP

Nothing contained in this Agreement shall create any partnership, association, joint venture, fiduciary or agency relationship between CONTRACTOR and CITY. Except as otherwise specifically set forth herein, neither CONTRACTOR nor CITY shall be authorized or empowered to make any representation or commitment or to perform any act which shall be binding on the other unless expressly authorized or empowered in writing.

#### 16. ASSIGNMENT

CONTRACTOR shall perform all the services under this Agreement and shall not assign any interest in this Agreement or transfer any interest in same or assign any claims for money due or to become due under this Agreement without the prior written consent of the CITY.

## 17. INSURANCE

CONTRACTOR shall obtain and maintain insurance at its own cost and expense during the life of this Agreement, and shall require Subcontractors, if any, to maintain during the life of his subcontract:

- a. Professional Liability: \$1,000,000 per claim

CONTRACTOR shall furnish the CITY with a certificate(s) of insurance showing CONTRACTOR and Subcontractors, if any, have complied with this Article. The CONTRACTOR shall provide insurance certificates before work is to start on the project and shall provide the CITY thirty (30) days written notification of cancellation of such policies.

## 18. INDEMNITY AND LIMITATION

CONTRACTOR shall indemnify, defend, and hold harmless the CITY from and against any and all claims, suits, actions, judgments, demands, losses, costs, expenses, damages, and liability caused solely by, resulting solely from, or arising solely out of the negligent acts, errors, or omissions of CONTRACTOR, its officers, employees, agents, or representatives in the performance of SERVICES under this agreement.

## 19. APPLICABLE LAW

This Agreement and the rights and obligations of the parties shall be governed by and construed by the laws of the State of New Mexico applicable to Agreements between New Mexico parties made and performed in that state, without regard to conflicts of law principles. Venue shall be in the Third Judicial District, State of New Mexico.

CONTRACTOR shall abide and be governed by all applicable state law, CITY ordinances, and laws regarding the CONTRACTOR'S services or any work done pursuant to this Agreement.

## 20. BREACH

In the event CONTRACTOR breaches any obligation contained in this Agreement, prior to instituting any action or dispute resolution procedure, the CITY shall give CONTRACTOR written notice of such breach. In the event CONTRACTOR fails to remedy the breach within five (5) working days of receiving such written notice, the CITY, at its sole discretion, without any obligation to do so and in addition to other remedies available under applicable law, may remedy CONTRACTOR'S breach and recover any and all costs and expenses in so doing from CONTRACTOR.

## 21. DISPUTE RESOLUTION

In the event that a dispute arises between CITY and CONTRACTOR under this Agreement or as a result of breach of this Agreement, the parties agree to act in good faith to attempt to resolve the dispute.

In the event of termination, CONTRACTOR shall be compensated for all services performed and costs incurred up to the effective date of termination for which CONTRACTOR has not been previously compensated.

Upon receipt of notice of termination from the CITY, CONTRACTOR shall discontinue the SERVICES unless otherwise directed and upon final payment from the CITY deliver to the CITY the required number of copies of all data, drawings, reports, estimates, summaries, and such other information and materials as may have been accumulated by CONTRACTOR in the performance of this Agreement, whether completed or in process.

22. NOTIFICATION

All notices required or permitted under this Agreement shall be in writing and shall be deemed sufficiently served if served by Registered Mail addressed as follows:

TO CITY: City of Las Cruces  
PO Box 20000  
Las Cruces, NM 88004  
ATTENTION: Michael Bartholomew

With Copies to: City Attorney  
Purchasing Manager

TO CONTRACTOR: Clever Devices  
300 Crossways Park Dr.  
Woodbury, NY 11797  
ATTENTION: Francis Ingrassia, President

23. SCOPE OF AGREEMENT

This Agreement incorporates all of the agreements, covenants, and understandings between the parties hereto concerning the subject matter hereof and that all such covenants, agreements, and understandings have been merged into this written agreement. No prior agreement or understanding verbal or otherwise of the parties or their agents shall be valid or enforceable unless embodied in this agreement.

\_\_\_\_\_  
CONTRACTOR

THE CITY OF LAS CRUCES

BY: \_\_\_\_\_  
PRINCIPAL

BY: \_\_\_\_\_  
PURCHASING MANAGER

DATE: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED AS TO FORM:

\_\_\_\_\_  
CITY ATTORNEY

# **EXHIBIT A**

# **SERVICES**

# **EXHIBIT B**

# **SCHEDULE**

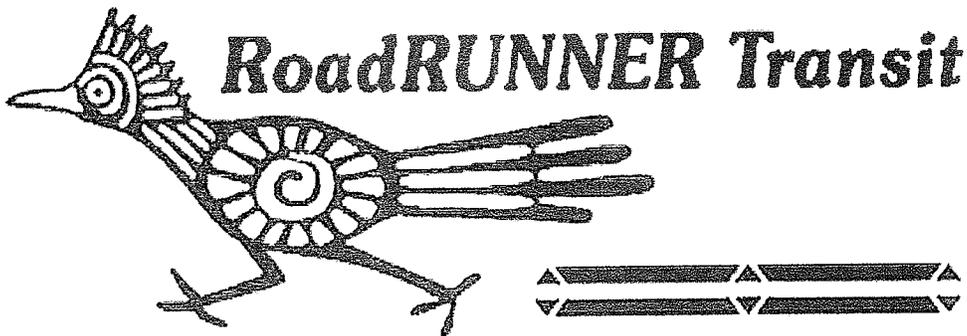
**To Be Determined**



Clever Devices' Response To  
The City of Las Cruces Transit Department's  
Integrated CAD/AVL Project for RoadRUNNER Transit

RFP NUMBER: 12-13-446

Due Date and Time: May 24, 2013 / 4:00 p.m.



May 24, 2013

**ORIGINAL**

Submitted By:



300 Crossways Park Drive  
Woodbury, NY 11797  
(516) 433-6100  
[www.cleverdevices.com](http://www.cleverdevices.com)



May 24, 2013

Ms. Penny Wilson  
 Asst. Operations Analyst  
 City of Las Cruces  
 700 N. Main Street, 3<sup>rd</sup> Floor Room 3134  
 Las Cruces, NM 88001

RE: Integration of the CAD/AVL System for the City of Las Cruces Transit Department (RoadRUNNER Transit)

Dear Ms. Wilson:

Thank you for the opportunity to present our proposal for the CAD/AVL system for the City of Las Cruces. Not only will Clever Devices provide RoadRUNNER Transit (RRT) with a best-in-class intelligent transit solution, but more importantly, we will provide a gateway to far greater system wide functionality that capitalizes on product innovations, as well as support and training that will enable RRT to derive the maximum benefit from our solution. Furthermore, our proposed solution has already been operationalized at the largest and most innovative transit agencies in North America. As a result, we are confident that it will enable RRT to become a leader in transit services that are safe, efficient, reliable, and customer focused.

A successful deployment of this project will improve your organization's operational effectiveness and allow you to realize significant efficiencies, simplify your business processes, and most importantly, improve your relationship with your ridership as they experience the enhanced service offerings. That is why selecting the right partner is critical for a successful implementation. Clever Devices has a proven track record of working with customers to achieve their desired outcomes and to improve the customer experience.

We are confident that by choosing Clever Devices, you will minimize your inherent project risk, not only because we have world-class products that are proven in many of the largest transit agencies in North America, but also because we have extensive experience in deploying our solutions in agencies that are similar in size and scope to RRT. We appreciate that during project implementation, it is imperative that you continue making daily service, that revenues are not compromised and that operational staff working on the project still have transit operations to manage. With this in mind, our approach is to leverage our internal resources to make the entire process as easy as possible for you.

We believe that Clever Devices is uniquely qualified to help you achieve and exceed your goals in this solicitation. Having the broadest, deepest collection of transit technology solutions of any firm, Clever Devices is committed to continued investment in additional functionality that will continue to create options for our clients beyond our present offerings. Because each generation of our technology is designed to be "future proof," it is backward and forward compatible as well as modular, meaning that each new innovation will be available to you without the need to upgrade your base system.



**PROPRIETARY:** This document contains information that is proprietary to Clever Devices Ltd. Use or disclosure of any material contained herein without the consent of Clever Devices is strictly prohibited.



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The combination of our mature solutions, experienced project team, corporate commitment to innovation in our industry, and unparalleled reputation of successful ITS deployments make Clever Devices the best and safest option for RRT.

David Mugica – Strategic Account Manager – will be your point of contact. He can be reached by phone at (516) 813-5785 or by email at [dmugica@cleverdevices.com](mailto:dmugica@cleverdevices.com). Clever Devices' head office is located at 300 Crossways Park Drive – Woodbury, NY 11797 and David Mugica is based in Dallas, Texas. Our proposal is valid for 180 days from the above date of submittal. As the Senior Officer of the firm, I am authorized to make a binding commitment with regard to the information contained in this document.

Sincerely,

Francis J. Ingrassia  
President  
Clever Devices Ltd.



**PROPRIETARY:** This document contains information that is proprietary to Clever Devices Ltd. Use or disclosure of any material contained herein without the consent of Clever Devices is strictly prohibited.



### RFP COMPLIANCE DECLARATION

**RFP TITLE:** INTEGRATED CAD/AVL PROJECT FOR ROADRUNNER TRANSIT RESOLICITATION

**RFP NO.:** 12-13-446

**DUE DATE/TIME:** May 21, 2013 / 4:00 p.m.

In compliance with the requirements of this RFP, I, the undersigned, offer and agree to furnish any or all materials and/or services to the City of Las Cruces within the time agreed.

I further certify that this company has not been debarred, suspended, or otherwise made ineligible for participation in Federal Assistance programs under Executive Order 12549 Debarment and Suspension as described in the Federal Rules and Regulations.

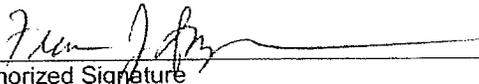
Receipt of Addenda Nos.: 1, 2, 3, 4, 5 is hereby acknowledged (where none received, place a zero in this space)

Company Name and Address:

Clever Devices Ltd.

300 Crossways Park Drive

Woodbury, NY 11797



Authorized Signature

Francis J. Ingrassia

Typed or Printed Name

President

Title

fingrassia@cleverdevices.com

Email address

Telephone number 516-433-6100

Fax number \_\_\_\_\_

NM Tax & Revenue Dept. CRS # Note 1

Current NM Public Regulatory Commission Registration # Note 1 (corporations only)

Federal I.D. number 11-2908781 (mandatory for all respondents)

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH PROPOSAL  
FAILURE TO INCLUDE WILL SUBJECT RESPONSE TO REJECTION**

Note 1: Will be obtained if selected for award.

**CERTIFICATION REGARDING LOBBYING**  
(To be submitted with bid)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-Cities shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, Clever Devices Ltd., certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

 Signature of Contractor's Authorized Official

Francis J. Ingrassia, President Name and Title of Contractor's Authorized Official

24 May 2013 Date

**NOTICE TO CONTRACTORS  
THIS FORM IS A MANDATORY SUBMITTAL WITH BID**

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM  
RACE NEUTRAL

FORM: RN- 1 (DBE Utilization) Rev: December 31, 2011

RFP#: 12-13-446

The undersigned has satisfied the requirements of the specifications in the following manner (please check the appropriate space):

- The bidder is committed to a minimum of 1.8 % DBE utilization on this project.
- The bidder, if unable to meet the goal of 1.8 % DBE, is committed to a minimum of \_\_\_\_\_ % DBE utilization on this project.

Prime Contractor: Clever Devices Ltd.

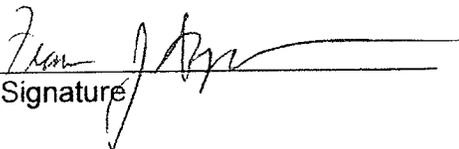
Address 300 Crossways Park Drive

City, State, Zip Woodbury, NY 11797

State Registration No. NY State No. 1240228

Contact E-mail: fingrassia@cleverdevices.com

Phone No. 516-433-6100

By:   
Signature

24 May 2013  
Date

Francis J. Ingrassia  
Printed Name

President  
Title



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## 1 Executive Summary

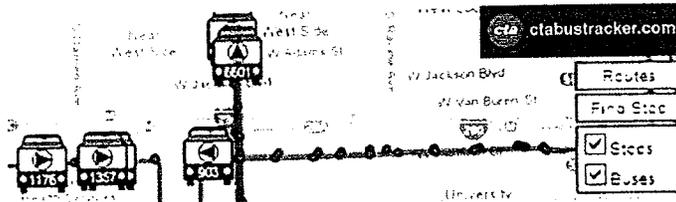
Clever Devices will implement a Computer Aided Dispatch (CAD) and Automatic Vehicle Location (AVL) system that provides the full functionality required by RFP NUMBER: 12-13-406. Clever Devices' integrated solution uses standard products configured for RRT's specific needs which will allow RRT to: implement industry leading CAD/AVL functionality to enhance staff and operational efficiencies; provide the benefits of real-time passenger information to your ridership interactively over the web, phone, mobile devices, and changeable message signs, increasing customer knowledge and satisfaction; improve safety and security through advanced administrative tools and reports; and enhance operations through additional functionality without taxing agency resources.

Clever Devices will provide you with leading edge technology to maximize the life of your project investment. We form partnerships with our clients and work with them to improve transit safety and reliability, enhance the customer experience, provide operational efficiencies, and environmental benefits. We supply all hardware, software, spare parts, services necessary to accomplish the installation, debugging and testing of our proposed system. Our technology is designed with a modular architecture, as well as backward and forward compatibility to protect the investment of our customers. This will enable you to grow your system as the need arises with existing or new technology without the need to replace base system components. This guarantees the project success for the long term and will provide a significant return on investment.

Clever Devices is a privately-owned, 330+ employee firm with our Corporate Headquarters located in Woodbury, New York. The company was founded in 1987, and is devoted exclusively to providing innovative mass transit technology. All of our products are designed and manufactured in the United States and we are 100% Buy America compliant. Clever Devices continues to grow rapidly because our products work, and are in demand. We provide cutting-edge solutions that both facilitate mass transit operations and enhance the rider experience. We strive to produce reliable value-added products that have low life-cycle costs and high return on investments, resulting in rapid payback periods for our clients. Moreover, sustainability and green technology also have, and will continue to play a central role in all of our current and future solutions research.

### **Clever Devices' Track Record of Success**

Clever Devices has a proven track record of success and has successfully implemented our turnkey solutions at a broad array of bus and paratransit fleets across North America, including the largest real-time AVL and web-based customer information system at the Chicago Transit Authority (CTA). Our vast experience across large, medium, and small agencies has led us to form partnerships with our clients to ensure that the job is done right.



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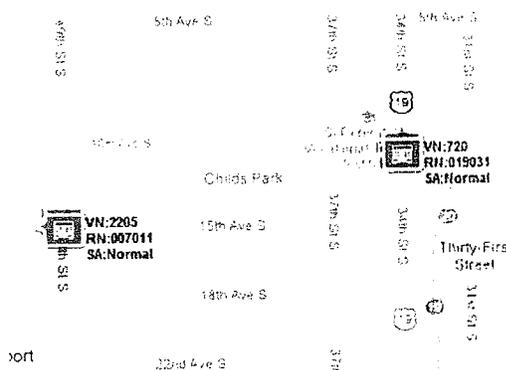
The foundation of CAD/AVL and real-time passenger Information is efficient and dependable real-time data communication. Clever Devices is an expert at on-board bus system integration and efficient real-time data transmission over cellular modems. We have an outstanding reputation in the industry for service and support.

### **Clever Devices' Best Value Proposal**

Clever Devices offers a full and robust suite of SmartBus™ solutions that meet or exceed the requirements stipulated in the RFP. We believe that our response provides RRT with a best-value, high-quality, and consolidated solution that will significantly reduce the risk and time of deployment. The foundation for our SmartBus™ offering is our Intelligent Vehicle Network (IVN®), the powerful on-board computer that supports the applications required in the RFP. IVN® easily supports all of the mandatory and optional requirements of the RFP, including CAD/AVL for fixed route services, Automatic Passenger Counting (APC), and real-time Passenger Information System.

Our proposal describes how our ITS solutions can save you money by generating maintenance and operational efficiencies and by creating opportunities to generate additional revenue. Accordingly, our response offers RRT the following solutions, features, and benefits:

### **A Turnkey Intelligent Transportation System Solution**



**CleverCAD®** is a state-of-the-art CAD/AVL solution designed for bus operations control centers that require the sophistication of graphic mapping integrated with dependable real-time location and status tracking for fixed route operations. The information-driven user interface is easy to learn and navigate. CleverCAD® provides the information necessary to reduce voice calls, while enhancing fleet visibility. CleverCAD® is designed to streamline day-to-day operations for our clients, so they can accomplish much more with existing resources.

**Grey Hawk** is a solution consisting of the vehicle MDC plus the GreyHawk Gateway program executing on a server at the dispatch center (or hosted at a remote location). This Gateway program will control the interface to the Trapeze software as well as the communications to/from the MDCs.

**BusTime®** is an award-winning, best-of-breed technology that generates reliable real-time arrival information to passengers via wayside signage, the web, smart phones, and SMS text messaging. These same channels can be utilized to pass important service information to RRT's customers. Easy access to this information promotes ridership, while saving RRT's customers time and money.



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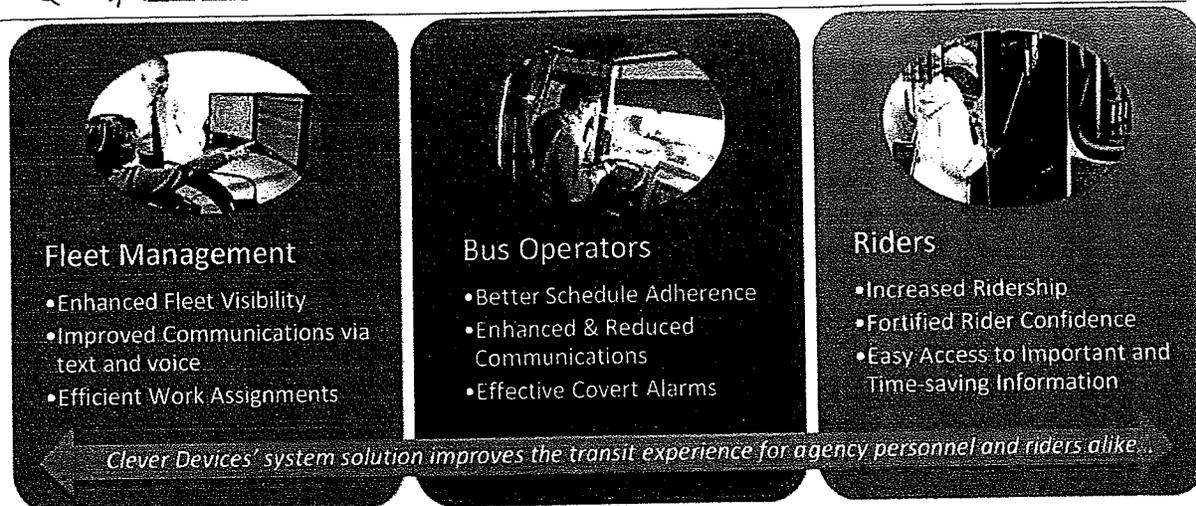


Figure 1: Benefit Summary

### **A Long Equipment Life-cycle**

Forward/backward compatibility of our on-board equipment has doubled the typical industry standard (six years). Clever Devices has several clients operating three generations of our equipment seamlessly, the oldest of which has been operational for 13 years and counting! Clever Devices' equipment continues to provide a significant return-on-investment for our current clients and will provide the same benefits to RRT.

### **A Tangible Return on Investment**

Clever Devices' commitment to the RRT CAD/AVL system project is to implement a solution that delivers a quantifiable return on investment. Our proposed solutions do more than simply improve the customer experience; they create operational efficiencies, which by definition, will reduce expenditures.

### **Looking Ahead**

Clever Devices continues to work closely with new and existing clients to develop thoughtful, innovative solutions. Recently, we worked collaboratively with New Jersey Transit to develop a safety critical solution that alerts bus operators to check for pedestrians before making left or right turns. We also developed a Voice-Over-IP (VoIP) solution for CENTRO in Syracuse, NY, that allows the agency to use a public cellular data network for voice communications. This year, we are working with the Chicago Transit Authority (CTA) to utilize state of the art technology to lockout vehicle ignition to prevent unauthorized individuals from operating CTA vehicles. These are just three examples of how our client-centric focus results in a unique understanding of our clients' challenges. For RRT, we are confident that the implementation of our proposed solution will allow you to improve your operations, without taxing additional resources. The technology and products that result are then made available to all Clever Devices' customers, so that an investment in Clever Devices technology is truly buying the future.



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### **In Closing**

We thank you for the opportunity to compete for this business. Our singular commitment and focus on mass transit technology is unparalleled and reflected in the solutions we provide. We have been an industry leader for over 25 years and have provided references that speak to the reliability and merits of our solutions. We have a culture of excellence and devotion to client service that is unparalleled in the industry.

Clever Devices is strongly interested in working with RRT on this project and we will commit our attention and resources to ensure a successful project. As a leader in intelligent transportation technology, we offer a low-risk program backed with the experience of multiple large and mid-sized deployments. Investing in Clever Devices will support RRT's immediate and future growth visions and will deliver a sound return on investment. As with our other clients, a partnership with Clever Devices will support the agency for decades.

We look forward to hearing from you and working with you as you evaluate our response to your Request for Proposal. As you review this document, please do not hesitate to contact us with any questions or concerns. The individual responsible for the RRT relationship is David Mugica, and he can be reached at 516-813-5785 or [dmugica@CleverDevices.com](mailto:dmugica@CleverDevices.com).



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## 2 Evaluation Criteria No.2 – System Design Concept and Functionality

Clever Devices is proposing a robust, feature rich system architecture for the City of Las Cruces Integrated CAD/AVL Project for RoadRUNNER Transit (RRT) based on a proven foundation of CAD/AVL and vehicle products. Clever Devices' proposed system solution architecture meets or exceeds all of RRT's functional and performance requirements and is shown in the system architecture diagram.

**The system architecture diagram is included in section 7 titled “Supplemental Attachment 1 – System Architecture Diagram” on page 49. Clever Devices has also provided RRT with a compliance matrix specific to RFP Section 2: System Functions; this can be found in section 8 titled “Supplemental Attachment 2 – Compliance Matrix” on page 50.**

The following provides guidance on which elements are provided by Clever Devices to meet and exceed the major functions described in the RFP and which elements are optional. The major functional areas of the architecture are described below:

### Proposed

- RRT Vehicles
- RRT Hosted Solution
- CAD/AVL Dispatch and Monitoring Systems
- GreyHawk Paratransit and Fleet Monitoring
- RTPi (BusTime®) System
- IVN®
- Training

### Optional

- Customer information signs
- Automatic Vehicle Monitoring (AVM®)
- BusLink® wireless bulk data transfer
- Automatic Vehicle Announcements
- Automatic Passenger Counters
- Integrate with Future Vehicle Security Camera Systems
- Optional Interfaces
  - Luminator destination sign
  - GFI Odyssey farebox

### **Fixed Route Transit Buses (13 LF Gilligs, 3 Novas, 2 Arbocs)**

The 18 RRT buses and six Dial-A-Ride paratransit vehicles will use the Clever Devices Intelligent Vehicle Network (IVN®) Vehicle Logic Unit (VLU) and Transit Control Head (TCH) to provide all required functional components for the buses. The ITS equipped vehicle subsystems provide:

- GPS for real-time passenger information
- Ability to toggle between paratransit & fixed route ops for the six Dial-A-Ride paratransit vehicles
- Emergency alarm functionality



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- Data communications using a cellular modem data gateway
- Touch screen driver interface
- Fixed route CAD/AVL (including schedule and route adherence monitoring)
- Vehicle J1708/1939 diagnostics and alarm monitoring (AVM®)

### **Dial-A-Ride Paratransit Vehicles (15 remaining vehicles)**

The dedicated Dial-A-Ride paratransit vehicles will be outfitted with the GreyHawk CEHawk® MDT vehicle hardware and a hosted backend sever/software solution to provide on-demand vehicle communications and tracking.

### **Supervisor Vehicles (3 vehicles)**

The RRT supervisor vehicles will be outfitted with ruggedized laptops and cellular modem hardware, giving them the tools they need to track the status of the entire RRT fleet equipped with Clever Devices ITS hardware.

