**Utah Transit Authority**
669 West 200 South
Salt Lake City, Utah 84101
Phone: (801) 741-8885
Fax: (801) 741-8892

CHANGE ORDER
No. **3**

ITLE: TDX Unidirectional Gateway Network Security Solution

DA E: 9/17/2021

PROJE ODE: SGR403 - Train Control Rehab & Replacement

This is a change order to ON RACT No: 19-03174

TO: Modern Communications Systems

ATTN: Brandon Wise

DESCRIPTION OF CH GE: Brief scope, references to scope defining documents such as RFIs, submittals, specified drawings, exhibits, etc.

To modernize the UTA Operations Network (OT Network) and to gain benefits from the TDx 3.0 upgrade, UTA requires a secure way to access the OT Network (via the UTA Business Network) to create reports and generate automatic emails. The OT network is currently secured using an air-gap method. In order to maintain the air-gap equivalent security and access the OT network, UTA needs to implement a system that allows information to only pass in one direction via a unidirectional gateway. This will ensure the security of the OT network maintains an "air-gap" equivalency and allow reports and emails to be sent from the OT network. UTA decided to use a system with a unidirectional gateway between the 2 networks. This security solution will be required on both the TRAX and Frontrunner systems.
Total Change Order amount: $348,369

Direction or Authorization to Proceed (D P) previously executed: YES _____ NO __X__

It is mutually agreed upon, there is a schedule impact due to this Change order: YES _____ NO __X__

The amount of any adjustment to time for Substantial Completion and/or Guaranteed Completion or Contract Price includes all known and stated impacts or amounts, direct, indirect and consequential, (as of the date of this Change Order) which may be incurred as a result of the event or matter giving rise to this Change Order. Should conditions arise subsequent to this Change Order that impact the Work under the Contract, including this Change Order, and justify a Change Order under the Contract, or should subsequent Change Orders impact the Work under this Change Order, UTA or the Contractor may initiate a Change Order per the General Provisions, to address such impacts as may arise.

**Current Change Order**

| | |
|---|---|
| Lump Sum: | $348,369 |
| Unit Cost: | - |
| Cost Plus: | - |
| **Total:** | **$348,369** |

**Contract**

| | |
|---|---|
| Original Contract Sum: | $4,621,707 |
| Net Change by Previously Authorized Changes: | $223,802 |
| **Previous Project Total:** | **$4,845,509** |
| Net Change This Change Order: | $348,369 |
| **Current Project Total:** | **$5,193,878** |

**Schedule**

| | |
|---|---|
| Final Completion Date Prior to This Change: | 12/31/2021 |
| **Contract Time Change This Change Order (Calendar Days):** | **0** |
| Final Completion Date as of This Change Order: | 12/31/2021 |

ACCEPTED:
By: DocuSigned by: Dan Meservy
Date: 10/12/2021
**Brandon Wise**
Modern Communications Systems

By:
Date:
**Jared Scarbrough**
Project Manager <$10,000

By:
Date:
**Jared Scarbrough**
Acting Director of Capital Construction <$50,000

By:
Date:
**David Hancock**
Acting Chief Service Dev Officer <$100,000

By:
Date:
Amanda Burton Pat Rostek
Procurement

By: DocuSigned by: Mike Bell
Date: 10/12/2021
**Michael Bell**
Legal Review

By:
Date:
**Mary DeLoretto**
Interim Executive Director >$100,000

## Change Order Summary Worksheet

**Previously Authorized Changes**

**Contract 19-03174 MCS**

| Change Order No | Date | Amount of CO | Running Contract Total | Subject |
|---|---|---|---|---|
| Original Contract | | | $4,621,707 | |
| 1 | 3/19/2021 | $39,363 | $4,661,070 | TDX 3.0 Upgrade- Trax TPSS Disconnect Switch Additional IO Modules |
| 2 | 9/17/2021 | $184,439 | $4,845,509 | Champion TDX Changes |
| **Total to Date** | | **$ $223,802** | | |

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**September 15, 2021** **PCO-0005**

Jared B Scarbrough
Manager, Systems Engineering
Utah Transit Authority
JScarbrough@rideuta.com

**Subject: Network Security Solution for TDX Version 3.0 - Change Order Proposal (UTA Contract 19-03174)**

Dear Mr. Scarbrough:

Modern Communications Systems (MCS) is pleased to provide this Change Order Proposal for the Scope of Work outlined below.

