



Office of the City Manager

CONSENT CALENDAR

October 29, 2024

To: Honorable Mayor and Members of the City Council

From: Paul Buddenhagen, City Manager

Submitted by: Kevin C. Fong, Director of Information Technology

Subject: Contract No. 32400104 Amendment: SmartWave for City Facility Managed Wi-Fi

RECOMMENDATION

Adopt a Resolution authorizing the City Manager to amend Contract No. 32400104 with SmartWave Technologies LLC, for managed Wi-Fi and related services increasing the amount by \$250,000 for a total not-to-exceed amount of \$620,000 from July 25, 2023 to June 30, 2026.

FISCAL IMPACTS OF RECOMMENDATION

Funding for the additional services in the amount of \$250,000 will be available in the Department of Information Technology's (IT) Cost Allocation fund, #680. Planned spending in the future fiscal years (FY) are subject to Council approval of the proposed city-wide budget and Annual Appropriation Ordinances.

CURRENT SITUATION AND ITS EFFECTS

The City continues to adopt a more mobile workforce, and the platforms we provide and support are increasingly reliant on wireless technology. IT contracts SmartWave Technologies LLC as the City's service provider and implementer. To meet increasing demand, we have identified the need for additional wireless access points (APs) to improve coverage in existing buildings and new sites due to various city department expansions. Exercising the contract extension options for another year ensures our ability to meet the expansion needs as well as maintain existing performance and modernization goals.

SmartWave has proven itself in deploying and managing over 200 access points (APs) in City of Berkeley buildings resulting in improved coverage and IT is very satisfied with the deployment, service and support SmartWave provides, and desires to continue using them.

An enterprise-quality Wi-Fi infrastructure aligns with the City's Strategic Plan Priority to provide state-of-the-art, well-maintained infrastructure, amenities, and facilities.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

Overall cost-effectiveness of Wi-Fi is greater than hard-wired ethernet, as there is no need to fully wire a facility with ethernet cable (comprised of copper and other materials), so the deployment cost of Wi-Fi is significantly less than a hardwired office and inherently faster to deploy.

Because Wi-Fi is “radio” based, it has a broader reach within a facility than a hardwired option. Reconfiguration of office space will require less material and labor with Wi-Fi than a hardwired solution, thus reducing the carbon footprint and cost of ownership over a lifespan.

Finally, as the City deploys more advanced technologies, and with the increasing demand from the community, this project will assist in providing community access to Wi-Fi at all City locations. By providing remote access to data, operational efficiencies are increased for staff, and energy and global warming emissions are reduced by both staff and the community.

RATIONALE FOR RECOMMENDATION

Deploying and managing a city-wide Wi-Fi solution requires dedicated staff time, both for monitoring the “uptime” of the system as well as replacing failed hardware. With already over 200+ access points, IT does not have adequate staff to provide for a 99% uptime, let alone, an ability to deploy Wi-Fi throughout all city-wide facilities.

Engaging a vendor to provide a managed service is the logical solution. A vendor will be responsible for the initial deployment of hardware with IT supervision and leadership, management and upkeep of the network, and “truck runs” (service calls) for repair. This will make Wi-Fi throughout City facilities as ubiquitous as a telephone and will be an expected service that is available and “just works”.

The City of Berkeley has been, and continues to use a competitively bid, cooperative contract from the City of Tucson, AZ. The City of Tucson, AZ conducted a competitive Request for Proposal (RFP) process that solicited bids for a vendor to provide “Region-Wide Point to Point Wireless System for the Regional Transportation Data Network” and selected SmartWave Technologies LLC (Attachment 1, Contract 240021-01), which was awarded and accepted on May 10, 2024 with one-year options to extend on an annual basis.

SmartWave Technologies LLC has extensive experience providing Wi-Fi installation and maintenance services and has a demonstrated, proven track record of completing projects on time and on budget, in addition to having responsive customer service. They are currently contracted by many local municipalities, including Oakland, San Jose, Dublin and Pleasanton. Furthermore, the County of San Mateo, Daly City, San Leandro, Hayward, South San Francisco and Livermore are currently using this competitive bid contract from the City of Tucson, AZ.

ALTERNATIVE ACTIONS CONSIDERED

Staff considered completing these installation services internally, but due to the high volume of existing work, staff do not currently have the capacity or the expertise to perform such a high volume of Wi-Fi installations and ongoing maintenance at all City locations.

CONTACT PERSON

Kevin C. Fong, Director of Information Technology, (510) 981-6541

Attachments:

1: Resolution

2: Tucson Contract Signed 05/10/2024

RESOLUTION NO. ##,###-N.S.

COMPETITIVE BID CONTRACT – SMARTWAVE FOR CITY FACILITY MANAGED WI-FI

WHEREAS, the City continues to adopt a more mobile workforce, and the platforms the City Information Technology Department (IT) provides and supports are increasingly reliant on wireless technology, and

WHEREAS, IT contracts SmartWave Technologies LLC as the City's Wi-Fi service provider and implementer, and

WHEREAS, to meet increasing demand, IT has identified the need for additional wireless access points (APs) to improve coverage in existing buildings and new sites due to various city department expansions, and

WHEREAS, exercising the contract extension options for another year ensures our ability to meet the expansion needs as well as maintain existing performance and modernization goals, and

WHEREAS, having an enterprise quality Wi-Fi infrastructure is consistent with the City's Strategic Plan Priority to provide state-of-the-art, well-maintained infrastructure, amenities, and facilities, and

WHEREAS, The City of Tucson conducted a competitive Request for Proposal (RFP) process that solicited bids for a vendor to provide "Region-Wide Point to Point Wireless System for the Regional Transportation Data Network" and selected SmartWave Technologies LLC, which was awarded and accepted on May 10, 2024 with one-year options to extend on an annual basis, and

WHEREAS, IT has been, and continues to use a competitively bid, cooperative contract from the City of Tucson, AZ for the same services, and

WHEREAS, the projected cost for Fiscal Years 2025-2026 is an additional \$250,000 in total, which will be available in the Department of Technology's Cost Allocation fund (Fund #680) and planned spending in future years (FY) are subject to Council approval of the proposed city-wide budget and Annual Appropriation Ordinances,

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the City Manager is authorized to amend contract #32400104 with Smartwave Technologies LLC, for managed Wi-Fi, including cabling, increasing the amount by \$250,000 for a total not-to-exceed amount of \$620,000 from July 25, 2023 to June 30, 2026.

Contract No. 240021-01

JOC for Design, Installation and Maintenance of Point-to-Point/ Point-to-Multipoint Wireless Backhaul

Table of Contents

1. Offer and Acceptance
2. SmartWAVE's Signed Letter of Concurrence
3. SmartWAVE's response to Intent to Negotiate
4. City's request for Intent to Negotiate
5. SmartWAVE's response to RFQ
6. Pricing
7. Insurance
8. RFQ# 240021

1. Offer and Acceptance

Restricted

OFFER AND ACCEPTANCE**OFFER****TO THE CITY OF TUCSON:**

The Undersigned hereby offers and shall furnish the material or service in compliance with all terms, scope of work, conditions, specifications, and addendums in the Request for Qualifications which is incorporated by reference as if fully set forth herein.

For clarification of this offer, contact:

SmartWAVE Technologies LLC

Company Name

2662 Holcomb Bridge Rd, Suite 340

Address

Roswell GA 30022

City State Zip



Signature of Person Authorized to Sign

Printed Name: Al Brown

CEO

Title

Al Brown

Name: _____

CEO

Title: _____

404-731-9580

Phone: _____

Fax: _____

E-mail: al.brown@smartwave.us _____

ACCEPTANCE OF OFFER

The Offer is hereby accepted. The Contractor is now bound to sell the materials or services specified in the Contract. This Contract shall be referred to as Contract No. _____.

CITY OF TUCSON, a municipal corporation

Approved as to form:

This 13th day of May 20 24

Regina Nassen for
As Tucson City Attorney and not personally

Awarded:

This 10th day of May 20 24

Mayra Garcia for
As Director of Business Services and not personally

2. Smart WAVE's Signed Letter of Concurrence

Restricted



Casey Adams
Principal Contract Officer
(520) 837-4128
Casey.Adams@tucsonaz.gov

April 2, 2023,

sent via email this day to: al.brown@smartwave.us

Al Brown
CEO
SmartWAVE Technologies, LLC.
2662 Holcomb Bridge Rd. Suite 340
Roswell, GA 30022

Subject: RFQ No. 240021 - JOC for Design, Installation and Maintenance of Point-to-Point/Point-to-Multipoint Wireless Backhaul

Dear Al,

This letter serves as a request for concurrence that the attached documentation is agreed upon for the subject solicitation. Specifically, you are asked to provide written confirmation by signing the concurrence line below. Points of agreement not identified below are not included in the offer. In the event there is any disagreement with this document or if there is other information that must be included in this document, Smartwave must specify such in a written response to this request.

The following agreement has been made between the City of Tucson and SmartWAVE regarding Request for Qualifications No. 240021 and is reflected in the following documents:

1. City of Tucson's Intent to Negotiate Letter dated February 14, 2024 (1 page).
2. The Contract consists of the following documents which are listed in order of precedence:
 - a. Exhibit A - Pricing for 240021 (4 pages)
 - b. Original response to RFQ 240021 submitted by SmartWAVE Technologies, LLC.

Please submit a written response providing your firm's concurrence at your earliest convenience via email to me at casey.adams@tucsonaz.gov. If you should have any questions, please call me at (520) 837-4128.

CITY OF TUCSON:

Authorized Signature Date

Printed Name

c File 240021

SmartWAVE Technologies, LLC:

 4/02/2024

Authorized Signature Date

Al Brown - CEO

Printed Name

Restricted

255 W. Alameda, 6th Floor, Tucson, AZ 85701 | Business Services Department – Procurement

www.tucsonprocurement.com

3. Smart WAVE's response to Intent to Negotiate

4. City's request for Intent to Negotiate

Restricted



Casey Adams
Senior Contract Officer
(520) 837-4128
Casey.Adams@tucsonaz.gov

February 14, 2024

Sent this day via email: al.brown@smartwave.us

Al Brown
CEO
SmartWAVE Technologies, LLC
2662 Holcomb Bridge Rd., Suite 340
Roswell, GA 30022

**RE: Intent to Negotiate RFQ #240021
JOC for Design, Installation and Maintenance of Point-to-Point/Point-to-Multipoint Wireless Backhaul**

Congratulations! The City of Tucson has completed the scoring for the above referenced solicitation and is pleased to invite your firm to enter into contract negotiations. All terms and conditions in the solicitation will become the terms and conditions of the contract.

Please provide your pricing pertaining to this RFQ. This pricing will be used under this contract.

In addition to a complete pricing breakdown, the City is requesting:

- One price for both licensed and unlicensed link support.
 - The City has our own frequency protection service that handles PCN responses for our FCC licenses.
- Pricing for 24/7 support for critical links.
- Fixed equipment and labor prices.

The Notice of Intent to Negotiate is not an intent to award a contract and does not establish a contractual relationship with the City. In the event that the City is not able to negotiate a satisfactory contract with your firm, the City will terminate negotiations.

Please submit pricing via email to casey.adams@tucsonaz.gov by **February 21, 2023.**

Please feel free to contact me if you have any questions.

Sincerely,



Casey Adams
Senior Contract Officer

Restricted

255 W. Alameda, 6th Floor, Tucson, AZ 85701 | Business Services Department – Procurement
www.tucsonprocurement.com

5. Smart WAVE's response to RFQ



JOC FOR DESIGN, INSTALLATION AND
MAINTENANCE OF POINT-TO-POINT/POINT-TO-
MULTIPOINT WIRELESS BACKHAUL

Bid Number: 240021

**TECHNICAL PROPOSAL
STATEMENT OF QUALIFICATIONS**



SmartWAVE Technologies

Enabling the Wireless Generation...

SmartWAVE Technologies LLC

2662 Holcomb Bridge Rd, Suite 340
Alpharetta, GA 30022

November 14, 2023



Smart**WAVE** Technologies
Enabling the Wireless Generation...

Restriction on Disclosure and Use of Data (None)

By accepting this document, Client agrees to use such materials and information solely for the purpose of evaluation. No information within this response is marked confidential or proprietary per the Bid document, but we do request notification in the event our response is requested by personnel or companies that are not employed by the City or part of the evaluation process.

Contact Information:

Al Brown - CEO

SmartWave Technologies LLC
2662 Holcomb Bridge Rd, Suite 340
Alpharetta, GA 30022
404-731-9580
al.brown@smartwave.us

Catch the **WAVE**!





Table of Contents

A – QUALIFICATIONS AND EXPERIENCE OF THE FIRM	4
A.1 - PRIOR EXPERIENCE	4
A.2 - REFERENCES FOR SIMILAR PROJECTS	5
B – EXPERIENCE AND QUALIFICATIONS OF THE TEAM	7
B.1 - RESOURCE OVERVIEW	7
B.2 - PROJECT ORGANIZATIONAL CHART	10
B.3 – CERTIFICATIONS	10
C – METHOD OF APPROACH AND AVAILABLE RESOURCES TO COMPLETE WORK	13
C.1 - SMARTWAVE METHODOLOGY	13
C.2 - EXPEDITED PROCESS	16
C.3 - STATEMENT OF WORK	16
C.4 – QUALITY ASSURANCE/QUALITY CONTROL	18
C.5 – BONDING	19
C.6 – TRAINING AND SAFETY	19
C.7 – TOOLS (HARDWARE AND SOFTWARE)	20
D – SUBCONTRACTOR SELECTION PLAN	21
E – PRODUCTS PROPOSED	23
F – PRICING	24
F.1 – MENU OF PRICING	24
F.2 – COOPERATIVE AGREEMENT	25

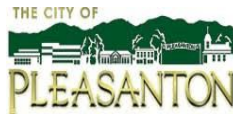


A – QUALIFICATIONS AND EXPERIENCE OF THE FIRM

A.1 - Prior Experience

SmartWAVE has been providing similar services to Municipal Governments since our founding in 2007. A sample of Smart Cities where we have provided similar wireless network design, installation and managed services:

- Tucson AZ
- Pima County AZ
- Golder Ranch Fire Dept AZ
- Northwest Fire Dept AZ
- Avra Valley Fire Dept AZ
- Three Points Fire Dept AZ
- Marana AZ
- Oro Valley AZ
- Mesa AZ
- Casa Grande AZ
- Phoenix AZ
- Santa Monica CA
- San Jose CA
- San Leandro CA
- San Mateo County CA
- Mountain View CA
- Los Angeles CA
- Omaha NE
- Lincoln NE
- Council Bluffs IA
- Atlanta GA
- McDonough GA
- Roswell GA





A.2 - References for Similar Projects

The following references include Community WiFi Networks using Ruckus Mesh WiFi products for public WiFi access similar to those requested for this initiative.

Reference #1: Wireless Network Services

Owner: City of Tucson

Contact Name: Francisco Leyva, Traffic Engineering, City of Tucson

Contact Phone #: 520-837-6672 E-mail: francisco.leyva@tucsonaz.gov

Project Overview: Planning, design, installation and post installation support for the City's wireless infrastructure supporting the Intelligent Traffic Control Network. These services have been provided since 2007 and include a variety of wireless technologies to include Mesh WiFi, WiMAX, Licensed and Unlicensed Microwave PTP Links and Wireless PTMP Technologies. These technologies have also been deployed to support other city services to include Police, Fire and Information Technology departments. All projects have been completed on time and within budget.

Reference #2: Wireless Network Services

Owner: City of San Jose

Contact Name: Ed Kim, Deputy CIO, City of San Jose

Contact Phone #: 408-793-6873 E-mail: ed.kim@sanjoseca.gov

Project Overview: Planning, design, installation and post installation support for all of the City's wireless infrastructure, including Community Wireless Broadband Networks, the San Jose Airport and the Convention Center. Wireless infrastructure includes all City owned facilities to include 60 Community Centers, City Hall, Public Works, Waste Water Treatment Plant, Police facilities, Fire facilities and all other city buildings. Wireless technologies include Siklu mmWave, Cambium mmWave, Ruckus WiFi, Mimosa Point to Multipoint, and Mimosa and SIAE Licensed and Unlicensed Microwave. The networks serve



over 500,000+ unique clients per month. All projects have been completed on time and within budget.

Reference #3: Wireless Network Services

Owner: County of San Mateo

Contact Phone #: 510-813-8303 E-mail: Bennylee.fon@gmail.com

Contact Name: Benny Lee, Project Manager, County of San Mateo

Project Overview: Planning, design, installation and post installation support for the County's Community WiFi Initiative. SmartWAVE has provided these services since 2014, implementing a number of rural communities in the County, Community Centers, Parks and other public locations. Wireless projects have included indoor and outdoor WiFi solutions, Point to Point solutions and Point to Multipoint solutions. All projects have been completed on time and within budget. SmartWAVE uses subcontractors Layer 1 Networks for low voltage cabling work and Rosendin Electric for electrical remediation work as needed to support the projects.



B – EXPERIENCE AND QUALIFICATIONS OF THE TEAM

B.1 - Resource Overview

SmartWAVE is assigning personnel offering unmatched experience and skills for designing, deploying and supporting wireless networks at key positions in Executive Management, Project Management, RF Engineering and Network Engineering. The resources assigned are a proven team in deploying award winning networks to include a number of municipal deployments similar to this one. No other firm responding can claim the success that SmartWAVE has demonstrated.

Project Team Resume

Project Executive - Al Brown

Al is President and CEO of SmartWAVE. In this role, he leads the company's growth, business strategy and position as an emerging market leader in providing innovative wireless networks and solutions. His responsibilities include P&L reviews, development of cost models, business plans and term sheets, identification of skill sets, and recruitment and management of team members. He is also responsible for leading negotiations for credit lines and facilities with distributors, manufacturers and financial institutions to support growth of SmartWAVE and their markets.

Al has been published in trade magazines regarding the deployment of wireless networking architectures. Mr. Brown has also given a number of presentations on wireless technologies and deployments and is often asked to participate in wireless workshops with local government entities.

Al's experience in providing Community Network Access solutions include the Council Bluffs BLINK Community Network, the Eastside Union High School District Community Network with the City of San Jose, the Wickedly Fast WiFi in San Jose, along with hundreds of other public access network deployment for cities in the Bay Area and across the United States to include for the City of Mountain View, San Mateo County, City of Los Angeles, City of Tucson, Santa Monica and a host of other cities.

Al has been with SmartWAVE since March of 2007 and engaged in the wireless industry since 1997. Previous corporate experience includes SmartWAVE, EDS and IBM Global Services. He received a Bachelor of Science in Mathematical Sciences from Clemson University. Mr. Brown was also a graduate of the EDS Systems Engineering Development program and the Executive Consulting Institute at IBM Global Services.



Project Manager – Josh Kehl

Josh is the Arizona Operations Manager for SmartWAVE Technologies where he provides the coordination, tasks management, and communications in the design and deployment of modern wireless networks and applications. Josh is a “working” Manager where he participates in deployment tasks to include Tower climbs, in addition to field engineering and project management services. Josh has been serving the Tucson and Arizona markets for over 20 years in various capacities and with various organizations. Josh is well-versed on a variety of Project Techniques and tools. His methodical approach to project deployments provides for project controls meeting or exceeding customer expectations, with a focus on financial and quality controls. His communication skills are spectacular and provide for granular communication for tasks planned, tasks completed, items for management attention, and items for management action. His commitment to success of the team will ensure this project is destined for success.

Josh has been a part of the SmartWAVE team since 2021 where he has been supporting the City of Tucson on all SmartWAVE contractual obligations. Josh is familiar with and certified on a variety of wireless network products to include Ruckus, Tarana, Siklu, Cisco, Ceragon, SIAE, Mimosa and others. Since his employment with SmartWAVE, he has lead the efforts to deploy numerous PTP and PTMP networks for the City and surrounding agencies to include Oro Valley, Pima County, Golder Ranch Fire Department, Casa Grande, Sedona and Mesa.

Project Engineer - Walter Orell

Walter is a Senior Network Engineer involved in many of the higher profile wireless opportunities that SmartWAVE is involved in. Walter has been working with the City of Tucson since 2005 on various wireless initiatives and is extremely familiar with the City’s network infrastructure and resources. Recent projects experiences (over the past 12 months) include network engineering and design work for the Council Bluffs BLINK Community Network, the ESUHSD James Lick and ESUHSD Overfelt Community Networks with the City of San Jose, County of San Mateo public WiFi initiatives, and the Austin Police Department Wireless Video offload project, along with network engineering and design work for the City of Mountain View, City of San Leandro, City of Richmond (CA), City of Los Angeles, City of Tucson, City of Santa Monica and a host of other cities. Past experience includes being the Project Engineer for the BLINK Community Network in Council Bluffs and ESUHSD Community Network in San Jose, Lead Network Engineer for the Pima County Video Network, Lead Network Engineer for the Google Mesh Network in Mountain View, and support for a variety of other



Mesh, Point to Multipoint, and Point to Point wireless networks that SmartWAVE has deployed. He has worked with and supported a variety of municipal applications within these projects to include Transportation, Police, Fire and Information Services.

Walter is Ruckus WISE Certified, and also certified on a variety of wireless technologies including Tarana, Siklu, Ruckus, Mimosa, Ubiquiti, Cambium, Tropos, Cisco and Meraki. Walter holds a Cisco CCNA certification and has experience configuring, auditing Cisco WiSM and WCS Controllers, along with Routers, switches and other peripheral devices. He is also trained on a variety of Video Surveillance platforms.

Senior RF Engineer – Nikolay Yumatov

Nikolay is a Senior RF Engineer involved in many of the higher profile wireless opportunities that SmartWAVE is involved in. Recent projects experiences (over the past 12 months) include propagation modeling and design work for ESUHSD James Lick and ESUHSD Overfelt Community WiFi networks in San Jose, the Council Bluffs BLINK Community Network, the Atlanta Police Department wireless video network in downtown Atlanta, along with modeling and design work for the City of Mountain View, San Mateo County, City of Los Angeles, City of Tucson, City of Hayward, City of Bristol VA, and City of Austin. Past experience includes being Lead RF Engineer for the Council Bluffs BLINK Community Network, the Eastside Union High School District Community Networks with the City of San Jose, and Wickedly Fast WiFi network in San Jose, performing an RF Feasibility study for a wireless mesh network for Microsoft, Lead RF Engineer for the Google Mesh Network in Mountain View, and various network modeling and RF design work for other municipal entities. Nikolay is experienced with Mesh, Point to Multipoint, and Point to Point technologies. He is well versed on a number of engineering tools and propagation software tools and is often the “preferred” request by our clients requiring complex wireless network design, such as Cisco Professional Services. He has worked with and supported a variety of municipal applications within these projects to include Transportation, Police, Fire and Information Services.

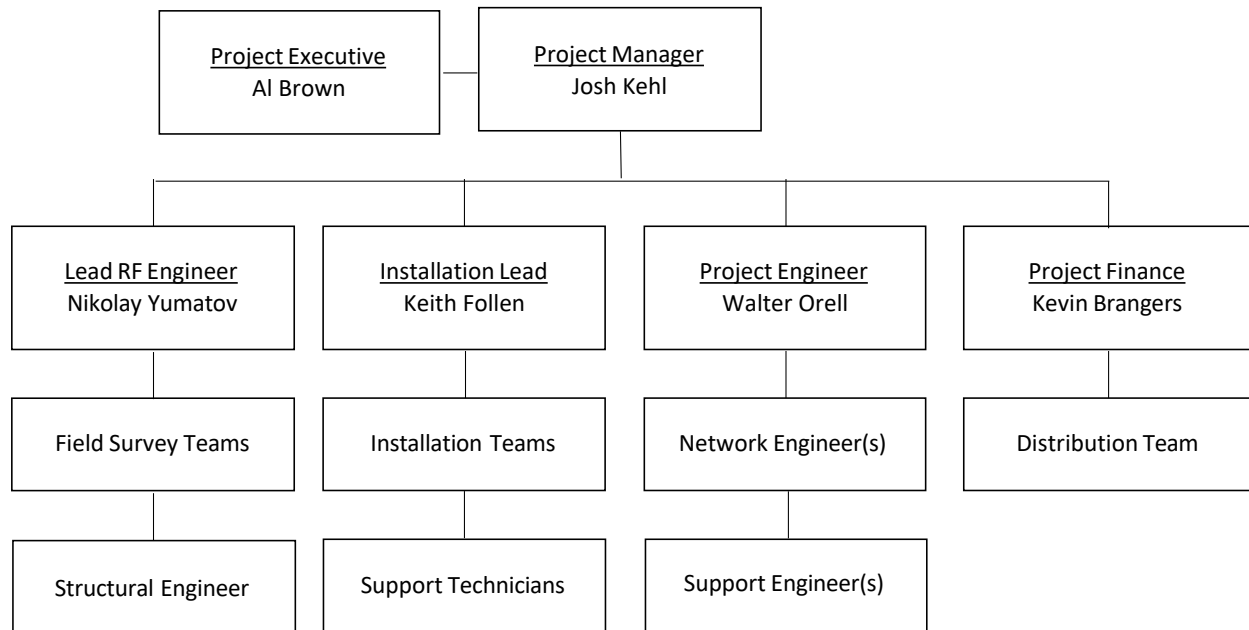
Nikolay is experienced with a variety of RF Tools including Sunset T10, Sunset E20, AM8e, FIREBERD 6000, Oscilloscopes, Agilent HP 8563e Spectrum Analyzer, Anritsu MS2721a Spectrum Analyzer, AirMagnet Mobile Suite, VSWR meter, RF power meter, TV vector scope, PAL\SECAM signal generator. He is also proficient in the following software required for Network Architecture services: EDX SignalPro 6.2, PathLoss 4, Motorola LAN planer, Motorola MESH planer, MapInfo Professional 8.5, ArcGIS 9.1 , Adobe Photoshop CS2, AutoCAD2007, Globalmapper 9, SATmaster PRO MK 6.5, Intelsat LST 5, MathCAD 14, MS Visio, LabView, , MS Word, MS Excel, MS Access, MS



Outlook. Google SketchUp , Google Earth Pro. Mr. Yumatov graduated with Honors with a MSEE from Penza State University in Penza, Russia.

B.2 - Project Organizational Chart

The staffing approach recognizes the need for coordination and continuity, combined with the need for unique project planning and technical design skills. We believe the proposed resources will provide the project guidance necessary and create a smooth transition through various project milestones and tasks as required.