### **RRT Hosted Solution:**

The base RRT hosted server system is comprised of several software solutions including CleverCAD®, BusTime® Real Time Passenger Information and GreyHawk Paratransit Operations software. All of these servers will be receiving data in real time leveraging cellular communications from the Fixed Route and Paratransit fleet. When data is transmitted from the bus it is routed through the Data Communications Controller (DCC) Server and sent to its respective database where it is sorted and stored. Depending on the user type, this data can be accessed from any location with proper security credentials and an active internet connection.

### **CAD/AVL Dispatch and Monitoring Systems:**

Clever Devices CAD/AVL system provides RRT operational personnel with access to the ITS Central Systems to affect real-time monitoring and control of their bus fleet as well as historical data viewing and reporting. From their respective locations, dispatchers and supervisors are able to monitor real-time performance of the vehicles, route and schedule adherence, monitor and respond to incidents, and communicate via text message to the drivers.

### **GreyHawk Paratransit Fleet Monitoring:**

The GreyHawk Paratransit MDT System replaces the printed driver manifest and is a tool that allows a driver to efficiently communicate in real time with a dispatcher during the route. The system uses computer technology in the vehicle to step the driver through the completion of each trip on the route and simultaneously transmit the results of the trip back to dispatch.

Voice radio traffic is dramatically reduced as intuitive color coded screens guide drivers through their routes. This new freedom allows them to concentrate on their main objective of transporting passengers safely, comfortably, and courteously to their destinations.

### **RTPI (BusTime®) System:**

The Clever Devices BusTime® Real-Time Passenger Information System (RTPIS) will provide real-time estimated arrival information, schedule information, service information, alerts, and map-based automatic vehicle location (AVL) information to RRT riders. BusTime® presents this information across various media such as the internet, LED signs, LCD Displays, and



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wireless devices such as smart phones and tablets. As an option, Clever Devices will also propose indoor and outdoor wayside customer information signage at the new transit intermodal center.

## 2.1 CleverCAD®

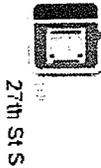
CleverCAD® is a state-of-the-art CAD/AVL solution designed for transit agencies that require a comprehensive transit service management solution for transit operation via central control

ion  
not

S  
1700

S  
1700

S  
2700



IN: 2206  
RN: 018131

1st Ave S

5th St S



**Vehicle Number:** 2206  
**Vehicle:** Gillig - 2002 40ft LF  
**Status:** Normal  
**Operator:** BLEWITT, GEORGE  
**Badge Number:** 70537  
**Route:** 18  
**Block:** 1813  
**Run:** 018131  
**Depot:** PSTA-SCHERER DRIVE FACILITY  
**Direction:** East  
**Destination:** ST PETE  
**Heading:** South  
**Schedule Adherence:** Normal  
**Route Adherence:** On Route

center and/or remotely via field/street supervisors. CleverCAD® is the central system designed specifically to interface with Clever Devices' on-board IVN® system for complete CAD/AVL functionality.

CleverCAD® is built on modern technology with a multi-tier architecture, strategic integration of WEB based technologies, and an intuitive Google map engine. The "information on demand" design enhances dispatcher performance, provides efficient presentation of crucial transit service (fleet and operational) information, delivers reports via web-based technologies, and is designed for rapid implementation. The information-driven user interface is easy to learn and

navigate, provides the information necessary to reduce voice calls, and enhances fleet visibility and transit service management.

Because CleverCAD uses Google Maps as its base layer source, routine updates to street and other base layers are provided automatically by Google. If required, standard ESRI shape files can be converted to KML format and imported as additional layers to be drawn on top of the CleverCAD Google Maps base map. It has been Clever Devices' experience, however, that the rich content of Google Maps provides the detail necessary for daily operation while affording the best performance.

CleverCAD®'s primary objectives are:

- Organize fleet and operational data into information
- Provide easy access to this information
- Improve communications between the fleet, dispatchers and field/street supervisors
- Utilize and intuitive user interface
- Customize to RRT's business processes
- Record all data and communications for reporting, tracking and documentation of issues and how they are handled.



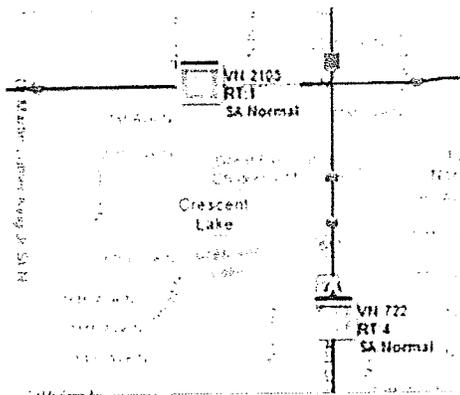
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CleverCAD® affords RRT the opportunity to make an additional and significant leap forward in transit service management. It monitors the transit service (fleet and operational behavior) and generates significantly more information than currently available. With CleverCAD®, the entire fleet can be monitored and managed from RRT's control center. The deployment of CleverCAD®, sufficient training, and Clever Devices' hands-on support will ensure success and a more efficient transit service operation. Clever Devices will be on-site during and after the deployment to monitor the system, help with operational behavior, and work with RRT to tune the business processes.

CleverCAD® is “the eyes and ears on the street” with command and control to prevent and react to normal operational activity. It is designed to streamline day-to-day operations so RRT can accomplish much more with existing resources. The deployment of CleverCAD® will result in improved transit service, improved customer information, and reduced costs to RRT.

They say a picture is worth a 1,000 words. CleverCAD® provides a map based view of the transit service area with information that is intuitive, customizable, and very easy to understand. CleverCAD® capitalizes on Google maps and supports both street and earth views. Routes and vehicles are color coded, and the amount of information displayed is based on the zoom level, while all information is quickly available by simply placing (hovering) the mouse on the object.



Each vehicle type has a specific vehicle icon such as fixed route, flex route, articulated, paratransit, maintenance, police, and supervisor. The icon color is configurable and reflects the current state of the vehicle and a color bar on the top of the icon matches the route color the vehicle is currently running.

CleverCAD® provides the dispatcher with much more information than can be seen on the street. The AVL map window has many features. A subset of these features is listed here:

- Enable/disable route display (color coded)
- Vehicle icon color based on current state
- Ghost view for vehicles assigned to different dispatcher
- Select vehicles by click, or by area
- Distance tool



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- Google traffic layer overlay
- Zoom & pan
- Last view
- Map bookmarks
- User defined configuration/filters of what information to display with a vehicle
- Find a vehicle based on user defined criteria
- Find closest supervisor to a vehicle
- Track a vehicle
- Inset of current map screen in transit service area
- Enable/disable Map legend
- Enable/disable coordinates (latitude/longitude)

The CleverCAD product displays the vehicle's performance relative to the schedule. Each bus will read either "Normal", "Early", or "Late." If "Normal" is displayed, the word appears alone. If the status is "Early" or "Late", the number of minutes the vehicle is early or late is displayed in parentheses to the right of the word. If the vehicle is early, this will be a negative number (-3, for example). If the vehicle is late, the number will be positive.

Typically, location is sent every 30 seconds, though this is configurable depending on the needs of RRT.

CleverCAD® has no trouble identifying specific routes even in the event of interlining. Clever Devices' system understands, based on the information received from the schedule system, the trips associated with the routes, blocks and runs. Each block and run is comprised of a set of trips to be operated in consecutive order regardless of the route to which the trip belongs. This data is available for all components of our solution.

**The advantage to RRT** is the availability of more information relative to the operator and bus on the AVL Map screen with quick and easy access to communicate with the vehicle & operator. All this accessible and organized information affords RRT dispatchers the ability to prevent and react to anomalies quickly. CleverCAD® provides tools to manage RRT's transit service more efficiently which result in improved transit service, improved customer information, and reduced costs.

Most of the features of CleverCAD® are used to monitor transit service and identify anomalies.

CleverCAD® affords RRT the ability to manage and monitor the fleet's route and schedule adherence. This information is available in the AVL map, the status grid, the run work grid, and the event grid. The dispatcher can define custom views for just this information and has the ability to define which grids this information can be shown. With CleverCAD®, dispatchers can easily find buses that are off route and/or off schedule and resolve any issues quickly.

RRT dispatchers will immediately know which buses are off route or off schedule and by how much. CleverCAD® allows the dispatchers to focus on buses with problems which results in improved transit service and customer information.

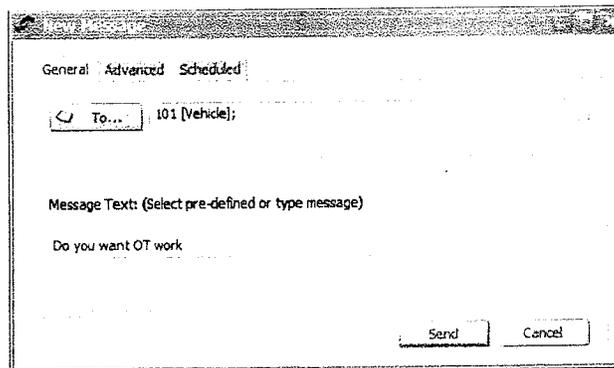


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One of the major goals of RRT was to reduce the amount of voice communications and streamline the dispatching functions through extensive use of text messaging. Clever Devices recognizes the goals of RRT and due to the lack of information on the current radio infrastructure we have chosen to highlight our text messaging capabilities.

Text messaging, an alternative to voice communications, is a quick and cost effective manner to communicate with operators to resolve transit service anomalies. Many transit authorities have limited voice channels available which limits its use. Text messaging is much like email and allows the dispatcher or operator to send messages and to view incoming messages. The CleverCAD® interface to send a message is shown below:



The dispatcher may send pre-defined (canned) text messages or ad-hoc (free form) text messages to a vehicle or any set of vehicles through a myriad of selection techniques listed here:

- ✓ Vehicle
- ✓ Group
- ✓ Block
- ✓ Garage
- ✓ All vehicles
- ✓ Operator
- ✓ Run
- ✓ Route
- ✓ Geographical area (rubber band on the map)

Text messages to the fleet can be configured for inbox, detour, or informational. This is used to make it easy for vehicle operator to find and manage text messages on-board the vehicle.

CleverCAD® text messaging feature also supports:

**Store and Forward:** Allows the dispatcher to schedule a text message for delivery at a given time in the future, a specific time period, or when the operator logs on to a specific route, run, or block during a specific time period. A common use of this feature is to ensure that all operators on a specific route receive applicable detour instructions.

**Response Required:** Allows the dispatcher to request a response from the operator. There are multiple responses the dispatcher can select from: Yes/No, Yes and Time /No, or Yes and number/No

**Spell Check:** Spell check is available





The vehicle operator can also send text messages to other CleverCAD® users. These are viewed in a mail client and have all the features and functions such as create a new text message, reply to driver requests, and confirm who has responded to a group message.

The advantage to RRT is a highly effective, reliable, and timely means of communications to and from the fleet. This will reduce voice communications dependency and will allow the dispatcher to handle multiple issues quickly. Text messaging will improve the dispatcher’s ability to resolve problems quickly and will result in improved transit service. For CleverCAD® (and BusTime® ) functionality, Clever Devices recommends a data plan that supports 10MB per bus per month. Costs will vary depending on the service provider.

CleverCAD® is a state-of-the-art component of Clever Devices’ ITS system solution. The Table below provides a summary of its major features and capabilities.

Table 1: Summary of CleverCAD® Features

<b>CleverCAD® Major Features</b>	
<b>Dispatcher Logon Authentication</b>	<ul style="list-style-type: none"> <li>• Active directory authentication</li> <li>• Built-in CleverCAD® authentication</li> </ul>
<b>Map Window &amp; AVL</b>	<ul style="list-style-type: none"> <li>• Centralized quick and intuitive access to information via menus and ribbons</li> <li>• Quick Access toolbar</li> <li>• Ribbon menu</li> <li>• Ribbon toolbar</li> <li>• Status toolbar</li> <li>• Vehicle monitoring and location tracking features</li> <li>• Synchronized to grids and other views</li> <li>• Standard map control such as pan, zoom, and select area</li> <li>• Reverse geo-coding for easy to interpret locations</li> </ul>
<b>Dispatcher Work</b>	<ul style="list-style-type: none"> <li>• Grouping of work by route, garages, vehicles, runs, blocks, vehicle type or Incident type to specific dispatch workstations</li> <li>• Creation of custom dispatcher groups</li> <li>• User sees all assigned vehicles and all other are ghost images</li> </ul>
<b>Assignment</b>	<ul style="list-style-type: none"> <li>• Operator gets on bus and drives</li> <li>• Operator enters OperatorID</li> <li>• Operator enters OperatorID and WorkID</li> <li>• Eliminate duplicate logons</li> <li>• Manual logon backup is always available</li> </ul>
<b>Operator Logon and Validation</b>	<ul style="list-style-type: none"> <li>• Simple view of all scheduled work that is not active</li> <li>• Monitor and manage pull-out and pull-in</li> <li>• Support for daily changes</li> <li>• Assignment of work to dispatcher</li> </ul>
<b>Run Work Management</b>	<ul style="list-style-type: none"> <li>• Monitor all buses on a route for spacing</li> <li>• Easy bus bunching detection</li> </ul>



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<b>Headway Management</b>	<ul style="list-style-type: none"> <li>• Monitor and event creation for route adherence</li> <li>• Monitor and event creation for schedule adherence</li> </ul>
<b>Route and Schedule Adherence</b>	<ul style="list-style-type: none"> <li>• Custom event prioritization and grouping</li> <li>• Duplicate event detection</li> <li>• Multiple event stacking</li> <li>• Event types and subtypes</li> </ul>
<b>Event Management</b>	<ul style="list-style-type: none"> <li>• Automated or manual incident creation</li> <li>• 16 pre-built incident types with the ability to create custom types</li> <li>• Auto-populated system data to decrease the average dispatcher response time</li> </ul>
<b>Incident Management</b>	<ul style="list-style-type: none"> <li>• Canned (pre-defined) text messages</li> <li>• Ad-hoc (free-form) text messages</li> <li>• Multiple &amp; easy vehicle selection techniques</li> </ul>
<b>Text Messaging</b>	<ul style="list-style-type: none"> <li>• Quick access to all the details of a specific vehicle</li> <li>• Current status of the vehicle with exhaustive details</li> </ul>
<b>Vehicle Details Window</b>	<ul style="list-style-type: none"> <li>• Review past events by viewing historical dispatcher and bus activity and status</li> <li>• View playback of a single vehicle or the whole fleet of vehicles</li> </ul>
<b>Playback</b>	<ul style="list-style-type: none"> <li>• Text messaging similar to vehicle text messaging</li> <li>• Chat room</li> </ul>

## 2.2 CleverReports™

Clever Devices proposes CleverReports™ as our comprehensive business intelligence and operational analytics reporting tool. Business intelligence dashboards and reports that result from centralized data lead to greater operational efficiencies and reductions in costs. CleverReports™ offers web-based dashboards, reports, and data warehousing in one easy to use, yet powerful application. Standard reports and ad hoc report creation are both included to meet all of RRT's reporting needs. The following sections describe the reporting functionality of CleverReports™ and provide a list of standard reports available to RRT.

Since CleverReports™ is a web-based application, any user in the organization with a web browser can be granted access. Major browsers such as Internet Explorer, Firefox, Chrome, and Safari are supported. In addition, mobile devices with built-in browsers can access CleverReports™, and an iPad application can also be provided.

In CleverReports™, and all other Clever Devices applications, the data is open and it belongs to RRT. Your users can store it locally or have it hosted and use the data as needed to run transit operations.

Our standard reports have been combined and summarized for ease of use in the system. In CleverReports™, reports are organized by subject matter and are numbered for easy reference. In addition, search capability is included, so the user may find a report based on all or part of a



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report name. The following table represents a subset of growing number of reports available in CleverReports™.

Table 2: Standard Reports List & Descriptions

Report Name	Description
<b>Real-Time Schedule Performance Dashboard</b>	Measures on-time performance, pull-in, and pull-out times versus scheduled times, and provides a graphic display of deviations. Allows the user to analyze the data over multiple time periods and provides results for both historical as well as real-time data for comparison. Drill down provided to the route and operator levels.
<b>Running Time Report</b>	Measures and provides a tabular display of running times at the route, direction, pattern, and timepoint level. Also allows the user to select from multiple time periods and routes over which to analyze the data.
<b>Vehicle Miles and Hours</b>	Provides a measure of actual vehicle miles and hours against scheduled vehicle miles and hours. Data broken down by revenue, pull-in/pull-out, deadhead, and layover operational segments. Drill down provided to vehicle type or individual vehicles.
<b>Dwell Time Report</b>	Indicates the amount of time spent with vehicles stopped for both scheduled and unscheduled stops. Provides both a tabular and graphical view. Drill downs provided for route, direction, and individual stops in a trip. <b>Sub-reports:</b> Dwell Time Last 10 Days Dwell Time by Route Dwell Time by Direction Dwell Time Details
<b>Headway Reliability Report</b>	Shows bunching and gapping of vehicles along a route in both tabular and graphical view. Drill down provided for day of the week. <b>Sub-reports:</b> Headway Reliability by Day
<b>Off Route Summary Report</b>	Allows assessment of the amount of off-route events and the distance traveled while off-route. Drill downs provided to route and individual instances. <b>Sub-reports:</b> Off Route Summary by Route Off Route Details by Route
<b>Missed Trip Summary Report</b>	Indicates the number of missed trips versus scheduled trips. Drill downs provided for routes and individual trips. <b>Sub-reports:</b> Missed Trips by Route Missed Trip Details
<b>Announcement Summary</b>	Indicates the number of scheduled announcements versus the actual number of announcements played. Drill downs provided for routes and individual stops. <b>Sub-reports:</b> Announcement Summary by Route Stop Audio Announcements



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Report Name	Description
<b>Pull-In Performance Report</b>	Shows late pull-ins from a historical perspective. Drill down provided for individual operators. Top 10 and Bottom 10 versions of the report included as tabs. <b>Sub-reports:</b> Top 10 Routes Bottom 10 Routes Pull-in Performance by operator Top 10 operators Bottom 10 operators
<b>Pull-Out Performance Report</b>	Shows late pull-outs from a historical perspective. Drill down provided for individual operators. Top 10 and Bottom 10 versions of the report included as tabs. <b>Sub-reports:</b> Top 10 Routes Bottom 10 Routes Pull Out Performance by Operator Top 10 operators Bottom 10 operators
<b>Log On Summary Report</b>	Indicates logons from a historical perspective. Drill down provided for details of each type of logon. <b>Sub-reports:</b> Logon Details
<b>Incident Activity Report</b>	Shows all incident report activity over a date range. <b>Sub-reports:</b> Opened and Closed Incidents Open Incidents
<b>Daily Incident Report</b>	Shows all incident report activity over a single day. Typically used as a daily email to track incidents that may not have been handled or closed the previous day. <b>Sub-reports:</b> Incident Type Summary Incident Listing
<b>Operator Performance Summary Report</b>	Indicates operator performance over a date range. Drill downs provide a breakdown by date and individual timepoints. <b>Sub-reports:</b> Operator Performance Summary by Day Operator Performance Detail Operator Actual timepoints Operator Deadhead Detail Operator Off Route Events
<b>On-Time Performance Report</b>	Indicates on-time Performance over a date range. Date is broken down by time period. Top 10 and Bottom 10 tabs are available from this report. <b>Sub-reports:</b> Top 10 Rank Bottom 10 Rank
<b>Deadhead Report</b>	Shows all deadhead activity by date, broken down by deadhead type. <b>Sub-reports:</b> Vehicle Deadhead Details
<b>Space Time Diagram</b>	Shows a visual representation of headway on consecutive trips on the same route. Can be filtered by time period. Hovering over individual stops provides schedule adherence data.



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Report Name	Description
<b>Layover Summary</b>	Summarizes all layovers that took place in the system by day. Drill downs are provided for each day showing individual layover details.
<b>Layover Operator Summary</b>	Summarizes layover activity broken down by operator. Drill downs are provided to view all layover details by operator. <b>Sub-reports:</b> Layover Operator Details
<b>Layover Timepoint Summary</b>	Summarizes layover activity broken down by layover point. Drill downs are provided to view all layover details by layover point. <b>Sub-reports:</b> Layover Timepoint Details
<b>Layover Operational Period Summary</b>	Summarizes layover activity broken down by operational period. Drill anywhere is used to allow the user to select and drill further into operator, date, or trip detail.
<b>Layover Timepoint Map</b>	Shows a Google Map of all layover locations. A tooltip is provided when hovering over a location to show summary statistics for that location.
<b>Voice and Data Communication</b>	Summarizes all voice and data communication activity between TCs and operators. Drill downs are provided to show communication details. <b>Sub-reports:</b> Voice Call Detail Data Call Detail
<b>Operational Dashboard</b>	Combines historical graphs for On-Time Performance, Late Pull-ins, Late Pull-outs, and Late Logons on a dashboard. Users may drill into graphs to show details.
<b>Active Fleet</b>	Shows all vehicles active over a given date range. <b>Sub-reports:</b> Fleet Details
<b>Daily Lost Time</b>	Shows all vehicles active over a given date range. <b>Sub-reports:</b> Daily Lost Time Details
<b>Driver Work Piece Summary</b>	Summarizes driver information for a given date range. Logons, pull-outs, and work performed are shown.

Sample CleverReports™ reports can be found in section 9 on page 78.

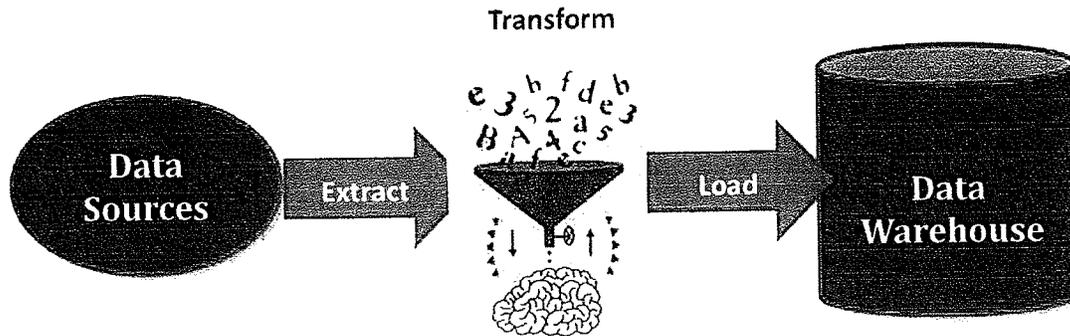
#### 2.2.1 Data Warehouse

The Data Warehouse is the heart of CleverReports™. The Star Schema design serves as the foundation for all reports and dashboards. The Data Warehouse is capable of ingesting data from virtually any source or format, including real-time sources. The data structure allows for any authorized person to become a report writer without having to write complicated queries. The resulting reports present a clear analysis of this data, and can be filtered by any variable such as OperatorID, VehicleID, time/date, route, stops, etc., or a combination of multiple filters.

It is important to have reliable data in the Data Warehouse. Clever ETL (Extract, Transform, and Load) extracts data from various sources, transforms the data into usable information, and loads the data warehouse.



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### Extract

Data sources can originate from Clever Devices' internal applications as well as from external sources such as a Human Resources system. Load plans are put in place only after carefully considering when the source data is available, when it is needed, and when it should be extracted. Source data can be extracted in real-time or on a historical basis. Multiple data sources are supported, including:

- Flat Files
- XML Files
- Microsoft SQL Server
- Teradata
- DB2
- Informix
- Sybase
- MySQL
- Progress
- Oracle

### Transform

The transformation layer is designed to convert data into a usable format and to prevent bad data from being placed into the data warehouse. The transformation layer also performs data aggregation, making logical data groupings such as days, weeks, and months. This helps ensure that data within the dashboards and reports is returned quickly when it is needed.

### Load

The load process moves the data into the data warehouse where it is ready for reporting. The Data Warehouse is fully documented to the table and column levels for the user and table relationship diagrams are provided.

Data on communications status, system status, route and schedule information, incidents, events, data required for displays and reports, data retrieved from the revenue and non-revenue fleets, data entered by product users, and data retrieved from other computer systems are kept secure and confidential information is not shared or externalized.