## *Overview*

The TDX system for FrontRunner and TRAX resides on UTA's operational network, which is physically separated or "air gapped" from UTA's business network. In order to modernize these networks and realize the benefits of TDX Version 3.0 ability to provide real-time visibility and reporting of operational data and improved worker safety, UTA's operational network will need to have the ability to connect to the business network. However, with increased interconnectedness comes increased vulnerability to remote-based cyber threats which routinely bring critical operational networks offline and impact the affected company with decreased public confidence, decreased revenue generation capability, and increase costs to restore networks to full functionality.

In order for UTA to gain the advantages of having real-time visibility to operational data, efficiency gains and improved worker and customer safety while simultaneously maintaining the highest level of network security, MCS is proposing Waterfall's patented Unidirectional Gateway technology as a solution on both the TRAX and FrontRunner networks. Waterfall Unidirectional Security Gateways provide absolute protection to control systems and operations networks from attacks originating on external networks meaning UTA can operate MRS TDXv3 software on their critical operational networks with full confidence with Waterfall's technology in place.

## *Network Security & Technical Requirements*

The Waterfall Security solution will enable the TDXv3 software to securely accomplish the following technical requirements for UTA business network:

1. Maintain air-gap equivalent security for both TRAX and FrontRunner networks
2. Email TDX Alarm Notifications to UTA's Business Network via SMTP
    a. TDX will send remote alarm notifications to allow immediate notification of certain alarms to specific users (i.e. alarms that are security related to be routed to transit police, equipment failures to be routed

to MOW, and operational alarms to controllers). MRS will configure TDX to send alarm notifications via email

   b. Provide a secure connection from the email server to the TDX application servers
      i. 2 Servers @ Trax
      ii. 2 Servers @ FrontRunner
   c. Allow only SMTP traffic from the TDX server to UTA's email server.

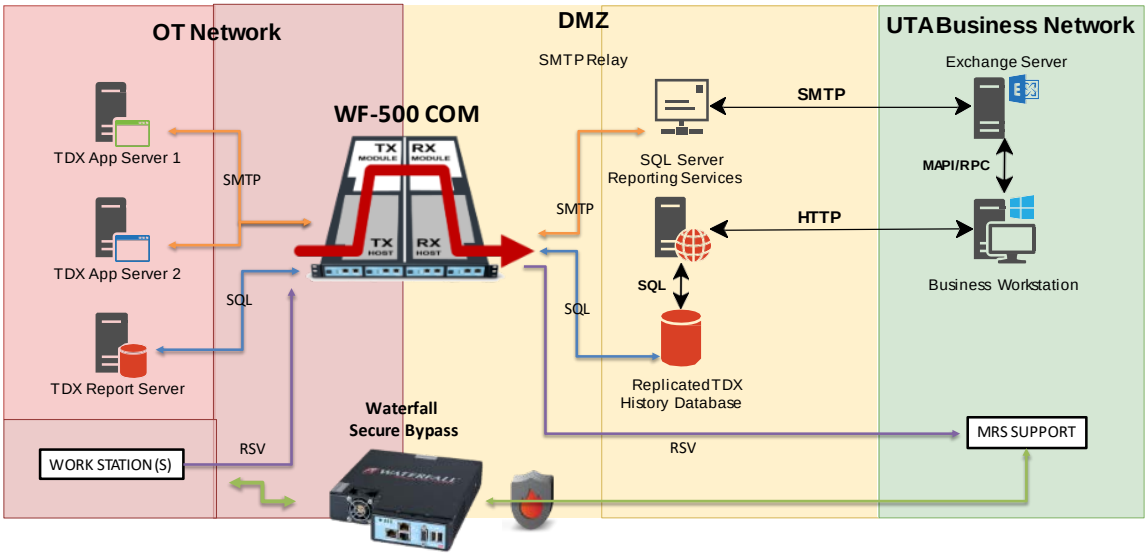
3. Email Notifications to Permit Holders Once a Permit is Activated in TDX via SMTP
   a. Send permits notifications to permit holders once the permit is activated in TDX allowing immediate notification to controllers and operators of work zone restrictions in place in order to improve the overall safety for dispatchers and maintenance of way workers while reducing the number of close call incidents along the alignments.
4. Access to TDX Reports from UTA's Business Network via Microsoft SQL Server Reporting Services
   a. Remote access to reports via a browser interface from any connected web-based device, helping to reduce the number of manhours that required to analyze data required for PTC reporting, a time-consuming effort.
   b. Microsoft SQL Server Reporting Services to accept report request via a browser interface from any connected web-based device.
   c. Major use case is for PTC Reporting needs on FrontRunner (time-consuming effort)
   d. Provide a secure connection to each TDX Report & Utility Servers
      i. 1 Server @ Trax
      ii. 1 Server @ FrontRunner
   e. Allow TDX Report & Utility Server to provide data via Microsoft SQL server's report services.
5. Minimal impact on UTA personnel to operate/maintain.
6. Enable on-call vendor support to TDX.
7. Facilitate seamless integration of future use cases