B.3 - Certifications

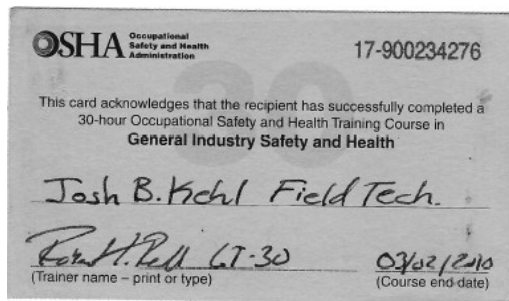
Comtrain – Tower Safety





SmartWAVE Technologies
Enabling the Wireless Generation...

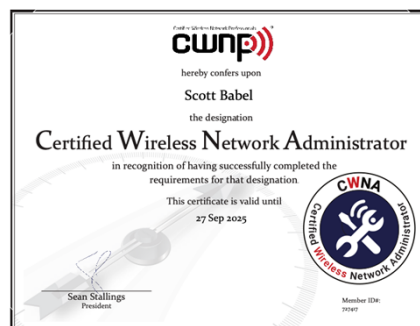
OSHA - Work Safety



Lift and Bucket Truck – Aerial Operations



CWNA – Wireless Expertise





SmartWAVE Technologies
Enabling the Wireless Generation...

Tucson Business License – T3002925



City of Tucson

Business License

Business Name and Mailing Address:

License Number: T3002925

Issue Date: December 16, 2022

Expiration Date: December 31, 2023

SMARTWAVE TECHNOLOGIES LLC
1016 E PENNSYLVANIA ST STE 303
TUCSON, AZ 85714

Owner:

SMARTWAVE TECHNOLOGIES LLC

This license/permit is non-transferable and must be posted
in a conspicuous place at the business location.

Doing Business As:

SMARTWAVE TECHNOLOGIES LLC

THE ISSUANCE OF THIS LICENSE / PERMIT SHALL NOT BE
CONSTRUED AS PERMISSION TO OPERATE IN VIOLATION
OF ANY LAW OR REGULATION.

City of Tucson, Arizona LICENSE SECTION Effective: January 01, 2023 Expiration Date: December 31, 2023	CITY OF TUCSON Business License	Non-Transferable T3002925 MUST BE DISPLAYED IN A CONSPICUOUS PLACE
For the payment of the license fee, the person or firm below is hereby licensed to conduct business in the City of Tucson. Tax accruing to the City of Tucson shall be paid under provisions of Ch. 19, Tucson City Code. This license is subject to revocation for violation of Ch. 7 or Ch. 19 of the Tucson City Code.		
Issued To: SMARTWAVE TECHNOLOGIES LLC Located At: 2662 HOLCOMB BRIDGE RD ALPHARETTA, GA 30022		
Please refer to license number in all correspondence.		BY: CFO/Assistant City Manager



C – METHOD OF APPROACH AND AVAILABLE RESOURCES TO COMPLETE WORK

C.1 - SmartWAVE Methodology

SmartWAVE takes a methodical approach in designing wireless network infrastructures. This section provides an overview of the Statement of Work necessary to successfully complete this project.

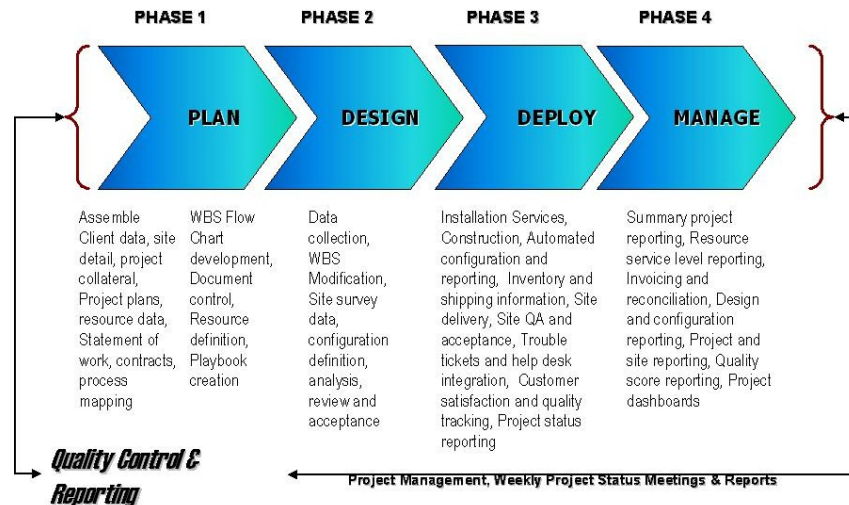


Figure 1. SmartWAVE Methodology

Network Planning Phase

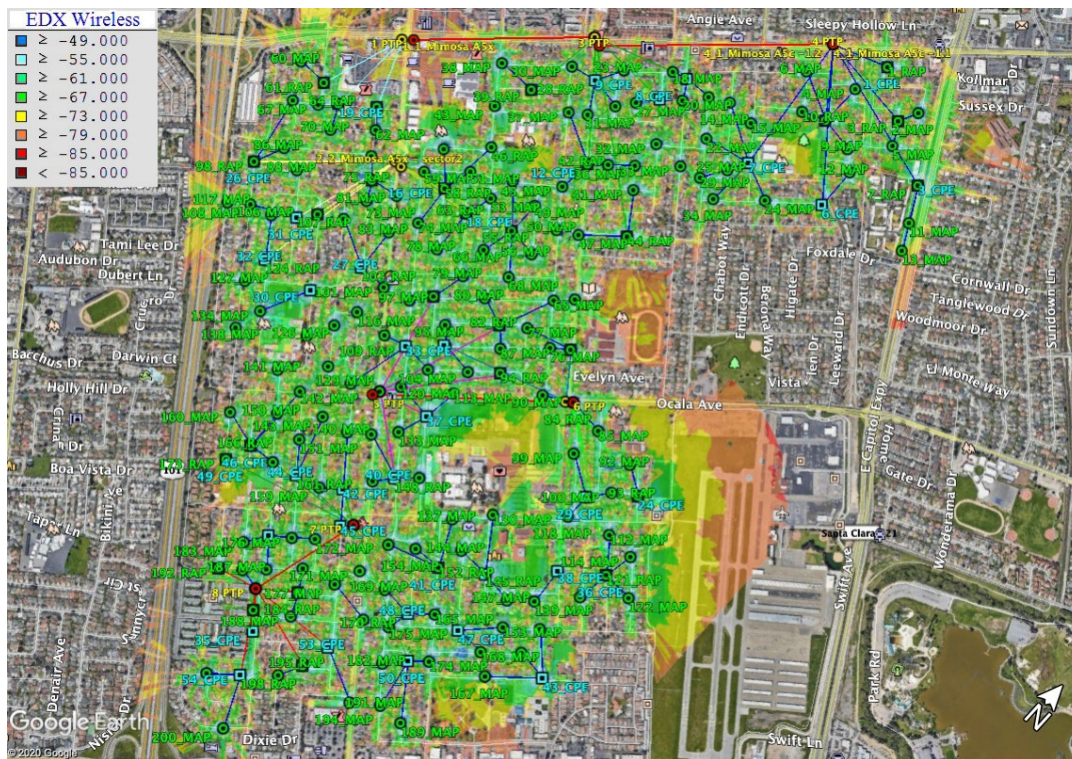
The purpose of this phase is to better understand the area, requirements, and determine the components and architecture of the network. Based on boundaries, general coverage and capacity requirements, redundancy requirements, device type, fiber location information, and any other asset agreements provided by customer, SmartWAVE will perform the following work:

- Gather Building, GIS and land use data and generate estimated number of nodes based on provided information and general area types
- Cut Clutter to depict RF Environment obstacles for outdoor radio locations
- Utilize tools-based software analysis to identify:
 - Potential issues with Backhaul/Capacity Injection
 - Topology, trees, and building/housing coverage issues
 - Potential mounting assets required to meet general coverage area requirements



- Potential access coverage/exclusion area issues
- Create a preliminary high level design document containing:
 - Network requirements
 - AP estimates from Land use and general drive area
 - Preliminary BOM for materials required
 - Radio and antenna mounting recommendations
- Provide predictive model for coverage, identifying ingress/egress points, and exclusion areas

Network Design Phase



NOTE: The above is the propagation model for the ESUSHD Overfelt Community WiFi network consisting of 200 Mesh WiFi Access Points.

The purpose of this phase is to validate the network architecture developed during the Planning Phase and collect data regarding mounting assets and locations. During this stage, SmartWAVE will perform the following work:

- Perform requested site surveys to validate selection of mounting assets, and issues with assets (e.g. power), no assets available, and interference problems.



- Conduct basic analysis of access coverage, backhaul/capacity links, redundancy, and hop counts
- Identify and document mounting solutions at each surveyed location
- Conduct an RF sweep at each AP location
- Conduct an RF drive sweep of the coverage area

Design Phase Deliverables

Upon completion of the Wireless Network Planning and Design Phases, SmartWAVE will provide the necessary documentation required to begin the configuration, commissioning and deployment of the network. Deliverables will include the following:

- Create Survey and Design Document
- Create updated BOM and Cost Estimate for Implementation
- Identify Customer Network Requirements
- Define basic network configurations for nodes plus identify any site/node specific parameters
- Create configuration spreadsheet with design information
- Conduct as-needed design review meetings and provide document updates as needed

Installation Phase

Upon completion of review of the design phase, SmartWAVE will work with the Client to deploy the wireless network. During this phase, SmartWAVE will provide the following services:

- Configure and test Management Platform
- Configure and test all wired and wireless radio equipment included in the bill of materials
- Install all mounting hardware for radio equipment
- Install and align all directional antennas
- Install grounding wire, surge protection and weatherproof all connectors on outdoor radio equipment with external antennas
- Move wireless equipment to production





- Perform post installation point coverage test using AirMagnet or similar software for radio service areas
- Document the final implementation

Installation Phase Deliverables

- As-built documentation of installed network to include all outdoor wireless radio equipment
- As-built design document to include heat map of final installation
- Provide an AP Inventory to include Serial Numbers and MAC Addresses
- Develop operational turnover documentation to transition the installed network to Maintenance and Support

C.2 - Expedited Process

SmartWAVE can easily accelerate the project through additional of installation resources. Because our methodology establishes “toll gates” through the process, we can “stair step” the implementation process to perform multiple projects in an expedited fashion. An example of the “stair step” approach is as follows:

Project 1	Propagation Modeling	Field Surveys	Installation	Testing		
Project 2		Propagation Modeling	Field Surveys	Installation	Testing	
Project 3			Propagation Modeling	Field Surveys	Installation	Testing

C.3 - Statement of Work

SmartWAVE has reviewed and will provide the services as listed in RFP pages 5-6. Sample work products are uploaded to the procurement site as separate files.

Required Services

SmartWAVE will provide complete end-to-end point-to-point or point-to-multipoint wireless solutions which may require the following:

- Site surveys and field investigation to verify installation requirements and path obstructions/line-of-site.
- Survey reports which may include path maps, terrain profiles, link budgets, antenna heights, path reliability calculations, etc.



- Design drawings which may include installation diagrams, tower elevations, equipment specifications, etc.
- Record drawings ("as-builts") following a final inspection and resolution of any punch list items.
- Installation, including masts, mounts, ballast blocks, grounding and lightning protection, conduit and roof support blocks for conduit, hardware, network and fiber cable, etc.
- Installation of monopoles or free-standing towers, including foundations and any required permits.
- Tower climbing and the use of aerial lifts.
- Remote monitoring. City of Tucson will support remote connectivity to individual IP addresses by VPN.
- Filing for FCC licensing, under City of Tucson's FRN, if applicable.

Equipment Requirements

- SmartWAVE is proposing a variety of wireless equipment options to provide appropriate and cost-effective solutions for differing requirements (path distance, licensed or unlicensed, bandwidths of 100 Mbps to >1 Gbps, reliability).
- All Equipment proposed will support out of band network management.

Maintenance and Support

- SmartWAVE will include a minimum of a one-year full warranty for any newly installed link.
- All warranty items, issues, and concerns shall be resolved at no charge to the City of Tucson.
- This shall include, but not limited to, parts, freight, travel, labor, etc.
- SmartWAVE is including an option to renew maintenance services for all active links on an annual basis in the pricing section of this response.
- Maintenance fees are not expected to include equipment spares/replacement costs.
- Warranty all parts and services provided by any subcontractor as if supplied by the bidder.



- All equipment furnished under the scope of this contract shall be new, current technology, and not approaching end-of-life. Equipment shall be a standard product of the manufacturer of the component to be furnished.
- Provide standard maintenance services from 8 AM to 4 PM Mountain Standard Time, Monday through Friday (excluding City of Tucson holidays), with a response time of 4 business hours and a restoration time of 24 hours.
- Provide an option for 24/7/365 maintenance services on select critical links, with a response time of 2 hours and a restoration time of 6 hours.
- Maintain a local supply of critical equipment spares.
- SmartWAVE is providing a pricing page as a separate attachment with this response, that will cover the products and services related to this proposal.

C.4 - Quality Assurance/Quality Control

The SmartWAVE Methodology leads to enhancements in our quality control process. We use a “toll-gate” approach where we do not move from one phase to the next until all tasks are completed as required. We provide this methodology in Section C.1, but the following diagram shows all phases as a single page, along with those tasks in each phase that represent the greatest risk to project budgets and timelines, noted in “red”:

Planning Phase

- Understand Application Requirements and Goals
- Define Capacity Required and Coverage Area Served
- **Collect and Review Mounting Asset Information**
- Define Security Requirements
- Define Maintenance, Support, and Management
- Define Service Levels
- Develop Preliminary Coverage Map
- Develop Preliminary Network Architecture

Design Phase

- Site Survey for Construction
- Spectrum Analysis/Model Calibration
- **Circuit Calculations, Structural Analysis, and Traffic Control**
- Finalize Logical Network Architecture
- Finalize Backhaul and Radio Placement
- Traffic Control Plans
- **Permit Approvals**
- Finalize BoM and Implementation Costs

Implementation Phase

- **Materials Procurement and Logistics**
- Equipment Burn-in and Configuration
- **Electrical Remediation**
- **Fiber or Backhaul Construction**
- Antenna Mount Construction
- Equipment Installation
- Drive Testing / System Acceptance

Management Phase

- Network Monitoring / Network Optimization
- Network Maintenance Services
- FCC PCN Filing Management
- Technician Dispatch/Truck Roll/Tower Climbs
- Help Desk and Trouble Ticketing
- Reporting for Data Analytics
- **Network Refresh/Upgrade**

*Items highlighted in **red** have greatest impact to budget and/or timeline in this phase



C.5 - Bonding

SmartWAVE is fully capable of bonding any project for Tucson requiring performance and payment bonds. If required for a project, SmartWAVE will list the cost of the Bond as a separate line item so the City can determine whether the additional expense is required based on the risks associated with the project.

SmartWAVE has previously bonded projects in excess of \$3M in Tucson, and in excess of \$10M in other markets. The costs of the bond will vary slightly based on contract terms, but is typically 1-2% above the Libor rate.

C.6 - Training and Safety

SmartWAVE believes in a “safety first” approach in all field exercises to include such activities as electrical work, installation in the right of way, and tower climbing.

The SmartWAVE Work Safety Policy is comprised 7 categories of focus:

MANAGEMENT LEADERSHIP	• Top management demonstrates its commitment to eliminating hazards and to continuously improving workplace safety and health, communicates that commitment to workers, and sets program expectations and responsibilities. • Managers at all levels make safety and health a core organizational value, establish safety and health goals and objectives, provide adequate resources and support for the program, and set a good example.
WORKER PARTICIPATION	• Workers and their representatives are involved in all aspects of the program—including setting goals, identifying and reporting hazards, investigating incidents, and tracking progress. • All workers, including contractors and temporary workers, understand their roles and responsibilities under the program and what they need to do to effectively carry them out. • Workers are encouraged and have means to communicate openly with management and to report safety and health concerns or suggest improvements, without fear of retaliation. • Any potential barriers or obstacles to worker participation in the program (for example, language, lack of information, or disincentives) are removed or addressed.
HAZARD IDENTIFICATION AND ASSESSMENT	• Procedures are put in place to continually identify workplace hazards and evaluate risks. • Safety and health hazards from routine, nonroutine, and emergency situations are identified and assessed. • An initial assessment of existing hazards, exposures, and control measures is followed by periodic inspections and reassessments, to identify new hazards. • Any incidents are investigated with the goal of identifying the root causes. • Identified hazards are prioritized for control.
HAZARD PREVENTION AND CONTROL	• Employers and workers cooperate to identify and select methods for eliminating, preventing, or controlling workplace hazards. • Controls are selected according to a hierarchy that uses engineering solutions first, followed by safe work practices, administrative controls, and finally personal protective equipment (PPE). • A plan is developed that ensures controls are implemented, interim protection is provided, progress is tracked, and the effectiveness of controls is verified.
EDUCATION AND TRAINING	• All workers are trained to understand how the program works and how to carry out the responsibilities assigned to them under the program. • Employers, managers, and supervisors receive training on safety concepts and their responsibility for protecting workers' rights and responding to workers' reports and concerns. • All workers are trained to recognize workplace hazards and to understand the control measures that have been implemented.
PROGRAM EVALUATION AND IMPROVEMENT	• Control measures are periodically evaluated for effectiveness. • Processes are established to monitor program performance, verify program implementation, and identify program shortcomings and opportunities for improvement. • Necessary actions are taken to improve the program and overall safety and health performance.
COMMUNICATION AND COORDINATION FOR EMPLOYERS ON MULTIEMPLOYER WORKSITES	• General contractors, contractors, and staffing agencies commit to providing the same level of safety and health protection to all employees. • General contractors, contractors, subcontractors, and staffing agencies communicate the hazards present at the worksite and the hazards that work of contract workers may create on site. • General contractors establish specifications and qualifications for contractors and staffing agencies. • Prior to beginning work, general contractors, contractors, and staffing agencies coordinate on work planning and scheduling to identify and resolve any conflicts that could impact safety or health.



SmartWAVE requires all Tower climbers to receive certification from Comtrain for Tower Safety Climbing.

SmartWAVE drivers attend the Altec Aerial Device Operator Safety Training.

SmartWAVE Lift operators attend classes provided by Liftoff.

C.7 - Tools (Hardware and Software)

SmartWAVE uses a variety of tools in providing design, installation and support services for outdoor wireless networks. The list of tools include, but are not limited to, the following items:

- Bucket Truck (with Insulated Bucket)
- Outdoor modeling tools to include EDX Pro, Global Mapper, and Google Network Planner
- Testing tools to include Fluke, Airmagnet and Anritsu
- Sunsight Antenna Alignment Tool
- Safety Climb Gear to include harnesses and pulleys



D – SUBCONTRACTOR SELECTION PLAN

SmartWAVE plans to self-fulfill the majority of tasks required to provide the services requested. Resource Availability is not an issue at this time.

Although Resource Availability is not an issue at this time, if that changes and we do need to subcontract services for specific trade disciplines required, we will select subcontractors based on the following criteria:

1. Safety Procedures

Safety is always a top priority when it comes to subcontractor selection, especially when it involves tower construction or electrical work. This being so, SmartWAVE requires subcontractors to provide their safety policies and procedures for review. We review the plan to insure it provides a clear understanding of the company's processes for identifying workplace hazards, correcting unsafe conditions, establishing safety training programs, and establishing environments where safety issues can be expressed without concern.

As we continue the qualification of subcontractors, we assess their Experience Modification Rates, OSHA recordable incidents, and time loss due to accidents.

2. Project and Financial References

SmartWAVE requests a minimum of three references for similar work in the trades required. We also request credit references to insure the company is financially solvent.

3. Adequate Staffing and Manpower

SmartWAVE requests a manpower loading schedule for jobs that extend over longer periods of time.

4. Adequate Equipment

SmartWAVE requests all subcontractors to provide detailed confirmation of their ability to provide the necessary hardware, software, testing and/or commercial construction equipment required for the tasks to be assigned. The items provided by the subcontractor must meet all of our standards and are readily available for the project assignment. If heavy equipment is required, it should be maintained in working order for safety purposes, and any costs associated with equipment, should include fuel,



shipping and or other items as required so there are no surprises with respect to project costs and availability.

5. Price

Price is obviously always going to be an important factor when choosing a subcontractor. We know to be competitive, general contractors need subcontractors that can deliver results at a competitive price. However, choosing a subcontractor solely based on price can really expose us to a lot of risk. If a subcontractor has a poor safety record, limited experience, or a track record of delivering second rate work, it can not only lead to expensive problems down the line, but it can also damage our reputation. While price is important, paying fair market value is essential for hiring a subcontractor that can get the job done right.

6. Communication

Working with a subcontractor that is transparent and accessible is absolutely key to commercial construction project success. A good subcontractor will set expectations upfront around communication and will be easy to track down. Our subcontractors are an extension of our team, so our communication lead is there when needed. We also ensure our subcontractor isn't juggling too many commercial construction projects at once, and that they have the bandwidth to give our project the attention needed.

7. Double Check Licenses And Insurance

Prior to making a final decision, we double check the prospective subcontractor's applicable licenses are up to date and that they possess the right credentials, training, and certifications necessary for your commercial construction project. Even though our insurance policies cover subcontractors, we request they have general liability and workers compensation policies.



E – PRODUCTS PROPOSED

SmartWAVE is proposing a variety of products to support the varying needs by the City of Tucson. All of the products listed are included in the Menu of Pricing provided in Section F of this response:

Tarana Wireless – High Bandwidth PTMP Product offering using Massive MIMO Antennas and Noise Cancelling technologies to provide up to 800Mbps to each subscriber and extended range of up to 10 miles, operating in the 5GHz or 3.5GHz spectrum.

Siklu – High Bandwidth PTP and PTMP product lines using Millimeter Wave and Terragraph Technologies to offer multi-gigabit fixed wireless connectivity using the 60GHz and 80GHz spectrum.

SIAE – Multi-gigabit Licensed PTP Microwave product portfolio offering solutions in the 6GHz, 11GHz, 18GHz and other licensed spectrums. Products include single radio architectures or split systems.

Ruckus – WiFi Mesh technology with extensive portfolio for indoor and outdoor applications, and a variety of control features that could operate as an appliance or in the Cloud. Proprietary Beamflex technology in concert with an antenna array provide for high capacity and low noise at the client receive end, providing for a great WiFi experience.

Mimosa – WiFi based cost effective PTP and PTMP solution offering speeds up to 1Gbps with products in the 24GHz and 5GHz spectrum.

Inscape Data – Ruggedized and outdoor switching and POE solutions offering speeds up to 10Gbps and POE capabilities up to 90W.

Product Data Sheets are attached separately.



F – PRICING

F.1 - Menu of Pricing

No	Product Description	Material	Labor	Total Unit Price	Pricing Notes
PTMP Unit Pricing					
1	Terragraph 60GHz Distribution Node Installed	\$ 2,900.00	\$ 2,575.00	\$ 5,475.00	Includes Terragraph Distribution Node, Mounting Bracket, Outdoor Rated POE Switch, Photocell Power Cable, Installation (Does not include conduit, NEMA Enclosure, Electrical Work, or Tower Work). Assumes location is roof top or bucket truck accessible.
2	Terragraph 60GHz Client Node (1Gbps) - Installed on a Street Light or Building	\$ 900.00	\$ 1,250.00	\$ 2,150.00	Includes Radio/Subsriber Unit/CPE, Mounting Bracket, Outdoor Rated POE Injector, Photocell Power Cable, Surge Protection, Installation (Does not include conduit, NEMA Enclosure, or Electrical Work). Assumes location is a street light or utility pole and is bucket truck accessible.
3	5GHz Unlicensed BSU (1Gbps) - Installed	\$ 2,675.00	\$ 2,575.00	\$ 5,250.00	Includes Radio/Base Station Unit, Mounting Bracket, Outdoor Rated POE Switch, Photocell Power Cable, Installation (Does not include conduit, NEMA Enclosure, Electrical Work, or Tower Work). Assumes location is roof top or bucket truck accessible.
4	5GHz Unlicensed SU (500Mbps) - Installed on a Street Light or Traffic Signal	\$ 650.00	\$ 1,250.00	\$ 1,900.00	Includes Radio/Subsriber Unit/CPE, Mounting Bracket, Outdoor Rated POE Injector, Photocell Power Cable, Surge Protection, Installation (Does not include conduit, NEMA Enclosure, or Electrical Work). Assumes location is a street light or utility pole and is bucket truck accessible.
5	Massive MIMO 5GHz Unlicensed BSU (2.4Gbps) - Tower Installed	\$ 20,500.00	\$ 4,000.00	\$ 24,500.00	Includes Radio/Base Node, Tower Mounting Bracket, Fiber Cabling, DC Power Cabling, Installation (Does not include conduit, Sled, NEMA Enclosure, or Electrical Work). Assumes location is Tower Mounted.
6	Massive MIMO 5GHz Unlicensed SU (800Mbps) - Installed on a Street Light or Traffic Signal	\$ 1,500.00	\$ 2,000.00	\$ 3,500.00	Includes Radio/Subsriber Unit/CPE, Mounting Bracket, Outdoor Rated POE Injector, Photocell Power Cable, Surge Protection, Installation, 1YR Subscription (Does not include conduit, NEMA Enclosure, or Electrical Work). Assumes location is a street light or utility pole and is bucket truck accessible.
PTP - Licensed and Unlicensed Unit Pricing					
7	Licensed 11/18GHz PTP Link (Up to 1Gbps) - Installed	\$ 23,000.00	\$ 7,000.00	\$ 30,000.00	Includes 2 Radios, Antennas, Power supplies, Surge Protection, 250FT Cat6 Cable, Tower Mounts, License Registration, Path Analysis and Installation (Does not include conduit, electrical work, switches, or NEMA Enclosures)
8	Unlicensed 24GHz or 60GHz PTP Link (Up to 1Gbps) - Installed	\$ 6,000.00	\$ 4,000.00	\$ 10,000.00	Includes 2 Radios, Antennas, Power supplies, Surge Protection, 250FT Cat6 Cable, Tower Mounts, Path Analysis and Installation (Does not include conduit, electrical work, switches, or NEMA Enclosures)
9	Unlicensed 5GHz 1Gbps PTP Link	\$ 2,500.00	\$ 4,000.00	\$ 6,500.00	Includes 2 Radios, Antennas, Power supplies, Surge Protection, 250FT Cat6 Cable, Tower Mounts, Path Analysis and Installation (Does not include conduit, electrical work, switches, or NEMA Enclosures)
Mesh Access Point Unit Pricing					
10	Pole Mounted Root AP Location (High Capacity 4x4+ AP) - Installed	\$ 3,400.00	\$ 1,750.00	\$ 5,150.00	Includes Root Mesh AP, Outdoor POE Switch, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation
11	Pole Mounted Mesh AP Location (High Capacity 4x4+ AP) - Installed	\$ 2,400.00	\$ 1,500.00	\$ 3,900.00	Includes Mesh AP, Outdoor POE Injector, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation
12	Pole Mounted Root AP Location (2x2 MIMO or comparable) - Installed	\$ 2,000.00	\$ 1,750.00	\$ 3,750.00	Includes Root Mesh AP, Outdoor POE Switch, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation
13	Pole Mounted Mesh AP Location (2x2 MIMO or comparable) - Installed	\$ 1,250.00	\$ 1,500.00	\$ 2,750.00	Includes Mesh AP, Outdoor POE Injector, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation



No	Product Description	Material	Labor	Total Unit Price	Pricing Notes
	Other Unit Pricing Items				
14	Mesh AP Cloud Control and Support - 1 Year		\$ 225.00	\$ 225.00	Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties.
15	Unlicensed PTP/PTMP Support - 1 Year		\$ 450.00	\$ 450.00	Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties.
16	Licensed Microwave PTP Link Support to include PCN Responses - 1 Year		\$ 750.00	\$ 750.00	Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties.
17	Nokia Hardware - Percent Off List Price	30%		30%	Percent off list price for all Nokia Hardware
18	Nokia Support - Percent Off List Price	0%		0%	Percent off list price for all Nokia Support
19	Siklu Hardware - Percent Off List Price	15%		15%	Percent off list price for all Siklu Hardware
20	Siklu Support - Percent Off List Price	0%		0%	Percent off list price for all Siklu Support
21	Cambium Hardware - Percent Off List Price	10%		10%	Percent off list price for all Cambium Hardware
22	Cambium Support - Percent Off List Price	0%		0%	Percent off list price for all Cambium Support
23	Tarana Hardware - Percent Off List	5%		5%	Percent off list price for all Tarana Hardware
24	Tarana Subscription/Support - Percent Off List	0%		0%	Percent off list price for all Tarana Subscriptions/support
25	Ruckus Hardware - Percent Off List Price	35%		35%	Percent off list price for all Ruckus Hardware
26	Ruckus Support - Percent Off List Price	0%		0%	Percent off list price for all Ruckus Support
27	Wireless Appurtenant Equipment or Subcontractor - Cost plus	20%	20%	20%	Cost plus 20%
28	Senior RF/Network Engineer Hourly Rate		\$ 200.00	\$ 200.00	Does not include Travel or Expenses. Rates may be reduced based on quantity of hours.
29	Project Manager Hourly Rate		\$ 165.00	\$ 165.00	Does not include Travel or Expenses. Rates may be reduced based on quantity of hours.
30	RF/Installation Technician Hourly Rate		\$ 105.00	\$ 105.00	Does not include Travel or Expenses. Rates may be reduced based on quantity of hours.
31	Tower Work Upcharge (if required)		\$ 2,500.00	\$ 2,500.00	Two Man Crew Per Day
The following pricing notes apply:					
	1 Site Acquisition Services are not included in install estimates. If required, hourly rates of \$250/hr for Site Acquisition services will apply.				
	2 PE Stamped drawings are not included.				
	3 Zoning, permitting or environmental services are not included.				
	4 RF/Network Design, Survey, Modeling, etc are NOT included in Unit Install Pricing.				
	5 Equipment Configuration and Testing is included in Unit Install Pricing.				
	6 Pricing listed is subject to a mutually agreeable contract between SmartWave and Client.				
	7 If not mentioned in the line item, all wireless solutions assume the customer provided switch/router is the demarcation point				
	8 Sales Tax is not included in Unit Pricing.				
	9 Costs associated with Bonds and Permits are not included in the price.				