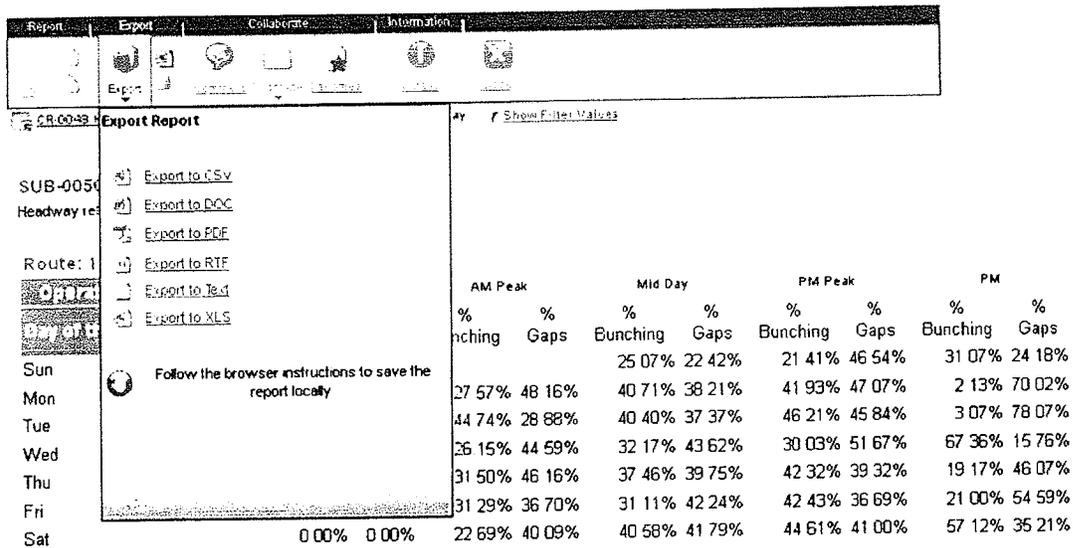
2.2.2 Graphical Reports

CleverReports™ supports a multitude of chart types, including:

- Bar Charts
- Line Charts
- Pie Charts
- Bubble Charts
- Scatter Plots
- Radar Charts
- Meters and Gauges
- Column Charts
- Area Charts
- Combination Charts
- Google Map support
- Heat Maps

2.2.3 Sharing Reports

Sharing reports is easy with CleverReports™. Reports can be exported in a number of formats including Excel, Word, and PDF. Reports can also be distributed via a built in email client to another user or group either on demand, on a scheduled basis, or based on a reporting threshold being crossed.



2.2.4 Web-Based Dashboards

CleverReports™ is delivered with two standard dashboards. The Schedule Performance Dashboard provides a combination of real-time and historical information against the agency's Key Performance Indicators (KPI) for Schedule Performance, pull-outs, and pull-ins. As such users can, at a glance, compare today's service performance to historical performance, and can even view performance versus service performance goals. Information is shown for the entire day and also can be broken down for the current time period. Drill down is supported to the individual route and operator levels.

2.3 Real Time Passenger Information (BusTime®)

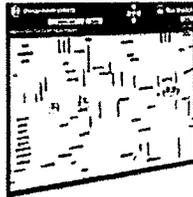
The proposed ITS system includes BusTime® to provide accurate and reliable passenger information to the RRT riders. BusTime® is a real-time passenger information system that provides estimated arrival information, schedule information, service information, alerts, and



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map-based automatic vehicle location (AVL) information. BusTime® presents this information across various media such as the internet, LED signs, LCD Displays, and wireless devices such as smart phones and tablets.



Bus Location Map  
See where buses are along your route



Estimated Arrival Times  
See when buses are expected to reach your stop

BusTime® uses a unique, Clever Devices' patented prediction algorithm to create real-time bus arrival times. BusTime® achieves the highest accuracy for predictive arrival systems due to its intelligence and quality of information entering the system. Accurate and reliable data entering the system from IVN®, BusTools®, and the DCC make for the most accurate system predictions. BusTime® prediction algorithms use the route/schedule database and real-time AVL data to generate accurate predictions that are displayed to the end user. BusTime® display components use route definition data to populate graphic user interface (GUI) controls (e.g. stop names, stop order, etc.). BusTime® display components also use schedules to display arrival information when AVL information is not available to generate goal predictions. Upon receiving an AVL report, BusTime® performs the following steps:

1. BusTime® validates the AVL report and matches it to the trip that is currently being run by the vehicle that generated the report.
2. With a vehicle's most current AVL report and trip, BusTime® proceeds to execute its prediction algorithm which results in an arrival time being generated for every stop scheduled to be serviced by the vehicle in the next 30 (configurable parameter) minutes.
3. BusTime® forwards and stores all arrival predictions to a temporary memory store to be accessed later by all display components that are interested in the information (i.e. website, API, PDAs, text messages, etc). The memory store only contains the most recent arrival predictions to insure that information displayed to the end user is the most recent.

BusTime® supports delivery of vehicle arrival/departure information in real-time to optional estimated departure LED and LCD signs. BusTime® delivers real-time arrival predictions, affording convenience and enhanced value to RRT's ridership. In addition, service alerts and other messages can be displayed on these signs.

Unlike some passenger information system products, which totally rely on historical data, and may provide incorrect information for a period of time until a new history is collected, Clever

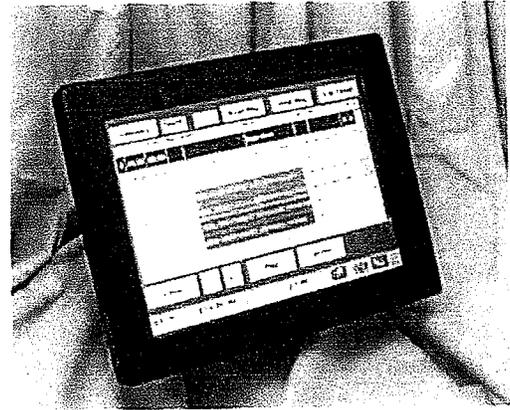


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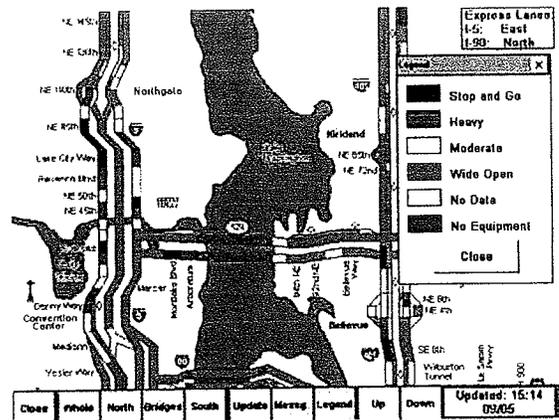
Devices' BusTime® system utilizes real-time data, schedule data, and historical data eliminating the possibility of error created with a historical only data model. Clever Devices' BusTime® system also has an online help function to assist users.

2.4 The GreyHawk 7 MDT Paratransit Solution  
The team will deploy the GreyHawk 7 mobile data terminal (MDT) on the paratransit fleet. The MDT is a Windows 7 based system and uses the latest in technology. It includes mapping, color coding, bordering, continuous time display, easy message handling, and other features that will simplify and reduce the driver's administrative tasks. This is a system based on "open systems architecture" to allow future migration and expansion. The GreyHawk system is a feature rich, highly intuitive data collection system that is a quantum leap forward in MDT technology. The following sections provide further description of how the GreyHawk 7 system provides the features and capabilities to support the driver's implementation of the manifests.



The GreyHawk solution consists of vehicle MDT systems plus a GreyHawk Gateway program executing on a PC at the dispatch center. This Gateway program will control the interface to the scheduling and dispatching system as well as the communications to/from the MDTs.

Each of the RRT's paratransit vehicles will have an MDT System consisting of a touch screen PC, GPS, and data WAN modem. Data from the vehicles is transmitted to the cellular towers where it is passed on to the GreyHawk Gateway System. This Gateway is a communications program that interfaces with the MDT/AVL interface program and controls the radio transmissions to and from the MDT units in the vehicles. The average cellular cost per vehicle is \$10.00 per month.



A scheduling system calculates routes consisting of pick up and drop off trips for each van in the fleet, and these route manifests are transmitted to the MDTs in the vehicles after the driver logs on. These MDT systems mounted in the vans utilize a 9 inch color touch screen with wide area real-time communications and Global Positioning System (GPS) to eliminate the problems of driver inefficiency and excessive voice radio traffic. The vehicle system employs color mapping and routing to efficiently guide the drivers to their destination. GreyHawk MDTs have the highest driver acceptance rating in the MDT industry because they are highly intuitive and simple to use.

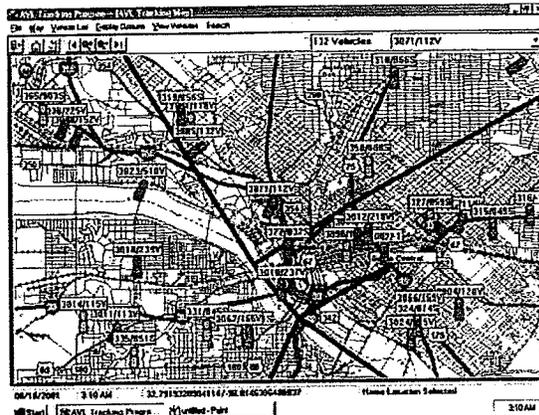
The MDC has no moving parts, allowing it to reliably withstand the hostile environment of transit vehicles. The GreyHawk MDT is password protected, and has a lock feature to protect data.



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When the drivers log on their specific route manifest is transmitted (downloaded) from the dispatching system to the vehicle MDT where it is displayed on the screen. The MDT requests manifest data from PASS on a frequent basis. It has the capability to display more than the next ten trip events or trip events in the next 60 minutes, all configurable by RRT's personnel. As the driver arrives at each destination and completes the trip, transactions of these events are transmitted to the Gateway, which hands off the transactions to the scheduling system where they automatically update the scheduling system. Messages can also be transmitted to and from RRT's dispatch and the RRT's vehicles. GPS latitude and longitude coordinates are periodically transmitted from the vehicle and can be plotted on a map at dispatch to show exactly where each vehicle is located. The frequency with which locations are updated is a user defined parameter and can set as often as 1 second per update. Reports based on the driver transactions can be printed via the scheduling and dispatching system.



The vehicle MDTs uses the GPS satellites to continuously calculate its location (latitude and longitude). Known as Automatic Vehicle Locator (AVL) information, this data is transmitted every x minutes or x miles (parameter controlled) from the vehicle to the radio towers. It is transmitted on to the GreyHawk AVL Tracker/Dispatch program running on a workstation at the dispatch center constantly updating the AVL Database with the latest location and vehicle on-time status. AVL Tracker workstations used by dispatchers, customer service representatives, reservationists, and managers read this database through the LAN and plot the vehicle location on the Map screen. Since the paratransit MDTs know the schedule of the vehicle and the exact arrival time to its destination, the MDT can determine if the vehicle is early, late, or on schedule. The AVL Tracker system color codes the icons to allow the user to determine at a glance the on-time status of the route (e.g., red = late, blue = early). Dispatchers can filter out unwanted vehicles to see, for example, only the vehicles running late, or show me only the vehicles within the northern sector boundaries. The GreyHawk 7 utilizes NavTeq mapping and can be updated yearly upon the request and expense of the customer.

The playback feature is a tool for customer service representatives to utilize historical data to address complaints such as drivers not arriving at the promised time or not arriving at the designated address. The playback routine allows a customer service representative to isolate data such as the date, time, driver, service provider, and route to pinpoint the circumstances of the complaint. This data set is then plotted on the map and each transaction in the data set is displayed one at a time to playback the event. The playback shows exactly what streets were taken by the driver, when the vehicle arrived, and when the vehicle departed the destination in question. GreyHawk maintains an independent Sequel database and reporting tools. Data will also be fed into Trapeze Pass for use in its reporting tools and storage.



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This data can also be shown in “column” format. Users can quickly scroll through the data set records to search for a customer name, arrival time, departure time, speed, or other event.

The following are a few transit agencies where GreyHawk has successfully interfaced with the Trapeze Pass Scheduling System:

- Dallas Area Rapid Transit (DART)
- King County Metro (Seattle, WA)
- City of Edmonton Alberta – DATS
- New Orleans Regional Transit Authority

#### 2.4.1 GreyHawk 7 MDT Specifications

Specifications for the GreyHawk 7 MDC are provided in the table below.

<b>GreyHawk 7 MDT Specifications</b>	
Processor:	Intel atom
Operating System:	Windows 7
Processor Speed:	1 Ghz (optional 1.6 Ghz)
DRAM Memory:	512 MBytes (optional to 2 GB)
Real Time Clock:	With battery backup
Data Storage/Flash Memory:	2 GB onboard storage (4 GB Optional)
Micro SD card Slot:	Providing an additional storage up to 32GB
Touch Screen Monitor:	High Bright (500 Nit) automotive grade capacitive touch display
Serial I/O Ports:	2 RS-232, 1 RS-485, 2 USB 2.0 Host
Network Port:	10/100/1000 Ethernet Port
Engine Telemetry:	SAE OBD II, CAN (J1939)
Digital I/O (Discrete Sensors)	4 Input /4 Output –Voltage (High/ Low)
GPS:	Ultra-sensitive GPS (2-3 meter accuracy)
WAN Modem:	Standard 3G Cellular GPRS (Optional CDMA)
802.11b/g/n Wi-Fi Radio:	Integrated
Antennas:	Internal Cellular, GPS and Wi-Fi antennas with external connectors for optional antennas.
Audio Speaker:	Standard internal speaker for turn-by-turn annunciation and communications alerts
Text-to-Speech Engine:	TTS engine for speaking turns and communications alerts
Audio Input (Covert Mic):	Requires cellular communications.
Vehicle Power Supply:	24/12 VDC internal power conditioning
Emergency Switch:	Standard
Storage Temperatures:	40°C (-40°F) to +85C (+185°F)

#### 2.5 BusFools®



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Clever Devices' BusTools® is a route and bus stop inventory database management application that has two major functions: managing the route and stop inventory and generating all of the execution data for SmartBus™.

BusTools® is a proprietary back end data maintenance tool used to manage route and bus stop inventory for time points and correlation with AVA stop announcements.

2.5.1 Schedule Data

Clever Devices personnel will enter RoadRUNNER Transit's schedule data into our in house scheduling system. This system will help provide Clever Devices' downstream products with the data needed to measure operational performance. Signups and interim schedule changes such as changes in running times or changes in scheduled timepoint crossings will be entered into this system. Once the schedule data has been created, it will be imported into our BusTools® application using the screen shown below.

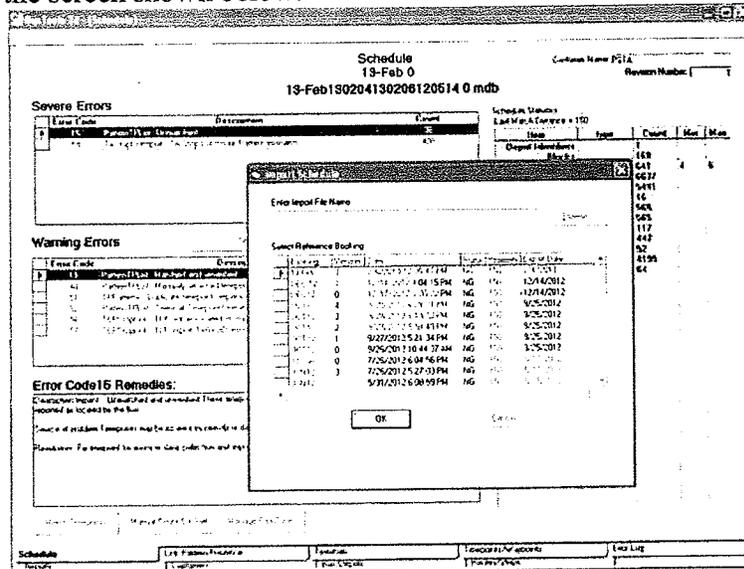


Figure 2: Schedule Data Import

As part of the import process, BusTools® performs integrity checks on the data to ensure quality. Once imported, the schedule data is joined to the spatial (GIS) data in the system. Spatial data contains elements such as stop locations, audio announcements, and the geographical path the buses traverse as they perform their daily work. Spatial data may be manipulated directly inside of the BusTools® application without having to perform schedule changes or an additional schedule import.





The screenshot shows the 'Edit Route' interface with a list of routes on the left and a detailed schedule table on the right. The schedule table includes columns for Stop, Stop ID, Stop Name, Stop Type, Stop Order, Stop Time, Stop Duration, Stop Delay, Stop Arrival, Stop Departure, Stop Status, and Stop Type.

Stop	Stop ID	Stop Name	Stop Type	Stop Order	Stop Time	Stop Duration	Stop Delay	Stop Arrival	Stop Departure	Stop Status	Stop Type
1	1746	PYRONE SQUARE MALL SHUTTLE C	1	1	7:00	0	0	7:00	7:00	0	1
2	1874	PYRONE BEYOND N. GARTH ST	1	2	7:05	0	0	7:05	7:05	0	1
3	1875	27ND AVE N + GARTH	1	3	7:10	0	0	7:10	7:10	0	1
4	1877	27ND AVE N + GARTH	1	4	7:15	0	0	7:15	7:15	0	1
5	1879	27ND AVE N + GARTH	1	5	7:20	0	0	7:20	7:20	0	1
6	1880	27ND AVE N + GARTH	1	6	7:25	0	0	7:25	7:25	0	1
7	1884	27ND AVE N + NORFOLK ST N	1	7	7:30	0	0	7:30	7:30	0	1
8	1882	27ND AVE N + WORCHESTER RD N	1	8	7:35	0	0	7:35	7:35	0	1
9	1887	27ND AVE N + 58TH ST N	1	9	7:40	0	0	7:40	7:40	0	1
10	1890	27ND AVE N + 58TH ST N	1	10	7:45	0	0	7:45	7:45	0	1
11	1876	27ND AVE N + 58TH ST N	1	11	7:50	0	0	7:50	7:50	0	1
12	1881	27ND AVE N + 58TH ST N	1	12	7:55	0	0	7:55	7:55	0	1
13	1891	27ND AVE N + 57ND ST N	1	13	8:00	0	0	8:00	8:00	0	1
14	1892	27ND AVE N + 51ST ST N	1	14	8:05	0	0	8:05	8:05	0	1
15	1893	27ND AVE N + 41TH ST N	1	15	8:10	0	0	8:10	8:10	0	1

Figure 3: Editing Routes (1)

After schedule and spatial data changes have been made, an export is created from BusTools®. This export is used by all Clever Devices applications for vehicle logons, associating APC data, tracking route and schedule adherence, and performing audio and visual announcements.

The screenshot shows the 'Flash Information' interface with a list of vehicle information. The table includes columns for Stop, Stop ID, Stop Name, Stop Type, Stop Order, Stop Time, Stop Duration, Stop Delay, Stop Arrival, Stop Departure, Stop Status, and Stop Type.

Stop	Stop ID	Stop Name	Stop Type	Stop Order	Stop Time	Stop Duration	Stop Delay	Stop Arrival	Stop Departure	Stop Status	Stop Type
1	1746	PYRONE SQUARE MALL SHUTTLE C	1	1	7:00	0	0	7:00	7:00	0	1
2	1874	PYRONE BEYOND N. GARTH ST	1	2	7:05	0	0	7:05	7:05	0	1
3	1875	27ND AVE N + GARTH	1	3	7:10	0	0	7:10	7:10	0	1
4	1877	27ND AVE N + GARTH	1	4	7:15	0	0	7:15	7:15	0	1
5	1879	27ND AVE N + GARTH	1	5	7:20	0	0	7:20	7:20	0	1
6	1880	27ND AVE N + GARTH	1	6	7:25	0	0	7:25	7:25	0	1
7	1884	27ND AVE N + NORFOLK ST N	1	7	7:30	0	0	7:30	7:30	0	1
8	1882	27ND AVE N + WORCHESTER RD N	1	8	7:35	0	0	7:35	7:35	0	1
9	1887	27ND AVE N + 58TH ST N	1	9	7:40	0	0	7:40	7:40	0	1
10	1890	27ND AVE N + 58TH ST N	1	10	7:45	0	0	7:45	7:45	0	1
11	1876	27ND AVE N + 58TH ST N	1	11	7:50	0	0	7:50	7:50	0	1
12	1881	27ND AVE N + 58TH ST N	1	12	7:55	0	0	7:55	7:55	0	1
13	1891	27ND AVE N + 57ND ST N	1	13	8:00	0	0	8:00	8:00	0	1
14	1892	27ND AVE N + 51ST ST N	1	14	8:05	0	0	8:05	8:05	0	1
15	1893	27ND AVE N + 41TH ST N	1	15	8:10	0	0	8:10	8:10	0	1

Figure 4: Editing Routes (2)

### 2.6 IVN®

The RRT vehicles will leverage the Clever Devices IVN® vehicle logic unit (VLU). IVN® is an industrial computer designed specifically for the transit environment, supporting Wi-Fi connectivity, bulk data transfer, single point logon with other on-board devices such as the destination sign, real-time AVL data, Automatic Voice Annunciation (AVA), and more. It combines ample processing power for future growth, a comprehensive set of industrial communication interfaces to all on-board systems, state-of-the-art network interfaces for on and



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off-board communications, multi-media capability for audio and video, the most accurate navigation system available, and most importantly an extensive and proven library of expert algorithms to meet all of RRT's ITS needs.

The local data on the IVN is contained on an MSATA drive which is located on the main printed circuit board inside the extrusion case. The case is sealed with tamper proof security screws to restrict access to the drive.

Data that is generated on the IVN® is transferred to an MSSQL 2008 R2 database for storage and retrieval. Historical data retention periods will be based on the requirements set forth by Las Cruces. Clever Devices complies with all requirements and regulations set forth by HIPAA.

#### 2.6.1 IVN® Hardware Details

##### **Dimensions:**

Size: 9"W x 7"L x 3"H

##### **Core Module:**

Main Board w/labor  
Ampro ATOM 1.6GHz COMexpress Nano  
2G DDR2  
Windows 7 Embedded license  
8GB mSATA Flash Card  
WLAN Adapter card – 802.11 a/b/g/n (PCIe)  
GPS module  
Internal Cellular modem (PCIe)  
/g/n and cellular modem

##### **GPS Antenna:**

WLAN Antenna  
12V Auxiliary Output

##### **External I/O:**

Power - 24V, GND (14 – 32 Vdc; 15 Watts total power)  
Standard IVN inputs: Run Switch, Front Door, Rear Door, Wheelchair, Stop Request, Reverse, Odometer and Emergency Alarm  
6 additional General Purpose Inputs / 4 General Purpose Outputs  
2x J1939 (CAN)  
2x J1708 (one configurable as RS485)  
1x RS-232, 2x RS-232/RS-485 (Selectable)  
4x USB  
2x Ethernet Ports

GPS w/DR Plug-in module

Line level audio ports for AVL applications (6 outputs / 4 microphone inputs)  
TCH (Video) port for AVL applications  
HDMI secondary video port w/audio channel  
2x mini PCIexpress slots to support 802.11 a/b/g/n and cellular modem

##### **Mechanical & Environmental WLAN:**

Operating Temp. -30°C to 60°C  
Storage Temp. -45°C to 80°C  
Humidity  
Operational: 10% to 90%  
Storage: 5% to 95% (non-condensing)  
Shock 15G peak-to-peak, 11ms duration, non-operation  
Vibration  
Non-operation: 1.88 Grms, 5-500 Hz, each axis  
Operation: 0.5 Grms, 5-500 Hz, each axis  
Form Factor - Extruded Al enclosure with front/rear panel.  
Approx. size est. 6.5" x 6" x 2

##### **Operator Interface:**

9" TFT-LCD DVI Touchscreen  
Supertwist, Graphic, Transmissive LCD  
Virtual Keypad

##### **Navigation:**

16 Channel GPS Receiver



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Odometer  
 Gyro (Angular Rate Sensor)  
 Enhanced Kalman Filter EKF™ Algorithm  
 Dead-Reckoning  
 WAAS Enabled  
 Fast TTFF (Time To First Fix)  
 Active Multipath Detection & Removal

**Radio Interface:**

1x Handset Interface (Mic & Speaker)  
 1x HookSwitch Digital Input  
 1x Radio PTT Digital Input & Output  
 1x Radio Audio Interface (In & Out)  
 1x Covert Microphone Interface  
 2x Radio Data Interfaces  
 Smart Radio Modem (Optional)

**Environmental:**

Temp: SAE J1455 4.1.3.1, 4.1.3.2  
 -20°C to +60°C  
 Humidity: SAE J1455 4.2  
 Splash: SAE J1455 4.4  
 Vibration: SAE J1455 4.9.4.1, 4.9.4.2  
 Shock: SAE J1455 4.10.3.1, 4.10.3.4  
 Programmable Delayed  
 Shutdown  
 Low Voltage Detect & Auto  
 Shutdown  
 Hardware/Software  
 Watchdog  
 Application Watchdog

**FCC Certification:**

Emission FCC Part 15 Class  
 A  
 EA INTERFACE  
 Current Sense EA Input  
 Controlled EA Output  
 Enhanced EA Circuit  
 Monitoring

Load Dump: SAE J1455 4.11.2.2.1  
 Ind. Switching: SAE J1455 4.11.2.2.2  
 Mutual Coupling: SAE J1455 4.11.2.2.3  
 Radiated Emissions: SAE J1113/41  
 SAE J1455 4.11.3.3.1  
 Conducted Emissions: SAE J1113/41  
 Radiated Interference Susceptibility:  
 SAE J1455 4.11.3.3.2  
 SAE J1113/22/24  
 Conducted Interference Susceptibility:  
 SAE J1113/2  
 ESD Handling: SAE J1455, J1113, J1211  
 ESD in Vehicle: SAE J1455, J1113

**Power Management:**

35 Watts Nominal Power Draw  
 1.5 Amp @ 24Vdc Current Draw  
 18 Vdc to 48 Vdc Input Voltage  
 Overvoltage Protection  
 Reverse Protection  
 Short Circuit Protection  
 Dedicated Power Management Micro  
 Protected from Ignition Interruption





## 2.7 Training

Training is essential to the overall success of this project. Clever Devices' Training Department, along with the project manager, will develop and implement the CAD/AVL training program. Training materials are from our standard training packages, which we will customize to reflect the unique configuration and architecture of the CAD/AVL system. Clever Devices will prepare and provide all documentation and training materials.