## Solution Overview & Description of Work

The diagram below depicts the network architecture at FrontRunner (Warm Springs) and TRAX (Jordan River) control centers. The security solution for UTA's operational networks consists of a WF500 Unidirectional Security Gateway and a Secure Bypass, providing absolute protection to UTA's operations networks.

The scope of this change includes all work to furnish, install, configure and test and deploy the proposed Waterfall security solution at the designated asset locations (Warm Springs and Jordan River OCC).

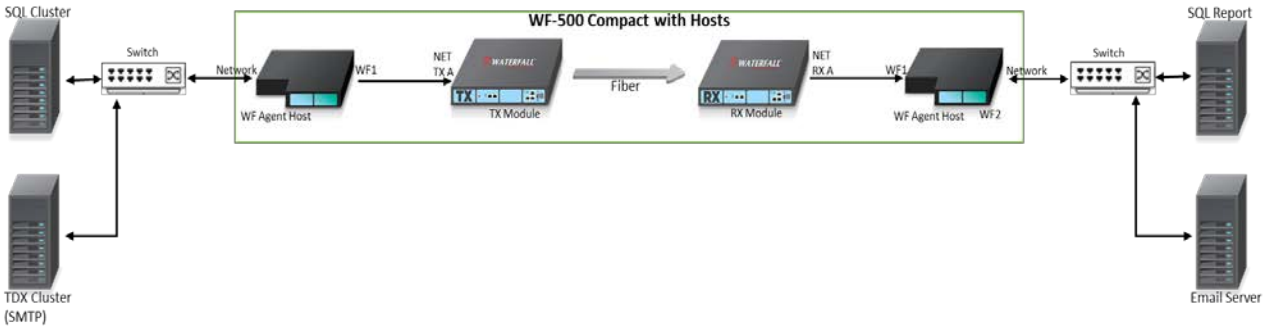
Service will also include Waterfall administration training and how to engage Waterfall support training.




## Hardware Solution

### WF-500-COM

The Waterfall solution is based upon the WF500 Unidirectional Security Gateway (USG) "COMPACT". The WF-500 COMPACT consists of 1 x ea 1U rack mount devices. It contains all the Tx and Rx functions built within a single chassis which includes the TX gateway module (the laser), the TX host upon which the data specific connector will be installed, the RX gateway module (the photocell receiver), the RX host upon which the data specific connector will be installed, redundant power supplies and redundant cooling fans. This device is industrial grade, high speed Unidirectional gateways. All network interfaces provide 1Gbs data throughput and are designed to support multiple data types on a single USG. Mean time before failure (MTBF) of the TX and RX module is 500,000 hours. The proposed solution is depicted in the following figure:



The figure above illustrates:

1. Each Waterfall WF-500 Compact device consists of a 1-u rack-mount cabinet with four power supplies, a TX Agent, a TX Module, an RX Agent and an RX Module
2. The WF-500 Compact is connected to the SCADA-Rail Network on the left side (TX side) and to the UTA Business Network from the right side (RX side)
3. On the SCADA-Rail Network, RJ45 cables ("copper") connect the switch to the TDX and SQL cluster. An RJ45 cable ("copper") connects the switch to Waterfall TX Agent
4. On the UTA Business Network, WF RX Agent is connected with an RJ45 cable ("copper") to a second network switch. RJ45 cables ("copper") connect the switch to the SQL Report server and Email server.