NOTE: All projects requiring labor hours of more than 40 hours per trade will be extended a discount of up to 10% on the price listed.

F.2 - Cooperative Agreement

SmartWAVE will offer a 0.5% incentive to the City of Tucson for use of the Cooperative Agreement. The incentive will apply to each purchase order received over \$250,000. The incentive will be paid upon full receipt of the PO amount from the customer using the Cooperative Agreement.



A – COVER LETTER

Introduction

SmartWAVE Technologies (SmartWAVE) appreciates this opportunity to provide this proposal in response to the JOC for Design, Installation and Maintenance of Point-to-Point/Point-to-Multipoint wireless Backhaul. SmartWAVE is a national leading “wireless” centric systems integrator that provides the planning, design, integration and managed services for wireless networks, along with the unique applications that these networks support. We’ve been providing these services to the Smart City market since 2007. We have also been providing design, installation and maintenance services for point-to-point (PTP) and point-to-multipoint (PTMP) wireless networks to the City of Tucson since our founding in 2007.

Throughout the years in serving the City of Tucson, we’ve had the opportunity to deploy a wide variety of wireless technologies to support a variety of applications. As these technologies have changed over time, as well as team members for the City and for SmartWAVE, we have continued to meet our service levels and contractual obligations. We are grateful to the City of Tucson for all of the opportunities provided to us over this time, and we hope to expand on these experiences with this opportunity.

We realize that deployment of large scale, outdoor wireless networks can be extremely complex. Our experience and methodology for deploying these types of networks has led to our success. We would argue there is no other company in Arizona, much less throughout the United States, that has the experience comparable to SmartWAVE for municipal owned wireless network deployments.

RFP Certification

In our response to this opportunity, we would also like to certify the following in adherence to the RFP requirements:

- A. SmartWAVE’s submission of the offer did not involve collusion or other anti-competitive practices.
- B. SmartWAVE will not discriminate against any employee or applicant for employment in violation of Federal or State law.
- C. SmartWAVE has not given, offered to give, nor intends to give at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, meal or service to a public servant in connection with the submitted offer.
- D. SmartWAVE hereby certifies that the individual signing the submittal is an authorized agent for the Offeror and has the authority to bind the Offeror to the Contract.

Why SmartWAVE

Understanding the needs for this project, we’re confident you will find our qualifications and experience are in perfect alignment with this opportunity in that:

- 1) SmartWAVE is a Tucson Licensed Business with operation facilities in Tucson, so we can quickly respond to urgent and scheduled requests.



SmartWAVE Technologies
Enabling the Wireless Generation...

- 2) SmartWAVE currently has a large portion of network components (to include City Traffic Controllers) integrated into our PRTG Monitoring system. Any other Respondent would have to invest in and discover all network equipment and build tables in order to get a "global" view of the network and associated problems.
- 3) SmartWAVE is currently under contract to maintain other PTP and PTMP wireless networks for government entities in the area to include Golder Ranch Fire Department, Drexel Heights Fire Department, SunTran, Northwest Fire, Pima County, and others.
- 4) SmartWAVE's Trouble Ticket System, that the City is using today, can be used as an online tool to open and track tickets to closure showing full ticket history to include resources assigned, problem identified and steps to resolution.
- 5) SmartWAVE has Bucket Trucks in Tucson, which are required to access radios on street lights, roof tops and certain "non-climbable" towers.
- 6) SmartWAVE has Tower Safety Trained personnel in market for those locations where Tower Climbing is required. We can easily meet the SLA response requirements through self-fulfillment of resources, where others responding from outside of Tucson will have to subcontract these services.
- 7) SmartWAVE has built the 5 largest municipal owned Community Wireless Broadband Networks in the United States. These experiences bring tremendous value to every client that we work with on large outdoor wireless network deployments.
- 8) SmartWAVE has a warehouse in Tucson with inventory of wireless equipment, and we can offer dispatch capabilities that simply can't be matched by our competitors.

Products Proposed and Pricing

SmartWAVE is recommending a number of innovative wireless products in this response. We are also providing pricing for products and for services. The Product information is provided in the Statement of Qualifications document in Section E, and the Pricing information is provide in the Statement of Qualifications document in Section F.

Contact Information

If you have any questions regarding this document, or the content herein, please don't hesitate to contact Al Brown at 404-731-9580 or al.brown@smartwave.us.

Thank you for your consideration!

Al Brown
President/CEO
2662 Holcomb Bridge Rd #340
Alpharetta, GA 30022
404-731-9580
al.brown@smartwave.us



CIO 20 MOST PROMISING
Review SMART CITY
SOLUTION PROVIDERS - 2018

RUCKUS® T350

Outdoor 802.11ax 2x2:2 Wi-Fi Access Point



Benefits

SIMPLICITY

RUCKUS' Outdoor APs make Wi-Fi deployments extremely simple to deploy with one-touch technologies like SmartMesh™.

STUNNING WI-FI PERFORMANCE

Extends coverage with patented BeamFlex® + adaptive antenna technology while mitigating interference by utilizing up to 64 directional antenna patterns.

GREAT OUTDOOR WI-FI

Experience high performance outdoor Wi-Fi 6 with IP-67 weather proofing.

MULTIPLE MANAGEMENT OPTIONS

Manage the T350 Series with physical or virtual controller appliances.

SERVE MORE DEVICES

Connect more devices simultaneously with two MU-MIMO spatial streams and concurrent dual-band 2.4/5GHz radios while also enhancing non-11ax device performance.

AUTOMATE OPTIMAL THROUGHPUT

ChannelFly® dynamic channel technology uses machine learning to automatically find the least congested channels. You always get the highest throughput the band can support.

MORE THAN WI-FI

Support services beyond Wi-Fi with [RUCKUS IoT Suite](#), [Cloudpath](#) security and onboarding software, [SPoT](#) Wi-Fi locationing engine, and [SCI](#) network analytics.

Modern Wi-Fi device users expect reliable connectivity—anywhere, anytime. But in crowded outdoor venues with thousands of users and constant RF noise, they are often frustrated by poor coverage, dropped connections, and reduced data rates. These aggravating Wi-Fi experiences can easily translate to negative perceptions of the venue and the service provider, resulting in loss of business. The quality of the network experience becomes the "litmus test" for acceptance or rejection.

As the market leader in outdoor Wi-Fi deployments, RUCKUS knows that one AP solution cannot meet every possible challenge of varied and complex outdoor requirements. This is why the RUCKUS T350 Wi-Fi 6 series is designed with more variety than any other outdoor AP in the market today. Available with either internal omni-directional antennas or internal high-gain directional antenna models, the T350 Series uses patented RUCKUS antenna optimization and interference mitigation technologies to improve throughput, connection reliability, and deliver industry-leading Wi-Fi 6 performance to every connected client. At the same time, the T350 Series is designed for fast, simple installation with an ultra-lightweight, low profile, IP-67 rated enclosure that can stand up to the most challenging outdoor environments.

At RUCKUS, we know that outdoor AP deployments are especially challenging for installation and maintenance, which is why RUCKUS outdoor APs use a variety of technologies, like SmartMesh that help simplify outdoor AP deployment.

The RUCKUS T350 Series is perfect for high-density outdoor public venues such as airports, convention centers, plazas, malls, smart cities, and other dense urban environments. By providing a superior Wi-Fi experience to every user in high-density outdoor locations, venue operators can improve guest satisfaction and loyalty, deliver new kinds of wireless application services, and increase revenues.

The RUCKUS T350 Series incorporates patented technologies found only in the RUCKUS Wi-Fi portfolio.

- Extended coverage with patented BeamFlex+ utilizing multi-directional antenna patterns.
- Improve throughput with ChannelFly, which dynamically finds less congested Wi-Fi channels to use.

Whether you're deploying ten or ten thousand APs, the T350 Series is easy to manage through RUCKUS' appliance and virtual management options.

RUCKUS T350

Outdoor 802.11ax 2x2:2 Wi-Fi Access Point

Access Point Antenna Pattern

RUCKUS' BeamFlex+ adaptive antennas allow the T350 AP to dynamically choose among a host of antenna patterns in real-time to establish the best possible connection with every device. This leads to:

- Better Wi-Fi coverage
- Reduced RF interference

Traditional omni-directional antennas, found in generic access points, oversaturate the environment by needlessly radiating RF signals in all directions. In contrast, the RUCKUS BeamFlex+ adaptive antenna directs the radio signals per-device on a packet by-packet basis to optimize Wi-Fi coverage and capacity in real-time to support high device density environments. BeamFlex+ operates without the need for device feedback and hence can benefit even devices using legacy standards.

Figure 1. Example of Beamflex+ pattern

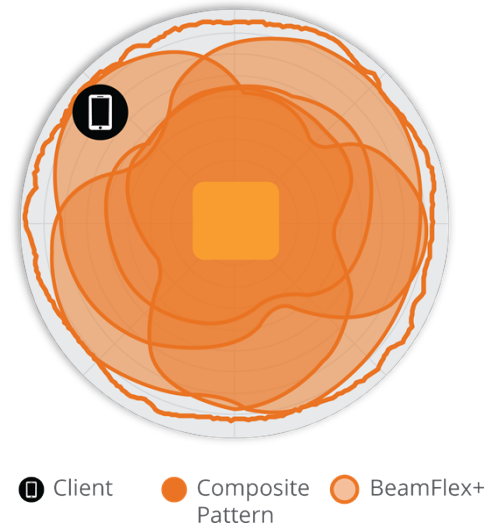


Figure 2. T350c/d 2.4GHz Azimuth Antenna Patterns



Figure 3. T350c/d 5GHz Azimuth Antenna Patterns



Figure 4. T350c/d 2.4GHz Elevation Antenna Patterns

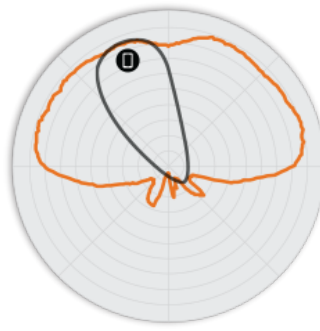
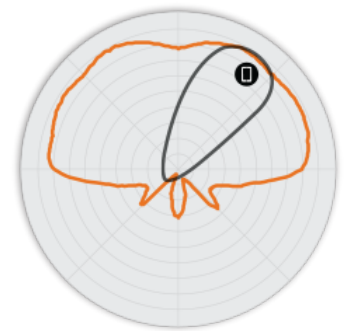


Figure 5. T350c/d 5GHz Elevation Antenna Patterns



Note: The outer trace represents the composite RF footprint of all possible BeamFlex+ antenna patterns, while the inner trace represents one BeamFlex+ antenna pattern within the composite outer trace.

RUCKUS T350

Outdoor 802.11ax 2x2:2 Wi-Fi Access Point

Wi-Fi	
Wi-Fi Standards	IEEE 802.11a/b/g/n/ac/ax
Supported Rates	802.11ax: 4 to 1774 Mbps 802.11ac: 6.5 to 867 Mbps 802.11n: 6.5 to 300Mbps 802.11a/g: 6 to 54 Mbps 802.11b: 1 to 11 Mbps
Supported Channels	2.4GHz: 1-13 5GHz: 36-64, 100-144, 149-165
MIMO	2x2 SU-MIMO 2x2 MU-MIMO
Spatial Streams	2 streams SU/MU MIMO 5GHz 2 streams SU/MU MIMO 2.4GHz
Radio Chains and Streams	2x2:2 (5GHz) 2x2:2 (2.4GHz)
Channelization	20, 40, 80MHz
Security	- WPA-PSK, WPA-TKIP, WPA2-Personal, WPA2-Enterprise, WPA3-Personal, WPA3-Enterprise, AES, 802.11i, Dynamic PSK, OWE - WIPS/WIDS
Other Wi-Fi Features	- WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v - Hotspot, Hotspot 2.0 - Captive Portal - WISPr

RF			
	T350c	T350d	T350se
Antenna Type	Internal omnidirectional	Internal omnidirectional	Internal 120 deg sectorized + N-type female external connectors
	BeamFlex+ adaptive antennas with polarization diversity		
Antenna Gain (max)	Up to 3dBi		TBD
Peak Transmit Power (Tx port/chain + 3dB Combining gain)	2.4GHz: 26 dBm 5GHz: 25 dBm		2.4GHz: TBD 5GHz: TBD
Frequency Bands	- ISM (2.4-2.484GHz) - U-NII-1 (5.15-5.25GHz) - U-NII-2A (5.25-5.35GHz) - U-NII-2C (5.47-5.725GHz) - U-NII-3 (5.725-5.85GHz)		

2.4GHZ RECEIVE SENSITIVITY							
HT20		HT40		VHT20		VHT40	
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7	MCS0	MCS7
-94	-75	-91	-72	-94	-75	-91	-72
HE20				HE40			
MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11
-94	-75	-71	-65	-91	-72	-68	-62

5GHZ RECEIVE SENSITIVITY											
VHT20				VHT40				VHT80			
MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9
-95	-76	-72	-70	-92	-73	-69	-67	-89	-70	-66	-64
HE20				HE40				HE80			
MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11
-95	-76	-70	-65	-92	-73	-67	-62	-89	-70	-64	-59

2.4GHZ TX POWER TARGET	
Rate	Pout (dBm)
MCS0 HT20	23
MCS7 HT20	18
MCS8 VHT20	17
MCS9 VHT40	16.5
MCS11 HE40	15

5GHZ TX POWER TARGET	
Rate	Pout (dBm)
MCS0 VHT20	22
MCS7 VHT40, VHT80	20
MCS9 VHT40, VHT80	19
MCS11 HE20, HE40, HE80	15

PERFORMANCE AND CAPACITY	
Peak PHY Rates	2.4GHz: 574 Mbps 5GHz: 1200 Mbps
Client Capacity	Up to 512 clients per AP
SSID	Up to 31 per AP

RUCKUS RADIO MANAGEMENT	
Antenna Optimization	- BeamFlex+ - Polarization Diversity with Maximal Ratio Combining (PD-MRC)
Wi-Fi Channel Management	- ChannelFly - Background Scan Based
Client Density Management	- Adaptive Band Balancing - Client Load Balancing - Airtime Fairness - Airtime-based WLAN Prioritization
SmartCast Quality of Service	- QoS-based scheduling - Directed Multicast - L2/L3/L4 ACLs
Mobility	SmartRoam
Diagnostic Tools	- Spectrum Analysis - SpeedFlex

RUCKUS T350

Outdoor 802.11ax 2x2:2 Wi-Fi Access Point

NETWORKING	
Controller Platform Support	- SmartZone - ZoneDirector - Unleashed - Cloud - Standalone
Mesh	SmartMesh™ wireless meshing technology. Self-healing Mesh
IP	IPv4, IPv6
VLAN	802.1Q (1 per BSSID or dynamic per use based on RADIUS) - VLAN Pooling - Port-based
802.1x	Authenticator & Supplicant
Tunnel	L2TP, GRE, soft-GRE
Policy Management Tools	- Application Recognition and Control - Access Control Lists - Device Fingerprinting - Rate Limiting
IoT	T350d: Integrated BLE and Zigbee (1 radio, switchable)

PHYSICAL INTERFACES			
	T350c	T350d	T350se
Ethernet	1 x 1GbE port, RJ-45 PoE In - 802.3at Class 4		
USB	—	1 USB 2.0 port, Type A	
DC Power	—	12V DC Terminal Block (7V - 20V)	

PHYSICAL CHARACTERISTICS			
	T350c	T350d	T350se
Physical Size	162.3 mm (W) x 194.9 mm (L) x 80.9 mm (H) 6.38 in (W) x 7.67 in (L) x 3.19 in (H)	162.3 mm (W) x 213.7 mm (L) x 80.9 mm (H) 6.38 in (W) x 8.41 in (L) x 3.19 in (H)	209.1 mm (W) x 261.7 mm (L) x 102.5 mm (H) 8.23 in (W) x 10.30 in (L) x 4.04 in (H)
Weight (w/ included bracket)	1.01kg (2.23lbs)	1.07kg (2.36lbs)	TBD
Ingress Protection	IP-67		
Mounting	- Pole Mount - Wall Mount - Flat Surface - Bracket included in the box		
Operating Temperature	-20°C (-4°F) to 65°C (149°F)	-40°C (-40°F) to 65°C (149°F)	
Operating Humidity	Up to 95%, non-condensing		
Wind Survivability	Up to 266km/h (165 mph)		
Altitude	Up to 3,048m (10,000 ft), functional operation		

POWER ²				
		T350c	T350d	T350se
Power Mode	System Configuration	Max Power Consumption (includes USB power)		
802.3at (PoE) - Class 4	Full Functionality	13.24W	17.57W	TBD
802.3af (PoE) - Class 3	USB Disabled IoT Disabled	11.42W	12.94W	TBD
Idle (PoE)		7.68W	7.78W	TBD
DC - max power	Full Functionality	—	16.32W	TBD
DC - idle		—	6.78W	TBD

CERTIFICATIONS AND COMPLIANCE	
Wi-Fi Alliance ³	- Wi-Fi CERTIFIED™ a, b, g, n, ac - Wi-Fi CERTIFIED™ 6 - WPA3™ - Enterprise, Personal - Wi-Fi Enhanced Open™ - Wi-Fi Agile Multiband™ - Wi-Fi Optimized Connectivity™ - Wi-Fi Vantage™ - WMM® - Passpoint®
Standards Compliance ⁴	- EN 60950-1 Safety - EN 60601-1-2 Medical - EN 61000-4-2/3/5 Immunity - EN 50121-1 Railway EMC - EN 50121-4 Railway Immunity - IEC 61373 Railway Shock & Vibration - UL 2043 Plenum - EN 62311 Human Safety/RF Exposure - WEEE & RoHS - ISTA 2A Transportation

SOFTWARE AND SERVICES	
Location Based Services	SPoT
Network Analytics	- SmartCell Insight (SCI) - RUCKUS Analytics
Security and Policy	Cloudpath

MODEL FEATURE DIFFERENCES				
Model	Antenna	Low Temp	USB	DC Power
T350c	Internal omni	-20°C	N	N
T350d	Internal omni	-40°C	Y	Y
T350se	Internal sector (120°) + External antenna capable	-40°C	Y	Y

² Max power varies by country setting, band, and MCS rate.

³ For complete list of WFA certifications, please see Wi-Fi Alliance website.

⁴ For current certification status, please see price list.

RUCKUS T350

Outdoor 802.11ax 2x2:2 Wi-Fi Access Point

ORDERING INFORMATION	
T350 OUTDOOR APs	
901-T350-XX20	T350c, omni, outdoor access point, 802.11ax 2x2:2 internal BeamFlex+, dual band concurrent. One Ethernet port, PoE input. -20°C to 65°C Operating Temperature. Includes mounting bracket and one year warranty. Does not include PoE injector.
901-T350-XX40	T350d, omni, outdoor access point, 802.11ax 2x2:2 internal BeamFlex+, dual band concurrent. One Ethernet port, PoE input, DC input and USB port. -40°C to 65°C Operating Temperature. Includes mounting bracket and one year warranty. Does not include PoE injector.
901-T350-XX51	T350se, sector+external, outdoor access point, 802.11ax 2x2:2, internal 120 degree sector + external antenna capable, dual band concurrent access point. One Ethernet port, PoE input, DC input and USB port. -40°C to 65°C Operating Temperature. Includes adjustable mounting bracket and one year warranty. Does not include PoE injector. (Available Q4'21)

See RUCKUS price list for country-specific ordering information. PLEASE NOTE: When ordering outdoor APs, you must specify the destination region by indicating -US, -WW, or -Z2 instead of XX. For access points, -Z2 applies to the following countries: Algeria, Egypt, Israel, Morocco, Tunisia, and Vietnam.

Warranty: Sold with a limited one year warranty.

For details see: <http://support.ruckuswireless.com/warranty>

OPTIONAL ACCESSORIES	
902-0162-XXYY	• PoE injector (24W) (Sold in quantities of 1, 10 or 100)
902-0125-0000	• Secure articulating mounting bracket
902-0127-0000	• Extended cap to accommodate up to 6 cm long USB dongle
902-1121-0000	• Spare weatherizing cable gland with option of one hole or 2 hole connection
902-0183-000	• Spare cable gland for weatherizing the RJ-45 ports on outdoor APs.

PLEASE NOTE: When ordering PoE injectors or power supplies, you must specify the destination region by indicating -US, -EU, -AU, -BR, -CN, -IN, -JP, -KR, -SA, -UK, or -UN instead of -XX.

CommScope pushes the boundaries of communications technology with game-changing ideas and ground-breaking discoveries that spark profound human achievement. We collaborate with our customers and partners to design, create and build the world's most advanced networks. It is our passion and commitment to identify the next opportunity and realize a better tomorrow. Discover more at commscope.com

COMMSCOPE®

commscope.com

Visit our website or contact your local CommScope representative for more information.

© 2021 CommScope, Inc. All rights reserved.

Unless otherwise noted, all trademarks identified by ® or ™ are registered trademarks, respectively, of CommScope, Inc. This document is for planning purposes only and is not intended to modify or supplement any specifications or warranties relating to CommScope products or services. CommScope is committed to the highest standards of business integrity and environmental sustainability with a number of CommScope's facilities across the globe certified in accordance with international standards, including ISO 9001, TL 9000, and ISO 14001.

Further information regarding CommScope's commitment can be found at www.commscope.com/About-Us/Corporate-Responsibility-and-Sustainability.

T750

Outdoor 802.11ax 4x4:4 Wi-Fi AP with 2.5Gbps Backhaul



DATA SHEET



BENEFITS

GREAT OUTDOOR WI-FI

Experience high performance outdoor Wi-Fi 6 with IP-67 weather proofing and dual backhaul options with SFP and multi-gigabit 2.5 GbE ethernet port.

CONNECT MORE DEVICES SIMULTANEOUSLY

Improve device performance, by enabling more simultaneous device connections with built-in 8 spatial streams (dual-concurrent, 4x4:4 in 5GHz, 4x4:4 in 2.4GHz), MU-MIMO and OFDMA technology while enhancing non-Wi-Fi 6 client performance. Support for up to 1,024 clients.

HIGH DENSITY PERFORMANCE

Provide exceptional end-user experience within high density public venues such as airports, amusement parks, stadiums, outdoor arenas, and other dense outdoor urban environments with the Ruckus Ultra-High-Density Technology Suite.

CONVERGED ACCESS POINT

Allow customers to eliminate siloed networks and unify Wi-Fi and IoT wireless technologies into one single network by using built-in BLE and Zigbee, and also expand to any future wireless technologies through the pluggable IoT module.

POWER OTHER DEVICES

Daisy chain and power other devices like an IP camera, or another AP directly from the 1 GbE PoE output port.

MULTIPLE MANAGEMENT OPTIONS

Manage the T750 with on premise physical/virtual appliances and control auto-provisioning for faster deployment and seamless firmware upgrades.

ENHANCED SECURITY

Reinforce security with WPA3, the latest Wi-Fi security standard and receive enhanced protection from man-in-the-middle attacks.

Outdoor locations such as stadiums, arenas can have the most demanding wireless requirements due to high client density. The T750 access point (AP), based on the latest Wi-Fi 6 standard, brings in multi-gigabit Wi-Fi to support the ever raising expectation for highest quality of service from the users. T750 is IP-67 rated to withstand the rigors of outdoor deployments.