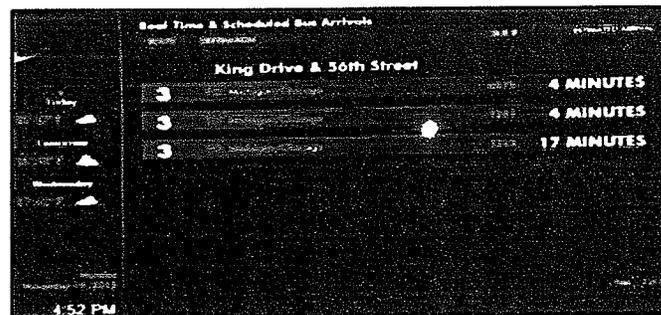
Clever Devices will provide an independent-study course with associated material for the bus operators.

There are two formats for training classes: standard and train-the-trainer. The standard class is for all users of the software at once. Train-the-trainer format saves time and resources by training a select group of CAD/AVL staff who will then be qualified to train other CAD/AVL employees. Clever Devices will provide train-the-trainer format training for RRT. The following classes will be given.

- Hardware Basic Maintenance Training
- Vehicle Equipment Advanced Maintenance Training (Option)
- System Administration Training
- Paratransit Scheduler/Dispatcher Training
- Fixed-route Supervisor Training
- Revenue Vehicle Operator Instructor Training
- Management Training
- Supplemental Training

## 2.8 Customer Information Signs for RRT's Intermodal Center (Optional)

Customer Information Signs displaying RTPI for next-bus arrivals are being proposed as an option for RRT. These signs will be located at RRT's new Intermodal Center and will be installed by RRT. Two wall-mounted LCD signs will be located inside in the general waiting area and one LED sign will be installed on the outdoor platform. For the indoor signs, Clever Devices is proposing a 42" LCD sign to display real-time passenger information, including estimated arrival information, the bay number for the route when it arrives, and any public service bulletins or other information that is necessary to relay to the riders. An example of this sign is seen below:



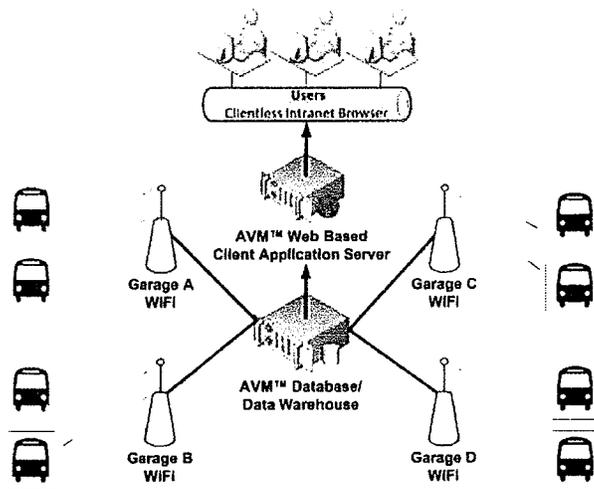


For the outdoor sign, Clever Devices is proposing a 4-line LED variable message sign. This will be located on the outdoor platform and will display real time passenger information, including estimated arrival information, the bay number for the route when it arrives and any public service bulletins or other information that is necessary to relay to the riders. An example of this sign is seen below:



2.9 Vehicle Health Monitoring: Automatic Vehicle Monitoring (AVM®) (Optional)

Vehicle Health Monitoring provides significant and quantifiable benefits in terms of improved maintenance efficiencies as well as enhanced fleet performance. Automatic Vehicle Monitoring (AVM®) is an innovative technology brought to the market by Clever Devices initially in 1998 and perfected over the last decade based on feedback from early adopter agencies, such as New York City Transit and Washington Metropolitan Area Transit Authority. Clever Devices is the recognized market leader in this technology. This entirely new approach to vehicle maintenance is yielding powerful results including reduced maintenance costs, decreased vehicle downtime (increased MDBF), extended vehicle life, and dramatically improved service to passengers. AVM® also significantly reduces the amount of time spent troubleshooting and diagnosing defects.



Our AVM® system continuously monitors and reports on vehicle condition and operational readiness for every vehicle in the fleet, seeking out hundreds of potential fault conditions that could lead to costly service interruptions. Problem vehicles are instantly and easily identifiable by maintenance personnel using the AVM® product’s color-coded status icons, and detailed views of information are easily modified to shift from single-vehicle analysis to fleet-wide condition reports. No additional staffing is required to operate this system once installed. It is



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used by existing maintenance departments to support work planning and can be interfaced to other maintenance work management systems.

AVM® is the realization of years of partnership with Clever Devices customers to bring the best ideas and practices into one industry leading system. The AVM® reporting solution leverages state-of-the-art data structure and storage utilizing MS SQL Server 2008 x64 Enterprise and Server 2008 operating environment. AVM® is a web-delivered application requiring no client-side installed software and can be delivered to users either over the internet or intranet. Best of all, AVM® centralizes all vehicle health data into a single data warehouse. This solution maintains enough detail to run reports by garage, bus type, bus manufacturer, individual fault, individual bus, or over the entire AVM® monitored fleet.

The AVM® system can collect and report on fault and operation performance data from such on-board systems as:

- Engine
- Transmission
- Anti-lock Brake
- Brake Wear/Condition Monitoring
- Tire Pressure Monitoring
- Battery Equalizer
- Supplemental Heater
- Air Conditioning
- Camera
- Event Data Recorders
- Multiplex Systems
- And many more...

AVM® is a truly web-based application that can be accessed from Internet Explorer, Google Chrome, Mozilla, and Safari, proving its flexibility. AVM® features a wide range of standard dashboards and reports. AVM® also allows authorized users to generate custom dashboards and reports. Please see the below list of dashboards and standard reports available in AVM®.

#### **Dashboard Types**

- Fault Explorer
- Engine
- Transmission
- ABS & Brake
- MAX/AVG/MIN Performance
- Trend Analysis (Performance Points)
- Fleet
- Garage
- Mechanic Current Month
- Foreman Current Month

#### **AVM® Fault Reports**

- Fault Priority
- Fault Summary
- Fault Detail
- Fault Trends Bus Type
- Fault Component Percentage
- Fault Trends Date
- Fault Trends Garage
- Fleet Defect
- Bus Type Fault Percentage
- Fault Priority
- And many more...





### **AVM® Performance Reports**

- Alphanumeric
- Accumulating Performance Point Summary
- Accumulating Performance Point Detail
- MAX/AVG/MIN Performance Point Summary
- Performance Point Detail
- Performance Threshold
- Performance Measure
- And many more...

### **AVM® Administrative Reports**

- File Ingestion Summary
- File Ingestion Detail
- ETL (Extraction, Transformation, Load) Failure
- Configuration File Ingestion Failure
- And many more...

AVM® further leverages this new architecture by providing a truly agile ad-hoc report generator that is easy to use and can be used by RRT authorized users. AVM® not only answers today's business questions, but empowers agency staff to answer new challenges into the future.

#### **2.10 BusLink® Wireless Bulk Data Transfer (Optional)**

BusLink® is a Clever Devices' WLAN communications product to control, manage, and distribute updates to all components of the system including the fleet, CAD/AVL, AVA, etc. BusLink® is a database application which runs on a standard Microsoft Windows operating system. It provides user authentication as well as automated upload and retrieval of vehicle data and manages connectivity and data transfer between the vehicle and the BusLink® server. BusLink® is more than just a data distribution mechanism to the fleet. It ensures data synchronization across all products within the system, tracks the update with time and status, and reports on any update anomalies. BusLink® does all the work while the user simply imports the data, assigns it to the fleet, sets an activation date and time, and presses "Go".

Clever Devices' BusLink® is responsible for transferring performance data from the buses, transferring software and data updates to the bus, managing and tracking the version of software and data on each bus, and providing a GUI interface for easy user interaction. Networking access to the vehicles is provided through a Wireless Local Area Network (WLAN). Clever Devices will install two (2) new WLAN access points at the garage facility.

When vehicles come in range of the BusLink® WLAN the BusLink® server will authenticate the user and then automatically check for software and updates. Any updates found will be downloaded to the vehicle and status reported. After the activation date and time passes, the vehicle will automatically apply the update. After downloading the updates, the vehicle logic unit (IVN®) will upload any performance data it has collected since its last authentication. The performance data will then be forwarded to the CAD/AVL server using an automated data forwarding application.





## 2.11 Automatic Vehicle Announcements (Optional)

Clever Devices' AVA function, which is an integral part of Clever Devices' IVN® VLU, will provide automated next stop and other safety/public service announcements and will interface to the inside next stop signs on the RTT buses.

Where all of our competitors address voice annunciation, passenger information, and content management as simply another component within the total system; we know otherwise. Often the ability to manage and deliver high quality content is the key application where quality, passenger experience, and safety are concerned. Our AVA system consists of state-of-the-art content management and control systems capable of delivering high definition audio into the most demanding environments. The system reliably ensures that the correct messages are always played at the correct time. The AVA function integrates fully with our IVN®, BusLink®, BusTools®, and BusTime® systems.

The IVN® transmits synchronized text messages to the interior LED sign(s) using a standard SAEJ1708/1587 protocol. The sign does support scrolling text. However, this is typically not used to support the visually impaired community, and BusTools® manages the character length of all text and limits this to the maximum character length of the sign. When a single message is being displayed on the screen, the visualization will remain on constantly. When a second message is required to be displayed, the IVN® will cycle through the visual messages, displaying only one at a time and alternating between the messages.

The interior DMS sign displays the following passenger information:

- Interior Stop
- Interior Transfer
- Interior Stop Requested
- Interior Date and Time

<b>Interior Stop</b>	The IVN® shall display the descriptions of the next stops consistent with the audio announcement. The information will be displayed at the same time as the “next stop” announcement is made.
<b>Interior Transfer</b>	The IVN® shall display the pre-programmed transfer information for the associated bus stops synchronized with the “next stop” audio and visual display.
<b>Interior Stop Requested</b>	The IVN® shall display the text “Stop Requested”, when a passenger has requested a stop via the bus’s stop request mechanism.
<b>Interior Date &amp; Time:</b>	The IVN® will display the current date and time on the interior LED sign. This information will be displayed upon start-up and will remain displayed while the system is on. The IVN® will alternate this information with the required ADA information as required. The text will not scroll off the LED sign.





Clever Devices' interior LED display will support upper case letters at least 50 mm in height. Additionally, the interior LED will be single-line with eight (8) LEDs high per character. The intended sign is similar to that illustrated below.



#### 2.12 Automatic Passenger Counters (Optional)

Clever Devices' APC units will be installed on two (2) fixed route vehicles and will be fully integrated with the IVN®, BusLink®, and BusTools® systems to provide RRT a complete passenger counting capability. Counts are registered and resolved using IVN®'s on-board algorithms and are stored and correlated to stops, routes, trips, patterns, blocks, runs, time, and location right on the vehicle. This association provides a distinct advantage and significantly reduces the need for post-processing. This data is also transferred in real time to the CleverCAD® system to provide insight to current passenger loading information.

#### 2.13 Integrate with Future Vehicle Security Camera Systems (Optional)

Camera integration via the SAE J1939 CAN network with IVN®/AVM® for fault and performance data allows it to generate surveillance and security reports as needed. Event correlation includes optional three-axis accelerometer integration, and information from IVN® including GPS/location data, time/date information, route number, operator ID, and any other selected details for advanced forensics and event re-creation. The reports can be generated in summary, detail, fault, and exception, and can be customized to exact need and frequency.

#### 2.14 Optional Interfaces

This section provides a brief overview of each optional interface between Clever Devices' proposed ITS solution and RRT's existing external systems.

**Luminator Destination Sign:** The Clever Devices IVN® VLU will interface with the existing Luminator headsigns via a J1708 interface. The IVN® will use the interface to command the headsign to display route information for an upcoming trip upon approaching a RRT-configured location/trigger point. Trigger points for changing the headsign display will be definable by the system administrator or other authorized personnel using the Clever Devices BusTools® application. An operator or dispatcher can manually override a headsign message. Such overrides will be logged by the IVN®. Status messages transmitted by the headsign will be received by the IVN® through the interface and stored in a log file, with each log record including the date, time, vehicle ID, GPS location, run, block, route, and trip. RRT staff will be able to upload these headsign status log files from the IVN®.

**GFI Odyssey Farebox:** Clever Devices has integrated with GFI fareboxes at multiple previous deployments, supporting a J1708 interface and single-point logon. At RRT, the operator will login to the TCH which automatically initializes the farebox, destination sign, APC, and AVA solutions. A successful logon will initiate a transfer of information from the IVN® to the



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farebox, including all run, route, trip, and operator information. This data will update accordingly, such as at the start of a new trip and location, should there be any changes.

The field-proven interface Clever Devices will use for the RRT deployment does not remove any functionality of the farebox OCU. This equipment will continue to work as expected, and will only use information sent to it, as specified, by the IVN®. This information, such as GPS location data and stop data, is sent to the farebox by the IVN® at periodic intervals.

Clever Devices has a long working relationship with GFI. Clever Devices interprets segmentation data as a means for RRT to tag data for reporting purposes. Typically this is accomplished by the user pressing a key on the GFI OCU that creates a tag. The GFI reporting software can then evaluate fares at specific points or areas along the route as tagged by the bus Operator. The GFI Odyssey farebox does not support receipt of segmentation data through the J1708 interface. However, the Stop and GPS data provided to the farebox can be used by the historical reporting solution to provide an equivalent segmentation data report.

Furthermore, if AVM® is purchased as an option, any alarms generated by the farebox will be sent to the IVN® VLU for transmission to the central system.



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### 3 Evaluation Criteria No.3 – Qualifications and Experience

#### 3.1 Company Profile

Clever Devices Ltd. is a New York State corporation founded in 1987 that dedicates 100% of its resources to providing innovative technology to the mass transit industry, setting us apart from most Intelligent Transportation System (ITS) providers.

Our mission is to provide innovative, state-of-the-art technology based solutions to public transportation that improve the rider experience, increase safety and security, augment operational efficiencies, and support socially and environmentally responsible provision of mass transportation.

Clever Devices designs and manufactures all of our products in the United States making us 100% Buy America compliant. With a technology and technologist staffing pool of over 320 + members, our firm dedicates the largest professional staffing resources to cutting edge ITS deployments of any firm in our market today! We strive to serve the ever-changing needs of mass transit by developing and implementing the most innovative and sustainable transit systems available.

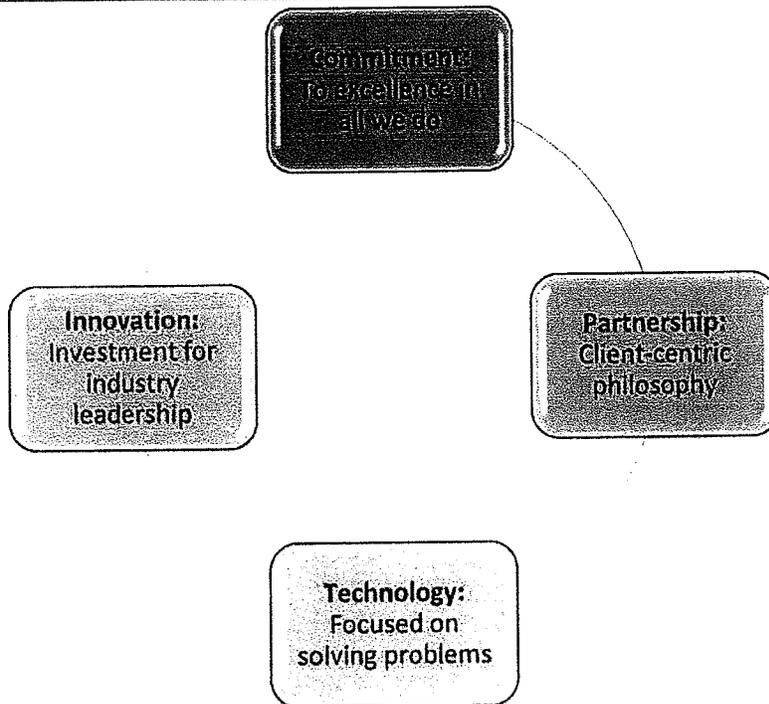
Clever Devices is a financially sound, privately-held company with over \$75M in annual revenue. The company has successfully implemented many multimillion dollar projects similar in size and scope to the CAD/AVL System that RRT requires.

We have an exemplary track record, successfully implementing our turnkey solutions 100% of the time at different size transit agencies throughout North America. Clever Devices has the desire and the credentials to supply a low risk and scalable CAD/AVL system for RRT. Our credentials that substantiate our capabilities to provide a successful project to RRT include:

- Prior relevant experience
- Appropriate technology
- Capacity to perform
- Existing maintenance and support approach
- Corporate financial stability
- Flexibility and a track record of success

We understand the connection between the successes of your project and the corporate culture of the company you partner with to deliver and help sustain your investment. We believe the high success rate of our projects is directly attributed to the key characteristics of our firm, which guide how we run our business. The figure below illustrates the key characteristics of Clever Devices' corporate culture that support a successful partnership.





**Commitment:** Clever Devices is committed exclusively to the transit marketplace. It is our goal at Clever Devices to be the world's leading provider of cutting-edge transportation technology. We are client-centric and encourage innovation and creativity. Also, we emphasize teamwork and service excellence in everything we do and commit the resources and attention to our projects to ensure a 100% success rate. Our customers will vouch for our commitment to their organization and ensuring project success.

**Partnership:** The partnership aspect of our relationship with our clients is a core element of our corporate culture and a key component in the 100% success rate of our projects. We carefully select and pursue engagements based on an alignment in corporate and agency culture, philosophy, and desire for a long-term relationship. Clever Devices has supported several of our clients for more than a decade with technology innovation, advice, services, and maintenance.

**Technology:** Clever Devices' solutions are state-of-the-art and are comprised of modular technology building blocks. Unlike many firms in our market space, Clever Devices has invested in understanding how ITS solutions are actually used in a transit agency through our staffing hires, and our long standing partnerships formed with agencies across the country. This understating enables us to focus on solutions that can be used to generate true benefits for our clients. We carefully assess the utility of every newly conceived bell and whistle, and carefully choose those which provide tangible benefits to our clients. We understand the correlation between technology and investment return in terms



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of both quantitative and qualitative measures including increased efficiencies, ridership growth, and enhanced safety and customer experience.

**Innovation:** Clever Devices' investment in research and development enables us to provide industry leadership and innovative solutions that benefit our clients. Our clients also enjoy the opportunity to adopt new technology and even participate with us, as WMATA did, in the development of AVM®.

Clever Devices' commitment to innovation has resulted in a number of significant achievements, awards and industry firsts, including:

- 2013 LISTnet award winner for CleverCAD®, the proposed CAD/AVL solution
  - 2012 Living Labs Global Award for Modern Urban Transport Information
  - 2012 LISTnet award winner for Automatic Vehicle Monitoring (AVM®), our vehicle health monitoring solution
  - 2011 First VoIP-based voice communications deployed at a transit system in the United States
  - 2010 Chicago Innovation Award for our BusTime® real-time passenger information system
  - 2002 First Automatic Passenger Counting system certified for National Transit Database (NTD) Reporting
  - 1998 First Automatic Vehicle Health Monitoring system installed on a public transit vehicle in the United States
  - 1998 Helen Keller Award of Appreciation for commitment to the Americans for Disabilities Act
  - 1998 New York City Transit – Department of Buses Innovative Technology Supplier of the Year
  - 1997 First fully automatic passenger information system installed on a public transit vehicle at Washington, D.C.
  - 1997 First GPS-based Automatic Voice Annunciation system installed on a public transit vehicle in the United States
- Finally, we are the original developer of the SmartBus™ concept, coordinating Automatic Voice Announcements with Automatic Passenger Counting (APC) and Automatic Vehicle Monitoring (AVM®).

### 3.2 Corporate Experience

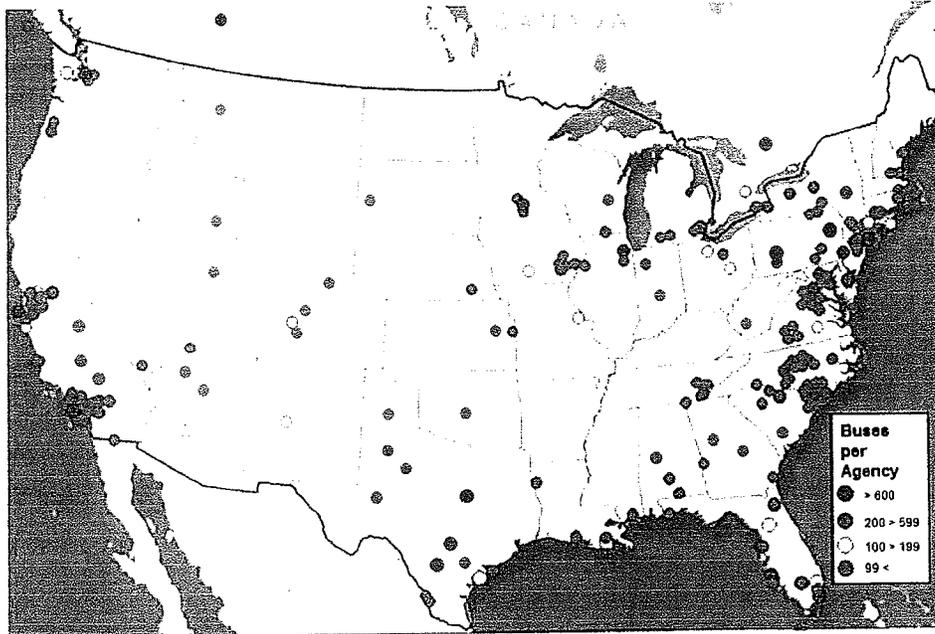
For 25 years, Clever Devices has built an unparalleled record of achievement in innovation and delivery of intelligent transportation systems while continuing to be a leader and innovator of transit solutions with a market share of over 40% in the USA. Today, as always, we are driving the market with solutions focused on sustainable transit operations and continue to increase accessibility and security while reducing operating and maintenance costs.



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The following map shows our installed systems and client base across the country. Because our solutions are scalable and modular, we are able to easily support customers with growth and addition of features over time, as they desire.