**Secure Bypass**

The Waterfall Secure Bypass is typically deployed in parallel to the Waterfall Unidirectional Security Gateway. While the Secure Bypass is not active the gateway provides a 100% security to the protected network from online attacks originating from the external network. When activated the Secure Bypass enables a time-limited bi-directional connectivity to a Unidirectionally protected network, allowing central engineering teams to access control systems from time to time to apply security updates, Anti-virus signature updates and other routine changes and maintenance.

When the Secure Bypass unit is activated, the Secure Bypass Module electronically connects remote-access equipment to an external network. Since the Secure Bypass is deployed between a control network firewall and the corporate network, when the Secure Bypass is activated, a temporary connection to a control system firewall is enabled.

The bypass is activated by a physical key on the front panel, or via the Waterfall software on a dedicated work station. The module automatically disconnects again after a configurable interval, to eliminate the risk of forgetting to disable the emergency two-way connection when the emergency or support problem has been resolved. The Secure Bypass module augments Unidirectional Gateway solutions for emergency operations.

The Secure Bypass module is configured through a dedicated port. The connection and disconnection of networks through Secure Bypass is carried out via a hardware relay. When the networks are disconnected, there is no way a distant adversary can force the Secure Bypass unit to connect its networks. When connected, there is no attack a distant adversary can launch which can prevent the Secure Bypass controller from disconnecting the networks after a pre-set period.

## Software Solution

**Waterfall Monitoring Tool**

Waterfall Monitoring tool supervise and monitor the Waterfall gateway. The Waterfall console enables the user to supervise and monitor all critical processes of the Waterfall Gateway including:

- **Heartbeat** - The Heartbeat enables users to verify communication between the TX and RX servers.
- **Waterfall Alerter** - The purpose of the Waterfall Alerter is to alert the user to various events in the system. The service issues alerts based on entries which the user defines in the Waterfall Configuration GUI. Alerts can be sent by one or more of the alert channels like Syslog, SNMP, SMTP, etc.
- **Waterfall Logging** - Each Waterfall service generates and writes to a separate log file which is saved in the service directory. The Waterfall Configuration GUI enables the user to easily manage the logs according to their local policy.
- **Waterfall Watchdog Service** - Waterfall Watchdog service restarts the Waterfall services in case of a service failure.

**Waterfall for SMTP**

Waterfall for SMTP provides a standard SMTP/electronic mail server on a protected industrial network. The mail server receives electronic mail from mail clients, email-aware industrial systems, and other electronic mail servers on the industrial network.

- Safe, real-time replication of email
- Precise control over the destination of electronic mail messages
- Compatible with all SMTP-standard email clients and servers
- Modular, flexible, scalable, user-serviceable hardware

**Waterfall for MSSQL**

Waterfall for MSSQL databases is part of the Waterfall Unidirectional Security Gateways family of products. Waterfall uses a preparation tool to define and configure the tables which will be replicated on the source network, and also imports the settings to the destination MSSQL DB.

On the OT network the WF TX agent is an MSSQL client, The TX agent communicate with the MSSQL Server and receives the insert/update/delete actions of the records.

On the IT network, Waterfall acts as an MSSQL client, The RX WF MSSQL Client communicates with the IT MSSQL server, and updates the target tables with the records changes.

The replica database in maintained as a faithful, real-time replica of the original MSSQL database on the industrial network.

Important Notes:

- Waterfall does not change any data on the source MSSQL DB
- It is not allowed to change the DB on the RX side
- The connector supports records update only and not Schema changes

Each system (TRAX and FrontRunner) will replicate two SQL databases from their respective MSSQL Server 2019 Cluster sources. One is Config and the other is History. There are 75 tables in Config and 40 tables in History. Schema will be provided when appropriate. The Config database is fixed at 82MB, but History will grow to support 3 years data upwards to 250GB. It is anticipated that 50-200 commits per second will be replicated based on analog value changes from the field.

**Waterfall RSV**

Waterfall Remote Screen View (RSV) provides safe remote access for vendors of all levels of clearance for a site. RSV enables remote experts to see the screens of computers on industrial networks while the industrial site retains full control over any expert-recommended manipulations or changes to that system. The Waterfall RSV provides maximum viewing versatility needed for effective monitoring and operational processes evaluation. It enables multiple users to remotely view, in real-time, multiple screens located inside the industrial network. Different users located in distant locations, can view multiple screens simultaneously.