The Ruckus T750 is our high-end dual-band, dual-concurrent Wi-Fi 6 AP that supports eight spatial streams (4x4:4 in 5GHz, 4x4:4 in 2.4GHz). The T750, with OFDMA and MU-MIMO capabilities, efficiently manages up to 1,024 client connections with increased capacity, improved coverage and performance in ultra-high dense environments. Furthermore, the 2.5 GbE ethernet ensures that the backhaul will not be a bottleneck for full use of available Wi-Fi capacity.

The T750 addresses the increasing client demands in public venues such as airports, convention centers, plazas, malls, and other dense urban environments. It is the perfect choice for data-intensive streaming multimedia applications like 4K video transmissions, while supporting latency sensitive voice and data applications with stringent quality-of-service requirements.

The T750 is also easy to manage through physical, virtual and cloud management options.

The T750 is also designed with a small form factor pluggable (SFP) fiber interface that enable seamless connectivity to a fiber backhaul. The T750 boasts a built-in GPS. Furthermore, 1GbE PoE output port can power a variety of devices like an IP-based camera or even another AP.

In addition, organizations are increasingly leveraging IoT-based sensors to serve their customers better. These sensors run on non-Wi-Fi wireless technologies such as Wi-Fi, BLE or Zigbee. Organizations need a unified platform to eliminate network silos. The Ruckus AP portfolio is equipped to solve these challenges.

The T750 has built-in IoT radios with onboard BLE and Zigbee capabilities. In addition, the T750 is a converged access point that allows customers to seamlessly integrate any new wireless technologies with pluggable IoT module.

The T750 when paired with the Ruckus Ultra-High-Density Technology Suite found only in the Ruckus Wi-Fi portfolio, dramatically improves network performance through a combination of patented wireless innovations and learning algorithms that includes:

- **Airtime Decongestion:** Increases average network throughput in heavily congested environments
- **Transient Client management:** Reduces interference traffic from unconnected Wi-Fi devices
- **BeamFlex+ Antennas:** Extended coverage and optimized throughput with patented multi-directional antennas and radio patterns

Whether you are deploying ten or ten thousand APs, the T750 is also easy to manage through Ruckus' physical and virtual management options.

ACCESS POINT ANTENNA PATTERN

Ruckus' BeamFlex+ adaptive antennas allow the T750 AP to dynamically choose among a host of antenna patterns (over 4,000 possible combinations) in real-time to establish the best possible connection with every device. This leads to:

- Better Wi-Fi coverage
- Reduced RF interference

Traditional omni-directional antennas, found in generic access points, oversaturate the environment by needlessly radiating RF signals in all directions. In contrast, the Ruckus BeamFlex+ adaptive antenna directs the radio signals per-device on a packet by-packet basis to optimize Wi-Fi coverage and capacity in real-time to support high device density environments. BeamFlex+ operates without the need for device feedback and hence can benefit even devices using legacy standards.

Figure 1. Example of BeamFlex+ pattern

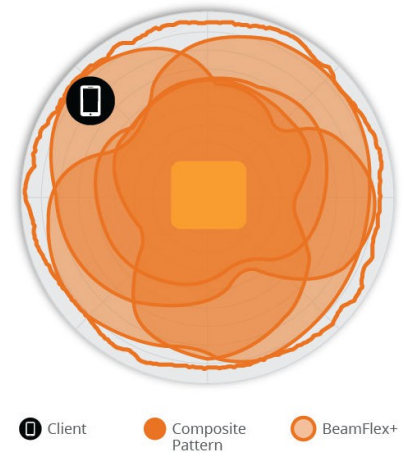


Figure 2. T750 2.4GHz Azimuth Antenna Patterns



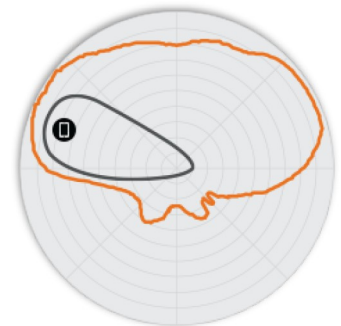
Figure 3. T750 5GHz Azimuth Antenna Patterns



Figure 4. T750 2.4GHz Elevation Antenna Patterns



Figure 5. T750 5GHz Elevation Antenna Patterns



Note: The outer trace represents the composite RF footprint of all possible BeamFlex+ antenna patterns, while the inner trace represents one BeamFlex+ antenna pattern within the composite outer trace.

Wi-Fi	
Wi-Fi Standards	IEEE 802.11a/b/g/n/ac/ax
Supported Rates	802.11ax: 4 to 2400 Mbps 802.11ac: 6.5 to 1732 Mbps 802.11n: 6.5 to 600 Mbps 802.11a/g: 6 to 54 Mbps 802.11b: 1 to 11 Mbps
Supported Channels	2.4GHz: 1-13 5GHz: 36-64, 100-144, 149-165
MIMO	4x4 SU-MIMO 4x4 MU-MIMO
Spatial Streams	4 for both SU-MIMO & MU-MIMO
Radio Chains and Streams	4x4:4
Channelization	20, 40, 80, 160MHz
Security	- WPA-PSK, WPA-TKIP, WPA2 AES, WPA3, 802.11i, Dynamic PSK, OWE - WIPS/WIDS
Other Wi-Fi Features	- WMM, Power Save, Tx Beamforming, LDPC, STBC, 802.11r/k/v - Hotspot - Hotspot 2.0 - Captive Portal - WISPr

RF	
Antenna Type	- BeamFlex+ adaptive antennas with polarization diversity - Adaptive antenna that provides 4,000+ unique antenna patterns per band
Antenna Gain (max)	Up to 3dBi
Peak Transmit Power (Tx port/chain + Combining gain)	2.4GHz: 26dBm 5GHz: 28dBm
Frequency Bands	- ISM (2.4-2.484GHz) - U-NII-1 (5.15-5.25GHz) - U-NII-2A (5.25-5.35GHz) - U-NII-2C (5.47-5.725GHz) - U-NII-3 (5.725-5.85GHz)

2.4GHZ RECEIVE SENSITIVITY (dBm)							
HT20		HT40		VHT20		VHT40	
MCS0	MCS7	MCS0	MCS7	MCS0	MCS7	MCS0	MCS7
-98	-79	-95	-76	-98	-79	-95	-76
HE20				HE40			
MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11
-98	-79	-76	-70	-95	-76	-73	-67

5GHZ RECEIVE SENSITIVITY (dBm)											
VHT20				VHT40				VHT80			
MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9	MCS0	MCS7	MCS8	MCS9
-98	-80	-77	-	-95	-77	-	-72	-92	-74	-	-69
HE20				HE40				HE80			
MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11	MCS0	MCS7	MCS9	MCS11
-98	-80	-75	-70	-95	-77	-72	-67	-92	-74	-69	-64

2.4GHZ TX POWER TARGET (PER CHAIN)	
Rate	Pout (dBm)
MCS0, HT20	20
MCS7, HT20	19.5
MCS8, VHT20	19
MCS9, VHT40	18.5
MCS11, HE40	17

5GHZ TX POWER TARGET (PER CHAIN)	
Rate	Pout (dBm)
MCS0, VHT20	22
MCS7, VHT40, VHT80	20
MCS9, VHT40, VHT80	18.5
MCS11, HE20, HE40, HE80	17

PERFORMANCE AND CAPACITY	
Peak PHY Rates	2.4 GHz: 1148 Mbps 5 GHz: 2400 Mbps
Client Capacity	Up to 1024 clients per AP

RUCKUS RADIO MANAGEMENT	
Antenna Optimization	- BeamFlex+ - Polarization Diversity with Maximal Ratio Combining (PD-MRC)
Wi-Fi Channel Management	- ChannelFly - Background Scan Based
Client Density Management	- Adaptive Band Balancing - Client Load Balancing - Airtime Fairness - Airtime-based WLAN Prioritization
SmartCast Quality of Service	- QoS-based scheduling - Directed Multicast - L2/L3/L4 ACLs
Mobility	SmartRoam
Diagnostic tools	- Spectrum Analysis - SpeedFlex

NETWORKING	
Controller Platform Support	- SmartZone - ZoneDirector - Unleashed* - Standalone
Mesh	SmartMesh™ wireless meshing technology. Selfhealing Mesh
IP	IPv4, IPv6, dual-stack
VLAN	802.1Q (1 per BSSID or dynamic per user based on RADIUS) - VLAN Pooling - Port-based
802.1x	Authenticator & Supplicant
Tunnel	L2TP, GRE, Soft-GRE
Policy Management Tools	- Application Recognition and Control - Access Control Lists - Device Fingerprinting - Rate Limiting
IoT Capable	Yes

*Refer to Unleashed datasheets for SKU ordering information.

OTHER RADIO TECHNOLOGIES	
GPS	Types GLONAS...etc

PHYSICAL INTERFACES	
Ethernet	1x 2.5 Gbps, 1 x 10/100/1000 Mbps ports, RJ-45 - LACP
Fiber	SFP, 1Gbps, SFP+ 10 Gbps
USB	1 USB 2.0 port, Type A (On Omni SKU only)

PHYSICAL CHARACTERISTICS	
Physical Size	34.64cm (L), 24.06cm (W), 10.17cm (H) 13.64in (L) x 9.47in (W) x 4.0in (H)
Weight	2.84kg 6.27lbs
Mounting	Pole Mount
Operating Temperature	-40°C (-40°F) to 65°C (145°F)
Operating Humidity	Up to 95%, non-condensing
Wind Survivability	Up to 266km/h (165mph)

POWER		
Mode	Power Consumption	System Configuration
AC Power	64.6W (SFP+ Backhaul) 63.7W (Ethernet Backhaul)	- Full Functionality 2nd Ethernet Port enabled - PSE Out (26W) Available - Onboard IoT enabled - USB Enabled (3W)
802.3bt Class 7 (Maximum Functionality With PSE Out)	57W	- Full Functionality 2nd Ethernet Port enabled - PSE Out (26W) Available - Onboard IoT enabled - USB Enabled (3W)
802.3bt Class 75 (Maximum Functionality With PSE Out)	31W	- Full Functionality 2nd Ethernet Port enabled - PSE Out Disabled - Onboard IoT enabled
802.3at (Reduced Functionality Without USB)	24.2W	- Full Functionality 2nd Ethernet Port enabled - PSE Out Disabled - Onboard IoT enabled - USB Disabled
Idle	10.75W	2nd Ethernet Port enabled - PSE Out Disabled - Onboard IoT disabled •USB Disabled

Certifications and Compliance	
Wi-Fi Alliance*	- Wi-Fi CERTIFIED™ a, b, g, n, ac, ax (Wi-Fi 6) - Passpoint®, Vantage
Standards Compliance**	- EN 60950-1 Safety - EN 60601-1-2 Medical - EN 61000-4-2/3/5 Immunity - EN 50121-1 Railway EMC - EN 50121-4 Railway Immunity - IEC 61373 Railway Shock & Vibration - EN 62311 Human Safety/RF Exposure - WEEE & RoHS - ISTA 2A Transportation

*For complete list of WFA certifications, please see the Wi-Fi Alliance website.

**For current certification status, please see the price list.

Software and Services	
Location based services	SPoT
Network Analytics	SmartCell Insight (SCI)
Security and Policy	Cloudpath

ORDERING INFORMATION

901-T750-XX01	• Ruckus T750 802.11ax Outdoor Wireless Access Point, 4x4:4 Stream, Omnidirectional Beamflex+ coverage, 2.4GHz and 5GHz concurrent dual band, (1x) 2.5G Ethernet port, (1x) 10/100/1000 Ethernet port, 100-240 Vac, POE in and PSE out, Fiber SFP/SFP+, GPS, IP-67 Outdoor enclosure, -40 to 65C Operating Temperature. • For box contents, see Shipping Container Contents.
901-T750-XX51	• Ruckus T750S 802.11ax Outdoor Wireless Access Point, 4x4:4 Stream, 120-Degree Sector antenna included and option to attach external antennae, 2.4GHz and 5GHz concurrent dual band, (1x) 2.5G Ethernet port, (1x) 10/100/1000 Ethernet ports, 100-240 Vac, POE in and PSE out, Fiber SFP/SFP+, GPS, IP-67 Outdoor enclosure, -40 to 65C Operating Temperature. • For box contents, see Shipping Container Contents.

See Ruckus price list for country-specific ordering information.

Warranty: Sold with a limited 1-year warranty.

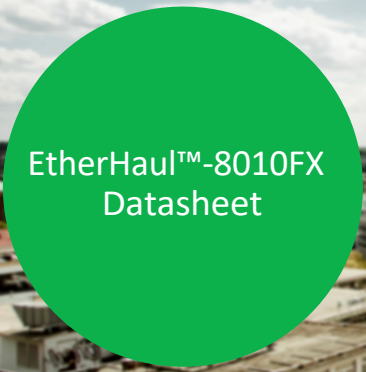
For details see: <http://support.ruckuswireless.com/warranty>.

OPTIONAL ACCESSORIES	
902-0180-XX00	• PoE Injector (60W)
902-1170-XX00	• Power Supply (48V, 0.75A, 36W)
902-0120-0000	• Spare, Accessory Mounting Bracket
902-0195-0000	• Spare, T-bar ceiling mount kit for mounting to flush frame ceiling
E1MG-BXD	• 1000BASE-BXD SFP optic SMF, transmits at 1490nm and receives at 1310nm, LC connector, single strand SMF fiber. This optic should only be connected to an E1MG-BXU at the far end.
E1MG-BXU	• 1000BASE-BXU SFP optic SMF, transmits at 1310nm and receives at 1490nm, LC connector, single strand SMF fiber. This optic should only be connected to an E1MG-BXD at the far end
E1MG-LHA-OM	• 1000BASE-LHA SFP optic, SMF, LC connector, optical monitoring capable
E1MG-LHA-OM-T	• 1000BASE-LHA SFP optic, SMF, LC connector, optical monitoring capable, industrial temperature (-40°C to 85°C)
E1MG-LX-OM	• 1000Base-LX SFP optic, SMF, LC connector, Optical Monitoring Capable
E1MG-LX-OM-8	• 1000BASE-LX SFP optic, SMF, LC connector, optical monitoring capable, 8-pack
E1MG-LX-OM-T	• 1000Base-LX SFP optic, SMF, LC connector, Optical Monitoring Capable, Industrial Temperature
E1MG-SX-OM	• 1000Base-SX SFP optic, MMF, LC connector, Optical Monitoring Capable
E1MG-SX-OM-8	• 1000BASE-SX SFP optic MMF, LC connector, optical monitoring capable, 8-pack
E1MG-SX-OM-T	• 1000Base-SX SFP optic, MMF, LC connector, Optical Monitoring Capable, Industrial Temperature
E1MG-LX-A	• 1000BASE-LX SFP Optic, SMF, LC connector, Optical Monitoring Capable, TAA compliant
E1MG-LX-A8	• 1000BASE-LX SFP Optic, SMF, LC connector, Optical Monitoring Capable, TAA compliant, 8-pack
E1MG-SX-A	• 1000BASE-SX SFP Optic, MMF, (LC), Optical Monitoring Capable, TAA compliant
E1MG-SX-A8	• 1000BASE-SX SFP Optic, MMF, (LC), Optical Monitoring Capable, TAA compliant, 8-pack
10G-SFPP-SR-SA	• 10GBASE-SR, SFP+ optic (LC), target range 300m over MMF, standard temperature (0°C to 70°C),TAA compliant
10G-SFPP-SR-SA8	• 10GBASE-SR, SFP+ optic (LC), target range 300m over MMF, standard temperature (0°C to 70°C),TAA compliant, 8 pack
10G-SFPP-SR-S	• 10GBASE-SR,SFPP MMF LC CONNECTOR (No TAA)
10G-SFPP-SR-S8	• 10GBASE-SR,SFPP MMF LC CONNECTOR 8-PACK (No TAA)
10G-SFPP-LR-SA	• 10GBASE-LR, SFP+ optic (LC), for up to 10km over SMF, standard temperature (0°C to 70°C), TAA compliant
10G-SFPP-LR-SA8	• 10GBASE-LR, SFP+ optic (LC), for up to 10km over SMF, -standard temperature (0°C to 70°C), TAA compliant, - 8 pack
10G-SFPP-LR-S	• 10GBASE-LR,SFPP SMF LC CONNECTOR (No TAA)
10G-SFPP-LR-S8	• 10GBASE-LR,SFPP SMF LC CONNECTOR 8-PACK (No TAA)

OPTIONAL ACCESSORIES	
10G-SFPP-USR-SA	• 10GE USR SFP+ OPTIC (LC),RANGE 100M MMF,Standard Temperature, TAA Compliant,1-Pack
10G-SFPP-USR-SA8	• 10GE USR SFP+ OPTIC (LC),RANGE 100M MMF,Standard Temperature, TAA Compliant,8-Pack

PLEASE NOTE: When ordering Indoor APs, you must specify the destination region by indicating -US, -WW, or -Z2 instead of XX. When ordering PoE injectors or power supplies, you must specify the destination region by indicating -US, -EU, -AU, -BR, -CN, -IN, -JP, -KR, -SA, -UK, or -UN instead of -XX.

For access points, -Z2 applies to the following countries: Algeria, Egypt, Israel, Morocco, Tunisia, and Vietnam.



EtherHaul™-8010FX Datasheet



10Gbps 70/80GHz Radio – Wireless Fiber Connectivity

The EH-8010FX delivers 10Gbps Full Duplex throughput for high capacity networks in Metro, Aggregation and Trunking applications.

Applications for a Wide Range of Vertical Markets

- Fiber Network Extension/ Backup
- Enterprise Multi Gigabit-Connectivity
- Metro and Aggregation Networks
- Multi-Dwelling Unit Gigabit Broadband
- Mobile Backhaul

The EH-8010FX is designed to connect into existing networks with its support for both copper and fiber 10G interfaces allowing service providers and enterprises to extend their copper or fiber networks.

Small Size, Easy to Deploy & Manage

The all-outdoor radio has a small footprint and is light weight which makes site acquisition a breeze. The product comes pre-configured out of the box with no license to download greatly simplifying the time and cost for installation. The intuitive web GUI manages local and remote units to enable fast commissioning and configuration.

Exceptional Value

With its IP67 construction, the EH-8010FX is extremely rugged and designed to last for years in the harshest conditions at a price that yields quick Return-On-Investment (ROI) and minimizes Total Cost of Ownership (TCO). The advanced 10Gbps system delivers an unbeatable price per Gb. Its small and light form factor lowers installation costs, increases reliability and reduces site visits.

Massive Spectrum Availability, and High Reuse

The EH-8010FX operates over the interference-free 71-76/81-86GHz E-band spectrum, with a total of 10GHz of bandwidth for use worldwide. By using a high-gain pencil-beam antenna, this helps guarantee spectrum will be available everywhere and maximizes spectrum re-use. Additionally, E-band systems are governed by low licensing fees and a quick licensing processes.

10Gbps Over Long Distance

The EH-8010FX radio delivers 10Gbps full duplex point-to-point wireless Ethernet connectivity with the longest mmWave reach by means of the highest system gain in the market. Incorporating dozens of Siklu innovations, the EH-8010FX is based on the same platform that has been deployed in tens of thousands of links from the EtherHaul family

Carrier Grade Features

High throughput and low latency combine to deliver fiber compatible performance. The EH-8010FX incorporates QoS-aware adaptive bandwidth coding and modulation for high availability and easy integration with Ethernet switches or MPLS routers in highly resilient topologies.



EtherHaul™-8010FX Specifications



Frequency / Duplexing	71-76GHz / 81-86GHz, FDD
Channel Bandwidth, Modulation & Adaptive Rate	500/1,250/2,000MHz Adaptive bandwidth, coding and modulation - boost gain over 20dB
Throughput	10,000Mbps full duplex
Tx Power	BPSK: +18dBm QAM128: +14dBm
Receive Signal Level (RSL)	RSL @ BPSK = -75dBm RSL @ QAM128 = -50dBm
Reach	1.7/2.3 mile @ 99.95% availability (rain zone K/E, 2ft ANT.)
Interfaces	1 combo 10GE port: 802.3bz (RJ-45, copper) or SFP+ (MMF or SMF) 1GE port: 802.3ab (RJ-45, copper)
Power Supply	PoE+ or 36÷57VDC; 50W
Management & Provisioning	In / Out-of-band management Web GUI or CLI SNMPv2/3, TACACS+, RADIUS Zero-touch turn-up
L2, Traffic Management	Transparent Bridge, VLAN encapsulation QOS Aware Traffic Management
Security	AES (factory option)
Timing	Synchronous Ethernet and 1588v2 TC (factory option)
Conformance	Radio: USA FCC Part 15.101 & ETSI EN 302 217; EMC: USA FCC 47CFR.part 15 & ETSI EN 301 489; Safety UL/EN 60950
Environmental	Operating Temperature: -45° to +55°C (-49° to +131°F) Ingress Protection Rating: IP67
Dimensions	ODU + 0.5ft antenna: 9.17" x 8.11" x 5.55" (23.3cm x 20.6cm x 14.1cm) ODU + 1ft antenna (Dia. x Depth): 12.6" x 4.3" (32cm x 13cm) ODU + 2ft antenna (Dia. x Depth): 25.6" x 15.35" (65cm x 37cm)
Weight	ODU + 0.5ft antenna: 9.2lbs. (4.1kg) ODU + 1ft. antenna: 9.9lbs. (4.4kg) ODU + 2ft. antenna: 24.3lbs (10.9kg)

Rev.A1



MULTIHAUL™ TG NODE N367

Enhanced 360-degree coverage in one unit for Terragraph deployments

The MultiHaul™ TG system marks the release of Siklu's 3rd generation point to multipoint 60GHz products, with Terragraph certification. The solution consists of Nodes operating over millimetre waves in a redundant mesh topology which connect a suite of Terminal Units (TU). The MultiHaul TG family of products brings the advantages of mmWave spectrum – multi-gigabit capacity, immunity to interference and massive amounts of available spectrum - to an easy to deploy solution with the addition of L2 SDN mesh, enabled by Siklu's SmartHaul™ NMS with the Runner subsystem, for stress-free coverage extension and multi-path reliability. MultiHaul TG Node, N367, is the ideal solution for scalable deployments across neighbourhoods and business environments.

Enhanced RF2 antennas, High Capacity and Flexibility for Dense Deployments

The MultiHaul TG Nodes operate with 4 independent sectors over the millimetre wave spectrum using narrow beams. This confers several advantages including multi-gigabit capacity in dense deployments. With 4 independent high-gain beam-forming RF2 antennas, a multitude of network topologies can be realized to optimize coverage, capacity, and performance. The industry unique RF2 antennas deliver a superior link budget, enhancing the service capacity and availability across a 60% to 80% larger service area, compared to non RF2 antennas.

A Wide Range of Applications

- Fixed 5G Wireless Access, Gigabit to the Home, the MDU and the Enterprise
- Wi-Fi Hotspot Backhaul
- Security / Safe City Networks
- Smart City Business Services, Municipal networks
- Small Cell Backhaul

Always-On Mission Critical Networks

When you can't afford to lose a video stream, critical safe city sensor data or any other mission critical data, you need a wireless network that's as reliable and secure as fiber. With maximal immunity to interference and hacker-proof links with embedded AES encryption, MultiHaul™ TG delivers a network you can count on. An additional layer of reliability is available through the L2 self-organizing (SON) capabilities enabled by SmartHaul NMS with Runner, enabling automatic reorganization and rerouting around site failures.

Simple Integrated Future-safe Multi-Functional Node

Wireless infrastructure should be simple, and future proof. Organizations want to quickly deploy a single box across the target neighbourhood, knowing that this infrastructure will address the needs of self-backhaul, distribution, local services, redundancy, SLA enforcement, with enough horsepower to scale the bandwidth and accommodate new features over the foreseeable future, achieving a long and useful lifetime.

Fiber Quality with Wireless Flexibility

Siklu's millimetre wave radios successfully combine the capacity of fiber with the flexibility, speed of deployment and low TCO of wireless networks. That is what makes them the world's best-selling millimetre wave radios every year since 2011. They provide rock solid performance, even in very dense networks or under severe weather conditions, in thousands of networks around the globe.

Highly Secure and Physically Immune Beams

The narrow beamwidth confers several advantages including immunity to interference and network jamming. In contrast to wide-beam wireless systems that need to use multiple strategies to perform in dense areas. Multiple subscribers and services can be connected with complete isolation based on physical port, VLAN ID and/or a Terminal Unit.

Ready Set Go

The plug and play integrated node is designed for an easy single person installation. The patent-pending scanning antennas automatically aligns with other Nodes or with TUs. For buildings with difficult roof-top access, a single Node is installed on its roof to serve multiple locations.



MULTIHAUL™ TG NODE - N367

60GHz 4x RF2-sectors wireless L2 SDN mesh Node Specifications

The main specifications of the MultiHaul™ TG N367 are outlined in the following table.

Topologies	Point to Point, Point to Multi-point, Self-Backhaul L2 SDN Mesh.
Frequency & Duplexing	57-66GHz, TDD/TDMA. 4 channels.
Channel Bandwidth, Modulation & Adaptive Coding, TPC	2160MHz, BPSK to QAM16, up to 10 levels of hitless adaptive bandwidth, coding and modulation – boost gain by over 29dB. Automatic Transmit Power Control (ATPC), per link.
Radio OTA Rate (over the air) / Throughput	OTA up to 4,600 Mbps per sector, Throughput > 3,800 Mbps per sector (> 16Gbps per node)
System Gain (link budget)	RF2 enabled, up to 128.5dB (Node to TU, including RF2 antenna gain). Please refer to Siklu SmartHaul™ Link Budget Calculator (lbc.siklu.com) for radio link performance models.
Sector(s)	4x 90° sector, for 360° coverage, any sector on any channel. Horizontal scanning: 90° per sector, Vertical scanning: 25°.
Network synchronization	On-board GPS
Interfaces	3 ports: 1x RJ-45 10/5/2.5/1GbE with PoE-In, 1x RJ-45 1GbE with PoE-Out (65W), 1x SFP+ 10GbE.
Ethernet Features	IEEE 802.1d transparent bridging, IEEE 802.1q Virtual LAN, IEEE 802.1ad Provider bridge VLAN stacking.
Security	AES 128-bits OTA, GUI over HTTPS, CLI over SSH.
Management & Provisioning	In-band, Out-of-band management, Web GUI (one-pane configuration of local and remote units) & Embedded CLI, NETCONF, SNMP.
PoE-Out	1 port, 45W POE-Out (IEEE 802.3bt; * cable loss may affect power delivered to the PD).
Power Supply	PoE-In (IEEE 802.3bt or passive), or 48V DC (via RJ-45 adaptor) 45W no POE-Out, 90W with 45W POE-Out.
Conformance	Radio: US FCC 47 CFR Part 15.255; EN 303 722; UK IR 2030 EMC: US FCC 47 CFR Part 15; EN 301 489, Safety: UL/IEC 62368-1; UL/IEC 60950-22.
Terragraph	Terragraph certified.
Environmental	Operating Temperature: -49° ÷ +131°F (-45° ÷ +55°C); Ingress Protection Rating: IP67.
Dimensions	7.7 x 9.5 x 7.2 in. / 195 x 242 x 184 mm (width x height x depth)
Weight	7.9 lbs. / 3.6 Kg.
In the Box	N367, mounting kit and metallic bands, All Weather Shells, grounding cable, quick start guide (QSG).