Our client base includes the following transit agencies:

1. MTA New York, New York , NY
2. New Jersey Transit, Newark, NJ
3. Chicago Transit Authority, Chicago, IL
4. Washington Metropolitan Transit Authority, Washington DC
5. OC Transpo, Ottawa ON
6. MTA Baltimore, Baltimore MD
7. Port Authority of Allegheny County, Pittsburg, PA
8. Sacramento Regional Transit Authority, Sacramento, CA
9. Pinellas Suncoast Transit Authority, St. Petersburg, FL
10. Sarasota County Area Transit, Sarasota, FL
11. Valley Metro, Phoenix, AZ
12. CENTRO, Syracuse, NY
13. Central Contra Costa Trans. Authority, Concord, CA
14. Greater Richmond Transit Company, Richmond, VA
15. Theme Park, Orlando, FL
16. Capital District Trans. Authority, Albany, NY
17. Chattanooga Area Reg. Trans. Authority, Chattanooga, TN
18. Worcester Regional Transit Authority, Worcester, MA
19. Montebello Bus Lines, Montebello, CA
20. Ohio State University, Columbus, OH
21. Société de transport de Montréal, Montreal, QB
22. Massachusetts Port Authority, Boston, MA
23. Suburban Metropolitan Authority for Regional Transportation, SMART
24. Williamsburg Area Transit, Williamsburg, VA
25. Niagara Falls Transit/Niagara Parks Commission, Niagara Falls, ON



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#### 4 Evaluation Criteria No.4 – References and Proposed Project Manager

##### 4.1 Central Contra Costa Transit Authority (CCCTA)

<b>The Central Contra Costa Transit Authority (CCCTA)</b>	
Address	The Central Contra Costa Transit Authority 2477 Arnold Industrial Way Concord, CA 94520
Project Description	For this client, Clever Devices deployed an AVA solution while also integrating bilateral data communications, scheduling, destination signs, and APC's with CleverReports™ reporting software. Clever Devices also provides onsite maintenance support to CCCTA. As a result of the success of this deployment, CCCTA recently contracted Clever Devices to install both our CleverCAD® CAD/AVL and our BusTime® real-time information system on the agency's 121-vehicle fleet.
Contract Amount	\$900,000
Project Manager	Jon Nilsen
Contact Information	Anne Muzzini Director of Planning and Marketing (925) 680-2043 muzzini@CCCTA.org

##### 4.2 Dallas Area Rapid Transit (DART)

<b>Dallas Area Rapid Transit (DART)</b>	
Address	101 N. Peak St Dallas, TX 75226
Project Description	<p>DART, a Trapeze PASS user, has 256 GreyHawk Paratransit MDCs "VBS" (Vehicle Business Systems) successfully installed since 2000. The agency initially started with the AT&amp;T CDPD network for the communications system transmitting at 19.2 kbps max but has since contracted with GreyHawk to upgrade to GPRS. DART runs over 3,000 trips per day (20,000 transactions). Its IT Department is located downtown and their paratransit offices and dispatch center are about five miles away. Their single service provider, ATC, is near Mesquite, TX, another five miles away. The Trapeze PASS scheduling and dispatching system, as well as the GreyHawk AVL system, is located downtown at the IT Center. A frame relay connection is made at the downtown location and they use T1 lines to route data to the dispatch center and to ATC. Full fleet installations were completed in January 2001.</p> <p>The contract was later increased to add the parking lot application, supervisory functions, and for customizing the AVL Tracker program which they chose to use instead of the Trapeze AVL tracking system. Much of the customizations were used to develop the standard MDC application program as it stands today. DART awarded to GreyHawk a contract to upgrade their</p>



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	<p>MDCs in late 2007 to the newer MDC in their 200+ vehicle fleet.</p> <p>Reliability is measured daily at DART in the form of the percentage of all Trapeze trips downloaded as manifest trips to the MDC units that are "Arrived" and "Performed" by the drivers. This data is then transmitted back to the Trapeze system and updates the Trapeze PASS system automatically.</p> <p>In September 2012 DART successfully upgraded the entire fleet on time and within budget.</p>
Contract Amount	\$1.6 Million
Project Manager	Thomas Fleming
Contact Information	<p>Dallas Area Rapid Transit Donnie Thompson VP of Mobility Services (214) 828 - 6628 Dthomps_on@dart.org</p>

#### 4.3 Central New York Regional Transportation Authority (CNYRTA – CENTRO)

<b>Central New York Regional Transportation Authority (CNYRTA – CENTRO)</b>	
Address	200 Cortland Ave. Syracuse, NY 13205
Project Description	<p>CNYRTA-CENTRO needed the best suited partner to design, supply, and implement an all-inclusive CAD/AVL solution. Clever Devices deployed CleverCAD®, our BusTime® real-time passenger information system, our AVA solution, and our AVM® vehicle health monitoring for the 267-vehicle fleet. The project has been successfully completed and CYNTRA-CENTRO as well as the riders are enjoying the benefits of a first class ITS solution.</p> <p>Clever Devices provided cellular communication network connections for VoIP and data transmission. The IVN® was integrated to on-board equipment to facilitate CAD/AVL services, passenger counts, vehicle announcements, vehicle component monitoring of onboard powertrain, and multiplex systems. Passenger information was enabled via BusTime®, dynamic message signs, and an IVR system. Equipment included the IVN®, interior signs, mobile data terminals, APCs, TSP emitters, antennas, and cables.</p>
Contract Amount	\$3.5 Million
Project Manager	Jon Nilsen
Contact Information	<p>Joe DeGray VP of Transit Operations (315) 263-1266 jdegray@centro.org</p>



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## 4.4 Project Manager – Jon Nilsen

<b>Project Manager – Jon Nilsen</b>	
<b>Professional Profile</b>	
Mr. Nilsen has over 16 years of experience in the implementation of Wireless Communication and Support Systems for the transit industry as an employee of both Clever Devices and Northwest Technology, Inc. Mr. Nilsen has been with Clever Devices for over nine years, all of which have been in project management for CAD/AVL, Real-time Passenger Information System, AVA, APC, and Cisco WLAN systems.	
<b>Major Project Contributions – Clever Devices</b>	
<b>Contra-Cost County Transit Authority (CCCTA) Project; Concord, CA</b>	
<ul style="list-style-type: none"> <li>➤ Deployed ITS bus AVA and APC Fleet wide</li> <li>➤ NTD certification project for on-board APCs</li> <li>➤ Deployed CleverCAD®, BusTime®, and Passenger Wi-Fi System</li> </ul>	
<b>Sacramento Regional Transit Authority (SacRT); Sacramento, CA</b>	
<ul style="list-style-type: none"> <li>➤ Deployed ITS bus AVA and APC Fleet wide</li> <li>➤ Deployed BusTime®</li> <li>➤ Integration to Region-wide Smartcard</li> </ul>	
<b>Valley Metro Regional Public Transportation Authority (RPTA); Phoenix, AZ</b>	
<ul style="list-style-type: none"> <li>➤ Deployed ITS bus AVA on BRT buses</li> <li>➤ Deployed BusTime®, CleverCAD®, and Talking Sign on 50 shelters for 2 BRT routes</li> <li>➤ Deployed AVM® (Automatic Vehicle Maintenance) and Passenger Wi-Fi System</li> </ul>	
<b>Chicago Transit Authority (CTA); Chicago, IL</b>	
<ul style="list-style-type: none"> <li>➤ Deployed BusTime® for CTA on over 2000 buses</li> <li>➤ Managed multiple crews during fleet retrofit</li> </ul>	
<b>Hong Kong Pilot</b>	
➤ Deployed ITS bus hardware, AVA, BusTime®, CleverCAD	
<b>Brazil Pilot</b>	
<ul style="list-style-type: none"> <li>➤ Deployed ITS bus hardware, AVA, BusTime®, CleverCAD®, AVM®</li> <li>➤ Deployed Passenger Wi-Fi system</li> </ul>	
<b>OC Transpo Pilot; Ottawa, Canada</b>	
➤ Deployed ITS bus AVA system for pilot project which lead to the win of the multi-million dollar full ITS project	
<b>King County Metro Transit Systems Integration Demonstration Project; Seattle, WA</b>	
➤ Deployed ITS bus hardware, AVA, AVM®	
<b>Experience</b>	
2002 – Present	<b>Project Manager</b> – <i>Clever Devices LP, Woodbury, NY</i>
1997 – 2002	<b>Deployment Manager</b> – <i>Northwest Technology Incorporated</i>
1995 – 1997	<b>Electrical Administrator / Master Electrician</b> – <i>D.W. Close, Ewing</i>
<b>Education</b>	
1992 – 1995	Electrical Certification
1995 – 1996	Electrical Administration Certification
<b>Professional Qualifications</b>	
Master Electrician, Electrical Administration Certification, PMP Training	



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## 5 Evaluation Criteria No.5 – Project Approach and Timeline

Our project management approach follows sound project management methodologies:

- Rigorous upfront planning
- Proactive rather than reactive problem identification and risk mitigation
- Open communication channels between all parties
- Consensus building to ensure common expectations are achieved
- Utilizes existing management tools to document and track the project status as it develops

### 5.1 Project Manager Responsibilities

From the standpoint of organization and implementation, Clever Devices assigns each project with a dedicated project manager. The project manager is the key point of contact for the team and is the primary planner and manager of the team to execute the project approach. The project manager provides several functions to plan and manage to ensure team progress for the development and deployment of the system. The project manager is responsible to keep the project moving forward and the team focused by managing the following functions:

- Project Schedule
- Scope Management
- Risk Management
- Deployment Management
- Documentation Management

### 5.2 Project Management Tools

Clever Devices understands that internal project communications as well as communications between our team and RRT are essential to the project success. Our team will coordinate bi-weekly project status calls throughout the course of the project to facilitate transparent and open communication of critical project information and to ensure the subcontractor team is working as an integrated element of the overall project team.

Communications with RRT will include technical status calls, monthly project reports, PDR and FDR meetings, as well as other necessary meetings. Meetings will be coordinated with the RRT project manager. Design Reviews will be held at RRT offices.

#### 5.2.1 Kick-off Meeting

Clever Devices proposes to conduct a project kick-off meeting to clarify the roles and responsibilities of Clever Devices and RRT, and to initiate the critical project tasks. During this meeting the team presents the project schedule and focuses on responsibilities for both teams, detailed discussions are held on immediate upcoming tasks leading up to the Preliminary Design Review.

#### 5.2.2 Bi-Weekly Conference Calls

In addition to scheduled bi-weekly status calls, informal communication with the Clever Devices' team and between the Clever Devices' team and RRT will be conducted bi-weekly, or as needed.





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These meetings will convey technical issues, action item status, or project management needs to be resolved in order to keep the project moving forward on schedule. Use of email communications is expected; however, it will not replace formal communications on matters or formal delivery of submittals.

#### 5.2.3 Project Status Review, Tracking, and Reporting

Consistent communications between RRT and Clever Devices' project team is a key element to ensuring effective project management and project success. Regular progress reviews and technical interchange meetings ensure close contact with RRT throughout the entire project deployment. Monthly progress update reports will be provided to update the RRT team of the project progress and outline any risks or mitigation plans.

#### 5.2.4 Project Process Control

Quality assurance and configuration management processes ensure the integrity and organization of the deployment is maintained.

#### 5.2.5 Documentation

The project manager is responsible to submit all applicable documentation to RRT, including any necessary updates during the project.

#### 5.2.6 Invoicing

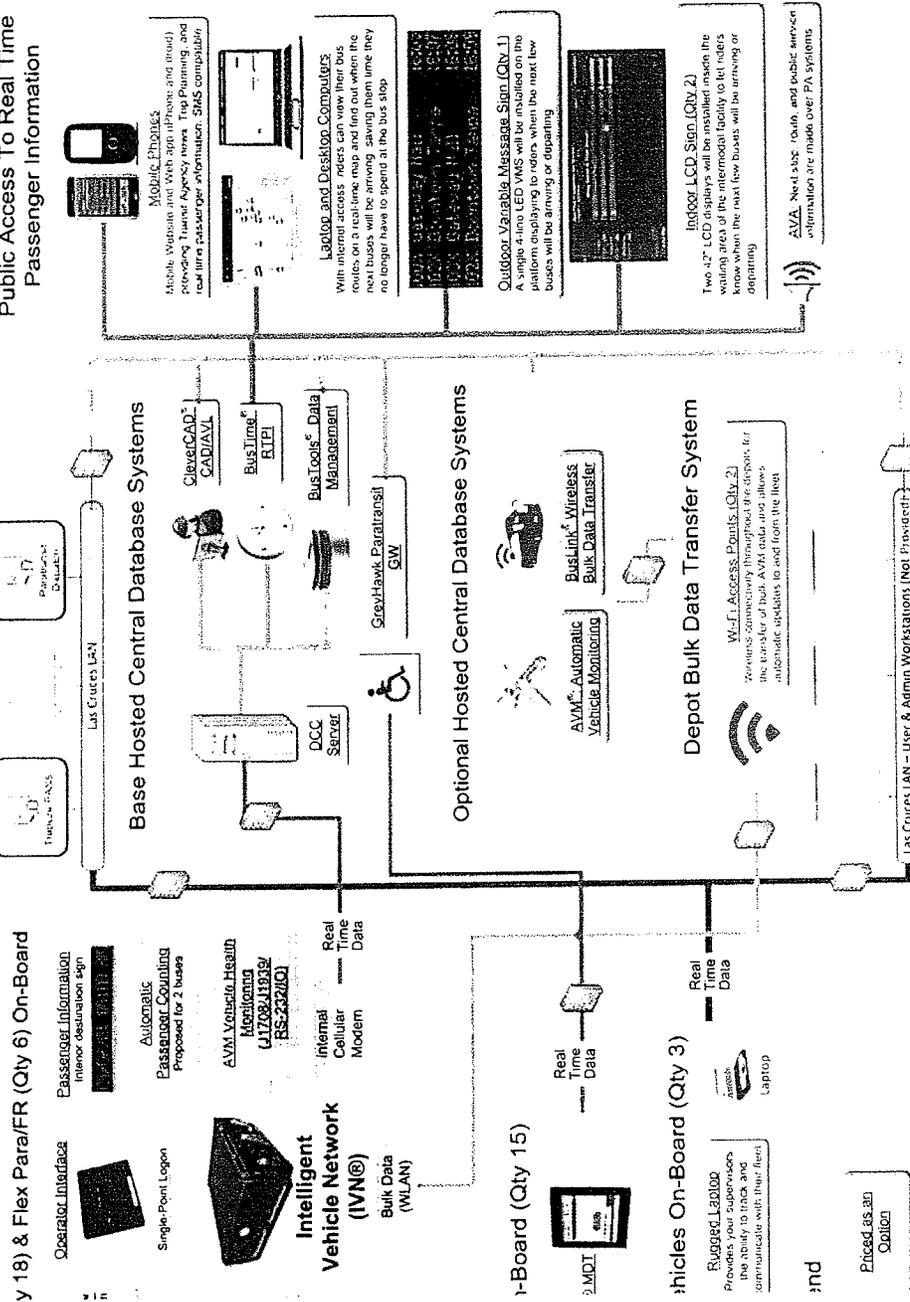
Invoices are submitted in accordance with the agreed upon payment milestone schedule.

#### 5.2.7 Project Closeout

The project manager will submit the final project report and any final documents needed for contract closure.



**Attachment 1 – System Architecture Diagram**



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## 8 Supplemental Attachment 2 – Compliance Matrix

For your convenience, Clever Devices has provided RRT with a compliance matrix specific to Section 2 System Functions in the RFP. The “Rating” column shows the compliance response. A response of “C” indicates “comply,” a response of “CM” indicates compliance with a modification, and a response of “N” indicates noncompliance.

Statements in the RFP that were shown in *italics* to indicate items that must be specifically addressed in the proposal are shown in *green italic font* in the compliance matrix below. Our corresponding responses for these fixed route and paratransit requirements are also provided.



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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
2.2.1 <b>PRODUCT Scalability</b>	The system shall be easily scalable to support additional, users, workstations, and transit facilities without replacement of initially installed components, including both hardware and software components. The PRODUCT shall, over its lifetime, be capable of interfacing to the ultimate number of vehicles, routes, and bus stops.	NA	NA	C
2.2.2 <b>Functional Expandability</b>	The PRODUCT shall be designed to permit the addition of new functional capabilities over its lifetime without significant replacement of the initially delivered components.	NA	NA	C
2.2.3 <b>Contractor's Standard, Service-Proven Products</b>	Contractors are encouraged to supply standard, unmodified, service-proven products of computer and communication equipment manufacturers, established third-party hardware and software suppliers and their own baseline product offerings where they meet or exceed the functional requirements of this Specification.	NA	NA	C
2.2.4 <b>Adjustable Parameters</b>	All parameters in the PRODUCT that may need to be modified to accommodate changes in RoadRUNNER Transit's service and operations shall be adjustable by authorized PRODUCT users.	NA	NA	C
2.2.5 <b>Output Requirements</b>	Whether or not explicitly specified in the function description, all data and results produced by PRODUCT functions shall be accessible for display, printing, and transfer to external computer systems. Output shall be exportable to MS Word and MS Excel formats.	NA	NA	C
2.2.6 <b>Reasonability of Data</b>	All input data and parameters, whether collected automatically or manually entered by a PRODUCT user, shall be checked for reasonability before allowing the data to be processed or used by the PRODUCT. Data determined to be invalid and/or unreasonable shall be rejected or automatically flagged for evaluation.	NA	NA	C
2.2.7 <b>Data Integrity</b>	The PRODUCT shall be designed to protect PRODUCT data integrity in a multi-user and multi-processing environment.	NA	NA	C
2.3 <b>Access Security</b>	Access to the PRODUCT shall be strictly limited to authorized PRODUCT users to be defined at a project development meeting. It is anticipated that there will be no more than 20 City staff with authorized access to this product.	NA	NA	C

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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
<p><u>2.4 Computer Aided Dispatch (CAD) Functions</u></p>	<p><i>The PRODUCT shall provide a comprehensive set of computer-aided dispatch features that will allow for effective and efficient monitoring and control of revenue and non-revenue vehicles. The proposer shall explain the types of CAD functions provided by the proposed product for both fixed route and paratransit applications.</i></p>	<p>See Section 2.1.</p>	<p>See Section 2.4.</p>	<p>C</p>
<p><u>2.5 Automatic Vehicle Location</u></p>	<p>The PRODUCT shall include a Global Positioning System (GPS)-based Automatic Vehicle Location function. The AVL function shall provide tracking and reporting of the locations of PRODUCT-equipped vehicles with a positional accuracy of nine meters or less, regardless of whether the vehicles are moving, on-route, off-route, have no assigned route; and whether or not the vehicles are logged in.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><u>2.5 Automatic Vehicle Location</u></p>	<p>The AVL implementation shall provide both the vehicle Operators and PRODUCT users with accurate and timely position, schedule, and route adherence data while minimizing the use of radio communications for the transmission of vehicle location data. Design approaches such as on-board calculation and display of schedule and route adherence (RSA) information are required.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><u>2.5 Automatic Vehicle Location</u></p>	<p>The PRODUCT shall report the vehicle location whenever a time point is encountered, schedule or route adherence thresholds are exceeded, a communications request is transmitted, and any vehicle alarm is transmitted.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><u>2.5.1 AVL Coverage</u></p>	<p>It is possible that there will be locations of momentary GPS signal blockage. Accordingly, it is the Contractor's responsibility under the scope of the resulting Contract to investigate the GPS satellite coverage throughout RoadRUNNER Transit's service area and to jointly determine with RoadRUNNER Transit if a backup to the GPS-based vehicle locations is required. Momentary loss of GPS signal less than a few minutes, which shall be Administrator-adjustable, may be acceptable as long as the last known good position is reported and the Operators and PRODUCT users are not presented with unnecessary events and alarms.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><u>2.5.2 AVL Map and Overlays</u></p>	<p>All maps and overlays shall be accurate and easy for PRODUCT users to use and interpret.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>

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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
2.5.2 AVL Map and Overlays	<i>The Proposer will describe how the AVL Maps and overlays will be created, refined and updated and maintained.</i>	See Section 2.1. The CleverCAD product uses Google Maps which will be created, refined, updated and maintained by Google.	See Section 2.4. GreyHawk 7 utilizes NavTeq mapping and can be updated yearly upon the request and expense of the customer.	C
2.6 Schedule Adherence Monitoring	The PRODUCT shall accurately monitor the schedule adherence of all fixed-route revenue vehicles that are operating on defined schedules.	NA	NA	C
2.6 Schedule Adherence Monitoring	<i>The Proposer shall explain how their product will address the monitoring of schedule adherence for both fixed route and paratransit applications</i>	See Section 2.1. The CleverCAD product displays the vehicle's performance relative to the schedule; Each bus will read either "Normal", "Early", or "Late". If "Normal" is displayed, the word appears alone. If the status is "Early" or "Late", the number of minutes the vehicle is early or late is displayed in parentheses to the right of the word. If the vehicle is early, this will be a negative number (-3, for example). If the vehicle is late, the number will be positive.	See Section 2.4. Route adherence is maintained and scheduled via the Trapeze-Pass scheduling system.	C
2.7 Route Adherence Monitoring	The PRODUCT shall accurately monitor the route adherence of all fixed-route revenue vehicles, including fill-in vehicles and special event/service vehicles that are operating on defined routes.	NA	NA	C
2.8 Interlining	The PRODUCT shall insure the proper handling of interlined routes by all PRODUCT functions.	NA	NA	C
2.8 Interlining	<i>Proposals shall specifically describe in detail how the proposed system handles interlined routes.</i>	See Section 2.1	NA	C

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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
<b>2.9 Operator Relief Status</b>	The PRODUCT shall monitor the status of scheduled reliefs for fixed-route vehicle Operators.	NA	NA	C
<b>2.10 PRODUCT User Functions</b>	The PRODUCT shall provide functions to support users including: The PRODUCT AVL map capabilities shall provide PRODUCT users with a detailed geographical map of the RoadRUNNER Transit service area showing the current locations and RSA status of all vehicles. This capability shall be provided at all workstations mobile stations equipped for the display of the AVL map.	NA	NA	C
<b>2.10.1 Map-Based Vehicle Location and Status</b>	<i>The proposer will also specifically describe how the PRODUCT will "push" real-time information out to transit customers.</i>	See Section 2.3.	NA	C
<b>2.10.2 Service Status</b>	The PRODUCT shall provide tabular information to PRODUCT users for determining the status of specific routes, schedules, and vehicles without the use of geographical maps. The PRODUCT user shall be able to filter and sort the data.	NA	NA	C
<b>2.10.3 Vehicle and Route Selection</b>	The PRODUCT shall enable users to quickly identify, through selection, a set of vehicles and routes for the purpose data communications. When a vehicle Operator generates an emergency alarm event, the PRODUCT shall provide a subtle (i.e., not readily observable by passengers on the vehicle) and silent indication back to appropriate transit staff that the emergency alarm has been initiated.	NA	NA	C
<b>2.10.4 Emergency Alarm</b>	A major goal of the PRODUCT is to greatly reduce the need for voice communications and to streamline the dispatching function through the extensive use of text messaging between Operators and Dispatchers. To this end, the PRODUCT shall be designed to efficiently support text messaging to and from the vehicle fleet.	NA	NA	C
<b>2.10.5 Text Messaging</b>	The PRODUCT shall monitor the RSA status of all fixed-route revenue vehicles. All vehicles that are off-route or off-schedule by more than pre-defined threshold values shall be presented to PRODUCT users. RSA status data shall be presented in terms of minutes early or late and the distance off-route.	NA	NA	C
<b>2.10.6 Route Schedule Adherence (RSA) Status</b>		NA	NA	C



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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
2.10.7 Playback	The PRODUCT shall include a playback capability that enables PRODUCT users to quickly recreate and observe the exact conditions that existed within the system at a previous time for the purpose of analyzing incidents. The playback function shall permit users to rapidly and selectively retrieve data for any time period where online historical data is available without requiring the loading of archival data from removable media.	NA	NA	C
<u>2.11 System Administration Functions</u>	<i>In the proposal, please discuss the System Administration Functions and provide visual samples of how the proposed product will address, at a minimum, the features noted below.</i>	See items below	NA	C
<u>2.11 System Administration Functions</u>	<ul style="list-style-type: none"> <li>Importing new or updated schedule information</li> </ul>	See Section 2.5.1.	NA	C
<u>2.11 System Administration Functions</u>	<ul style="list-style-type: none"> <li>Performing interim maintenance on loaded bus routes and schedules</li> </ul>	See Section 2.5.1.	NA	C
<u>2.11 System Administration Functions</u>	<ul style="list-style-type: none"> <li>Updating and maintaining the most current GPS data</li> </ul>	See Section 2.5.1.	NA	C
<u>2.12 Revenue Vehicle Functions</u>	The PRODUCT shall provide revenue vehicle function, the minimum of which are specified in this section (2.12). PRODUCT-equipped revenue vehicles shall be capable of providing all required functions, with validity checks where appropriate, while operating anywhere within RoadRUNNER Transit's defined service area.	NA	NA	C
<u>2.12.1 Operator Support Functions</u>	At a minimum, this includes:	NA	NA	C
<u>2.12.1 Operator Support Functions</u>	<ul style="list-style-type: none"> <li>Operator Logon and Logoff</li> </ul>	NA	NA	C
<u>2.12.1 Operator Support Functions</u>	<ul style="list-style-type: none"> <li>Operator Changes</li> </ul>	NA	NA	C
<u>2.12.1 Operator Support Functions</u>	<ul style="list-style-type: none"> <li>Text messaging – this includes the ability to send pre-defined text messages to users with a minimum of interaction.</li> </ul>	NA	NA	C
<u>2.12.1 Operator Support Functions</u>	<ul style="list-style-type: none"> <li>RSA Status (for both fixed route and paratransit)</li> </ul>	NA	NA	C





RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
2.12.2 Vehicle Location Reporting	Reporting of vehicle locations based upon on-board GPS equipment shall be provided by the PRODUCT.	NA	NA	C
2.12.2 Vehicle Location Reporting	<i>The Proposal shall indicate the frequency with which locations are updated.</i>	See Section 2.1. Typically location is sent every 30 seconds, though this is configurable depending on the needs of RRT.	See Section 2.4. Frequency with which locations are updated is a user defined parameter and can set as often as 1 second per update.	C
2.12.3 Destination Sign Control (Propose as an Option as per 2.1.2)	<i>The proposal will describe features, if applicable, that could provide for automatic control of all fixed-route vehicle destination signs that are equipped with external interfaces.</i>	See proposal section 2.14.	NA	C
2.12.4 Automatic Annunciator Announcements (Propose as an Option as per 2.1.2)	<i>The proposal will describe features, if applicable, that could provide automatic internal audio announcements, and external audio announcements on fixed-route vehicles.</i>	See proposal section 2.11.	NA	C
2.12.5 Mechanical Alarms (Propose as an Option as per 2.1.2)	<i>The proposal will describe features, if applicable, that could be used to detect certain vehicle warning and failure conditions and generate an appropriate mechanical alarm event.</i>	See proposal section 2.9.	NA	C
2.12.6 Farebox Interface (Propose as an Option as per 2.1.2)	<i>The proposal will describe features, if applicable, that could be integrated into the existing GFI farebox system. If any solutions include the potential of adding smart card or Payment Card Industry (PCI) capabilities, the response must address how confidential information would be securely encrypted in transit and at rest.</i>	See proposal section 2.14.	NA	C
2.12.7 Automatic Passenger Counters (Propose as an Option as per 2.1.2)	<i>The proposal will describe how this PRODUCT could be integrated with Automatic Passenger Counters (APC) on two (2) fixed route buses and whether the Contractor can provide the necessary software and equipment for the APC.</i>	See proposal section 2.12.	NA	C

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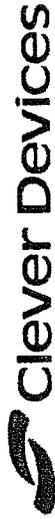




RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
2.12.8 DAR Vehicle Manifests	The PRODUCT shall provide the DAR vehicle manifest functions as specified in this section and subsequent subsections. Operators shall have access to their assigned manifest while operating a PRODUCT-equipped DAR revenue vehicle. The manifest shall support and present to the Operator the manifest entries supplied by RoadRUNNER Transit's Trapeze Pass system, including pick-ups, drop-offs, and other entry types.	NA	NA	C
2.12.8 DAR Vehicle Manifests	<i>A detailed description of the functions noted below is required in the proposal. The functions outlined in this section are considered a minimum requirement. If any of the data listed below falls under Personally Identifiable Information (PII) or HIPAA rules, the response must address how confidential information is securely encrypted. The vehicle manifest shall include, but not be limited to, the following data:</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>a. Trip number</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>b. Customer name</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>c. Pick up address</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>d. Drop-off address</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>e. Pick-up time</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>f. Drop-off time</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>g. Number of customers by type (adult, personal assistant, guests)</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>h. Fare amount to be collected</i>	NA	Section 2.4	C
2.12.8 DAR Vehicle Manifests	<i>i. Special instructions.</i>	NA	Section 2.4	C
2.12.8.1 Manifest Schedule Changes	The PRODUCT shall update vehicle manifests with trip insertions and deletions that may occur throughout the service day.	NA	NA	C



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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
2.12.8.2 Trip Status Reporting	The PRODUCT shall enable Operators to quickly and easily report specific events relative to the status of their assigned manifest. Operator-initiated status updates that can be reported shall include, but not be limited to, the following:	NA	NA	C
2.12.8.2 Trip Status Reporting	a. Arrival – arrival time at the current trip pick-up or drop-off location, as appropriate.	NA	NA	C
2.12.8.2 Trip Status Reporting	b. Departure – departure time from the current trip pick-up or drop-off location, as appropriate.	NA	NA	C
2.12.8.2 Trip Status Reporting	c. No Show – no-show status reporting.	NA	NA	C
2.12.8.3 Automatic Arrival Reporting	The PRODUCT shall detect when a vehicle has arrived at its next scheduled location and automatically report an arrival event. The Operator shall also have a means to manually report arrivals.	NA	NA	C
2.12.8.4 Manifest Mileage Data	The PRODUCT shall track, calculate, and report the actual DAR vehicle mileage information associated with each trip on the vehicle's assigned manifest. Trip mileage shall be calculated from the pick-up to the drop-off location. The total day's service mileage (i.e., from pull-out to pull-in) shall also be calculated and reported. The Operator shall also have a means to manually enter mileage data and correct erroneous data pre-filled by the PRODUCT.	NA	NA	C
2.12.8.5 Manifest Navigation Aid	The PRODUCT shall provide route navigation assistance to the Operator based on the vehicle's manifest schedule. Navigation assistance with the vehicle's route to the next scheduled location shall not require manual entry of starting and ending points; however, the ability to enter any starting and ending points shall also be supported. Operators shall be able to activate and deactivate this feature depending on whether they require assistance.	NA	NA	C
2.13 Non-Revenue Vehicle Functions	The PRODUCT shall provide non-revenue vehicle functions as specified in this Section. PRODUCT-equipped non-revenue vehicles shall be capable of providing all required functions while operating anywhere within RoadRUNNER Transit's defined service area and without requiring manual reconfiguration of any kind.	NA	NA	C

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2.13.1 Vehicle Operator Support Functions	Except for RSA status, the PRODUCT shall provide the same vehicle Operator support functions for nonrevenue vehicles as specified in Section 2.12 for the revenue vehicles.	NA	NA	C
2.13.2 Vehicle Location Reporting	The PRODUCT shall perform non-revenue vehicle location reporting.	NA	NA	C
2.13.3 Mobile Computer Terminal	The PRODUCT shall include a Mobile Computer Terminal (MCT), or comparable device such as a tablet, with all required PRODUCT application and utility software to provide PRODUCT user functions in support of field supervision activities. The MCTs shall support the following PRODUCT user functions: a. CAD capabilities including text messaging to vehicles, and event management. b. Display of current service schedules c. Incident Management functions d. Map-based AVL tracking and vehicle status monitoring functions.	NA	NA	C
2.13.3 Mobile Computer Terminal	a. CAD capabilities including text messaging to vehicles, and event management.	NA	NA	C
2.13.3 Mobile Computer Terminal	b. Display of current service schedules	NA	NA	C
2.13.3 Mobile Computer Terminal	c. Incident Management functions	NA	NA	C
2.13.3 Mobile Computer Terminal	d. Map-based AVL tracking and vehicle status monitoring functions.	NA	NA	C
2.14 Data Storage Function	The PRODUCT shall provide data storage function to record and store all collected operational data for the purpose of later retrieval and analysis.	NA	NA	C
2.14 Data Storage Function	<i>Describe the data storage functions and requirements of the proposed product. The City's desire is that the best provides the storage. The method used to securely encrypt confidential information, if applicable, must be addressed in the response.</i>	See Section 2.6. Clever Devices complies with all requirements and regulations set forth by HIPAA	See Section 2.6. Clever Devices complies with all requirements and regulations set forth by HIPAA	C
2.15 Data Retrieval Function	The PRODUCT shall provide a data retrieval function that enables PRODUCT users to selectively retrieve short-term and long-term historical data.	NA	NA	C



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<p><b><u>2.15 Data Retrieval Function</u></b></p>	<p><i>Describe the data retrieval functions and requirements of the proposed product.</i></p>	<p>See Section 2.6. Data that is generated on the IVN® is transferred to an MSSQL 2008 R2 database for storage and retrieval</p>	<p>Clever Devices is going with the assumption that Las Cruces will provide access to the secure database where the Trapeze PASS information is stored.</p>	C
<p><b><u>2.16 Customer Information Signs</u></b> (Propose as an Option as per 2.1.2)</p>	<p>As an Option, the PRODUCT shall provide all necessary software and equipment, including signs and communications devices to support the display of service information to RoadRUNNER Transit customers at the new intermodal center at 300 W. Lohman. A total of 2 wall-mounted, digital LED or LCD display shall be provided and installed by the Contractor; <b>both in the public indoor lobby</b> at RoadRUNNER Transit's new intermodal facility.</p>	NA	NA	C
<p><b><u>2.16 Customer Information Signs</u></b> (Propose as an Option as per 2.1.2)</p>	<p>The Contractor shall provide and install customer information signs to convey transit service information to RoadRUNNER Transit customers. This facility is currently being built to supply conduit to all the necessary locations for signage at the intermodal center.</p>	NA	NA	C
<p><b><u>2.16.1 User-Defined Messages</u></b></p>	<p>The PRODUCT shall provide authorized users the means to create, configure, save, select, edit, delete, and send pre-defined and ad hoc messages (e.g., service alerts, service changes, fare information, special announcements, advertisements, etc.) to customer information signs with a minimum of interaction.</p>	NA	NA	C
<p><b><u>2.17 Interfaces with External Systems</u></b></p>	<p>The PRODUCT shall support interfaces to external systems in order to provide all required functions of this Specification. It shall be the responsibility of the Contractor to determine each interface capability and to promptly report to RoadRUNNER Transit any deficiencies that may prevent full compliance with the functional requirements of this Specification.</p>	NA	NA	C





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2.17.1 Demand Response Scheduling System Interface	<p>The PRODUCT shall interface with RoadRUNNER Transit's Trapeze Pass (v. 12) demand response scheduling system for the automatic exchange of manifest service data between the scheduling system and DAR vehicles required to support RoadRUNNER Transit's demand response operations. The Trapeze Pass system servers are located at City Hall and are accessible via the City's LAN.</p> <p>The City shall be responsible for coordination of any and all communications and exchanges between the Trapeze Group and the Contractor to obtain the information necessary to implement this function as specified, even if such coordination necessitates that the PRODUCT Contractor enter into a separate agreement with Trapeze. RoadRUNNER Transit may be involved in the coordination and management of any agreement between the PRODUCT Contractor and Trapeze concerning the scheduling system interface.</p>	NA	NA	C
2.17.1 Demand Response Scheduling System Interface	<p><i>Proposals shall identify where an interface to Trapeze Pass has been implemented by the proposer with the same generation PRODUCT software proposed for the PRODUCT, whether the standard Trapeze Pass interface format and protocol was used, and any additions or modifications that may be required to support the PRODUCT DAR vehicle functions.</i></p>	NA	NA	C
2.17.2 System Time Interface	<p>The PRODUCT shall include Universal Coordinated Time equipment to obtain accurate time from GPS.</p>	NA	NA	C
2.17.3 External Access to PRODUCT Historical Data	<p>Historical data collected by the PRODUCT is potentially of significant value to different departments within the RoadRUNNER Transit organization.</p>	NA	NA	C
2.17.3 External Access to PRODUCT Historical Data	<p><i>Describe the types historical data can be accessed by approved users and the process for storing and accessing the historical data that will be provided in the proposed PRODUCT.</i></p>	<p>See Section 2.6. Data that is generated on the IVN® is transferred to an MSSQL 2008 R2 database for storage and retrieval. Historical data retention periods will be based on the requirements set forth by Las Cruces.</p>	<p>See Section 2.4. GreyHawk maintains an independent Sequel database and reporting tools. Data will also be fed into Trapeze Pass for use in its reporting tools and storage.</p>	C

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2.17.4 Customer Service Data Interface	The PRODUCT shall be capable of supplying real-time schedule adherence and other service data needed to support Customer Service functions such as trip planning, next bus, and interactive voice response to customer information systems and subsystem. The PRODUCT shall also be able to "push" real-time information requests initiated by a customer such as vehicle location, estimated time of arrival to a particular point, and trip planning directly to that customer through a web and/or cellular based context.	NA	NA	C
Section 3 USER INTERFACE	The PRODUCT shall provide a modern, state-of-the-art User Interface (UI) for supporting all PRODUCT fixed-end and mobile users.	NA	NA	C
3.1 User Interface General Features	Rapid and reliable selection and performance of user actions is crucial to the successful implementation of the PRODUCT and acceptance by its users. The Contractor's system and UI must be user-friendly and allow all user actions to be completed as quickly and conveniently as possible.	NA	NA	C
3.2 PRODUCT User Displays	The Contractor shall provide all standard displays that are normally included with the base PRODUCT system product.	NA	NA	C
3.2 PRODUCT User Displays	<i>As part of the PRODUCT proposal, please provide examples of user displays that sufficiently demonstrate the PRODUCT's capabilities.</i>	See various sub-sections in section 2.	See various sub-sections in section 2	C
3.2.1 General Display Features	Provide example of general display features available.	NA	NA	C
3.2.2 AVL Map Display	A geographical map display of RoadRUNNER Transit's service area shall be provided on PRODUCT workstations and shall support all functional requirements for vehicle location status tracking, vehicle and route selection, and other supplied functions that require the use of a geographical map.	NA	NA	C
3.2.2 AVL Map Display	The PRODUCT shall provide specific AVL map display features and capabilities defined below in order to enable PRODUCT users to efficiently interact with the map.	NA	NA	C

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3.2.2 AVL Map Display	<p><i>Describe and provide examples of the AVL map display. The description must include who will maintain the map, how the map will be maintained, who will generate the map or provide the technical aspects of map generation. Include the following elements in the description.</i></p>	<p>See Section 2.1. The CleverCAD product uses Google® Maps which will be created, refined, updated and maintained by Google.</p>	<p>See Section 2.4. GreyHawk utilizes NavTeq mapping and can be updated yearly upon the request and expense of the customer.</p>	C
3.2.2.1 Map Views	<p>PRODUCT users shall be able to set up a particular view of RoadRUNNER Transit's service area on the map display and store it for future selection and display.</p>	NA	NA	C
3.2.2.2 Map Attributes	<p>The AVL map shall be capable of supporting a variety of map attributes, including all roads, major roads, prominent geographical features (e.g., rivers, major bodies of water, mountains), important landmarks (bridges, airports, fire and police stations, shopping centers, schools, etc.), labels, RoadRUNNER Transit-specific spatial data (e.g., transit centers/hubs, time points, bus stops, etc.), and other map attributes required to meet the functional requirements of this specification.</p>	NA	NA	C
3.2.2.3 Geographic Boundaries	<p>The AVL map shall support defined boundaries within the RoadRUNNER Transit fixed-route and DAR service areas that may be used to classify location-based data. Users shall be able to display defined boundary types on the map using overlays. Specific boundaries supported shall include, but not be limited to, the following:</p>	NA	NA	C
3.2.2.3 Geographic Boundaries	a. Municipal boundaries	NA	NA	C
3.2.2.3 Geographic Boundaries	b. DAR service zones.	NA	NA	C

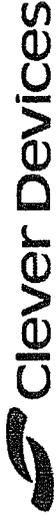




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3.2.2.4 <i>Vehicle Overlays</i>	The location of each PRODUCT-equipped vehicle shall be indicated by a special symbol that is overlaid on the AVL map display. Up to six distinctive vehicle symbols shall be provided that represent each of RoadRUNNER Transit's vehicle types. Vehicle symbols shall also clearly show the vehicle state and status using combinations of symbol colors and shapes and, if necessary, text. The symbols shall be approved by RoadRUNNER Transit and shall be easily modified by the System Administrator.	NA	NA	C
3.2.2.5 <i>Map Navigation</i>	AVL maps must be easily navigable.	NA	NA	C
3.2.2.6 <i>Map Scaling</i>	PRODUCT users shall be able to zoom in and out on the AVL map display to view specific areas of the service area at different levels of detail.	NA	NA	C
3.2.2.7 <i>Map Attribute Filtering</i>	<i>Describe and provide examples of any map attribute filtering feature in the proposed product</i>	See Section 2.1. Different colored route lines on the CAD map represent different routes. Any number of routes can be selected and layered on the map, as selected by the user. A google traffic overlay can also be selected by the user to be displayed on the CAD map to show real time traffic conditions.	NA	C
3.2.2.8 <i>Vehicle Overlay Filtering</i>	A PRODUCT user shall be able to restrict the display of PRODUCT-equipped vehicles on the AVL map to any combination vehicles.	NA	NA	C
3.2.2.9 <i>Emergency Alarm Tracking</i>	The generation of an emergency alarm by an Operator shall automatically display a separate emergency alarm tracking window on the AVL map display with the associated vehicle centered and highlighted within the tracking window.	NA	NA	C



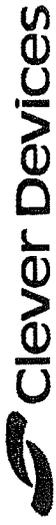
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3.2.3 Service Performance Display	A tabular display, or integrated set of displays, shall be provided that enables PRODUCT users to quickly monitor the current fixed-route service performance. In addition to basic identifying information, such as route, vehicle ID, Operator badge number, run number, etc., the following specific types of information, at a minimum, shall be provided:	NA	NA	C
3.2.3 Service Performance Display	a. Late locon	NA	NA	C
3.2.3 Service Performance Display	b. Off-route status	NA	NA	C
3.2.3 Service Performance Display	c. Off-schedule	NA	NA	C
3.2.3 Service Performance Display	d. Late pull-out	NA	NA	C
3.2.3 Service Performance Display	e. Late pull-in	NA	NA	C
3.2.4 Re-Route Notices Display	The PRODUCT shall provide a re-route notices display for the creation, maintenance, cancellation, and distribution of temporary re-routes affecting fixed-route operations.	NA	NA	C
3.2.5 Reference Information Displays	The PRODUCT shall provide reference information displays that present transit operations information routinely needed by the paratransit dispatchers, customer service staff, and fixed route supervisors. Displays must include, but are not limited to:	NA	NA	C
3.2.5 Reference Information Displays	a. Headway Displays – These displays shall present a list of buses by route including time points along the route, the pull out/pull in times, and the departure times of each fixed route vehicle.	NA	NA	C
3.2.5 Reference Information Displays	b. Route Displays – These displays shall provide detailed descriptions, including any notes, for each fixed service route.	NA	NA	C
3.2.5 Reference Information Displays	c. Vehicle Listing Display – This display shall show a listing of all revenue and nonrevenue vehicles. The information presented in this display shall include the vehicle number, vehicle type, manufacturer, license plate number, registration information, MDT serial number, and other pertinent vehicle-specific information.	NA	NA	C

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3.2.6 Actual Versus Scheduled Headway	<p>A display shall be provided that graphically and numerically compares the scheduled headways between vehicles on each fixed route with the actual headways. PRODUCT users shall be able to specify the route whose headways are to be displayed.</p> <p>The on-time performance of each vehicle shall also be displayed. Display selection buttons shall be provided on this display to allow users to directly request the desired headway displays and direction for the route.</p> <p>It shall be possible to present any data in the PRODUCT database on a report.</p>	NA	NA	C
3.2.6 Actual Versus Scheduled Headway	<p>The PRODUCT shall support production of pre-defined and ad-hoc (user defined) reports, which may be requested immediately and on user-defined schedules.</p> <p>The destination of report output shall be user-selectable. Report output file formats shall include ASCII text format, HTML, Acrobat PDF formats, MS Word and MS Excel.</p> <p>The Contractor shall provide all standard reports and standard report templates that are normally included with the Contractor's base product offering, as well as all reports required by the Contractor's design approach for meeting the functional requirements of this Specification.</p> <p><i>Samples of all the Contractor's standard reports included in the base product offering shall be included in the Proposal. Provide a listing of all the types of reports that can be generated with the proposed PRODUCT. Discuss how the product will meet the requested general reporting features noted below. Be sure to note report formatting and parameters that can be adjusted by the user.</i></p>	NA	NA	C
<u>3.3 Reports</u>		NA	NA	C
<u>3.3 Reports</u>		NA	NA	C
<u>3.3 Reports</u>		NA	NA	C
<u>3.3 Reports</u>		NA	NA	C
<u>3.3 Reports</u>		NA	NA	C
<u>3.3 Reports</u>		Please see Section 9	NA	C



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Section 4 SOFTWARE REQUIREMENTS	<p>This section outlines the required characteristics of the PRODUCT fixed-end software that is desired. It is neither intended nor possible to list all software and all characteristics of the software required. The Contractor shall, however, provide all software necessary to satisfy the PRODUCT functional requirements described in this Specification. ALL PROPOSED SOFTWARE PRODUCTS ARE SUBJECT TO REVIEW AND APPROVAL BY THE CITY INFORMATION TECHNOLOGY DEPARTMENT PRIOR TO AWARD.</p>	NA	NA	C
<b>4.1 General Characteristics</b>	<p>The Contractor shall provide standard, field-proven software products wherever possible.</p>	NA	NA	C
<b>4.1 General Characteristics</b>	<ul style="list-style-type: none"> <li>All software shall be easily expandable to accommodate the anticipated transit service growth.</li> </ul>	NA	NA	C
<b>4.1 General Characteristics</b>	<ul style="list-style-type: none"> <li>All software shall be designed with sufficient modularity to minimize the time and complexity involved in making a change to any program.</li> </ul>	NA	NA	C
<b>4.1 General Characteristics</b>	<p>The system-level software provided shall include operating systems capable of supporting the functional, performance, and response requirements of the PRODUCT. Any operations software – even web-based software – must be compatible be compatible with a computer running Windows 7 or higher using Internet Explorer 9 or higher. Any required hosting services on City servers must support Windows Server 2008 R2 or higher in a virtualized environment. Any requirements of local hosting of data within the City requires the use of MS SQL 2008 R2 or higher.</p>	NA	NA	C
<b>4.2 Operating System Software</b>	<p><i>Proposals shall indicate the Microsoft Windows version(s) with which the software is compliant. If the proposed product requires server space on the City's server, requirements for this must be stated.</i></p>	See Section 2.6. Clever Devices software is compliant with Microsoft Windows Server 2008 R2	See Section 2.4. The GreyHawk 7 software is compatible with up to Windows 7.	C
<b>4.2.1 Graphical User Interface</b>	<p>Operating systems supplied for the PRODUCT workstations and servers shall utilize the Microsoft Windows graphical user interface. This graphical user interface shall be used to provide all user interaction within the PRODUCT.</p>	NA	NA	C



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4.2.2 Time and Calendar Functions	The date and time of day shall be maintained for use by other PRODUCT software, as specified below:	NA	NA	C
4.2.2.1 Calendar Function	The current date shall be maintained as month, day, and year; the day of the week; and the day of the year. Leap years shall be recognized and properly handled by the calendar function as they occur, without manual intervention. Holidays shall be recognized for use by other PRODUCT programs.	NA	NA	C
4.2.2.2 Timekeeping Function	The time of the day shall be maintained optionally in 12-hour and 24-hour format in hours, minutes, and seconds. The timekeeping function shall include the ability to correct for the local time zone, including adjustments to reflect Daylight Saving Time observance or the lack thereof.	NA	NA	C
4.2.2.2 Timekeeping Function	Orderly adjustments for time changeovers between standard and Daylight Saving Time on event processing, historical files, system reports, and all other time-oriented functions shall be made.	NA	NA	C
4.2.2.3 Date and Time Correction	The differential GPS reference receiver shall be periodically read and used by the PRODUCT time and calendar functions to maintain an accurate time base and keep all components of the PRODUCT synchronized.	NA	NA	C
4.2.3 System Performance Monitoring Software	Software shall be provided to continuously monitor hardware and software performance and gather performance statistics in real-time with a minimum of interference with the normal PRODUCT functions.	NA	NA	C
4.2.4 Error Monitoring	The PRODUCT servers shall employ error monitoring.	NA	NA	C
4.3.1 Online Database	The City desires a PRODUCT that includes a web-based (i.e., continually updated and accessible) database software that maintains comprehensive current and historical information on the PRODUCT operating state, including, but not limited to, data on communications status, system status, route and schedule information, incidents, events, data required for displays and reports, data retrieved from the revenue and non-revenue fleets, data entered by PRODUCT users, and data retrieved from other computer systems.	NA	NA	C

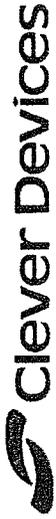
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<p><b>4.3.1 Online Database</b></p>	<p><i>In the proposal, discuss how the PRODUCT can address this. It is the intent of the City that this information would be non-confidential used to improve operational efficiencies. If any of the proposed features of this product could include confidential information, the respondent must identify what that information is and how it would be kept secure.</i></p>	<p>See Section 2.2.1. Data on communications status, system status, route and schedule information, incidents, events, data required for displays and reports, data retrieved from the revenue and non-revenue fleets, data entered by PRODUCT users, and data retrieved from other computer systems are kept secure and confidential information is not shared or externalized.</p>	<p>NA</p>	<p>C</p>
<p><b>4.3.2 Information Database</b></p>	<p>The PRODUCT shall provide a separate information database.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><b>4.3.3 GIS Map Database</b></p>	<p>The PRODUCT shall allow separation of complex mapping based on function.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><b>4.4 Software Maintenance Tools</b></p>	<p>The Contractor shall provide for the continued maintenance of the PRODUCT following installation.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><b>4.4 Software Maintenance Tools</b></p>	<p><i>The proposal shall include a brief discussion of how the vendor will maintain the product and include at a minimum:</i></p>	<p>See items below</p>	<p>NA</p>	<p>C</p>
<p><b>4.4 Software Maintenance Tools</b></p>	<p>• <i>Display Generation/Editing</i></p>	<p>See section 2.2. Depending on the product type (CleverCAD®, BusTime®, AVM®, etc.) screens and dashboards can be user created and edited using our reporting tools.</p>	<p>NA</p>	<p>C</p>