Waterfall RSV is an easy to install and maintain COTS solution. Users can access the screen feeds in standard web browsers.

- Screens from industrial computers are visible in external networks
- Screens are accessed by conventional browsers and video streaming
- Supports Windows OS
- Comprehensive diagnostics including real-time alerts to fault conditions via email, SNMP, log files and PI tags
- Broad manageability & control of replicated screens including refresh rate, video quality and activation mode
- SCADA managers can configure the Waterfall RSV to stream screens on demand

**Additional Data Connector Requirements:**

At this time there are no additional requirements to transport additional data protocols out of the protected enclaves, however the Waterfall USG will easily accommodate adding future connectors if/when the business need arises. No additional hardware will be required to add connectors should they be required. For a full list of available data connectors please review the following: https://waterfall-security.com/solutions/

| Waterfall Security Solution - H/W & S/W Bill of Materials | | | | |
|---|---|---|---|---|
| Item | Part No. | Product Name | Quantity | Description |
| 1 | WF-500-COM | Compact cabinet with TX and Host modules | 2 | Compact unidirectional gateway hardware on 1U chassis. Includes TX module, TX host, & redundant power and cooling |
| 2 | SQL | Waterfall for Microsoft SQLserver | 2 | Standard unidirectional gateway hardware on 1U chassis. Includes RX module, RX host, & redundant power and cooling |
| 3 | RSV | Waterfall for Remote Screen View | 2 | Waterfall for Remote Screen View. Unlimited client agent installations, one concurrent screen view, unlimited viewers. |
| 4 | SMTP | Waterfall for SMTP | 2 | Waterfall for SMTP. Any number of email clients. |
| 5 | WF-500-St-SBPA-SYS | Waterfall Secure Bypass | 2 | Waterfall Secure Bypass on 1U chassis. |
| 6 | WIN-SRV-2019 | Windows Server 2019 | 4 | Windows Server 2019 Operating System License. Required for each TX and RX and SBP host. |
| 7 | WF-INSTL | Waterfall Installation and Training Services | 2 | Waterfall installation and training services. On-site, FFP. |

## Waterfall Product Support

The scope of this change also includes a 5-year level warranty and "Standard" level support package and includes H/W module replacement and Waterfall S/W Connector minor releases as applicable consistent with Waterfall's Service Leve Agreement. Hardware component replacement is provided for where conditions warrant consistent with terms and conditions agreement.

| Parameters | Standard Plan | | Premium Plan | |
|---|---|---|---|---|
| Technical Assistance Center Availability | 5 Business days / Mon to Fri 8:30 – 17:30 | | 7 days / week 24H | |
| Response Time (Phone/Fax/Email) | Critical | 1 business day | Critical | 4 hours |
| | Major | 1 business day | Major | 1 business day |
| | Minor | 5 business days | Minor | 1 business day |
| | | | | |
| Hardware Replacement Shipment Time | Critical | OSRH / 5 business days | Critical | OSRH / 1 business day |
| | Non Critical | OSRH / 15 days | Non Critical | OSRH / 15 days |
| Delivery Terms | DAP (named place of destination) Incoterms ® 2010 | | DAP (named place of destination) Incoterms ® 2010 | |
| | | | | |
| Software updates | Provision of all official patches, bug fixes and minor version releases | | Provision of all official patches, bug fixes and minor version releases | |
| | | | | |
| OSRH Service | Can be purchased separately | | | |
| On Site Professional Services | Can be purchased separately | | | |