MULTIHAUL™ TG TERMINAL UNIT T265

Service Options in Terragraph deployments

The MultiHaul™ TG system marks the release of Siklu's 3rd generation point to multipoint 60GHz products, this one with Terragraph certification. The TG network solution consists of Nodes operating over millimeter waves in a redundant mesh topology which also connect to Terminal Units (TU). The T265 communicates to the N366 TG Distribution node using the TG protocol, acting as an end point in a fully meshed MH TG topology. The T265 is Siklu's first TG TU and incorporates several features from our standard MH TU. The T265 offers up to 3 ports with both copper and fiber interfaces as well as a PoE out port to power third party devices such as video cameras. The MH-T260 is available for single port applications.

A Wide Range of Applications

- Fixed 5G Wireless Access, Gigabit to the Home, the MDU and the Enterprise
- Wi-Fi Hotspot Backhaul
- Security / Safe City Networks
- Smart City Business Services, Municipal networks
- Small Cell Backhaul
- Fiber hand-off

Capacity and Flexibility for Demanding Applications

The MultiHaul™ TG Terminal Units operate over the millimeter wave spectrum using self-aligned, dynamic beam steering RF. This confers several advantages including multi-gigabit capacity in dense deployments. With 3 ports, RJ-45 up to 2.5GE or fiber up to 10Gbps, a multitude of service deliveries and interfaces can be realized to meet the need of any demanding application.

Always-On Mission Critical Networks

When you can't afford to lose a video stream, critical safe city sensor data or any other mission critical data, you need a wireless network that's as reliable and secure as fiber. With maximal immunity to interference and hacker-proof links with embedded AES encryption, MultiHaul™ TG delivers a network you can count on. With the mesh topology there are built in redundant paths for traffic if an outage occurs in a given link.

Simple Integrated Future-safe Terminal Unit

Wireless infrastructure should be simple, and future proof. Organizations want to quickly deploy a single box across the target neighborhood, knowing that they have options to meet the interface requirements of any application. With a built-in software configured ethernet switch, PoE out up to 63W for collocated CPEs, cameras or other devices, plus fiber termination, the T265 Unit can address all your applications.

Fiber Quality with Wireless Flexibility

Siklu's millimeter wave radios successfully combine the capacity of fiber with the flexibility, speed of deployment and low TCO of wireless networks. That is what makes them the world's best-selling millimeter wave radios every year since 2011. They provide rock solid performance, even in very dense networks or under severe weather conditions, in thousands of networks around the globe.

Highly Secure and Physically Immune Beams

The narrow beamwidth confers several advantages including immunity to interference and network jamming. In contrast to wide-beam wireless systems that need to use multiple strategies to perform in dense areas. Multiple subscribers and services can be connected with complete isolation based on physical port, VLAN ID and/or a Terminal Unit.

Ready Set Go

The plug and play TU is designed for an easy single person installation. The patent-pending scanning antennas automatically aligns with serving Node(s).



MULTIHAUL™ TG TERMINAL UNIT T265

60GHz Terminal Unit Radio – specifications

The main specifications of the MultiHaul™ TG T265 model are outlined in the following table.

Topologies	Point to Multi-point.
Frequency & Duplexing	57-66GHz, TDD/TDMA. 4 channels.
Channel Bandwidth, Modulation & Coding, TPC	2160MHz, BPSK to QAM16, up to 10 levels of hitless adaptive coding and modulation – boost gain by over 29dB. Automatic Transmit Power Control (ATPC), per link.
Radio OTA Rate (over the air) / Throughput	OTA up to 4,600Mbps (future release 9,200Mbps with channel bonding) / Throughput up to 3800 Mbps aggregate (future release up to 5,500 Mbps aggregate).
System Gain (link budget)	110dB (Node to TU, including antenna gain). Please refer to Siklu SmartHaul™ Link Budget Calculator (lbc.siklu.com) for radio link performance models.
Self-alignment scanning	Horizontal scanning: 90°, Vertical scanning: 50°.
Network synchronization	To N366
Interfaces	1x RJ-45 2.5/1GbE with PoE-In 1x RJ-45 1GbE with PoE-Out (81W) 1x SFP+ 10GbE.
Ethernet Features	IEEE 802.1d transparent bridging, Provider bridge - VLAN & VLAN stacking.
Security	AES 128-bits OTA, GUI over HTTPS, CLI over SSH, file transfer over SSH. IP-less operations.
Management & Provisioning	In-band, Out-of-band management, Web GUI (one-pane configuration of local and remote units) & Embedded CLI, NETCONF, SNMP.
PoE-Out	1 port, 81W POE-Out (IEEE 802.3bt; * cable loss may affect power delivered to the PD).
Conformance	Radio: US FCC 47 CFR Part 15.255; EN 303 722, EMC: US FCC 47 CFR Part 15; EN 301 489, Safety: UL/IEC 62368-1; UL/IEC 60950-22.
Terragraph	Terragraph certified.
Power Supply	PoE-In (IEEE 802.3bt or passive), or 48V DC (via RJ-45 adaptor), 19W no POE-Out, up to 90W with up to 81W POE-Out.
Environmental	Operating Temperature: -49° ÷ +131°F (-45° ÷ +55°C); Ingress Protection Rating: IP67.
Dimensions	6.9 x 8.6 x 4.9 in. / 175 x 220 x 125 mm. (W x H x D).
Weight	4.84 lbs. / 2.2 Kg.
In the Box	Terminal unit with attached mounting kit, metallic bands, all weather shell, indoor 60W PoE power supply with AC cable, quick start guide.



MULTIHAUL™ TG LR TERMINAL UNIT T280

Long Range Options in Terragraph deployments

The MultiHaul™ TG system marks the release of Siklu's 3rd generation point to multipoint 60GHz products, this one with Terragraph certification. The TG network solution consists of Nodes operating over millimeter waves in a redundant mesh topology which also connect to Terminal Units (TU). The T280 is Siklu's long range TG TU, compatible with the N366 in PtMP mode for additional distances to served locations. The T280 can also operate in PtP mode, 2 identical units on each site, for even longer distances. The T280 offers up to 3 ports with both copper and fiber interfaces as well as a PoE out to power a collocated N366 or any other 3rd party device.

A Wide Range of Applications

- Fixed 5G Wireless Access, Gigabit to the Home, the MDU and the Enterprise
- Wi-Fi Hotspot Backhaul
- Security / Safe City Networks
- Smart City Business Services, Municipal networks
- Small Cell Backhaul
- Fiber hand-off

Long Distance and High Capacity

The Long Range T280 provides deployment options like no other 60GHz radios, with the inherent capacity of the Terragraph links. A choice of 0.5ft, 1ft or 2ft antenna allows choosing the perfect solution for the most challenging long-distance links, while allowing installation on roof tops, or on street furniture with its compact streamlined reflector antenna.

Flexibility for Demanding Applications

The MultiHaul™ TG LR Terminal Units operate over the millimeter wave spectrum, with a range of reflector antennas. This confers several advantages including multi-gigabit capacity in dense deployments. With 3 ports, RJ-45 up to 5GE or fiber up to 10Gbps, a multitude of service deliveries and interfaces can be realized to meet the need of any demanding application.

Always-On Mission Critical Networks

When you can't afford to lose a video stream, critical safe city sensor data or any other mission critical data, you need a wireless network that's as reliable and secure as fiber. With maximal immunity to interference and hacker-proof links with embedded AES encryption, MultiHaul™ TG delivers a network you can count on. With the mesh topology there are built in redundant paths for traffic if an outage occurs in a given link.

Simple Integrated Future-safe Terminal Unit

Wireless infrastructure should be simple, and future proof. Organizations want to quickly deploy a single box across the target neighborhood, knowing that they have options to meet the interface requirements of any application. With a built-in software configured ethernet switch, PoE out up to 63W for collocated CPEs, cameras or other devices, plus fiber termination, the T280 Unit can address all your applications.

Fiber Quality with Wireless Flexibility

Siklu's millimeter wave radios successfully combine the capacity of fiber with the flexibility, speed of deployment and low TCO of wireless networks. That is what makes them the world's best-selling millimeter wave radios every year since 2011. They provide rock solid performance, even in very dense networks or under severe weather conditions, in thousands of networks around the globe.

Highly Secure and Physically Immune Beams

The narrow beamwidth confers several advantages including immunity to interference and network jamming. In contrast to wide-beam wireless systems that need to use multiple strategies to perform in dense areas. Multiple subscribers and services can be connected with complete isolation based on physical port, VLAN ID and/or a Terminal Unit (in PtMP mode).

Ready Set Go

With auto-connect no laptop or mobile device needed, the T280 allows plug and play deployment in a very short time. It fits right into the PtMP management model of the serving N366 in PtMP mode, or operates with a single pane of glass in PtP mode, both units on the same screen.



MULTIHAUL™ TG LONG REACH TERMINAL UNIT T280

60GHz Long Range Terminal Unit Radio - specifications

The main specifications of the MultiHaul™ TG Long Range Units are outlined in the following table.

Topologies	Point to Point, Point to Multi-point, Daisy-chain, L2 SDN Mesh
Frequency & Duplexing	57-66GHz, TDD/TDMA, 4 channels.
Channel Bandwidth, Modulation & Adaptive Coding, TPC	2160MHz, BPSK to QAM16, up to 10 levels of hitless adaptive bandwidth, coding and modulation – boost gain by over 29dB. Automatic Transmit Power Control (ATPC), per link.
Radio OTA Rate (over the air) / Throughput	OTA up to 4,600Mbps (future SW release 9,200Mbps with channel bonding) / Throughput up to 3800 Mbps aggregate (future SW release up to 5,500 Mbps aggregate).
Antenna Options	0.5ft – 36dBi or 1ft – 42dBi, field installable / replaceable (FRU). Effective distances, capacity and availability can be calculated with Siklu Link Budget Calculator lbc.siklu.com
Transmit power	Up to +13dBm at the antenna port (note: transmit power is backed off above MCS9)
Interfaces (3 ports)	1x RJ-45 5G/2.5/1GbE with PoE-In, 1x RJ-45 1GbE with PoE-Out (up to 81W), 1x SFP+ 10GbE.
Ethernet Features	IEEE 802.1d transparent bridging, VLAN tagging and isolation, Provider bridge - VLAN stacking.
Security	AES 128-bits OTA, GUI over HTTPS, CLI over SSH, file transfer over SSH. IP-less operations.
Out of the Box	Factory configuration PtMP mode (N36x <> T280), Field configuration to PtP mode (T280 <> T280).
Management & Provisioning	In-band, Out-of-band management, Web GUI (one-pane configuration of local and remote units) & Embedded CLI, NETCONF, SNMP.
PoE-Out	1 port, 81W POE-Out (IEEE 802.3bt; * cable loss may affect power delivered to the PD).
Conformance	Radio: US FCC 47 CFR Part 15.255; EN 303 722, EMC: US FCC 47 CFR Part 15; EN 301 489, Safety: UL/IEC 62368-1; UL/IEC 60950-22.
Terragraph	Terragraph certified.
Power Supply	PoE-In (IEEE 802.3bt or passive), or 48V DC (via RJ-45 adaptor), 19W no POE-Out, up to 90W with up to 81W POE-Out.
Environmental	Operating Temperature: -49° ÷ +131°F (-45° ÷ +55°C); Ingress Protection Rating: IP67.
Dimensions	6.9 x 9 x 2.5 in. / 175 x 230 x 65 mm. (W x H x D), antenna not included.
Weight	4.4 lbs. / 2 Kg, antenna not included.
In the box	Terminal unit, all weather shell, grounding cable, quick start guide.
Accessories	External Antenna, Mounting Kit, Power Supply – not included. Optional accessories, not included: surge protector, SFP/SFP+.

LinkPower™ LPS3400ATMP-300-T1

Outdoor Layer 2+ Managed Gigabit PoE Network Switch with Gigabit Fiber Uplink



APPLICATIONS

- Smart City
- Video Security Surveillances
- Campus Networks
- Wireless Service Networks
- Border Security Surveillance
- Municipal Networks
- Hospitality Networks
- Hotel Resort Networks
- Hotspot Integrations
- VOIP Services
- Traffic Monitoring

The LinkPower™ LPS3400ATMP-300-T1 Layer 2+ 6-Port Managed Outdoor PoE (Power over Ethernet) IEEE802.3bt Switch offers 4-Port Gigabit PoE with 2 SFP Uplink Port Network Switch with dual power input redundancy with 120V~240AC and/or 48V DC. This is the industry first outdoor weatherproof industrial gigabit Ethernet switch that delivers data and high power DC, i.e., up to 95W Type 4 per PoE port, over one single network cable protected with an IP68 compliant weatherproof enclosure, and the total system power is 300W. The outdoor weatherproof rating of the systems is strictly based on how the top cover is closed. For the hinged cover without the four top cover screws, the outdoor weatherproof rating is IP66 and, otherwise, the outdoor rating is IP68 with the four top cover screws securely closed with the enclosure.

The LPS3400ATMP-300-T1 Outdoor Layer 2+ Managed Gigabit PoE Switch is designed for industrial and commercial applications, e.g., high performance video surveillance, high bandwidth wireless mesh, carrier wifi installations, and etc. The terminal equipment, i.e., powered devices, such as weather-proof high power IP camera, high performance wireless AP and industrial IP telephony. With the two port Gigabit fiber ports, it can transfer data up to a distance of 120Km from SFP fiber port to a remote control center and the systems is also offer with powerful anti-electromagnetic interference feature. Additionally, the LPS3400ATMP-300-T1 Layer 2+ Managed Gigabit PoE Series is designed for harsh outdoor environments with features such as a wide working temperature range from -30°C to +70°C and 3KV Ethernet port surge protection that can ensure the reliability of the uninterrupted PoE network operations. The LPS3400ATMP-300-T1 Outdoor Gigabit PoE Switch is a Managed network switch with Link Aggregation, VLAN, Trunking, SNMP, and QoS technology to meet the accelerating demand for powering the most demanding outdoor PoE devices. The LPS3400ATMP-300-T1 Gigabit PoE Switch provide LED displays internally that show device status for easy power management and troubleshooting. The PoE technology conveniently eliminates the need to install networked devices with multiple wires, such as Inscape Data's IP cameras and SB300/BR300, and B3000/BR3000 wireless products, thereby reducing equipment and installation costs. The LPS3400ATMP-T1 Gigabit PoE Switch offers the following key features:

- Dual Power Input Redundancy with 120V~240AC and/or 48V DC
- Compliant to IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.3ab, IEEE 802.3x, IEEE 802.1D, IEEE 802.3af, IEEE 802.1Q, IEEE 802.1p, IEEE802.1x, IEEE 802.1W, SNMP, IGMP standards
- Four 10/100/1000M self-sensing RJ45 port, support IEEE802.3bt Type 3 & Type 4 PoE power supply function
- Four gigabit SFP fiber ports are capable of high bandwidth and long distance transmission
- All ports support auto-flip (Auto MDI/MDIX)
- Each PoE port can provide power 60W and up to 95W
- Supply 95W PoE++ DC power for powered devices compatible with IEEE802.3af/at
- Port security, allows setting different security level on each port with password, 802.1x, IP&MAC address Guard, RADIUS, & TACACS+
- Support IEEE802.3x full duplex flow control and duplex back pressure flow control
- Two SFP fiber optic ports, support 2.5Gbps uplink network speed
- 8K MAC address table, 12Gbps backplane bandwidth
- Its 4.5KV network port surge protection can adapt to harsh outdoor environment
- Working temperature from -30°C ~ +70°C at full load
- Compatible with Port-based VLAN, IEEE 802.1Q VLAN and GVRP protocols, & Dynamic VLAN MAC Address Authentication
- Support authentication features including TACACS+, IEEE 802.1x, HTTPS and SSH, and MAC address port locking
- Support SNMP V1/V2c/V3 for different levels network management
- Adopt RMON to effectively improve network surveillance and forecasting capabilities Auto accident report through E-mail and the output of electric relay

** LinkPower LPS Outdoor PoE Series Products are protected under several of Inscape Data's U.S. Patents.

Model Description	Outdoor 6-Port Layer 2+ Gigabit Managed PoE Switch
Model Name	LPS3400ATMP-300-T1
Port Interface	4 * 10/100/1000 RJ45 Ports, 2 * Gigabit LC Optical Ports
Optical Transmission Distance	20KM, 1310nm
Forwarding Mode	Save and forwarding, link-speed forwarding (Frame Size Range: 64~1536)
Network Media	10BASE-T: UTP Cat 3, 4, 5 (≤100 Meters) 100BASE-TX: UTP Cat 5/5e/6 (≤100 Meters)
Performance Specification	Bandwidth: 12Gbps (non-blocking) Network Latency (100 to 100M bps): maximum delay less than 50 microseconds Packet forwarding rate: 8.93Mbps@64bytes MAC address table: 8K MTBF: 539608 hours Support protection for over-current, over-voltage and reverse connection
Network Protocols and PoE Standards	IEEE 802.3i 10BASET IEEE 802.3u 100BASETX IEEE 802.3x Flow Control IEEE 802.3abT Type 3 60W & Type 4 95W
LED Indicator	Running Light: SYS, Interface Light: LINK, PoE
Power Supply	AC Input voltage: 120V ~ 240V AC DC Input voltage: 48V~57V Power Connector: 3-Pin AC & 4-Pin DC industrial terminal Block System Power : 300W Surge Protection: 6kv TP Port Surge Protection: 4.5Kv
Enclosure Dimension	LxWxH: (12 x 10 x 4 inch, 304.8 x 250.4 x 101.6 mm)
Working Environment	Working Temperature: -30~70°C Storage Temperature: -40~85°C Relative Humidity: 5%~95%, non-condensing Storage Humidity: 10%~95%, non-condensing Working Height: 3000M above sea level (10,000ft) Storage Height: 3000M above sea level (10,000ft)
Radiation	CE mark, commercial FCC Part 15 Class B
Certification	CE Mark ,Commercial CE/LVD FCC, RoHS、C-TICK, UL
Warranty	3 Years

PACKAGE CONTENTS

- LinkPower LPS3400ATMP-300-T1 Gigabit PoE Switch
- User's Manual
- Quick Install Guide
- 3-Year Warranty Information
- APCK0001 AC Power Cable Kit
- PFCK0001-3 Power & Fiber Connector Kit
- ECK0001-4 Ethernet Connector Kit
- WMK0001 Wall Mount Kit with 4 Flanges (Standard)
- MMK0001-L Pole Mount Kit (Optional)



THE LEADING
OUTDOOR NETWORK
APPLIANCE COMPANY

Total Turnkey Solutions for Outdoor PoE, Wired/Wireless, and IP Video Applications

Product Information Online: <http://www.inscapedata.com/lps3000-t1-mgt.htm>

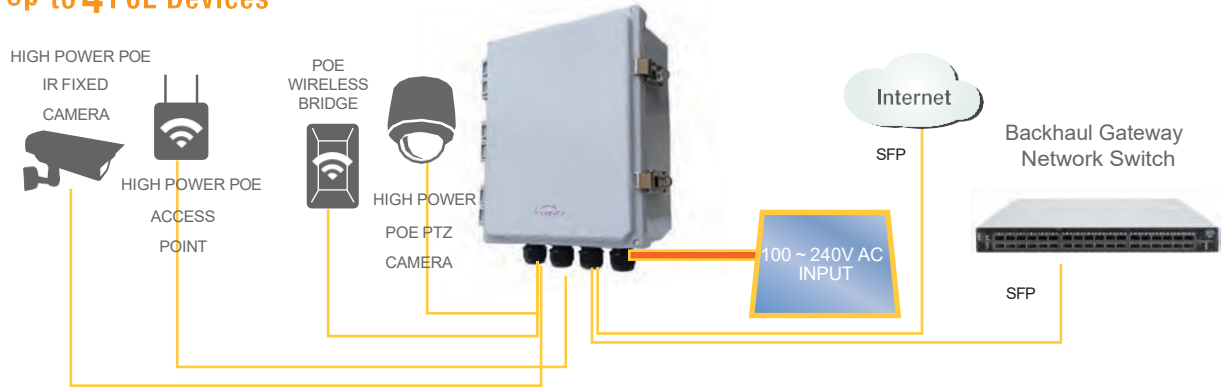
Corporate Headquarters
1620 Oakland Road, Suite D101, San Jose, CA 95131, U.S.A.
PHONE +1.408.392.9800 **FAX** +1.408.392.9812
EMAIL sales@inscapedata.com

Layer 2+ Switching	
Spanning Tree Protocol (STP)	Standard Spanning Tree 802.1d Rapid Spanning Tree (RSTP) 802.1w
G.8032 ERPS	<50ms ring protection for industrial high reliable application
Aggregation	Link Aggregation Control Protocol (LACP) IEEE 802.3ad; Up to 7 groups ; Up to 14 ports per group
VLAN	Support up to 4K VLANs simultaneously (out of 4096 VLAN IDs) ; Port-based VLAN; 802.1Q tag-based VLAN, GVRP, Dynamic VLAN MAC Address Authentication
IGMP v1/v2 snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters; supports 1024 multicast groups (source-specific multicasting is not supported)
Security	
Secure Shell (SSH) Protocol	SSH secures Telnet traffic in and out the switch, SSH v1 and v2 are supported
Secure Sockets Layer (SSL), HTTPS	SSL encrypts the http traffic, allowing advance secure access to the browser-based management GUI in the switch
Port Security	Locks MAC Addresses to ports, and limits the number of learned MAC addresses
DHCP Snooping	prevent unauthorized configuration and use of IP addresses, while providing support for IP Source Guard and ARP detection
IP Source Guard	Prevents datagram with spoofed addresses from being in the network
ARP Inspection	Prevent ARP spoofing attacks and ARP
Storm control	Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port
ACLs	Support for up to 256 entries; Drop or rate limitation based on source and destination MAC, VLAN ID or IP address, protocol, port, differentiated services code point (DSCP) / IP precedence, TCP/ UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, TCP flag
Quality of Service	
Hardware	Support 8 hardware queues
Scheduling	8 COS (Class of Service) queues per port support strict priority and weighted round-robin (WRR)
Classification	Port based; 802.1p (PCP) VLAN priority based;
Rate Limiting	Ingress policer; egress shaping and rate control; per VLAN, per port and flow based
Management (Web/ SSL, Telnet/ SSH, ping, Trivial File Transfer Protocol (TFTP), SNMP, Syslog)	
Web GUI interface	Built-in switch configuration utility for browser-based device configuration (HTTP/HTTPS). Supports configuration, system dashboard, maintenance, and monitoring
Dual Image	Dual image provides independent primary and secondary OS files for backup while upgrading
Firmware upgrade	Web browser upgrade (HTTP/ HTTPS) and TFTP; Upgrade through console port as well
Port mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to N-1 (N is Switch's Ports) ports can be mirrored to single destination port. A single session is supported.
Other management	Single IP management; HTTP/HTTPS; SSH; RADIUS; TACACS+, DHCP Client; SNTP; cable diagnostics; ping; syslog; Telnet client (SSH secure support)

SYSTEM CONFIGURATION

LinkPower™ LPS3400ATMP-300-T1
Managed Gigabit PoE Switch

Connect Up to 4 PoE Devices



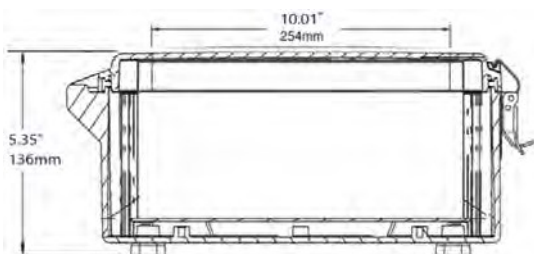
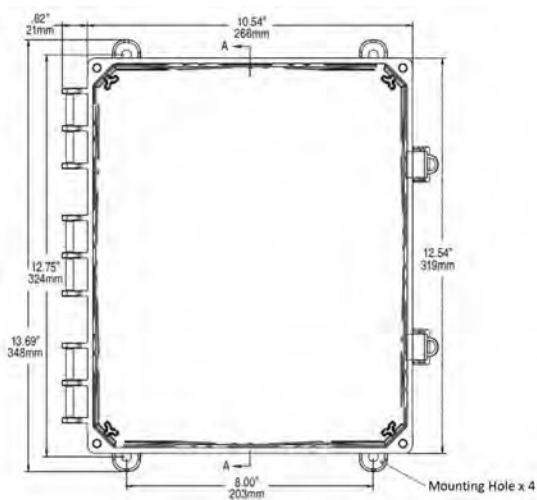
STANDARD ACCESSORIES

ECK0001-2
Ethernet Connector KitWMK0001
Wall Mounting KitAPCK0001
AC Power Cord Kit

OPTIONAL ACCESSORIES

MMK0001-L Mast
Mounting Kit
(For Pole Diameter
from 2" to 4.5")WPCK0001-3-4
DC Power Cord Kit

ENCLOSURE DRAWINGS & INTERFACES



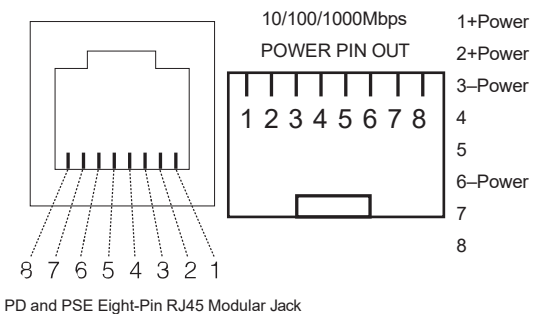
10"x5"x4" (WxLxH) Internal

(Hotel) Space for Wiring Storage

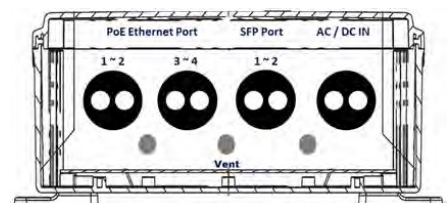


Pole Mount View

ELECTRICAL PIN OUT DIAGRAM



LPS3400ATMP-T1 Connector Interfaces



To Use Conduit Connectors, the Diameter of Hole Size is 1.0 Inch

1. Weatherproof PoE Connector (1~4)
2. Weatherproof SFP Cable Connector (1~2)
3. Weatherproof AC / DC Power Cable Connector
4. Vent Plug

THE LEADING
OUTDOOR NETWORK
APPLIANCE COMPANY

Product Information Online: <http://www.inscapedata.com/lps3000-t1-mgt.htm>

Corporate Headquarters
1620 Oakland Road, Suite D101, San Jose, CA 95131, U.S.A.
PHONE +1.408.392.9800 FAX +1.408.392.9812
EMAIL sales@inscapedata.com

Key Features & Benefits



- Supply power to 5 classes network surveillance cameras
- 2x 10/100/1000 Mbps RJ45 ports
- Support network port, lightning-proof power input port (the secondary lightning protection)
- PoE power supply type is four line pairs of twisted pair, the positive power supply side is 1/2 or 4/5 line pair, and the negative power supply side is 3/6 or 7/8 line pair
- Support LT PoE++ high power standard compatible with IEEE802.3af/IEEE802.3at standard
- Single port PoE output power is 95W, output voltage is 47.04~50.4V, and the total power is 100.8W
- No fans, natural cooling, small and exquisite, no noise design, suitable for outdoor installation
- IP67* Compliant Rating And Water Tight Connectors Based On Patent Pending Technology
- External LEDs - Highly Visible LED Indicator for Ethernet Link, PoE Power, System Power, & AC Output Port.