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<p><b>4.4 Software Maintenance Tools</b></p>	<ul style="list-style-type: none"> <li>• <i>Report Generation and Editing</i></li> </ul>	<p>See section 2.2. Depending on the product type (CleverCAD®, BusTime®, AVM®, etc.) screens and dashboards can be user created and edited using our reporting tools.</p>	<p>NA</p>	<p>C</p>
<p><b>4.4 Software Maintenance Tools</b></p>	<ul style="list-style-type: none"> <li>• <i>Testing and Debugging</i></li> </ul>	<p>See section 1. All software that is created by Clever Devices goes through a comprehensive software QA process including code review, bench testing and mini-fleet real world testing before it gets released to a fleet of buses.</p>	<p>NA</p>	<p>C</p>





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<p><b>4.4 Software Maintenance Tools</b></p>	<p><i>Online and Information Database Maintenance GIS Database Maintenance - The PRODUCT shall support GIS database updates made by importing externally supplied (external to the PRODUCT) map data. The GIS Database updates from the City will be supplied in ESRI's technology, either shapefile or geodatabase formats, ArcGIS version 10.0 or higher. Data would be provided in our native geographic projection and datum using the "NAD 1983 State Plane New Mexico Central FIPS 3002 Feet". Proposer will need to be able to work with this format. The proposer will describe the process for maintaining the GIS database used by the PRODUCT.</i></p>	<p>See Section 2.1. Because CleverCAD uses Google Maps as its base layer source, routine updates to street and other base layers are provided automatically by Google. If required, standard ESRI shape files can be converted to KML format and imported as additional layers to be drawn on top of the CleverCAD Google Maps base map. It has been Clever Devices' experience, however, that the rich content of Google Maps provides the detail necessary for daily operation while affording the best performance.</p>	<p>NA</p>	<p>C</p>
<p><b>4.5 Contractor's Future Software Changes</b></p>	<p>RoadRUNNER Transit shall be placed on the Contractor's regular mailing list to receive all software announcements, including announcements of new software releases and other improvements that could be made to the software furnished with the PRODUCT. Solutions to problems with Contractor-supplied software, whether discovered and corrected on the PRODUCT or elsewhere, shall be documented and supplied to RoadRUNNER Transit without additional charge. This service shall include announcements and fixes pertaining to Contractor produced software for ten (10) years after final system acceptance, and shall include announcements pertaining to software produced by third-party suppliers for the life of the PRODUCT warranty.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>

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Section 5 HARDWARE CHARACTERISTICS	This section describes the hardware equipment characteristics for the PRODUCT. All proposed hardware products are subject to review and approval by the City Information Technology Department prior to award.	NA	NA	C
<u>5.1 General Requirements</u>	All hardware shall be manufactured, fabricated, assembled, finished, and documented with workmanship of the highest production quality and shall conform to all applicable quality control standards of the original manufacturer and the Contractor. All hardware components shall be new and suitable for the purposes specified. All hardware provided shall be commercially available, standard, off-the-shelf products manufactured by well-established and reputable manufacturers.	NA	NA	C
<u>5.2 Servers</u>	<i>It is desired to have a service that is hosted off of the City's network. However, if the PRODUCT requires some space on City servers, those requirements must be clearly specified in the proposal.</i>	NA	NA	C
<u>5.3 Workstations</u>	It is expected that existing City workstations will be used with this PRODUCT.	NA	NA	C
<u>5.4 Time Facility and Displays</u>	A total of 2 wall-mounted, digital LED or LCD displays shall be provided and installed by the Contractor; one in the Control Center and one in the Operator Lounge area at RoadRUNNER Transit's new intermodal facility. The exact location of the displays shall be mutually determined following Contract Award.	NA	NA	C
<u>5.4 Time Facility and Displays</u>	The displays shall be synchronized with PRODUCT time and shall be updated every second.	NA	NA	C
<u>5.4 Time Facility and Displays</u>	The time shall be presented in a 24-hour format in hours, minutes, and seconds.	NA	NA	C
<u>5.5 Customer Information Signs (Option)</u>	The Contractor shall provide and install all customer information signs and associated hardware at selected transit and stop/berth locations previously noted in this request, including the required communications devices to deliver the information to be displayed on the signs.	NA	NA	Deleted as per Add. 3 dated May 10, 2013



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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
<p><b><u>5.5 Customer Information Signs (Option)</u></b></p>	<p>All signs shall be of durable construction suitable for installation in a non-secure public environment. Signs shall be shall be tamper and vandal resistant or otherwise protected from vandalism, and securely fastened in place such that they are not accessible or within reach of the general public. For outdoor locations, signs shall be suitable for viewing in daytime and nighttime, and in varying weather conditions. Outdoor signs shall be made of non-corrosive material including enclosures, components, and fasteners suitable for installation in an unprotected outdoor environment. Signs shall be water-tight and capable of operating and presenting display information within a Winter/Summer temperature range consistent with the southern New Mexico area.</p>	NA	NA	Deleted as per Add. 3 dated May 10, 2013
<p><b><u>5.6 Vehicle Equipment</u></b></p>	<p>The vehicle equipment shall be designed, built, and installed for the harsh environment in which this equipment is to operate, including conditions pertaining to temperature, humidity, power variations, shock, vibration, altitude, and EMI/RFI interference. All equipment housings shall be water proof and dust proof, and prevent damage from water directed on equipment while cleaning the inside of the revenue vehicles.</p>	NA	NA	C
<p><b><u>5.6 Vehicle Equipment</u></b></p>	<p>The installation details and placement of vehicle equipment shall be subject to RoadRUNNER Transit review and approval during the design phase of the PRODUCT project. The availability and location of space for equipment installation will vary according to the various types of vehicles in the fleet.</p>	NA	NA	C
<p><b><u>5.6 Vehicle Equipment</u></b></p>	<p>In addition to the vehicle equipment that the Contractor is explicitly required to furnish by this Specification, the Contractor shall provide any other equipment that is required to install and operate the Contractor-provided equipment on RoadRUNNER Transit vehicles.</p>	NA	NA	C



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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
<b>5.6 Vehicle Equipment</b>	All Contractor-installed vehicle equipment shall be easily accessible, modular, and easily removable to facilitate maintenance and repair of the equipment. The vehicle equipment (e.g., MDC) shall be programmable using a personal computer and via a wireless link. All necessary field programming shall be possible without disassembly of the MDC enclosure. Programming and other routine maintenance shall not require removal or replacement of internal devices of any kind.	NA	NA	C
<b>5.6 Vehicle Equipment</b>	<i>The proposal will address how vehicle equipment will be hardened to protect data in the event of loss or theft of the equipment. Catchlines on hardening equipment are included in the Information Technology Department noted in the introduction of this request.</i>	See Section 2.6. The local data on the IVN® is contained on an MSATA drive which is located on the main printed circuit board inside the extrusion case. The case is sealed with tamper proof security screws to restrict access to the drive.	See Section 2.4. The GreyHawk MDT is password protected and has a lock feature to protect data.	C
<b>5.6.1 Mobile Data Computers</b>	The Contractor shall provide and install MDCs for all PRODUCT-installed vehicles. All other devices of the MDC shall be securely mounted behind vehicle panels or in designated vehicle equipment compartments.	NA	NA	C
<b>5.6.1 Mobile Data Computers</b>	The MDCs must be capable of communicating with the hosting environment. This will be through a cellular data connection that supports 3G and 4G networks in the Las Cruces local area.	NA	NA	C
<b>5.6.1 Mobile Data Computers</b>	<i>The proposal must include an estimate of annual cellular costs for the PRODUCT proposed.</i>	See section 2.1. For CAD/AVL and BusTime functionality, Clever Devices recommends a data plan that supports 10MB per bus per month. Costs will vary depending on the service provider.	See Section 2.4. The average cellular cost per vehicle is \$10.00 per month.	C
<b>5.6.2 Vehicle Wiring and Connectors</b>	The Contractor shall provide and install all other vehicle wiring and connectors required for the Contractor-provided equipment	NA	NA	C

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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-C/M-N
5.6.3 Power-Off Delay Timer	Unless the equipment is disconnected for maintenance purposes, the PRODUCT vehicle equipment shall remain powered on for a defined time period after the vehicle has been powered off to allow the PRODUCT to prevent Operators having to re-logon during short layovers.	NA	NA	C
5.6.4 GPS Receivers and Antennas	The Contractor shall provide the GPS receivers, antennas, and all necessary connections required to monitor the location of PRODUCT-equipped vehicles.	NA	NA	C
5.6.5 Additional Navigation Equipment	The PRODUCT shall include and utilize any additional navigation equipment required to meet the PRODUCT positional accuracy requirements.	NA	NA	C
5.6.6 Emergency Alarm Switches	The Contractor shall install new emergency alarm switches on PRODUCT-equipped revenue vehicles. All installed switches shall be identical. The switch configuration and location for new emergency alarm switches shall be subject to RoadRUNNER Transit approval.	NA	NA	C
5.6.7 Fare box Interface (Option)	The PRODUCT on-board equipment shall interface with RoadRUNNER Transit's new GFI fare boxes on all equipped fixed-route vehicles.	NA	NA	C
5.6.8 Automatic Audio Announcement Equipment (Option)	The Contractor shall supply and install all fully automatic internal and external audio announcement equipment necessary to provide the required audio announcement functionality specified in Section 2. The Contractor shall be responsible for surveying RoadRUNNER Transit's vehicles, determining the feasibility of using the existing audio components, and reporting to RoadRUNNER Transit any needed modification to, and replacement of, the existing components.	NA	NA	C

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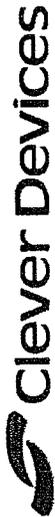




RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
<p><b>5.6.9 Mobile Computer Terminals</b></p>	<p>The Contractor shall provide MCT equipment for all Road Supervisor vehicles consisting of ruggedized laptop PCs or Tablets. The MCTs shall provide full PC capability and Microsoft Windows compatibility, and serve as the interface between the Road Supervisors and the PRODUCT. The MCTs shall include all hardware, including docking stations, required to provide all the functionality specified in Section 2. The MCTs shall be securely mounted on rigid Contractor-provided support brackets that are customized by the Contractor as needed for each type and variation of vehicle. The MCTs shall be locked into the Contractor-provided support brackets with a key lock system, as well as permit quick removal of the MCTs. Each MCT shall be mounted and positioned within convenient reach of, and where the MCT's display and keyboard can be easily read by, the vehicle operator. The placement of the MCT and mounting equipment shall not interfere with the operation of the driver's and passenger's airbag. The placement and mounting of each MCT shall be decided jointly by RoadRUNNER Transit and the Contractor.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>
<p><b>5.6.10 Automatic Passenger Counting Equipment (Option)</b></p>	<p>The PRODUCT shall support APC equipment on two (2) fixed-route buses. The Contractor shall provide all onboard APC equipment including sensors, wiring, cabling, and installation required to make APC fully functional on the RoadRUNNER Transit-selected buses. Sensors used to detect passenger boarding and de-boarding shall not use step-treadle technology, but shall use infrared or other similar sensors that have a high level of reliability and are easily serviced. The sensors shall have a demonstrated accuracy of 95% or better. The APCs shall include all equipment required to interface the subsystem with the rest of the vehicle equipment to allow the passenger counts to be correctly associated with the GPS-based location and correct bus stops. This interface equipment shall allow the PRODUCT to offload accumulated passenger count data from the buses at the end of the service day, along with other data accumulated by the vehicle equipment.</p>	<p>NA</p>	<p>NA</p>	<p>C</p>

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RFP Section	RFP Requirement	Fixed Route response to specifically address italicized requirement	Paratransit response to specifically address italicized requirement	Rating C-CM-N
<u>5.13 Vehicle Operator Training Hardware</u>	The proposal shall discuss the recommended method for training operators and staff on how to properly use the vehicle PROJECT equipment on both Dial-a-Ride and Fixed-Route vehicles. RoadRUNNER Transit would prefer to train in the vehicles with the installed equipment without affecting the integrity of PROJECT data. If this is not feasible, the proposer shall offer an alternative training methodology. If that includes acquiring hardware specifically for training it should be explained in the proposal.	NA	NA	C
<u>5.13 Vehicle Operator Training Hardware</u>	RoadRUNNER Transit would prefer to train in the vehicles with the installed equipment without affecting the integrity of PROJECT data. If this is not feasible, the proposer shall offer an alternative training methodology. If that includes acquiring hardware specifically for training it should be explained in the proposal.	NA	NA	C
<u>5.14 Other Peripheral Devices</u>	The Contractor shall supply any other peripheral devices or equipment required for the operation, software support, or maintenance of the proposed PRODUCT.	NA	NA	C
<u>5.15 Equipment Space</u>	The Contractor shall provide a plan view of all locations where the PRODUCT equipment is to be installed as part of the PRODUCT design phase. There are no raised floors in RoadRUNNER Transit's facilities.	NA	NA	C





## 9 Supplemental Attachment 3 – Clever Reports™ Sample Reports

The following are a subset of reports available from Clever Reports™. The intent of this section is to demonstrate the capability of the tool to generate meaningful reports and user friendliness of the tool to display information any many different ways.

### 9.1 Running Time Report

*The Running Time Report measures and provides a tabular display of running times at the route, direction, pattern, and TimePoint level. This report also allows the user to select from multiple time periods and routes over which to analyze the data.*

Route	AM (12:00AM-9:00AM)			AM Peak (9:00AM-10:00AM)			Mid Day (10:00AM-3:00PM)			PM Peak (3:00PM-7:00PM)			PM (7:00PM-11:59PM)		
	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference
APECHA AVE LINK	00:14:01	00:20:12	00:06:11	00:39:17	00:32:56	00:06:21	00:35:45	00:30:37	00:05:08	00:39:48	00:35:43	00:04:05	00:36:16	00:28:50	00:07:27
MARL - MARL ST LINK	00:36:03	00:33:12	00:02:50	00:39:21	00:36:24	00:02:56	00:41:44	00:37:11	00:04:32	00:40:31	00:38:49	00:01:42	00:42:18	00:43:12	00:02:05
MARL - MARL ST LINK	00:37:05	00:34:18	00:02:46	00:39:34	00:36:19	00:03:15	00:42:19	00:37:24	00:04:55	00:40:01	00:38:15	00:01:46	00:39:47	00:37:55	00:01:52

Conditional Format List  
 C#1 Difference Not Between -00:05:00 And 00:05:00

### 9.2 Running Time Report – Drill Down by Route

*The example Running Time Report below provides information for a particular route for the selected operational periods.*

Operational Period	Direction	AM (12:00AM-9:00AM)			AM Peak (9:00AM-10:00AM)			Mid Day (10:00AM-3:00PM)			PM Peak (3:00PM-7:00PM)			PM (7:00PM-11:59PM)		
		Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference
East		00:39:16	00:35:45	00:02:30	00:39:56	00:34:46	00:05:10	00:42:03	00:36:41	00:05:21	00:44:04	00:38:29	00:05:34	00:45:17	00:39:55	00:05:22
West		00:34:33	00:31:29	00:03:04	00:38:47	00:37:57	00:00:49	00:41:26	00:38:36	00:02:50	00:37:17	00:39:06	-00:01:49	00:39:19	00:40:29	-00:01:09

Conditional Format List  
 C#1 Difference Not Between -00:05:00 And 00:05:00



### 9.3 Running Time Report – Drill Down by Route Direction

The example Running Time Report below provides information for a particular route direction for the selected operational periods.



18:00:00 Running Time

Average Actual vs Average Scheduled Running Time by Segment

181 - MAHA - MAHA - SPHILLIPS - Direction: East

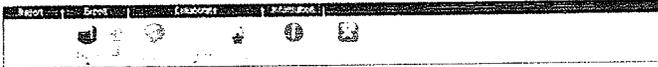
Operational Period	AM (12:00AM-0:00AM)			AM Peak (6:00AM-10:00AM)			Mid Day (10:00AM-3:00PM)			PM Peak (3:00PM-7:00PM)			PM (7:00PM-11:59PM)		
	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference
01	00:38:16	00:35:45	00:02:30	00:39:56	00:34:46	00:05:10	00:42:03	00:35:41	00:06:21	00:44:04	00:38:29	00:05:34	00:45:17	00:39:55	00:05:22

Conditional Format List

Col Difference Not Between -00:05:00 And 00:05:00

### 9.4 Running Time Report – Drill Down by Route Segment

The example Running Time Report below provides information for a particular route in a single direction for all time periods.



18:00:00 Running Time

Average Actual vs Average Scheduled Running Time by Segment

181 - MAHA - MAHA - SPHILLIPS - Direction: East - Variation: 01

Operational Period	AM (12:00AM-0:00AM)			AM Peak (6:00AM-10:00AM)			Mid Day (10:00AM-3:00PM)			PM Peak (3:00PM-7:00PM)			PM (7:00PM-11:59PM)		
	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference	Avg Actual	Avg Scheduled	Difference
01: SYMA - MAAL	00:08:30	00:06:00	00:02:30	00:09:20	00:06:00	00:03:20	00:09:48	00:06:00	00:03:48	00:09:10	00:06:00	00:03:10	00:09:16	00:06:00	00:03:16
02: MAAL - CCMA	00:02:47	00:03:00	00:00:12	00:03:12	00:03:00	00:00:12	00:03:23	00:03:00	00:00:23	00:03:08	00:03:00	00:00:08	00:03:10	00:03:00	00:00:10
03: CCMA - MACE	00:02:56	00:02:00	00:00:56	00:02:58	00:02:00	00:00:58	00:03:16	00:02:00	00:01:16	00:03:21	00:02:00	00:01:21	00:03:31	00:02:00	00:01:31
04: MACE - MAME	00:02:00	00:02:00	00:00:00	00:02:18	00:02:00	00:00:18	00:02:09	00:02:00	00:00:09	00:02:20	00:02:00	00:00:20	00:02:04	00:02:00	00:00:04
05: MAME - MAST	00:03:08	00:03:00	00:00:08	00:03:29	00:03:00	00:00:29	00:03:23	00:03:00	00:00:23	00:03:19	00:03:00	00:00:19	00:03:20	00:03:00	00:00:20
06: MAST - MAGI	00:02:35	00:02:00	00:00:35	00:02:40	00:02:00	00:00:40	00:02:57	00:02:00	00:00:57	00:02:57	00:02:00	00:00:57	00:02:49	00:02:00	00:00:49
07: MAGI - MALU	00:02:33	00:02:00	00:00:33	00:02:46	00:02:00	00:00:46	00:02:43	00:02:00	00:00:43	00:02:57	00:02:00	00:00:57	00:02:36	00:02:00	00:00:36
08: MALU - MAYA	00:01:44	00:03:00	-00:01:15	00:01:55	00:03:00	-00:01:04	00:02:04	00:03:00	-00:00:55	00:02:02	00:03:00	-00:00:57	00:02:03	00:03:00	-00:00:56
09: MAYA - MAGR	00:02:28	00:03:00	-00:00:31	00:02:36	00:03:00	-00:00:23	00:02:26	00:03:00	-00:00:33	00:02:19	00:03:00	-00:00:40	00:02:36	00:03:00	-00:00:23
10: MAGR - MAHI	00:03:19	00:03:00	00:00:19	00:02:58	00:03:00	-00:00:01	00:03:08	00:03:00	00:00:08	00:03:02	00:03:00	00:00:02	00:02:40	00:03:00	-00:00:19
11: MAHI - MARE	00:02:06	00:02:00	00:00:06	00:01:53	00:02:00	-00:00:06	00:01:50	00:02:00	-00:00:09	00:01:51	00:02:00	-00:00:08	00:02:07	00:02:00	00:00:07
12: MARE - MAPO	00:02:27	00:03:00	-00:00:32	00:02:14	00:03:00	-00:00:45	00:02:19	00:03:00	-00:00:40	00:02:17	00:03:00	-00:00:42	00:02:25	00:03:00	-00:00:34
13: MAPO - VALU	00:01:28	00:02:00	-00:00:31	00:02:02	00:02:00	00:00:02	00:02:04	00:02:00	00:00:04	00:01:50	00:02:00	-00:00:09	00:01:39	00:02:00	00:00:20
14: VALU - SPHA	00:04:09	00:04:00	00:00:09	00:05:15	00:04:00	00:01:15	00:05:31	00:04:00	00:01:31	00:05:24	00:04:00	00:01:24	00:05:01	00:04:00	00:01:01

Conditional Format List

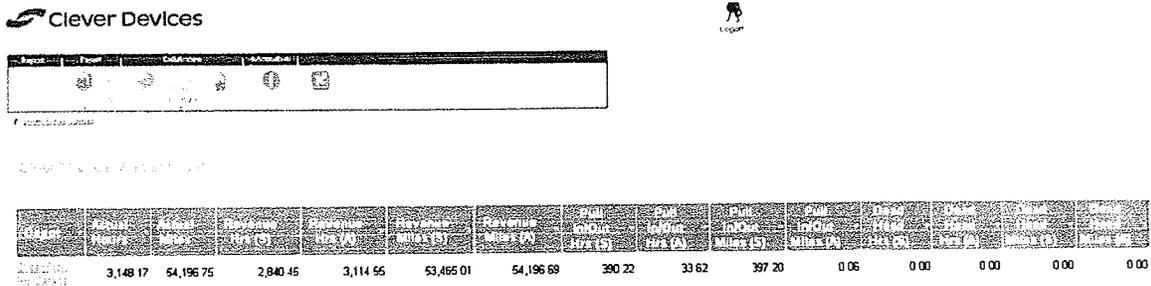
Col Difference Not Between -00:05:00 And 00:05:00



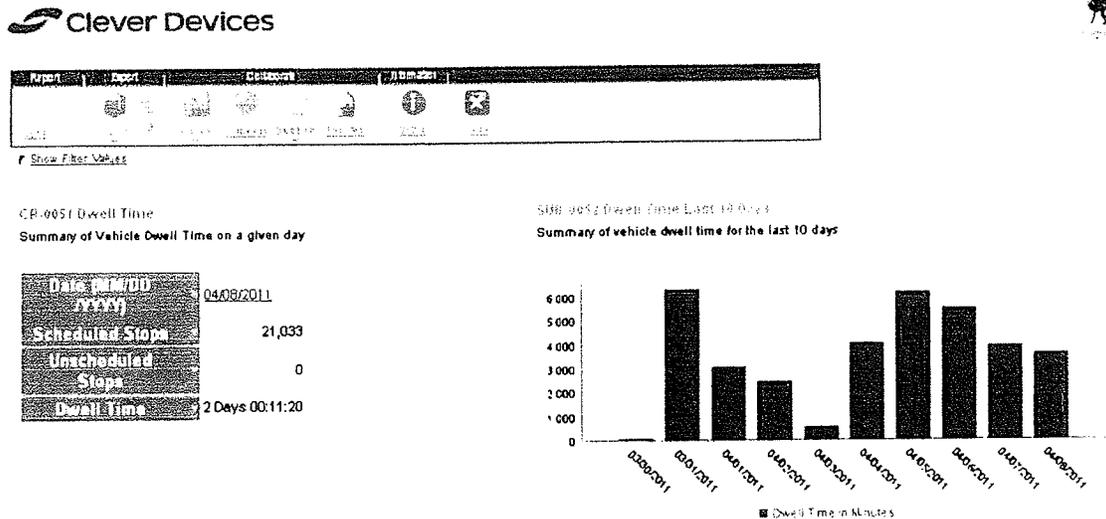
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**9.5 Vehicle Miles and Hours (Drill to Vehicle Models, and Individual Vehicles)**  
*The Vehicle Miles and Hours Report provides a measure of actual vehicle miles and hours against scheduled vehicle miles and hours and is broken down by revenue, pull-in/pull-out, deadhead, and layover operational segments. The user is also able to drill down to obtain more detailed information based on a vehicle type or even an individual vehicle.*



**9.6 Dwell Time Report**  
*The Dwell Time Report allows the user to easily assess the amount of time spent with vehicles stopped and both scheduled and unscheduled stops. This provides both a tabular and graphical view. Drill downs are provided for route, direction, and individual stops in a trip.*





### 9.7 Headway Reliability Report

The Headway Reliability Report to look at bunching and gapping of vehicles along a route. This provides both a tabular and graphical view. Drill down is provided for day of the week.