## MCS Labor and Materials

MCS will also furnish the following materials as requested by UTA:

| Other Materials | | | | |
|---|---|---|---|---|
| Item | Part No. | Product Name | Quantity | Description |
| 1 | WS-C3560CX-12PC-S | Cisco Catalyst 3560CX-12PC-S 12-Port Gigabit Ethernet Switch | 2 | Switch for UTA Business Network - Configured / Installed by UTA IT |
| 2 | CON-SNT-WSC312PC | Cisco SMARTnet Extended Service Agreement | 2 | |
| 3 | CAB-TA-NA | Cisco 8' 125 VAC Power Cable | 2 | |
| 4 | GLC-LH-SMD= | Cisco - SFP (mini-GBIC) transceiver module - GigE | 4 | |
| 5 | 6TX01 | Ruggedcom RX1500PN LM 6TX01 Line Module | 1 | Will Add 6 More Ports @ Warm Springs RC Switch |
| 6 | JL260A | HPE Aruba 2930F 48G 4SFP Managed Switch - 48 ports | 1 | New 48-Port HP Switch for OT Network @ Jordan River (Not Enough Available Ports) |
| 7 | N/A | RJ45 Copper Cables | 10 | |

MCS will configure and install the new OT network equipment (HP switch and RJ45 card) at Jordan River and Warm Springs control centers. This proposal assumes MCS network tasks to enable the Waterfall solution will be reimbursed under the maintenance service agreement and has not included any costs for network labor in our pricing.

MCS has included 80 hours for Software Project Engineer for project interface engineering tasks associated with the Waterfall integration into TDX.

## *CONSTRUCTION PHASING & SCHEDULE*

- Delivery dates are approximately 6 working weeks after receipt of order.

## *COMMERCIAL CLARIFICATIONS*

1. MCS has **EXCLUDED** Sales Tax
2. MCS has **INCLUDED** Standard Insurances
3. MCS has **EXCLUDED** costs for Substation Test Support (under the MCS Systems On-Call contract)
4. F.O.B Salt Lake City, UT
5. Product warranty period commences at delivery date
6. Waterfall's warranty and service plans are detailed in Waterfall's SLA.
7. Waterfall's End User License Agreement (EULA) conditions apply. UTA must execute EULA with Waterfall
8. MCS has **EXCLUDED** Network labor. Assumes Network tasks to configure and install new OT network equipment will be reimbursed under the maintenance service agreement
9. Assumes new switches for UTA's Business Network will be configured and installed by UTA IT / Network personnel

## *PRICING*

Pricing for the above-mentioned scope is **$ 348,368.84**. Please refer to the detailed estimate for breakdown of pricing for this change.

We appreciate this opportunity and look forward to helping make this project successful. If you have any questions, please do not hesitate to contact me.

Best regards,

**Brandon Wise**
Project Manager
**Modern Communications Systems**
bwise@modrailsystems.com

Attachments:

- Change Order Cost Estimate Worksheet – Network Security Solution for TDX Version 3.0

# UTA TDX Version 3.0 & Substation Controls Upgrades

**UTA Contract 19-03174**

## PCO-0005 UTA Waterfall Security Solution for TDX Version 3.0 Upgrades

***Change Order Cost Estimate Worksheet***

***SCOPE OF WORK FOR CHANGE ORDER*** ***9/15/2021***

- See Scope of Work in PCO-0005 Change Order Proposal (Dated 9/15/2021)
-

***SUPPORTING DOCUMENTATION***

- Waterfall Commercial Proposal (Rev 2.1 dated 8/13/2021)
-
-

| ***SUBCONTRACTORS*** | ***Qty*** | ***UoM*** | ***UP*** | ***Extended*** |
|---|---|---|---|---|
| Compact cabinet with TX and Host modules | 2 | EA | $ 13,860.00 | $ 27,720.00 |
| Waterfall for Microsoft SQLserver | 2 | EA | $ 40,635.00 | $ 81,270.00 |
| Waterfall for Remote Screen View | 2 | EA | $ 9,450.00 | $ 18,900.00 |
| Waterfall for SMTP | 2 | EA | $ 9,450.00 | $ 18,900.00 |
| Waterfall Secure Bypass | 2 | EA | $ 15,750.00 | $ 31,500.00 |
| Windows Server 2019 | 4 | EA | $ 800.00 | $ 3,200.00 |
| Waterfall Installation and Training Services | 2 | EA | $ 3,750.00 | $ 7,500.00 |
| Equipment Shipping and Handling | 4 | EA | $ 125.00 | $ 500.00 |
| 5-Year Support Option | 1 | LS | $ 90,928.00 | $ 90,928.00 |
| | | | **Subtotal Subcontractors** | **$ 280,418.00** |