* When used with the included watertight connector kit

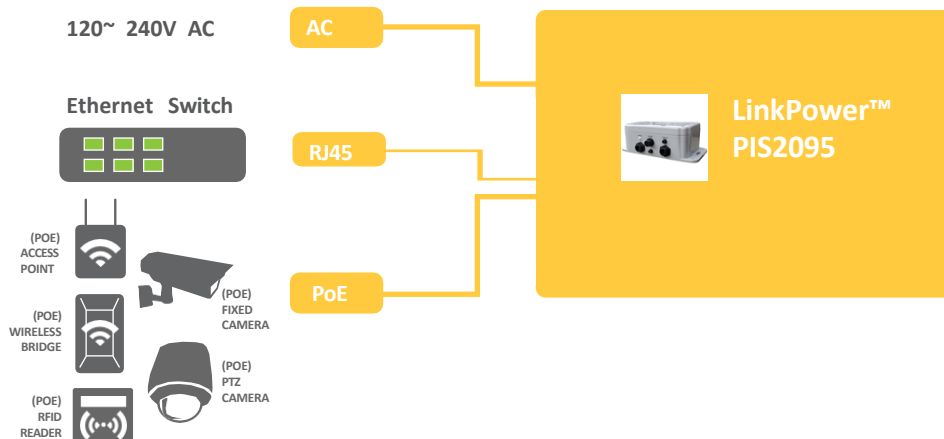
LinkPower™ PIS2095 95W 10/100/1000Mbps 2-Port Gigabit PoE Injector

Inscape Data's LinkPower™ PIS2095 two port 10/100/1000M PoE (Power over Ethernet) Injector is a Gigabit high power 95W DC PoE injector, and it is designed with Texas Instruments's latest TPS23881 chipset and supports IEEE802.3bt high power standard and is backward compatible with IEEE 802.3af/IEEE802.3at standards. The maximum output power is 100W, and the total system power is 100.8W. There are two RJ45 network ports, and one of which is used as an uplink port to a switch or to another network device. Another network port is the PoE port that integrated PoE power output and network data. The high power DC output simplifies the overall installation by eliminating the need for a power cord, such as, high power network dome cameras or other high power IP devices.

Applications

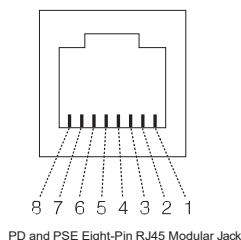
- Smart City
- IP Video Surveillance
- Campus Network
- Wireless Mesh Network
- Border Security Surveillance
- Municipal Network
- Energy & Refineries
- Hospitality Network
- Hotel Resort Network
- Hotspot Integration
- VOIP Service
- Traffic Monitoring

System Configurations



Technical Specifications

Product Name	10/100/1000M 95W Two Port PoE Injector
Product Model	PIS2095
Connector Type	2x 10/100/1000M copper cable RJ45 ports, 1x Data input port, 1x PoE output port
PoE Power Supply Type	PoE power supply is four line pairs of twisted pair, the positive power supply side is 1/2 or 4/5 line pair, the negative power supply side is 3/6 or 7/8 line pair
Network Medium	10BASE-T: 5 class UTP(≤100m)
	100BASE-TX: 5 class or more UTP(≤100m)
	1000BASE-TX: 5 class or more UTP (≤100m)
Performance Specifications	PoE output voltage: 48.0~50.4V
	Working Speed:10/100/1000Mbps
	Network Port Protection: meet the IEC61000-4-2(ESD)
	MTBF: 100,000 hours
Network Protocols and Standards	IEEE 802.3i 10BASET
	IEEE 802.3u 100BASETX
	IEEE 802.3x Flow Control
	IEEE 802.1ab 1000BASET
	IEEE 802.3af DTE Power via MDI
	Support LT PoE++ high power PoE standard, compatible with IEEE 802.3af/ IEEE 802.3at standard
LEDs Indicator	PoE working status
Power	Total system power: 100.8W
	PoE output power: 95W
	Input Voltage: 120V ~240V AC, Output Voltage: 48.0 - 50.4V DC
Dimension/Weight	LxWxH: 193.80mm x 117.60mm x 78.49mm (7.63x4.63x3.09 inch) / 4LB / 1.8kg
Working Environment	Working Temperature: -30°~70°C, Storage Temperature: -20°~ 75°C
	Working Humidity: 10% ~ 90%, non-condensing, Storage humidity:10% ~95%, non-condensing, Weatherproof to IP67 Compliance
Safety & EMC	CE mark, commercial, FCC Part 15 Class B, RoHS UL60950-1, TUV EN60950-1 Approved
Warranty	3-year warranty



RJ45 Conductor Pin#	PSE Pinout		PD Pinout	
	802.3af Mode A	802.3af Mode B/ Passive PoE*	802.3af Mode A	802.3af Mode B/ Passive PoE*
1	Rx, V+	Rx	TX+, V+	TX+
2	Rx, V+	Rx	TX-, V+	TX-
3	Tx, V-	Tx	RX+, V-	RX+
4	Spare	V+		V+
5	Spare	V+		V+
6	Tx, V-	Tx	RX-, V-	RX-
7	Spare	V-		V-
8	Spare	V-		V-

PACKAGE CONTENTS

- PIS2095 (1)
- WECK0001 Waterproof Ethernet Connector Kit (1)
- WPCK0001 Waterproof Power Cord Kit (1)
- User Manual (1)
- 3-Year Warranty Sheet (1)
- MMK0001-XS Pole Mount Kit (1) (Optional)



United States Headquarters 1620 Oakland Road, Suite D101, CA 95131, U.S.A.
 PHONE +1.408.392.9800 TOLL FREE +1.888.267.4507 FAX +1.408.392.9812 EMAIL sales@inscapedata.com

Revision 1.0

Total PoE Solutions for Wired/Wireless, IP Video, & Smart City Applications



Milan, Italy

Who We Are

- Founded in 1952
- Headquartered in Milan, Italy
- 25 offices worldwide
- USA headquarters in Dallas, TX
- 1500+ employees
- 280,000+ radios shipped last 3 years
- Company owned factory
- Excellent list of Tier1 reference customers
- SM Optics – purchased optical BU of ALU
- Established, well-funded company who will be here for the long haul

Key Differentiators

- Complete portfolio of microwave and millimeter wave backhaul solutions from 6 to 80 GHz including NMS
- 100 Mbps to 20 Gbps data rates
- Excellent Quality Products, ISO9001:2008
- High MTBF – up to 147 years
- USA based pre- and post- sales support
- Rapid delivery – established distributors
- Centralized SIAE warehouse with stock
- Excellent channel partner program
- Design & Turnkey services

Vertical Markets

- Mobile / Cellular Operators
- Public Telephone Operators (PTO/PTT)
- Service Providers (Tier II and Tier III)
- Local Exchange Carriers (CLEC, ILEC)
- Wireless Service Providers (WISPs)
- Industrial (utilities, oil & gas)
- Transportation (railroads, highways)
- Government (local, state, municipal)
- Schools (Universities, K-12)
- Private Network Expansion (WLAN)
- Fiber Replacement for fast ROI



ALFOPlus2



ALFOPlus1



ALFOPlus



AGS20



ALFOPlus80HDX



ALFOPlus80



NMS

5

Compression

	Frequency	Type	Max Capacity	Modulation	# of Carriers	# of Ports	Power	Encryption	
ALFOPlus2	6L, 6U, 11, 18, 23	All-Outdoor	2 Gbps	4096QAM	Two	4x GbE	-48V or PoE	128/256 AES	PHC – yes
ALFOPlus1	6L, 6U	All-Outdoor	500 Mbps	4096QAM	One	4x GbE	-48V or PoE	128/256 AES	PHC – yes
ALFOPlus	11, 18, 23	All-Outdoor	500 Mbps	1024QAM	One	2x GbE	-48V or PoE	No	PHC – yes
AGS20	6L, 11, 18, 23	Split-mount	500 Mbps x4	2048QAM	Up to Four	10x GbE	-48V	128/256 AES	PHC – yes
ALFOPlus80HDX	70/80	All-Outdoor	10 Gbps	256QAM	One	2x10GbE, 2xGbE	-48V or PoE	128/256 AES	No

ALFOPlus80HD	70/80	All-Outdoor	2 Gbps	64QAM	One	2x GbE	-48V or PoE	128/256 AES	No
--------------	-------	-------------	--------	-------	-----	--------	-------------	-------------	----



Introducing . . . **GIGABIT 1**

Large portions of both developed and especially developing economies remain underserved in an ongoing pandemic that makes real broadband more essential than ever. Copper-based fixed access networks are increasingly exhausted. Efforts to improve supply with fiber have been throttled by prohibitively high costs and installation complications. Wireless alternatives continue to fail in the face of the significant technical challenges in gigabit-class fixed access, including pervasive obstructions, spectrum scarcity, interference, changing conditions, and unworkable deployment models.

Tarana innovation has solved all these problems. Our software-defined Gigabit 1 system (G1) is powered by the results of more than ten years of focused R&D, and crafted from its custom silicon up to its cloud-based service automation with a completely fresh approach to fixed wireless. Extensively validated by tier-1 operators and in mass-scale deployment now, our fundamental advances in multi-radio performance completely transform the economics of delivering gigabit-class access.

Fast broadband
is more essential than ever.
Getting it to the home is hard.
We've made it easy.

- c Fiber quality
- c in free, unlicensed spectrum
- c at massive scale



A whole new approach to broadband

Residential Coverage

Page 75 of 111

Sacramento, California Metro Area Example

G1 Range in
3 GHz

61,100

Households
Passed

21,700

10,100

G1 in
5 GHz

22,800

8,100

3,700

○ — 68 For reference:
5G mm-wave (28 GHz)

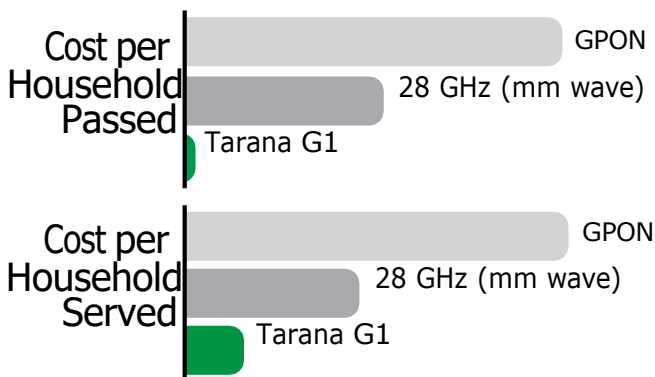
Cell-Edge Mbps

800
500
200

25m tower, 1,000 HH/km²
Erceg B propagation
Sacramento, CA example

1km

Network Economics

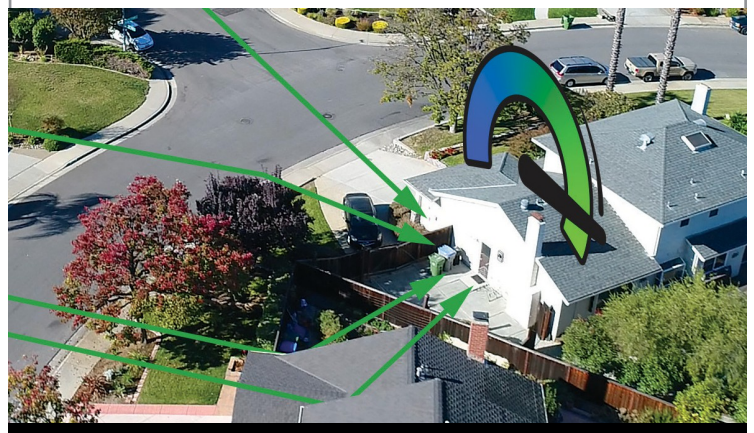


Unprecedented residential non-line-of-sight coverage and massive capacity per site fuel dramatic improvements in network economics

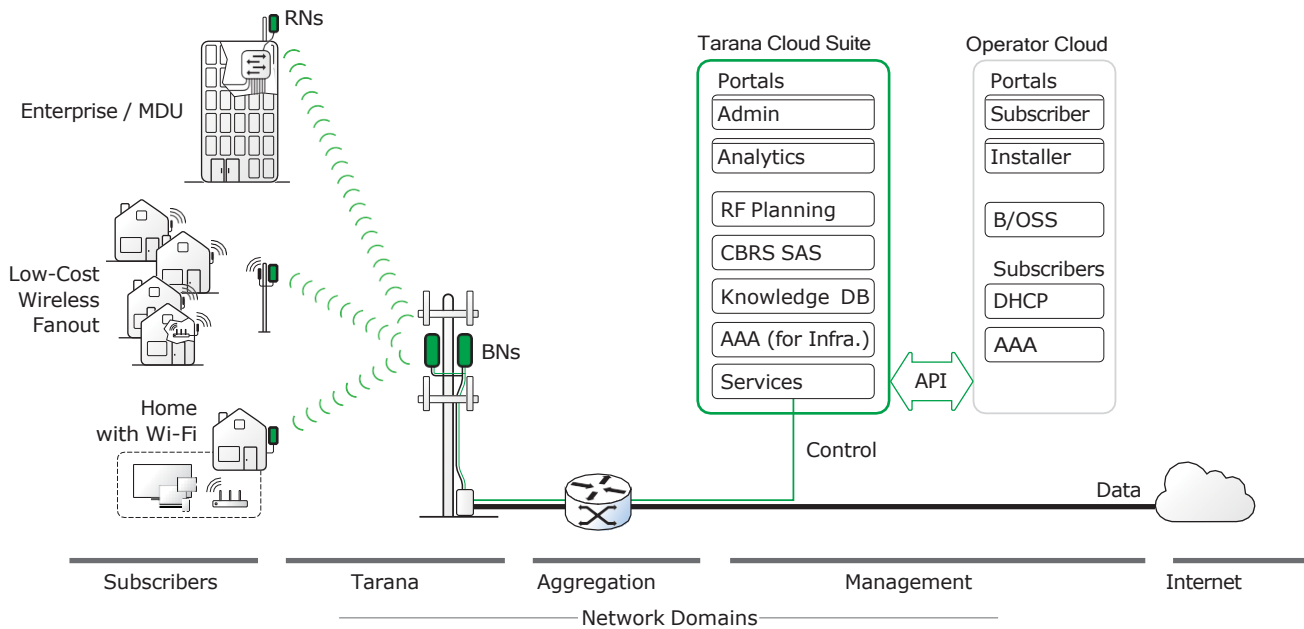


G1 Highlights

- Up to 800 Mbps aggregate throughput per link
- Up to 9.6 Gbps capacity / site / 80 MHz channel (using free, unlicensed spectrum)
- 1024 users / site (256 / sector)
- Industry-first complete cancellation of unlicensed-band interference
- 3 or 5 GHz
- Cellular deployment model
- Suburban full-NLoS range to 1.5 km, rural nLoS to 3 km, LoS to 30+ km
- Compact, integrated base node and low-cost residential node
- Enhanced TR101 Broadband Forum network architecture
- Comprehensive cloud suite for planning, zero-touch config, monitoring, SDN management, and support automation
- Software-defined radios, enabling automated, cloud-managed performance upgrades



A simple IP-based network architecture, supported by the Tarana Cloud Suite, enables multiple subscriber access models for highly cost-efficient residential, SMB, and enterprise service



The Tarana Cloud Suite powers efficient network planning, zero-touch provisioning, SDN management, and support automation — featuring...

Subscriber Service Activation	API support for zero-touch deployment configuration, with minimal to no changes on directly connected infrastructure Infrastructure authentication QoS management Speed test tools
Management and Maintenance	24x7x365 KPI monitoring and management, including long-term historic data Fault logging, correction, and reporting Firmware and configuration management automation with pre-provisioning support Operator and installer portals
Radio and Network Planning Integration (US only, requires HH data)	Spectrum management — CBRS SAS domain proxy Coverage footprint prediction (heatmap in Google Earth) and capacity of each cell or sector Cell densification analysis Household-level service-level estimation to help sales and business teams identify and target customers
Fault Management and Network Analytics	Alarms and historic events with e-mail alerts User-defined threshold-based alerts Alarm Correlation, Capacity Expansion, Anomaly Detection
REST API for Carrier System Integration	Performance management KPIs, device inventory, and network topology Subscriber provisioning and billing integration Geo-mapping information End-user login and management with role-based access



Tarana G1 System Specifications

Radio Network Elements

Topology	
Maximum # of Users	Per BN
	Per Site (4 BN)
Channel Bandwidth	BN
	RN
Aggregate Throughput (UL + DL)	Per Link
	Per BN
	Per Site (4 BN)
Duplexing	
Downlink/ Uplink Ratio	
Modulation	
MIMO Streams Per Link	
MU-MIMO Streams at Aggregation Point	

Spectral Efficiency

Range (full rate, frequency dependent)	NLoS
	nLoS
	LoS

Recommended Frequency Reuse Factor

Form Factor	BN
	RN
Beamforming	
Interference Management	
Scheduler	
Frequency Support	

		5.150-5.250 GHz (FCC)
		5.725-5.850 GHz (FCC)
Latency (1-way avg)		< 5 msec
ACM		Hitless automatic modulation rate control
Management / Control Plane Security		Certificate, HTTPS
Data Plane Security	RF Link Encryption	AES-128
Compliance		FCC C.F.R 47, Part 15, Part 96
Safety		IEC 6236801, IEC 60529
Tarana Cloud Suite		Scalable microservices-based multi-tenant network management
		Zero-touch provisioning and control of radios with streaming telemetry
		Firmware and configuration management
		24x7x365 KPI monitoring and management
		Fault management and historical events
		Network Analytics
		SAS-Domain Proxy
		Northbound Rest-API for Customer and operator portal (B/OSS)
Interfaces	BN	Dual 10 Gbps SFP+ data interfaces.
		Additional 1 Gbps mgmt Ethernet interface.
		48V DC Power
	RN	1 Gbps Ethernet interface, with PoE support
HxWxD (inches)	BN	16.6x21.2x4.7
	RN	11x12.5x3
Weight (lb.)	BN	38
	RN	7
Power Consumption (Typical)	BN	275W
	RN	35W
Mounting	BN	Saddle clamp for pole mount (2-3/8" - 5" OD)
	RN	Band clamp for pole mount (1.5"-2.5" OD)

Specifications subject to change without notice.



6. Pricing

No	Product Description	Material	Labor	Total Unit Price	Pricing Notes
PTMP Unit Pricing					
1	Terragraph 60GHz Distribution Node Installed	\$ 2,900.00	\$ 2,575.00	\$ 5,475.00	Includes Terragraph Distribution Node, Mounting Bracket, Outdoor Rated POE Switch, Photocell Power Cable, Installation (Does not include conduit, NEMA Enclosure, Electrical Work, or Tower Work). Assumes location is roof top or bucket truck accessible.
2	Terragraph 60GHz Client Node (1Gbps) - Installed on a Street Light or Building	\$ 900.00	\$ 1,250.00	\$ 2,150.00	Includes Radio/Subscriber Unit/CPE, Mounting Bracket, Outdoor Rated POE Injector, Photocell Power Cable, Surge Protection, Installation (Does not include conduit, NEMA Enclosure, or Electrical Work). Assumes location is a street light or utility pole and is bucket truck accessible.
3	5GHz Unlicensed BSU (1Gbps) - Installed	\$ 2,675.00	\$ 2,575.00	\$ 5,250.00	Includes Radio/Base Station Unit, Mounting Bracket, Outdoor Rated POE Switch, Photocell Power Cable, Installation (Does not include conduit, NEMA Enclosure, Electrical Work, or Tower Work). Assumes location is roof top or bucket truck accessible.
4	5GHz Unlicensed SU (500Mbps) - Installed on a Street Light or Traffic Signal	\$ 650.00	\$ 1,250.00	\$ 1,900.00	Includes Radio/Subscriber Unit/CPE, Mounting Bracket, Outdoor Rated POE Injector, Photocell Power Cable, Surge Protection, Installation (Does not include conduit, NEMA Enclosure, or Electrical Work). Assumes location is a street light or utility pole and is bucket truck accessible.
5	Massive MIMO 5GHz Unlicensed BSU (2.4Gbps) - Tower Installed	\$ 20,500.00	\$ 4,000.00	\$ 24,500.00	Includes Radio/Base Node, Tower Mounting Bracket, Fiber Cabling, DC Power Cabling, Installation (Does not include conduit, Sled, NEMA Enclosure, or Electrical Work). Assumes location is Tower Mounted.
6	Massive MIMO 5GHz Unlicensed SU (800Mbps) - Installed on a Street Light or Traffic Signal	\$ 1,500.00	\$ 2,000.00	\$ 3,500.00	Includes Radio/Subscriber Unit/CPE, Mounting Bracket, Outdoor Rated POE Injector, Photocell Power Cable, Surge Protection, Installation, 1YR Subscription (Does not include conduit, NEMA Enclosure, or Electrical Work). Assumes location is a street light or utility pole and is bucket truck accessible.
PTP - Licensed and Unlicensed Unit Pricing					

7	Licensed 11/18GHz PTP Link (Up to 1Gbps) - Installed	\$ 23,000.00	\$ 7,000.00	\$ 30,000.00	Includes 2 Radios, Antennas, Power supplies, Surge Protection, 250FT Cat6 Cable, Tower Mounts, License Registration, Path Analysis and Installation (Does not include conduit, electrical work, switches, or NEMA Enclosures)
8	Unlicensed 24GHz or 60GHz PTP Link (Up to 1Gbps) - Installed	\$ 6,000.00	\$ 4,000.00	\$ 10,000.00	Includes 2 Radios, Antennas, Power supplies, Surge Protection, 250FT Cat6 Cable, Tower Mounts, Path Analysis and Installation (Does not include conduit, electrical work, switches, or NEMA Enclosures)
9	Unlicensed 5GHz 1Gbps PTP Link	\$ 2,500.00	\$ 4,000.00	\$ 6,500.00	Includes 2 Radios, Antennas, Power supplies, Surge Protection, 250FT Cat6 Cable, Tower Mounts, Path Analysis and Installation (Does not include conduit, electrical work, switches, or NEMA Enclosures)
Mesh Access Point Unit Pricing					
10	Pole Mounted Root AP Location (High Capacity 4x4+ AP) - Installed	\$ 3,400.00	\$ 1,750.00	\$ 5,150.00	Includes Root Mesh AP, Outdoor POE Switch, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation
11	Pole Mounted Mesh AP Location (High Capacity 4x4+ AP) - Installed	\$ 2,400.00	\$ 1,500.00	\$ 3,900.00	Includes Mesh AP, Outdoor POE Injector, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation
12	Pole Mounted Root AP Location (2x2 MIMO or comparable) - Installed	\$ 2,000.00	\$ 1,750.00	\$ 3,750.00	Includes Root Mesh AP, Outdoor POE Switch, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation
13	Pole Mounted Mesh AP Location (2x2 MIMO or comparable) - Installed	\$ 1,250.00	\$ 1,500.00	\$ 2,750.00	Includes Mesh AP, Outdoor POE Injector, Surge Protection, Photocell Power Cable, Mounting Brackets, AP License, Installation
Other Unit Pricing Items					
14	Mesh AP Cloud Control and Support - 1 Year		\$ 225.00	\$ 225.00	Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties.
	8x5xNBD Licensed or Unlicensed PTP/PTMP				Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties. Does not include responses to PCN requests.
15a	Support - 1 YR (Does not include responses to PCN requests) - 1 to 10 Radios Supported		\$ 450.00	\$ 450.00	

15b	8x5xNBD Licensed or Unlicensed PTP/PTMP Support - 1 YR (Does not include responses to PCN requests) - 11+ Radios Supported	\$	360.00	\$	360.00	Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties. Does not include responses to PCN requests.
16a	24x7x4 Licensed or Unlicensed PTP/PTMP Support - 1 YR (Does not include responses to PCN requests) - 1 to 10 Radios Supported	\$	750.00	\$	750.00	Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties. Does not include responses to PCN requests.
16b	24x7x4 Licensed or Unlicensed PTP/PTMP Support - 1 YR (Does not include responses to PCN requests) - 11+ Radios Supported	\$	600.00	\$	600.00	Per Device - Network monitoring, optimization and Truck Roll services required for maintenance related services. Does not include move, add, change work, or manufacturer extended warranties. Does not include responses to PCN requests.
17	Nokia Hardware - Percent Off List	30%		30%		Percent off list price for all Nokia Hardware
18	Nokia Support - Percent Off List	0%		0%		Percent off list price for all Nokia Support
19	Siklu Hardware - Percent Off List	15%		15%		Percent off list price for all Siklu Hardware
20	Siklu Support - Percent Off List	0%		0%		Percent off list price for all Siklu Support
21	Cambium Hardware - Percent Off List	10%		10%		Percent off list price for all Cambium Hardware
22	Cambium Support - Percent Off List	0%		0%		Percent off list price for all Cambium Support
23	Tarana Hardware - Percent Off List	5%		5%		Percent off list price for all Tarana Hardware
24	Tarana Subscription/Support - Percent Off List	0%		0%		Percent off list price for all Tarana Subscriptions/support
25	Ruckus Hardware - Percent Off List	35%		35%		Percent off list price for all Ruckus Hardware
26	Ruckus Support - Percent Off List	0%		0%		Percent off list price for all Ruckus Support
27	Celona Hardware - Percent Off List	15%		15%		Percent off list price for all Celona Hardware
28		15%		15%		
29	SIAE Hardware - Percent Off List	15%	\$	165.00	\$	165.00
30	SIAE Support - Percent Off List	0%		0%		
31	Wireless Appurtenant Equipment or Subcontractor - Cost plus					
32	Senior RF/Network Engineer Hourly Rate	\$	200.00	\$	200.00	
33	Project Manager Hourly Rate					

Percent off list price for all Ruckus Hardware
Percent off list price for all Ruckus Support

20% 20% 20% Cost plus 20%

Does not include Travel or Expenses. Rates may be reduced based on quantity of hours.