CP 0018 Headway Reliability

CP 0018 Headway Reliability

Headway reliability, bunching and gap percentage, by Schedule Type.

Route	% Bunching	% Gaps	% Acceptable Gapping
1 - 1 ALTON PARK	46.46%	29.55%	23.99%
2 - 2 NORTH CHATTANOOGA	66.70%	26.43%	6.88%
4 - 4 EAST GATE/HAMILTON PL	68.21%	23.66%	8.12%
7 - 7 CHATTANOOGA HOUSING AUTHORITY	68.72%	13.77%	17.51%
8 - 8 EASTDALE	78.36%	3.81%	17.84%
9 - 9 EAST LAKE	72.13%	19.07%	8.79%
13 - 13 ROSSVILLE	84.75%	2.97%	12.28%
14 - 14 MOONS EXPRESS	0.00%	0.00%	100.00%
15 - 15 ST BLVD	83.23%	4.31%	12.47%
15 - 15 NORTHGATE	73.58%	15.89%	10.53%
19 - 19 CROMWELL ROAD	51.89%	12.23%	35.87%
21 - 21 GOLDEN GATEWAY	72.92%	20.28%	6.81%
28 - 28 ANNOOLA HWY CHATT STATE	61.10%	15.09%	23.81%
33 - 33 DOWNTOWN SHUTTLE	51.11%	43.70%	5.19%
34 - 34 NORTH SHORE SHUTTLE	87.74%	6.45%	5.81%
10A - 10A AVONDALE	61.74%	20.80%	17.46%
10C - 10C CAMPBELL	51.19%	15.19%	33.62%
10G - 10G GLENWOOD	51.57%	29.76%	18.67%

### 9.8 Off Route Summary Report

The Off Route Summary Report allows the user to easily assess the amount of off route events and the distance traveled while off route. Drill downs to route and individual instances are provided.

CP 0046 Off Route Summary

Summary of Off Route Events by Day

Date (mm/dd/yyyy)	Off Route Events	Distance Traveled in Miles	Time Off Route
04/04/2011	45	14.24	01:51:14
04/05/2011	47	25.08	02:17:05
04/06/2011	41	13.55	01:28:58
04/07/2011	50	27.47	02:37:19
	<b>183</b>	<b>80.34</b>	<b>08:14:34</b>



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### 9.9 Missed Trip Summary Report

The Missed Trip Summary Report allows the user to easily assess the amount of missed trips versus scheduled trips. Drill downs are provided for routes and individual trips.

CR-0039 Missed Trip Summary

Summarized scheduled vs missed trips for a selected date range.

Date (MM/DD/YYYY)	Scheduled Trips	Missed Trips
04/04/2011	1,485	632
04/05/2011	1,489	640
04/06/2011	1,491	610
04/07/2011	1,489	501
04/08/2011	1,491	674

### 9.10 Stop Announcement Report

The Stop Announcement Report allows the user to assess the amount of scheduled announcements versus the actual amount of announcements played. Drill downs are provided for routes and individual stops.

CR-0033 Announcement Summary

A summary of Audio Announcements by Route

Route	Required Stop Announcements	Stop Announcements Played
1 - 1 ALTON PARK	9,055	8,134
2 - 2 NORTH CHATTANOOGA	1,786	1,460
4 - 4 EASTGATE/HAMILTON PL	19,856	18,600
7 - 7 CHATTANOOGA HOUSING AUTHORITY	838	744
8 - 8 EASTDALE	1,629	1,513
9 - 9 EAST LAKE	6,878	6,325
13 - 13 ROSSVILLE	3,008	2,689
15 - 15 ST. ELMO	2,928	2,705
16 - 16 NORTHGATE	6,886	6,551
19 - 19 CROMWELL ROAD	1,785	1,709
21 - 21 GOLDEN GATEWAY	3,231	2,661
28 - 28 AMNICOLA HWY CHATT STATE	1,104	964
10A - 10A AVONDALE	4,427	4,166
10C - 10C CAMPBELL	648	628
10G - 10G GLENWOOD	4,804	4,525



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## 9.11 Pull In Performance Report

The Pull In Performance Report allows the user to look at late pull ins from a historical perspective. A drill down is provided for individual operators. Top 10 and Bottom 10 versions of the report are also included as tabs.

CR-0023 Pull In Performance | SUB-0025 Top 10 Routes | SUB-0024 Bottom 10 Routes

### CR-0023 Pull In Performance

Pull In Performance by Operational Time Period

Route	Late Pull Ins per Day	Late Pull In %	Pull In Trips	Days
<u>1 - 1 ALTON PARK</u>	0.00	0.00%	29	10
<u>2 - 2 NORTH CHATTANOOGA</u>	0.00	0.00%	6	6
<u>4 - 4 EASTGATE/HAMILTON PL</u>	0.00	0.00%	110	12
<u>7 - 7 CHATTANOOGA HOUSING AUTHORITY</u>	0.00	0.00%	59	9
<u>8 - 8 EASTDALE</u>	0.00	0.00%	6	6
<u>9 - 9 EAST LAKE</u>	0.00	0.00%	35	10
<u>13 - 13 ROSSVILLE</u>	0.00	0.00%	18	8
<u>14 - 14 MOCS EXPRESS</u>	0.00	0.00%	15	7
<u>15 - 15 ST ELMO</u>	0.00	0.00%	15	8
<u>16 - 16 NORTHGATE</u>	0.00	0.00%	66	13



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9.12 Pull Out Performance Report

The Pull Out Performance Report allows the user to look at late pull outs from a historical perspective. A drill down is provided for individual operators. Top 10 and Bottom 10 versions of the report are also included as tabs.

CR-0018 Pull Out Performance    SUB-0019 Top 10 Routes    SUB-0020 Bottom 10 Routes

CR-0018 Pull Out Performance

Pull Out Performance by Operational Time Period.

Route	Late Pull Outs per Day	Late Pull Out %	Pull Out Trips	Days
1 - 1 ALTON PARK	2.25	36.00%	25	4
2 - 2 NORTH CHATTANOOGA	0.50	25.00%	8	4
4 - 4 EASTGATE/HAMILTON PL	3.00	23.53%	51	4
7 - 7 CHATTANOOGA HOUSING AUTHORITY	0.00	0.00%	14	4
8 - 8 EASTDALE	1.00	100.00%	3	3
9 - 9 EAST LAKE	1.00	20.00%	20	4
13 - 13 ROSSVILLE	0.00	0.00%	7	4
14 - 14 MOCS EXPRESS	0.00	0.00%	9	4
15 - 15 ST ELMO	0.33	20.00%	5	3
16 - 16 NORTHGATE	0.50	6.45%	31	4

9.13 Log On Summary Report

The Log On Summary Report allows the user to look at logons from a historical perspective. A drill down is provided for details of each type of logon.

CR-0031 Logon Summary

Scheduled vs. actual logon activity by Date

Logon data normally takes 1-3 days to update.

Logons Date (MM/DD YYYY)	Logon Status			
	Early Logon	Late Logon	Missed Logon	On Time Logon
04/04/2011	7	3	31	55
04/05/2011	5	6	31	54
04/06/2011	8	2	28	58
04/07/2011	4	6	26	60
04/08/2011	1	9	51	35



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9.14 Incident Activity Report

The Incident Activity Report shows the user all incident report activity over a date range.

CR-0001 Incident Activity

Activity summary, Open & Closed Incidents, and Open Incidents during the given date range.

Incident Reports Opened	6
Incident Reports Closed	1
Incidents Remaining Open	5

SUB-0009 Opened and Closed Incidents

Status	Incident ID	Incident Type	Date Opened	Opened By	Date Closed	Closed By
Closed	4	Service Recovery	12/07/2010	Alvin Turner	12/07/2010	Alvin Turner

Count: 1

SUB-0012 Open Incidents

Incident ID	Incident Type	Date Reported	Reported By	Assigned To
1	Communication	12/02/2010	Darryl Curtis	Darryl Curtis
2	Communication	12/02/2010	Darryl Curtis	Darryl Curtis

9.15 Daily Incident Report

The Daily Incident Report shows the user all incident report activity over a single day. This report is typically used as a daily email to track incidents that may not have been handled or closed the previous day.

CR-0002 Daily Incident Report

Incidents Carried Over	2
New Incidents	2
Incidents Closed	1
New Incidents Remaining Open	1
Total Open Incidents	3

SUB-0011 Incident Type Summary

Type	Incidents
Communication	2
Unknown	1
	3

SUB-0010 Incident Listing

Opened or Closed on the reporting date

Incident ID	Incident Type	Date Opened	Opened By	Date Closed	Closed By
3	Unknown	12/07/2010	Unknown	Unknown	
4	Service Recovery	12/07/2010	Alvin Turner	12/07/2010	Alvin Turner

Count: 2





### 9.16 Operator Performance Summary Report

The Operator Performance Summary Report allows the user to assess operator performance over a date range. Drill downs provide a breakdown by date and individual TimePoints.

CR-0042 Operator Performance Summary

Operator performance summarized by day for the selected date range

Operator	Scheduled Time Points	Actual Time Points	Dead Handed	Off Route Events	Logon Count
<u>Alfonse Wilkerson</u>	209	206	6	13	3
<u>Arin Smothers</u>	304	308	16	24	7
<u>Angele Smith</u>	113	112	5	7	3
<u>Anneine Brentley</u>	41	40	4	4	2
<u>Bobby Lester</u>	275	264	4	19	4
<u>Brett Townsend</u>	401	401	4	10	4
<u>Catherine Blackman</u>	267	266	3	4	4
<u>Charles Sloudemire</u>	270	213	4	4	3
<u>Cynthia Jennings-Roshell</u>	189	189	4	6	2
<u>Dana Phillips</u>	266	266	15	1	8
<u>Daniel Collins</u>	109	107	6	5	3
<u>David Cook</u>	240	246	3	4	4

### 9.17 On Time Performance Report

The On Time Performance Report allows the user to look at On Time Performance over a date range. Date is broken down by time period. Top 10 and Bottom 10 tabs are also available from this report.

CR-0015 On Time Performance | SUB-0016 Top 10 Rank | SUB-0017 Bottom 10 Rank

CR-0015 On Time Performance

On Time Performance % by Operational Periods.

On Time % Route	All Day	AM	AM Peak	Mid Day	PM Peak
		12:00AM - 6:00AM	6:00AM - 10:00AM	10:00AM - 3:00PM	3:00PM - 7:00PM
1 - 1 ALTON PARK	53.45%	27.16%	55.58%	57.89%	49.65%
2 - 2 NORTH CHATTANOOGA	56.10%	25.00%	66.67%	56.52%	46.24%
4 - 4 EASTGATE/HAMILTON PL	55.61%	61.74%	53.80%	61.18%	51.16%
7 - 7 CHATTANOOGA HOUSING AUTHORITY	57.84%		52.94%	60.94%	52.38%
8 - 8 EASTDALE	51.79%	50.00%	65.09%	59.09%	29.94%
9 - 9 EAST LAKE	49.85%	36.11%	56.47%	56.99%	41.69%
13 - 13 ROSSVILLE	48.47%	41.67%	43.55%	45.86%	62.07%
14 - 14 MOCS EXPRESS	45.20%		31.75%	50.00%	48.58%
15 - 15 ST. ELMO	58.02%	62.50%	60.39%	58.12%	53.98%
16 - 16 NORTHGATE	49.40%	48.00%	57.72%	54.37%	38.78%



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9.18 Deadhead Report

The Deadhead Report shows the user all deadhead activity over by date broken down by deadhead type.

Deadhead Break Down (Scheduled/Actual)

Filters

Date (MM/DD/YYYY) Equal to 06/04/2011

Vehicle Number	Operator's Front to Garage (S)	Operator's Front to Garage (A)	Operator's Front to Garage (S)	Operator's Front to Garage (A)	Operator's Interline (S)	Operator's Interline (A)	Operator's Interline (S)	Operator's Interline (A)
7001	00	00	02:05:19	00:06:46	00	00	00:00:00	00:00:00
7002	00	00	00:44:55	00:12:18	00	00	00:00:00	00:00:00
7003	00	00	01:29:39	00:00:22	00	00	00:00:00	00:00:00
7004	00	00	01:42:19	00:00:00	00	00	00:00:00	00:00:00
7006	00	00	01:29:39	00:09:58	00	00	00:00:00	00:00:00
7007	00	00	00:39:39	00:00:00	00	00	00:00:00	00:00:00
7009	99	00	01:22:34	00:02:51	00	00	00:00:00	00:00:00
8511	99	00	01:02:39	00:16:15	00	00	00:00:00	00:00:00
8514	00	00	00:19:54	00:00:00	00	00	00:00:00	00:00:00
8515	00	00	00:19:54	00:00:00	00	00	00:00:00	00:00:00
8516	00	00	00:17:44	00:00:00	00	00	00:00:00	00:00:00
8518	00	00	00:00:00	00:00:00	00	00	00:00:00	00:00:00



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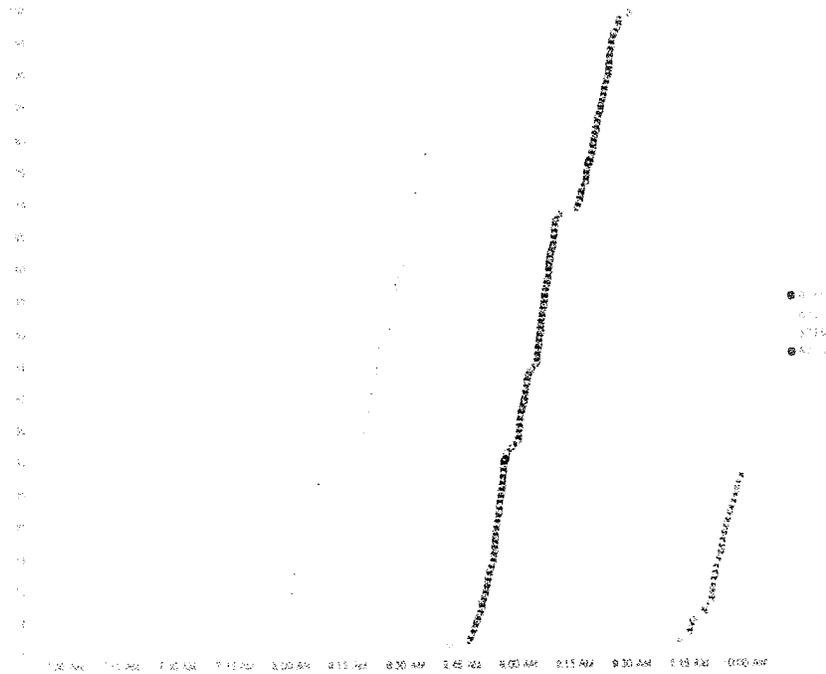


### 9.19 Space Time Diagram

The Space Report shows the user a visual representation of headway on consecutive trips on the same route. The report can be filtered by time period. Hovering over the individual stops also provides schedule adherence.

CR-0067

CR-0067 Space Time Diagram





9.20 Ridership Variation by Weather

*Ridership Variation by Weather shows the number of riders that board during various weather situations. Weather conditions, temperature, and wind chill are included. Drill down capability is provided to break down data by route.*

CR-0075 Ridership Variation by Weather  
 Passenger Load data with weather conditions for the given date

M T W T F S S 100 11 363 4 H

Date	Passenger Load	Weather Condition	Temperature	Route
02/28/2011	51	Fair	66	9 South
	16	Light Rain	62	13 Southwest
	21	Partly Cloudy	60	12 Southwest
	21	Fair	63	9 South
	21	Partly Cloudy	63	5 South
	3	Mostly Cloudy	59	13 Southwest
	1	Fog/Mist	63	6 Southwest
	1	Fair	58	13 West



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9.21 Boardings and Alightings

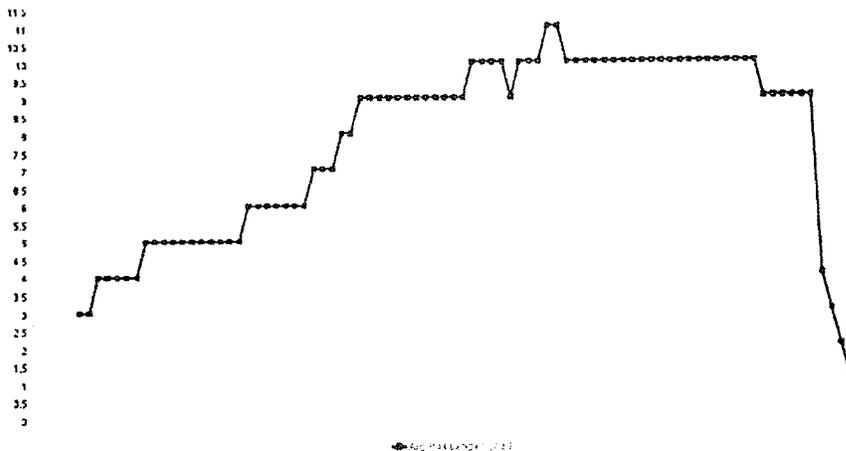
*Boardings and Alightings shows a summary of rider statistics along a route along with a graph of average load along a route.*

CP-0071 Boardings and Alightings  
Boardings and Alightings by a Route

Route: 4 - 4 EASTGATE HAMILTON  
PL

Trips	1,681
Boardings	24,203
Alightings	23,982
Revenue Hours	1,461.26
Revenue Miles	23,161.26
Boardings per Mile	1.05
Boardings per Hour	16.60
Alightings per Mile	1.04
Alightings per Hour	16.41
Average Speed	16.12
TP Ontime	3,278
TP Early	3,283
TP Late	4,906
Ontime (%)	28.64%

SUB-0072 Passenger Load by Stop Order  
Graphs the average load on the vehicle by Stop Order





9.22 Passenger Load Profile

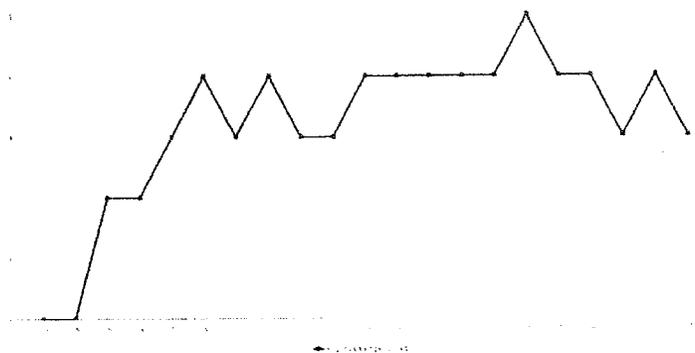
Passenger Load Profile shows a summary of rider statistics along a route along with a graph of load by time of day and percentage of capacity used by time of day.

CR-0073 Passenger Load Profile by Hour  
Show the average load and percentage of Capacity, by Hour for the selected Route

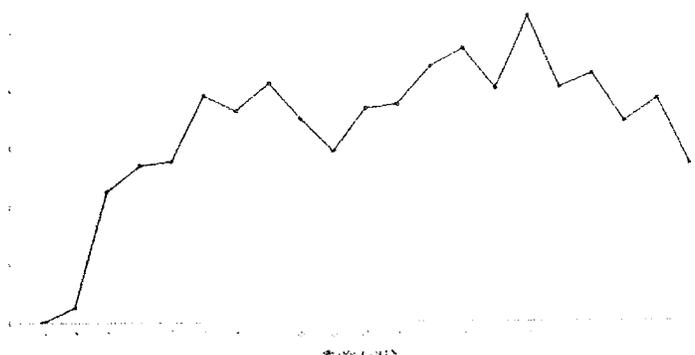
Route: C - TAMM HOLEMAN

Time	2,180
Managers	13,318
TP Online	11,771
Available Riders	1,076.80
Available Seats	14,883.22
Available per Hour	0.09
Available per Hour	12.38
Available per Hour	0.79
Available per Hour	10.94
Available per Hour	14.13
TP Online	3,822
TP City	3,569
TP City	5,048
Available %	29.37%

SUB-0074 Passenger Load Profile by Time  
Average Passenger Load, Hour of the Day



SUB-0075 Vehicle Passenger Load %  
Passenger Load as a percentage of the vehicle Max capacity, by Hour of the Day





### 9.23 Standing Time Report

The Standing Time Report shows the amount of time a vehicle was not moving while the doors were closed. Drill downs are provided to provide details on individual instances. Note: This report requires a TSP system to be installed.

CR-0006 Standing time

The time (average) a vehicle was detected to be standing with the doors closed

Route	AM (12:00AM-6:00AM)		AM Peak (6:00AM-10:00AM)		Mid Day (10:00AM-3:00PM)		PM Peak (3:00PM-7:00PM)		PM (7:00PM-11:00PM)	
	Standing Events	Average Stand	Standing Events	Average Stand	Standing Events	Average Stand	Standing Events	Average Stand	Standing Events	Average Stand
AZLINK - ARIZONA AVE LINK	20	00:00:18	35	00:00:32	74	00:00:33	45	00:00:27	43	00:00:23
MAINLINK - MAIN ST LINK	73	00:00:30	248	00:00:31	347	00:00:32	241	00:00:23	101	00:00:24

### 9.24 Driver Workpiece Summary

The Driver Workpiece Summary shows a summary of driver information for a given date range. Logons, pullouts and work performed are shown.

CR-0070 Driver Work Piece Summary  
Driver Work Summary by Day

04/01/2011 08:00:00 - 04/01/2011 17:00:00

DATE	LOGON TIME	PULLOUT TIME	LOGOFF TIME	DRIVER NAME	TRIPS	START TIME	END TIME	TRIPS									
04/01/2011	1:25 PM	1:18 PM	00:05:54	Roger McNabb	105	1:18 PM	1:18 PM	72			72						72
04/01/2011	2:15 PM	2:15 PM	00:00:19	Tom Martin	123	2:15 PM	2:15 PM	60			60						60
04/01/2011	2:30 PM	2:31 PM	00:01:21	James Boles	109	2:31 PM	2:31 PM	83			83						83
04/01/2011	2:35 PM	2:40 PM	00:05:37	Yakia Green	108	2:40 PM	2:40 PM	26			26						26
04/01/2011	3:10 PM	3:12 PM	00:02:39	Jackie Doggett	119	3:12 PM	3:12 PM	76			76						76
04/01/2011	3:20 PM	3:12 PM	00:07:02	Lyndia Sanders	118	3:12 PM	3:12 PM	41			41						41
04/01/2011	3:20 PM	3:15 PM	00:04:45	Rhonda Albert	114	3:15 PM	3:15 PM	41			41						41
04/01/2011	4:20 PM	4:18 PM	00:01:13	David Orsillo	116	4:18 PM	4:18 PM	96			96						96
05/01/2011	10:20 AM	10:10 AM	00:09:18	Wardell Ramsey	117	10:10 AM	10:10 AM	108			108						114
05/01/2011	10:50 AM	10:38 AM	00:11:45	June Atkins	126	10:38 AM	10:38 AM	75			75						75

### 9.25 Productivity

The Productivity Report shows summary productivity statistics for the entire system along with a break down by route. Drill downs are provided for each route, showing a graphic for average load along the route.

CR-0058 Productivity Report  
Passenger Productivity for a given date range

Trips	20,069
Passenger Boardings	133,832
All Boardings	119,873
Revenue Hours	6,667.43
Revenue Miles	134,236.73
Boardings per Mile	1.00
Boardings per Hour	15.44
Boardings per Trip	0.99
All Boardings per Route	13.84

SUB-0059 Productivity By Route  
Route Passenger productivity

Route Name	Trips	Boardings	Revenue Hours	Revenue Miles	Boardings per Mile	Boardings per Hour	Boardings per Trip	Boardings per Mile
1. LACON PARK	2,160	13,318	11,771	1,075.89	14,963.22	0.89	12	0.79
2. NIMROLD/HAIRMAN/COCA	905	1,121	843	203.24	2,990.86	0.37	6	0.26
4. LEASDALE/HANNA/DELTA	3,276	50,617	49,881	2,870.92	45,483.60	1.11	18	1.10
7. CHATHAM/KINGS CROSSING ANDREWS	426	778	392	101.23	1,793.67	0.43	8	0.22
8. RASDALE	436	754	638	90.25	1,910.09	0.39	8	0.33
9. FRASER LAKE	1,251	7,973	6,568	574.99	9,346.88	0.85	14	0.70



**EXHIBIT B**

**SCHEDULE**

**To Be Determined**