| ***MATERIALS*** | ***Qty*** | ***UoM*** | ***UP*** | ***Extended*** |
|---|---|---|---|---|
| Cisco Catalyst 3560CX-12PC-S 12-Port Gigabit Ethernet Switch | 2 | EA | $ 1,399.72 | $ 2,799.44 |
| Cisco SMARTnet Extended Service Agreement | 2 | EA | $ 275.00 | $ 550.00 |
| Cisco 8' 125 VAC Power Cable | 2 | EA | $ 50.00 | $ 100.00 |
| Cisco - SFP (mini-GBIC) transceiver module - GigE | 4 | EA | $ 782.12 | $ 3,128.48 |
| Ruggedcom RX1500PN LM 6TX01 Line Module | 1 | EA | $ 445.31 | $ 445.31 |
| HPE Aruba 2930F 48G 4SFP Managed Switch - 48 ports | 1 | EA | $ 2,287.50 | $ 2,287.50 |
| RJ45 Copper Cables | 10 | EA | $ 25.00 | $ 250.00 |
| | | | | $ - |
| | | | **Subtotal Materials** | **$ 9,560.73** |
| | | | **Freight on Material 5.00%** | **$ 478.04** |
| | | | **Tax on Material (UT) 0.00%** | **$ -** |
| | | | **Total Materials incl Freight & Tax** | **$ 10,038.77** |

| ***LABOR*** | ***Qty*** | ***UoM*** | ***UP*** | ***Extended*** |
|---|---|---|---|---|
| ***Indirect Labor*** | | | | |
| Sr. Project Manager | 0 | HR | $ 162.00 | $ - |
| Project Manager | 40 | HR | $ 122.15 | $ 4,886.00 |
| Manager of TDX | 20 | HR | $ 158.82 | $ 3,176.40 |
| Signal Test Manager | 0 | HR | $ 131.00 | $ - |
| Document Control Specialist | 2 | HR | $ 56.00 | $ 112.00 |
| Contract Coordinator | 10 | HR | $ 62.00 | $ 620.00 |
| Scheduler | 4 | HR | $ 85.91 | $ 343.64 |
| | | | | $ - |
| | | | **Subtotal Indirect Labor** | **$ 9,138.04** |
| ***Direct Labor*** | | | | |
| Sr. Software Engineer | 0 | HR | $ 143.57 | $ - |
| Software Engineer | 0 | HR | $ 51.41 | $ - |
| Software Project Engineer | 80 | HR | $ 81.91 | $ 6,552.80 |
| Comm Engineer | 0 | HR | $ 110.30 | $ - |
| Signal Test Engineer | 0 | HR | $ 111.00 | $ - |
| CADD Technician | 0 | HR | $ 53.23 | $ - |
| | | | | $ - |
| | | | **Subtotal Direct Labor** | **$ 6,552.80** |

| *EQUIPMENT* | *Qty* | *UoM* | *UP* | *Extended* |
|---|---|---|---|---|
| 1-Ton Crew Truck | 0 | HR | $ 22.39 | $ - |
| 1/2-Ton Crew Truck | 0 | HR | $ 18.00 | |
| | | | **Subtotal Equipment** | **$ -** |

| *TRAVEL & PER DIEM* | *Qty* | *UoM* | *UP* | *Extended* |
|---|---|---|---|---|
| T&E - Project Management | 0 | Man-Weeks | $ 2,000.00 | $ - |
| T&E - Engineering / TDX | 0 | Man-Weeks | $ 2,000.00 | $ - |
| T&E - Testing | 0 | Man-Weeks | $ 2,000.00 | $ - |
| T&E - Other | 0 | LS | | $ - |
| | | | **Subtotal T&E** | **$ -** |

| *TOTALS* | *Pct* | *Basis* | *Extended* |
|---|---|---|---|
| **Subtotal Direct Costs** | | | **$ 299,594.81** |
| **Contingency** | 1% | $ 299,594.81 | **$ 2,995.95** |
| **Insurance** | 1% | $ 299,594.81 | **$ 2,995.95** |
| **Subtotal Cost with Contingency & Insurance** | | | **$ 305,586.70** |
| **Fee** | 14% | $ 305,586.70 | **$ 42,782.14** |
| **Subtotal Cost with Contingency & Insurance** | | | **$ 348,368.84** |