Does not include Travel or Expenses. Rates may be reduced based on quantity of hours.

34	RF/Installation Technician Hourly Rate	\$ 105.00	\$ 105.00	Does not include Travel or Expenses. Rates may be reduced based on quantity of hours.
35	Tower Work Upcharge (if required)	\$ 2,500.00	\$ 2,500.00	Two Man Crew Per Day

The following pricing notes apply:

- 1 Site Acquisition Services are not included in install estimates. If required, hourly rates of \$250/hr for Site Acquisition services will apply.
- 2 PE Stamped drawings are not included.
- 3 Zoning, permitting or environmental services are not included.
- 4 RF/Network Design, Survey, Modeling, etc are NOT included in Unit Install Pricing.
- 5 Equipment Configuration and Testing is included in Unit Install Pricing.
- 6 Pricing listed is subject to a mutually agreeable contract between SmartWave and Client.
- 7 If not mentioned in the line item, all wireless solutions assume the customer provided switch/router is the demarcation point
- 8 Sales Tax is not included in Unit Pricing.
- 9 Costs associated with Bonds and Permits are not included in the price.
- 10 Labor Rates quoted are subject to a COLA adjustment each year upon renewal.

Explanation of the Menu of Pricing - The menu of pricing is meant to provide the costs of adding different wireless components to an existing network. The pricing is not priced to provide support for a new application or any changes in the core network. There would be additional costs associated with those tasks.

Pole Installations

Point of Demarcation

- ⊕ Power is a standard 110-480V photocell within 20 feet of the Radio/GW/P2P/P2MP Link.

Inclusions

- ⊕ The price includes all of the material, configuration, installation, and testing basic functionality of the network connection.
- ⊕ Basic coordination with the organizations to get IP/SSID/VLAN/Mgt information, update configuration documents, set up warranty, and/or monitor the device through the NOC.

Exclusions

- ⊕ Right to install (excludes any additionally required drawings, approvals, or permits for a new site)
- ⊕ Any special non-standard mounting brackets or other obstacles that would prevent a typical installation
- ⊕ Tower work requiring certified tower climbers

Building Installations

Point of Demarcation

- ⊕ For building mounted mesh nodes, it's assumed a 110 standard AC plug is within 100 feet of the radio installation point, and a pre-configured Ethernet port within 100 feet of the radio installation point

Inclusions

- ⊕ The price includes all of the material, configuration, installation, and testing basic functionality of the network connection.
- ⊕ Basic coordination with the organizations to get IP/SSID/VLAN/Mgt information, update configuration documents, set up warranty, and/or monitor the device through the NOC.

Exclusions

- ⊕ Right to install (excludes any additionally required PE stamped drawings, approvals, or permits for a new site)

⌕ Special non-standard mounting brackets, new roof penetration, or other obstacles that would prevent a typical installation

Page 84 of 177

7. Insurance



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

5/9/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Yates, LLC 2800 Century Parkway NE Suite 300 Atlanta GA 30345	CONTACT NAME: PHONE (A/C, No, Ext): 404-633-4321 FAX (A/C, No): 404-633-1312 E-MAIL ADDRESS: certs@yatesins.com
INSURED SmartWave Technologies, LLC 2662 Holcomb Bridge Rd. Ste 340 Alpharetta GA 30022	INSURER(S) AFFORDING COVERAGE INSURER A: The Hanover American Insurance Company INSURER B: The Hanover Insurance Company INSURER C: Allmerica Financial Benefit Insurance Company INSURER D: INSURER E: INSURER F:

COVERAGES

CERTIFICATE NUMBER: 753350547

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR ☐ GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC ☐ OTHER:			ZZAJ53055700	8/27/2023	8/27/2024	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
C	☒ AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY ☒ HA Phys Dmg			AWAJ53080500	8/27/2023	8/27/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	☒ UMBRELLA LIAB ☒ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ☒ RETENTION \$ -0-			UHAJ53056400	8/27/2023	8/27/2024	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y / N ☒ N	N / A	W2AJ48940800	8/27/2023	8/27/2024	☒ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C A A	Business Auto - Any Auto Employee Theft (incl ERISA) Leased/Rented Equipment			AWAJ53080500 ZZAJ53055700 ZZAJ53055700	8/27/2023 8/27/2023 8/27/2023	8/27/2024 8/27/2024 8/27/2024	Comp Ded \$1,000 \$1,000 Ded \$1,000 Ded Coll Ded \$1,000 \$250,000 \$25,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

B	Cyber Liability / E&O Liability	LHAJ5334900	8/27/2023 - 8/27/2024	\$10,000 Retention	\$5,000,000
A	Business Personal Prop	ZZAJ53055700	8/27/2023 - 8/27/2024	\$1,000 Ded	\$380,000

See Attached...

CERTIFICATE HOLDER

CANCELLATION

City of Tucson
255 W Alameda, 6th Floor
Tucson AZ 85701

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



© 1988-2015 ACORD CORPORATION. All rights reserved.



ADDITIONAL REMARKS SCHEDULE

Page 1 of 1

AGENCY Yates, LLC		NAMED INSURED SmartWave Technologies, LLC 2662 Holcomb Bridge Rd. Ste 340 Alpharetta GA 30022	
POLICY NUMBER		EFFECTIVE DATE:	
CARRIER	NAIC CODE		

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** CERTIFICATE OF LIABILITY INSURANCE

Subject to policy terms, conditions, forms, and exclusions, the insurance coverages afforded by the policies above include the following when required by written contract for the certificate holder and/or entities listed below: Blanket Additional Insured in regards to General Liability for ongoing and completed operations, Automobile Liability and Umbrella Liability; Blanket Primary and Non-Contributory in regards to General Liability and Automobile Liability; Blanket Waiver of Subrogation in regards to General Liability, Automobile Liability, Workers Compensation and Umbrella Liability. Per Project Aggregate applies to the General Liability.

FORMS:

421-2915 0615 - Commercial General Liability Broadening Endorsement
 421-2926 0615 - Commercial General Liability Enhancement Endorsement - Technology
 421-3635 0716 - Aggregate Limits of Insurance Per Project and Per Location With Cap
 461-0155 (9-97) - Business Auto Coverage – Broadening Endorsement
 461-0478 12 12 - Blanket Additional Insured – Primary and Non-Contributory
 475-0003 12 14 - Schedule of Underlying Policies
 475-0001 12/22 - Hanover Commercial Follow Form Excess And Umbrella Policy
 475-0526 01/18 - Blanket Waiver of Transfer of Rights of Recovery Against Others To Us
 WC00 0313 (Ed. 4-84) - Waiver of Our Right To Recover From Others Endorsement

RE: City of Tucson RFQ #240021 - JOC for Design, Installation and Maintenance of Point-to Point/Point-to-Multipoint Wireless Backhaul

Entities: City of Tucson the officers, officials, employees and volunteers

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

COMMERCIAL GENERAL LIABILITY BROADENING ENDORSEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SUMMARY OF COVERAGES

1.	Additional Insured by Contract, Agreement or Permit	Included
2.	Additional Insured - Primary and Non-Contributory	Included
3.	Blanket Waiver of Subrogation	Included
4.	Bodily Injury Redefined	Included
5.	Broad Form Property Damage - Borrowed Equipment, Customers Goods & Use of Elevators	Included
6.	Knowledge of Occurrence	Included
7.	Liberalization Clause	Included
8.	Medical Payments - Extended Reporting Period	Included
9.	Newly Acquired or Formed Organizations - Covered until end of policy period	Included
10.	Non-owned Watercraft	51 ft.
11.	Supplementary Payments Increased Limits	
	- Bail Bonds	\$2,500
	- Loss of Earnings	\$1000
12.	Unintentional Failure to Disclose Hazards	Included
13.	Unintentional Failure to Notify	Included

This endorsement amends coverages provided under the Commercial General Liability Coverage Part through new coverages, higher limits and broader coverage grants.

1. Additional Insured by Contract, Agreement or Permit

The following is added to **SECTION II - WHO IS AN INSURED**:

Additional Insured by Contract, Agreement or Permit

- a. Any person or organization with whom you agreed in a written contract, written agreement or permit that such person or organization to add an additional insured on your policy is an additional insured only with respect to liability for "bodily injury", "property damage", or "personal and advertising injury" caused, in whole or in part, by your acts or omissions, or the acts or omissions of those acting on your behalf, but only with respect to:

- (1) "Your work" for the additional insured(s) designated in the contract, agreement or permit;

- (2) Premises you own, rent, lease or occupy; or

- (3) Your maintenance, operation or use of equipment leased to you.

- b. The insurance afforded to such additional insured described above:

- (1) Only applies to the extent permitted by law; and

- (2) Will not be broader than the insurance which you are required by the contract, agreement or permit to provide for such additional insured.

- (3) Applies on a primary basis if that is required by the written contract, written agreement or permit.
 - (4) Will not be broader than coverage provided to any other insured.
 - (5) Does not apply if the "bodily injury", "property damage" or "personal and advertising injury" is otherwise excluded from coverage under this Coverage Part, including any endorsements thereto.
- c. This provision does not apply:
- (1) Unless the written contract or written agreement was executed or permit was issued prior to the "bodily injury", "property damage", or "personal injury and advertising injury".
 - (2) To any person or organization included as an insured by another endorsement issued by us and made part of this Coverage Part.
 - (3) To any lessor of equipment:
 - (a) After the equipment lease expires; or
 - (b) If the "bodily injury", "property damage", "personal and advertising injury" arises out of sole negligence of the lessor
 - (4) To any:
 - (a) Owners or other interests from whom land has been leased which takes place after the lease for the land expires; or
 - (b) Managers or lessors of premises if:
 - (i) The occurrence takes place after you cease to be a tenant in that premises; or
 - (ii) The "bodily injury", "property damage", "personal injury" or "advertising injury" arises out of structural alterations, new construction or demolition operations performed by or on behalf of the manager or lessor.
 - (5) To "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of or the failure to render any professional services.
- This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage" or the offense which caused the "personal and

advertising injury" involved the rendering of or failure to render any professional services by or for you.

- d. With respect to the insurance afforded to these additional insureds, the following is added to **SECTION III - LIMITS OF INSURANCE**:

The most we will pay on behalf of the additional insured for a covered claim is the lesser of the amount of insurance:

- 1. Required by the contract, agreement or permit described in Paragraph a.; or
- 2. Available under the applicable Limits of Insurance shown in the Declarations.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

2. Additional Insured - Primary and Non-Contributory

The following is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, Paragraph 4. Other insurance:

Additional Insured - Primary and Non-Contributory

If you agree in a written contract, written agreement or permit that the insurance provided to any person or organization included as an Additional Insured under **SECTION II - WHO IS AN INSURED**, is primary and non-contributory, the following applies:

If other valid and collectible insurance is available to the Additional Insured for a loss covered under Coverages **A** or **B** of this Coverage Part, our obligations are limited as follows:

a. Primary Insurance

This insurance is primary to other insurance that is available to the Additional Insured which covers the

Additional Insured as a Named Insured. We will not seek contribution from any other insurance available to the Additional Insured except:

- (1) For the sole negligence of the Additional Insured;
- (2) When the Additional Insured is an Additional Insured under another primary liability policy; or
- (3) when b. below applies.

If this insurance is primary, our obligations are not affected unless any of the other insurance is also primary. Then, we will share with all that other insurance by the method described in c. below.

b. Excess Insurance

- (1) This insurance is excess over any of the other insurance, whether primary, excess, contingent or on any other basis:
- (a) That is Fire, Extended Coverage, Builder's Risk, Installation Risk or similar coverage for "your work";
 - (b) That is Fire insurance for premises rented to the Additional Insured or temporarily occupied by the Additional Insured with permission of the owner;
 - (c) That is insurance purchased by the Additional Insured to cover the Additional Insured's liability as a tenant for "property damage" to premises rented to the Additional Insured or temporarily occupied by the Additional Insured with permission of the owner; or
 - (d) If the loss arises out of the maintenance or use of aircraft, "autos" or watercraft to the extent not subject to Exclusion g. of **SECTION I - COVERAGE A - BODILY INJURY AND PROPERTY DAMAGE LIABILITY**.
- (2) When this insurance is excess, we will have no duty under Coverages **A** or **B** to defend the insured against any "suit" if any other insurer has a duty to defend the insured against that "suit". If no other insurer defends, we will undertake to do so, but we will be entitled to the insured's rights against all those other insurers.
- (3) When this insurance is excess over other Insurance, we will pay only our share of the amount of the loss, if any, that exceeds the sum of:
- (a) The total amount that all such other insurance would pay for the loss in the absence of this insurance; and
 - (b) The total of all deductible and self insured amounts under all that other insurance.

We will share the remaining loss, if any, with any other insurance that is not described in this Excess Insurance provision and was not bought specifically to apply in excess of the Limits of Insurance shown in the Declarations of this Coverage Part.

c. Method Of Sharing

If all of the other insurance permits contribution by equal shares, we will follow this method also. Under this approach each

insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first. If any of the other insurance does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers

3. Blanket Waiver of Subrogation

The following is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, Paragraph 8. **Transfer Of Rights Of Recovery Against Others To Us:**

We waive any right of recovery we may have against any person or organization with whom you have a written contract that requires such waiver because of payments we make for damage under this coverage form. The damage must arise out of your activities under a written contract with that person or organization. This waiver applies only to the extent that subrogation is waived under a written contract executed prior to the "occurrence" or offense giving rise to such payments.

4. Bodily Injury Redefined

SECTION V - DEFINITIONS, Definition 3. "bodily injury" is replaced by the following:

3. "Bodily injury" means bodily injury, sickness or disease sustained by a person including death resulting from any of these at any time. "Bodily injury" includes mental anguish or other mental injury resulting from "bodily injury".

5. Broad Form Property Damage - Borrowed Equipment, Customers Goods, Use of Elevators

- a. **SECTION I - COVERAGES, COVERAGE A - BODILY INJURY AND PROPERTY DAMAGE LIABILITY**, Paragraph 2. **Exclusions** subparagraph j. is amended as follows:

Paragraph (4) does not apply to "property damage" to borrowed equipment while at a jobsite and not being used to perform operations.

Paragraphs (3), (4) and (6) do not apply to "property damage" to "customers goods" while on your premises nor do they apply to the use of elevators at premises you own, rent, lease or occupy.

- b. The following is added to **SECTION V - DEFINITIONS:**

24. "Customers goods" means property of your customer on your premises for the purpose of being:

- a. worked on; or
- b. used in your manufacturing process.
- c. The insurance afforded under this provision is excess over any other valid and collectible property insurance (including deductible) available to the insured whether primary, excess, contingent

6. Knowledge of Occurrence

The following is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, Paragraph 2. **Duties in the Event of Occurrence, Offense, Claim or Suit**:

- e. Notice of an "occurrence", offense, claim or "suit" will be considered knowledge of the insured if reported to an individual named insured, partner, executive officer or an "employee" designated by you to give us such a notice.

7. Liberalization Clause

The following is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**:

Liberalization Clause

If we adopt any revision that would broaden the coverage under this Coverage Form without additional premium, within 45 days prior to or during the policy period, the broadened coverage will immediately apply to this Coverage Part.

8. Medical Payments - Extended Reporting Period

- a. **SECTION I - COVERAGES, COVERAGE C - MEDICAL PAYMENTS**, Paragraph 1. **Insuring Agreement**, subparagraph a.(3)(b) is replaced by the following:
 - (b) The expenses are incurred and reported to us within three years of the date of the accident; and
- b. This coverage does not apply if **COVERAGE C - MEDICAL PAYMENTS** is excluded either by the provisions of the Coverage Part or by endorsement.

9. Newly Acquired Or Formed Organizations

SECTION II - WHO IS AN INSURED, Paragraph 3.a. is replaced by the following:

- a. Coverage under this provision is afforded until the end of the policy period.

10. Non-Owned Watercraft

SECTION I - COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, Paragraph 2. **Exclusions**, subparagraph g.(2) is replaced by the following:

g. Aircraft, Auto Or Watercraft

- (2) A watercraft you do not own that is:

- (a) Less than 51 feet long; and
- (b) Not being used to carry persons or property for a charge;

This provision applies to any person who, with your consent, either uses or is responsible for the use of a watercraft.

11. Supplementary Payments Increased Limits

SECTION I - SUPPLEMENTARY PAYMENTS COVERAGES A AND B, Paragraphs 1.b. and 1.d. are replaced by the following:

- 1.b. Up to \$2,500 for cost of bail bonds required because of accidents or traffic law violations arising out of the use of any vehicle to which the Bodily Injury Liability Coverage applies. We do not have to furnish these bonds.

- 1.d. All reasonable expenses incurred by the insured at our request to assist us in the investigation or defense of the claim or "suit", including actual loss of earnings up to \$1000 a day because of time off from work.

12. Unintentional Failure to Disclose Hazards

The following is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, Paragraph 6. **Representations**:

We will not disclaim coverage under this Coverage Part if you fail to disclose all hazards existing as of the inception date of the policy provided such failure is not intentional.

13. Unintentional Failure to Notify

The following is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, Paragraph 2. **Duties in the Event of Occurrence, Offense, Claim or Suit**:

Your rights afforded under this policy shall not be prejudiced if you fail to give us notice of an "occurrence", offense, claim or "suit", solely due to your reasonable and documented belief that the "bodily injury" or "property damage" is not covered under this policy.

ALL OTHER TERMS, CONDITIONS, AND EXCLUSIONS REMAIN UNCHANGED.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

COMMERCIAL GENERAL LIABILITY ENHANCEMENT ENDORSEMENT - TECHNOLOGY

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SUMMARY OF COVERAGES

1.	Additional Insured - Broad Form Vendors	Included
2.	Additional Insured - Employee and Volunteer Worker Broadened Bodily Injury Coverage	Included
3.	Aggregate Limit per Location	Included
4.	Aircraft - Nonowned Hired, Chartered or Loaned with Paid Crew	Included
5.	Alienated Premises	Included
6.	Broad Form Named Insured	Included
7.	Damage to your Product	\$50,000
8.	Extended Property Damage	Included
9.	Incidental Malpractice (Employed nurses, EMT's & paramedics)	Included
10.	Mobile Equipment Redefined	Included
11.	Personal Injury - Broad Form	Included
12.	Product Recall Expense	
	- Each Occurrence Limit	\$25,000
	- Aggregate Limit	\$50,000
	- Deductible	\$500
13.	Property Damage Legal Liability - Broad Form	
	- Fire, Lightning, Explosion, Smoke and Leakage from Fire Protective Systems	\$1,000,000
	Damage Limit	

This endorsement amends coverages provided under the Commercial General Liability Coverage Part through new coverages, higher limits and broader coverage grants.

1. Additional Insured - Broad Form Vendors

The following is added to **SECTION II - WHO IS AN INSURED**:

Additional Insured - Broad Form Vendors

- a. Any person or organization that is a vendor with whom you agreed in a written contract or written agreement to include as an additional insured under this Coverage Part is an insured, but only with respect to liability for "bodily injury" or "property damage" arising out of "your products" which are distributed or sold in the regular course of the vendor's business.
- b. The insurance afforded to such vendor described above:
 - (1) Only applies to the extent permitted by law;
 - (2) Will not be broader than the insurance

which you are required by the contract or agreement to provide for such vendor;

- (3) Will not be broader than coverage provided to any other insured; and
- (4) Does not apply if the "bodily injury", "property damage" or "personal and advertising injury" is otherwise excluded from coverage under this Coverage Part, including any endorsements thereto

- c. With respect to insurance afforded to such vendors, the following additional exclusions apply:

The insurance afforded to the vendor does not apply to:

- (1) "Bodily injury" or "property damage" for which the vendor is obligated to pay damages by reasons of the assumption of liability in a contract or agreement. This

exclusion does not apply to liability for damages that the insured would have in the absence of the contract or agreement;

- (2) Any express warranty unauthorized by you;
- (3) Any physical or chemical change in the product made intentionally by the vendor;
- (4) Repackaging, unless unpacked solely for the purpose of inspection, demonstration, testing, or the substitution of parts under instruction from the manufacturer, and then repackaged in the original container;
- (5) Any failure to make such inspection, adjustments, tests or servicing as the vendor has agreed to make or normally undertakes to make in the usual course of business in connection with the sale of the product;
- (6) Demonstration, installation, servicing or repair operations, except such operations performed at the vendor's premises in connection with the sale of the product;
- (7) Products which, after distribution or sale by you, have been labeled or relabeled or used as a container, part or ingredient of any other thing or substance by or for the vendor;
- (8) "Bodily injury" or "property damage" arising out of the sole negligence of the vendor for its own acts or omissions or those of its employees or anyone else acting on its behalf. However, this exclusion does not apply to:
 - (a) The exceptions contained within the exclusion in sub-paragraphs (4) or (6) above; or
 - (b) Such inspections, adjustments, tests or servicing as the vendor has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products.
- (9) "Bodily injury" or "property damage" arising out of an "occurrence" that took place before you have signed the contract or agreement with the vendor.
- (10) To any person or organization included as an insured by another endorsement issued by us and made part of this Coverage Part.
- (11) Any insured person or organization, from whom you have acquired such products, or any ingredient, part or container, entering into, accompanying or containing such products.

- d. With respect to the insurance afforded to these vendors, the following is added to **SECTION III - LIMITS OF INSURANCE:**

The most we will pay on behalf of the vendor for a covered claim is the lesser of the amount of insurance:

1. Required by the contract or agreement described in Paragraph a.; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

2. **Additional Insured - Employee and Volunteer Worker Broadened Bodily Injury Coverage**

The following is added to **SECTION II - WHO IS AN INSURED**, Paragraph 2.a.(1):

Your "employees" and "volunteer workers" are insured for "bodily injury" that results from the providing of or failure to provide first aid by an "employee" or "volunteer worker", other than a licensed medical provider.

3. **Aggregate Limit Per Location**

- a. **SECTION III - LIMITS OF INSURANCE**, the General Aggregate Limit applies separately to each of your "locations" owned by or rented to you.

- b. For purpose of this coverage only, the following is added to **SECTION V - DEFINITIONS:**

"Location" means premises involving the same or connecting lots, or premises whose connection is interrupted only by a street, roadway, waterway or right-of-way of a railroad.

4. **Aircraft - Nonowned Hired, Chartered or Loaned with Paid Crew**

The following is added to **SECTION I - COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY**, Paragraph 2. **Exclusions**, subparagraph g.:

This exclusion does not apply to:

g. **Aircraft, Auto or Watercraft**

An aircraft you do not own that is hired, chartered or loaned with a paid crew.

This exception does not apply if the insured has any other valid and collectible insurance for "bodily injury" or "property damage" liability that would also be covered under this provision, whether the other insurance is primary, excess, contingent or on any other basis. In that case, this provision does not provide any insurance.

5. Alienated Premises

SECTION I - COVERAGES, COVERAGE A - BODILY INJURY AND PROPERTY DAMAGE LIABILITY, Paragraph 2. Exclusions, subparagraph j.(2) is replaced by the following:

- (2) Premises you sell, give away or abandon, if the "property damage" arises out of any part of those premises and occurred from hazards that were known by you, or should have reasonably been known by you, at the time the property was transferred or abandoned.

6. Broad Form Named Insured

If you are designated in the Declarations as anything other than an individual, then any organization:

- a. Over which you maintained a combined ownership interest of more than 50% on the effective date of this policy;
- b. That is not a partnership, joint venture or limited liability company; and
- c. That is not excluded by any endorsement to this policy, will qualify as a Named Insured if there is no other similar insurance available to that organization, or that would be available but for exhaustion of its limits.

Any such organization will cease to qualify as a Named Insured as of the date during the policy period when the combined ownership interest of the Named Insureds in the organization equals or falls below 50%.

7. Damage to Your Product

SECTION I - COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, Paragraph 2. Exclusions, subparagraph k. **Damage to Your Product** is replaced by the following:

"Property damage" to "your product" if caused by any of the following:

- (1) Delay in, or failure to begin, complete or deliver, "your product";
- (2) Loss of market;
- (3) Any fraudulent, malicious, criminal or intentional act committed by an insured or with an insured's consent or knowledge; or
- (4) Wear or tear, or gradual deterioration.

Subject to the Products Completed Operations Aggregate Limit, the Damage to "Your Product" Limit shown in the Schedule above is the most that we will pay because of all "property damage" to "your product" arising out of any one "occurrence".

Coverage provided by this section is subject to the Retention stated in the Declarations, and is subject to all other policy terms and conditions.

8. Extended Property Damage

SECTION I - COVERAGES, COVERAGE A - BODILY INJURY AND PROPERTY DAMAGE LIABILITY, Paragraph 2. Exclusions, subparagraph a. is replaced by the following:

a. Expected or intended Injury

Bodily injury" or "property damage" expected or intended from the standpoint of the insured. This exclusion does not apply to "bodily injury" or "property damage" resulting from the use of reasonable force to protect persons or property.

9. Incidental Malpractice - Employed Nurses, EMT's and Paramedics

SECTION II - WHO IS AN INSURED, Paragraph 2.a.(1)(d) does not apply to a nurse, emergency medical technician or paramedic employed by you if you are not engaged in the business or occupation of providing medical, paramedical, surgical, dental, x-ray or nursing services.

10. Mobile Equipment Redefined

SECTION V - DEFINITIONS, Definition 12. "Mobile Equipment", paragraph f.(1) does not apply to self-propelled vehicles of less than 1,000 pounds gross vehicle weight.

11. Personal Injury - Broad Form

- a. **SECTION I - COVERAGES, COVERAGE B - PERSONAL AND ADVERTISING INJURY LIABILITY, Paragraph 2. Exclusions,** subparagraph e. is deleted.

- b. **SECTION V - DEFINITIONS, Definition 14,** "Personal and advertising injury" subparagraph b. is replaced by the following:

- b. Malicious prosecution or abuse of process.

- c. The following is added to **SECTION V - DEFINITIONS, Definition 14.** "Personal and advertising injury":

"Discrimination" (unless insurance thereof is prohibited by law) that results in injury to the feelings or reputation of a natural person, but only if such "discrimination" is:

- (1) Not done intentionally by or at the direction of:

- (a) The insured;

- (b) Any officer of the corporation, director, stockholder, partner or member of the insured; and

- (2) Not directly or indirectly related to an "employee", not to the employment,

prospective employment or termination of any person or persons by an insured.

d. The following is added to **SECTION V - DEFINITIONS:**

"Discrimination" means the unlawful treatment of individuals based upon race, color, ethnic origin, gender, religion, age, or sexual preference. "Discrimination" does not include the unlawful treatment of individuals based upon developmental, physical, cognitive, mental, sensory or emotional impairment or any combination of these.

e. This coverage does not apply if **COVERAGE B - PERSONAL AND ADVERTISING INJURY LIABILITY** is excluded either by the provisions of the Coverage Form or by endorsement.

12. Product Recall Expense

a. **SECTION I - COVERAGES, COVERAGE A - BODILY INJURY AND PROPERTY DAMAGE LIABILITY, Paragraph 2. Exclusions, subparagraph n.** is replaced by the following:

n. **Recall of Products, Work or Impaired Property**

Damages claimed for any loss, cost or expense incurred by you or others for the loss of use, withdrawal, recall, inspection, repair, replacement, adjustment, removal or disposal of:

- (1) "Your product";
- (2) "Your work"; or
- (3) "Impaired property";

if such product, work, or property is withdrawn or recalled from the market or from use by any person or organization because of a known or suspected defect, deficiency, inadequacy or dangerous condition in it, but this exclusion does not apply to "product recall expenses" that you incur for the "covered recall" of "your product".

However, this exception to the exclusion does not apply to "product recall expenses" resulting solely from:

- (4) Failure of any products to accomplish their intended purpose;
- (5) Breach of warranties of fitness, quality, durability or performance;
- (6) Loss of customer approval, or any cost incurred to regain customer approval;

- (7) Redistribution or replacement of "your product" which has been recalled by like products or substitutes;
- (8) Caprice or whim of the insured;
- (9) A condition likely to cause loss of which any insured knew or had reason to know at the inception of this insurance;
- (10) Asbestos, including loss, damage or clean up resulting from asbestos or asbestos containing materials;
- (11) Recall of "your products" that have no known or suspected defect solely because a known or suspected defect in another of "your products" has been found.

b. The following is added to **SECTION II - WHO IS AN INSURED, Paragraph 3.:**

COVERAGE A does not apply to "product recall expense" arising out of any withdrawal or recall that occurred before you acquired or formed the organization.

c. For the purposes of this endorsement only, the following is added to **SECTION III - LIMITS OF INSURANCE:**

Product Recall Expense Limits of Insurance

- a. The Limits of Insurance shown in the **SUMMARY OF COVERAGES** of this endorsement and rules stated below fix the most we will pay under this Product Recall Expense Coverage regardless of the number of:
 - (1) Insureds;
 - (2) "Covered Recalls" initiated; or
 - (3) Number of "your products" withdrawn.
- b. The Product Recall Expense Aggregate Limit is the most we will reimburse you for the sum of all "product recall expenses" incurred for all "covered recalls" initiated during the policy period.
- c. The Product Recall Expense Each Occurrence Limit is the most we will pay in connection with any one defect or deficiency.
- d. All "product recall expenses" in connection with substantially the same general harmful condition will be deemed to arise out of the same defect or deficiency and considered one "occurrence".
- e. Any amount reimbursed for "product recall expenses" in connection with any one "occurrence" will reduce the amount of the

Product Recall Expense Aggregate Limit available for reimbursement of "product recall expenses" in connection with any other defect or deficiency.

- f. If the Product Recall Expense Aggregate Limit has been reduced by reimbursement of "product recall expenses" to an amount that is less than the Product Recall Expense Each Occurrence Limit, the remaining Product Recall Expense Aggregate Limit is the most that will be available for reimbursement of "product recall expenses" in connection with any other defect or deficiency.

g. Product Recall Deductible

We will only pay for the amount of "product recall expenses" which are in excess of the \$500 Product Recall Deductible. The Product Recall Deductible applies separately to each "covered recall". The limits of insurance will not be reduced by the amount of this deductible.

We may, or will if required by law, pay all or any part of any deductible amount, if applicable. Upon notice of our payment of a deductible amount, you shall promptly reimburse us for the part of the deductible amount we paid.

The Product Recall Expense Limits of Insurance apply separately to each consecutive annual period and to any remaining period of less than 12 months, starting with the beginning of the policy period shown in the Declarations, unless the policy period is extended after issuance for an additional period of less than 12 months. In that case, the additional period will be deemed part of the last preceding period for the purposes of determining the Limits of Insurance.

- d. The following is added to **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, Paragraph 2. **Duties in the Event of Occurrence, Offense, Claim or Suit:**

You must take the following actions in the event of an actual or anticipated "covered recall" that may result in "product recall expense":

- (1) Give us prompt notice of any discovery or notification that "your product" must be withdrawn or recalled, including a description of "your product" and the reason for the withdrawal or recall; and
- (2) Cease any further release, shipment, consignment or any other method of

distribution of like or similar products until it has been determined that all such products are free from defects that could be a cause of loss under this insurance.

- e. The following definitions are added to **SECTION V - DEFINITIONS:**

"Covered recall," means a recall made necessary because you or a government body has determined that a known or suspected defect, deficiency, inadequacy, or dangerous condition in "your product" has resulted or will result in "bodily injury" or "property damage".

"Product recall expense" means:

- a. Necessary and reasonable expenses for:

- (1) Communications, including radio or television announcements or printed advertisements including stationery, envelopes and postage;
- (2) Shipping the recalled products from any purchaser, distributor or user to the place or places designated by you;
- (3) Remuneration paid to your regular "employees" for necessary overtime;
- (4) Hiring additional persons, other than your regular "employees";
- (5) Expenses incurred by "employees" including transportation and accommodations;
- (6) Expenses to rent additional warehouse or storage space;
- (7) Disposal of "your product", but only to the extent that specific methods of destruction other than those employed for trash discarding or disposal are required to avoid "bodily injury" or "property damage" as a result of such disposal;

You incur exclusively for the purpose of recalling "your product"; and

- b. Your lost profit resulting from such "covered recall".
- f. This Product Recall Expense Coverage does not apply:
- (1) If the "products - completed operations hazard" is excluded from coverage under this Coverage Part including any endorsement thereto; or
 - (2) To "product recall expense" arising out of any of "your products" that are otherwise excluded from coverage under this Coverage Part including endorsements thereto.

13. Property Damage Legal Liability - Broad Form

- a. **SECTION I - COVERAGES, COVERAGE A - BODILY INJURY AND PROPERTY DAMAGE LIABILITY**, the last paragraph (after the exclusions) is replaced by the following:

Exclusions c. through n. do not apply to damage by fire, lightning, explosion, smoke or leakage from fire protective systems to premises while rented to you or temporarily occupied by you with the permission of the owner. A separate limit of insurance applies to this coverage as described in **SECTION III - LIMITS OF INSURANCE**.

- b. **SECTION III - LIMITS OF INSURANCE**, Paragraph 6. is replaced by the following:

6. Subject to Paragraph 5. above, The Damage to Premises Rented to You Limit is the most we will pay under **COVERAGE A** for damages because of "property damage" to any one premises from fire, lightning, explosion, smoke and leakage from fire protective systems to premises, while rented to you or temporarily occupied by you with permission of the owner.

The Damage to Premises Rented to You Limit is the higher of:

- a. \$1,000,000; or
- b. The Damage to Premises Rented to You Limit shown in the Declarations.

This limit will apply to all damage caused by the same event, whether such damage

results from fire, lightning, explosion, smoke, leakage from fire protective systems or any combination of any of these.

- c. **SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS**, Paragraph 4. **Other Insurance**, subparagraph b. **Excess Insurance**, item (a)(ii) is replaced by the following:

- (ii) That is fire, lightning, explosion, smoke or leakage from fire protective systems insurance for premises rented to you or temporarily occupied by you with permission of the owner; or

- d. **SECTION V - DEFINITIONS**, Definition 9. "Insured contract", Paragraph a. is replaced by the following:

- a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire, lightning, explosion, smoke or leakage from fire protective systems to premises while rented to you or temporarily occupied by you with permission of the owner is not an "insured contract".

- e. This coverage does not apply if Damage to Premises Rented to You is excluded either by the provisions of the Coverage Part or by endorsement.

ALL OTHER TERMS, CONDITIONS, AND EXCLUSIONS REMAIN UNCHANGED.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

AGGREGATE LIMITS OF INSURANCE PER PROJECT AND PER LOCATION WITH CAP

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Policy Aggregate: \$ 2,000,000

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

A. The following is added to SECTION III – LIMITS OF INSURANCE, paragraph 2.:

The General Aggregate Limit applies separately to:

- a. Construction projects away from premises owned or rented to you; and
- b. Each "location" owned by or rented to you.

If the Schedule above is completed, however, a Policy Aggregate Limit applies. The most we will pay for the sum of all damages, except for damages included in the "products-completed operations hazard", regardless of the number of insureds, claims made or "suits" brought, persons or organizations making claims or bringing "suits",

or "locations", is the Policy Aggregate Limit identified in the Schedule above.

B. This endorsement does not apply to damages included in the "products-completed operations hazard".

C. For the purposes of this endorsement, the following definition is added to SECTION V – DEFINITIONS:

- 1. "Location" means premises involving the same or connecting lots, or premises whose connection is interrupted only by a street, roadway, waterway or right-of-way of a railroad.

ALL OTHER TERMS, CONDITIONS, AND EXCLUSIONS REMAIN UNCHANGED

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BUSINESS AUTO COVERAGE BROADENING ENDORSEMENT

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

1. CANCELLATION EXTENSION

Paragraph **A. CANCELLATION 2. b.** of the **COMMON POLICY CONDITIONS** is replaced with the following:

- b. 60 days before the effective date of cancellation if we cancel for any other reason.

- d. Any business entity for which you have a financial interest greater than 50% of the voting stock or otherwise have a controlling interest after the effective date of this policy or that is newly acquired or formed by you during the term of this policy.

SECTION I - COVERED AUTOS

2. EMPLOYEE HIRED "AUTOS"

Description Of Covered Auto Designation Symbols; Symbol 8 is replaced by the following:

8 = Hired "Autos" Only - Only those "autos" you lease, hire, rent or borrow; including "autos" your employee hires at your direction, for the purpose of conducting your business. This does not include any "auto" you lease, hire, rent, or borrow from any of your "employees" or partners or members of their households.

The coverage provided by this provision is afforded until expiration or termination of this policy, whichever occurs earlier.

The coverage provided by this provision does not apply to any business entity described in d. above that qualifies as an insured under any other automobile liability policy issued to that business entity as a named insured or would have been an insured except for the exhaustion of the policy limits or the insolvency of the insurer.

SECTION II - LIABILITY COVERAGE

3. BROADENED NAMED INSURED

The following is added to the **SECTION II - LIABILITY COVERAGE**, Paragraph 1. **Who Is An Insured** provision:

The coverage provided by this provision does not apply to "bodily injury" nor "property damage" arising from an accident that occurred prior to your acquiring or forming the business entity described in d. above.

4. EMPLOYEES AS INSURED

The following is added to the **SECTION II - LIABILITY COVERAGE**, Paragraph 1. **Who Is An Insured** provision:

- e. Any employee of yours is an "insured" while using a covered "auto" you do not own, hire or borrow in your business or your personal affairs.

5. SUPPLEMENTARY PAYMENTS

The following amends **SECTION II - LIABILITY COVERAGE**, Paragraph 2. **Coverage Extensions** provision:

Paragraph (2) is replaced by the following:

- (2) Up to \$2500 for cost of bail bonds (including bonds for related traffic law violations) required because of an "accident" we cover. We do not have to furnish these bonds.

Paragraph (4) is replaced by the following:

- (4) All reasonable expenses incurred by the "insured" at our request, including actual loss of earnings up to \$500 a day because of time off from work.

6. AMENDED FELLOW EMPLOYEE EXCLUSION

The following is added to the **SECTION II - LIABILITY COVERAGE**, B. **Exclusions Fellow Employee**

This exclusion does not apply if the "bodily injury" arises from the use of a covered "auto" you own or hire. This coverage is excess over any other collectible insurance

SECTION III - PHYSICAL DAMAGE COVERAGE.

7. EXPENSE OF RETURNING A STOLEN "AUTO" and SIGN COVERAGE

The following is added to **SECTION III - PHYSICAL DAMAGE COVERAGE, A.1. COVERAGE:**

d. Expense Of Returning A Stolen "Auto"

We will pay for the expense of returning a covered "auto" to you.

e. Sign Coverage

We will pay for loss to signs, murals, paintings or graphics, as part of equipment, which are displayed on a covered "auto".

The most we will pay for "loss" in any one "accident" is the lesser of:

1. The actual cash value of the property as of the time of the "loss"; or
2. The cost of repairing or replacing the damaged or stolen property with other property of like kind and quality; or
3. \$2,000.

8. GLASS BREAKAGE DEDUCTIBLE

The following is added to **SECTION III - PHYSICAL DAMAGE COVERAGE, A. COVERAGE** paragraph 3. **Glass Breakage - Hitting a Bird or Animal - Falling Objects or Missiles:**

Any deductible shown in the Declarations as applicable to the

covered "auto" will not apply to glass breakage if such glass is repaired, rather than replaced.

9. TRANSPORTATION EXPENSE

Paragraph 4. **Coverage Extension.** of **SECTION 111 - PHYSICAL DAMAGE COVERAGE, A. COVERAGE** is replaced with the following:

4. Coverage Extension

We will pay up to \$50 per day to a maximum of \$1500 for temporary transportation expense incurred by you because of the total theft of a covered "auto" of the private passenger type. We will pay only for those covered "autos" for which you carry either Comprehensive or Specified Causes of Loss Coverage. We will pay for temporary transportation expenses incurred during the period beginning 24 hours after the theft and ending, regardless of the policy's expiration, when the covered "auto" is returned to use or we pay for its "loss".

10. HIRED AUTO PHYSICAL DAMAGE

The following is added to **SECTION 111 - PHYSICAL DAMAGE COVERAGE, A. COVERAGE**:

5. Hired Auto Physical Damage

If hired "autos" are covered "autos" for Liability Coverage and if Physical Damage Coverage of Comprehensive, Specified Causes of Loss, or Collision is provided under this Coverage Form for any "auto" you own, then the Physical Damage Coverage(s) provided is extended to "autos" you hire without a driver or your employee hires, without a driver, at your

direction, for the purpose of conducting your business, for a period of 30 days or less, of like kind and use as the "autos" you own, subject to the following:

The most we will pay for any one loss is the lesser of the following:

- a. \$50,000 per accident, or
- b. cash value, or
- c. the cost of repair,

minus the deductible equal to the lowest deductible applicable to any owned "auto" for that coverage. Any deductible shown in the Declarations does not apply to "loss" caused by fire or lightning. Subject to the limit and deductible stated above, we will provide coverage equal to the broadest coverage provided to any covered "auto" you own, that is applicable to the loss.

If the loss arises from an accident for which you are legally liable and the lessor incurs an actual financial loss from that accident, we will cover the lessors actual financial loss of use of the hired "auto" for a period of up to seven consecutive days from the date of the accident, subject to a limit of \$1,000 per accident.

AUDIO, VISUAL AND DATA ELECTRONIC EQUIPMENT COVERAGE

The following is added to **SECTION III - PHYSICAL DAMAGE COVERAGE, A. COVERAGE**:

6. Audio, Visual and Data Electronic Equipment Coverage

We will pay for "loss" to any electronic equipment that receives

Includes copyrighted material of Insurance Services Office, Inc. with its permission.

Copyright, Insurance Services Office, Inc., 1996

or transmits audio, visual or data signals and that is not designed solely for the reproduction of sound. This coverage applies only if the equipment is permanently installed in the covered "auto" at the time of the "loss" or the equipment is removable from a housing unit which is permanently installed in the covered auto at the time of the "loss", and such equipment is designed to be solely operated by use of the power from the "auto s" electrical system, in or upon the covered "auto", including its antennas and other accessories. However, this does not include tapes, records or discs.

The exclusions that apply to PHYSICAL DAMAGE COVERAGE, except for the exclusion relating to Audio, Visual and Data Electronic Equipment, also apply to coverage provided herein. In addition, the following exclusions apply:

We will not pay, under this coverage, for either any electronic equipment or accessories used with such electronic equipment that is:

1. Necessary for the normal operation of the covered "auto" or the monitoring of the covered "auto s" operating system; or
2. Both:
 - a. An integral part of the same unit housing any sound reproducing equipment designed solely for the reproduction of sound if the sound reproducing equipment is permanently installed in the covered "auto", and
 - b. Permanently installed in the opening of the dash or console normally used by the manufacturer for the installation of a radio.

With respect to coverage herein, the **LIMIT OF INSURANCE** provision of **PHYSICAL DAMAGE COVERAGE** is replaced by the following:

1. The most we will pay for all "loss" to audio, visual or data electronic equipment and any accessories used with this equipment as a result of any one "accident" is the lesser of
 - a. The actual cash value of the damaged or stolen property as of the time of the "loss"; or
 - b. The cost of repairing or replacing the damaged or stolen property with other property of like kind and quality; or
 - c. \$500.
2. An adjustment for depreciation and physical condition will be made in determining actual cash value at the time of the "loss".
3. Deductibles applicable to PHYSICAL DAMAGE COVERAGE, do not apply to this Audio, Visual and Data Electronic Equipment Coverage.

If there is other coverage provided by this policy for audio, visual and data electronic equipment, the coverage provided herein is

excess. However, you may elect to apply the limit or any portion thereof of coverage provided herein to pay any deductible that is applicable under the provisions of the other coverage.

12. RENTAL REIMBURSEMENT and MATERIAL TRANSFER EXPENSE

The following is added to **SECTION 111 - PHYSICAL DAMAGE COVERAGE, A. COVERAGE:**

7. Rental Reimbursement and Material Transfer Expense

This coverage provides only those Physical Damage Coverages where a premium is shown in the Declarations. It applies only to a covered "auto" described or designated to which the Physical Damage Coverages apply.

We will pay for auto rental expenses and the expenses, incurred by you because of "loss" to a covered "auto", to remove and transfer your materials and equipment from the covered "auto". Payment applies in addition to the otherwise applicable amount of each coverage you have on a covered "auto". No deductibles apply to this coverage.

We will pay only for those auto rental expenses incurred during the policy period beginning 24 hours after the "loss" and ending, regardless of the policy s expiration, with the lesser of the following number of days:

1. The number of days reasonably required to repair or replace the

covered "auto". If loss is caused by theft, this number of days is added to the number of days it takes to locate the covered "auto" and transport it to a repair shop.

2. 60 days.

Our payment is limited to the lesser of the following amounts:

1. Necessary and actual expenses incurred, including loss of use.
2. \$3000.

This auto rental expense coverage does not apply while there are spare or reserve "autos" available to you for your operations.

If "loss" results from the total theft of a covered "auto" of the private passenger type, we will pay under this coverage only that amount of your rental reimbursement expenses which is not already provided for under the SECTION III - PHYSICAL DAMAGE COVERAGE, A. 4. Coverage Extension.

13. AIRBAG COVERAGE

SECTION III - PHYSICAL DAMAGE COVERAGE, B. Exclusions, paragraph 3.

The portion of this exclusion relating to mechanical or electrical breakdown does not apply to the accidental discharge of an airbag. This coverage is excess of other collectible insurance or warranty. No deductible applies to this Airbag Coverage.

Includes copyrighted material of Insurance Services Office, Inc. with its permission.

Copyright, Insurance Services Office, Inc., 1996

14. AUTO LOAN PHYSICAL DAMAGE EXTENSION

The following is added to **SECTION III - PHYSICAL DAMAGE COVERAGE, C. Limit Of Insurance** provision:

When a "loss" results in a total loss to a covered auto you own for which a Loss Payee is designated in this policy, the most we will pay for "loss" in any one "accident" is the greater of:

1. The actual cash value of the damaged or stolen property as of the time of the "loss"; or
2. The outstanding balance of the initial loan, less any amounts for taxes, overdue payments, overdue payment charges, penalties, interest, any charges for early termination of the loan, costs for Credit Life Insurance, Health, Accident or Disability Insurance purchased with the loan, and carry-over balances from previous loans.

15. AUTO LEASE PHYSICAL DAMAGE EXTENSION

The following is added to **SECTION III - PHYSICAL DAMAGE COVERAGE, C. Limit Of Insurance** provision:

If, because of damage, destruction or theft of a covered "auto", which is a long-term leased "auto", the lease agreement between you and the lessor is terminated, "we" will pay the difference between the amount paid under paragraph **C. LIMIT OF INSURANCE 1.** or **2.** and the amount due at the time of "loss" under the terms of the lease agreement applicable to the leased "auto" which you are required to pay: less any fees to dispose of the auto; any overdue payments; financial penalties

imposed under a lease for excessive use, abnormal wear and tear or high mileage; security deposits not refunded by the lessor; cost for extended warranties, Credit Life Insurance, Health, Accident or Disability Insurance purchased with the loan; and carry over balances from previous leases.

This coverage applies only to the initial lease for the covered "auto" which has not previously been leased. This coverage is excess over all other collectible insurance.

SECTION IV - CONDITIONS

16. DUTIES IN THE EVENT OF ACCIDENT, CLAIM, SUIT OR LOSS

The following is added to **SECTION IV - BUSINESS AUTO CONDITIONS, A. Loss Conditions, 2. Duties In The Event Of Accident, Claim, Suit Or Loss:**

- d. Knowledge of any "accident", claim, "suit" or "loss" will be deemed knowledge by you when notice of such "accident", claim, "suit" or "loss" has been received by:
 - (1) You, if you are an individual;
 - (2) Any partner or insurance manager if you are a partnership; or
 - (3) An executive officer or insurance manager if you are a corporation.

17. BLANKET WAIVER OF SUBROGATION

Paragraph 5. **Transfer Of Rights Of Recovery Against Others To Us, SECTION IV - BUSINESS AUTO CONDITIONS, A. Loss Conditions** is replaced by the following:

Includes copyrighted material of Insurance Services Office, Inc. with its permission.

Copyright, Insurance Services Office, Inc., 1996

**5. Transfer Of Rights Of Recovery
Against Others To Us**

If any person or organization to or for whom we make payment under this Coverage Form has rights to recover damages from another, which have not been waived through the execution of an "insured contract", written agreement, or permit, prior to the "accident" or "loss" giving rise to the payment, those rights to recover damages from another are transferred to us. That person or organization must do everything necessary to secure our rights and must do nothing after the "accident" or "loss" to impair them.

**18. UNINTENTIONAL FAILURE TO
DISCLOSE INFORMATION**

The following is added to **SECTION IV BUSINESS AUTO CONDITIONS. B. General Conditions**, paragraph 2. **Concealment, Misrepresentation Or Fraud:**

Your unintentional error in disclosing, or failure to disclose, any material fact existing after the effective date of this Coverage Form shall not prejudice your rights under this Coverage Form. However, this provision does not affect our right to collect additional premium or exercise our right of cancellation or nonrenewal.

**19. HIRED AUTO -WORLDWIDE
COVERAGE**

The following is added to **SECTION IV - Business Auto Conditions, B. General Conditions**, paragraph 7. **Policy Period, Coverage Territory** provision:

- e. Outside the coverage territory described in a., b., c., and d. above for an "accident" or "loss" resulting from the use of a covered "auto" you hire, without a driver, or your employee hires without a driver, at your direction, for the purpose of conducting your business, for a period of 30 days or less, provided the suit is brought within The United States of America or its territories or possessions.

SECTION V - DEFINITIONS

20. MENTAL ANGUISH

Paragraph C. **"Bodily injury"**, **SECTION V - DEFINITIONS** is replaced by the following:

- C. "Bodily injury" means bodily injury, sickness or disease sustained by a person including death or mental anguish resulting from any of these.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BLANKET ADDITIONAL INSURED - PRIMARY AND NON-CONTRIBUTORY

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE PART

A. The following is added to SECTION II - LIABILITY COVERAGE, Paragraph A.1. Who Is

An Insured:

Additional Insured if Required by Contract

If you agree in a written contract, written agreement or written permit that a person or organization be added as an additional "insured" under this Coverage Part, such person or organization is an "insured"; but only to the extent that such person or organization qualifies as an "insured" under paragraph A.1.c. of this Section.

If you agree in a written contract, written agreement or written permit that a person or organization be added as an additional "insured" under this Coverage Part, the most we will pay on behalf of such additional "insured" is the lesser of:

- (1) The Limits of Insurance for liability coverage specified in the written contract, written agreement or written permit; or
- (2) The Limits of Insurance for Liability Coverage shown in the Declarations applicable to this Coverage Part.

Such amount shall be part of and not in addition to the Limits of Insurance shown in the Declarations applicable to this Coverage Part.

Regardless of the number of covered "autos", "insureds", premiums paid, claims made or vehicles involved in the "accident", the most we will pay for the total of all damages and "covered pollution cost or expense" combined resulting from any one "accident" is the Limit of Insurance for Liability Coverage shown in the Declarations.

B. The following is added to SECTION IV - BUSINESS AUTO CONDITIONS, Paragraph B.

General Conditions, subparagraph 5. Other Insurance:

Primary and Non-Contributory

If you agree in a written contract, written agreement or written permit that the insurance provided to a person or organization who qualifies as an additional "insured" under SECTION II - LIABILITY COVERAGE, Paragraph A.1. Who Is An Insured, subparagraph

Additional Insured if Required by Contract is primary and non-contributory, the following applies:

The liability coverage provided by this Coverage Part is primary to any other insurance available to the additional "insured" as a Named Insured. We will not seek contribution from any other insurance available to the additional "insured" except:

- (1) For the sole negligence of the additional "insured"; or
- (2) For negligence arising out of the ownership, maintenance or use of any "auto" not owned by the additional "insured" or by you, unless that "auto" is a trailer connected to an "auto" owned by the additional "insured" or by you; or
- (3) When the additional "insured" is also an additional "insured" under another liability policy.

C. This endorsement will apply only if the "accident" occurs:

1. During the policy period;
2. Subsequent to the execution of the written contract or written agreement or the issuance of the written permit; and
3. Prior to the expiration of the period of time that the written contract, written agreement or written permit requires such insurance to be provided to the additional "insured".

D. Coverage provided to an additional "insured" will not be broader than coverage provided to any other "insured" under this Coverage Part.

ALL OTHER TERMS, CONDITIONS, AND EXCLUSIONS REMAIN UNCHANGED.

461-0478 12 12

Includes copyrighted material of ISO Insurance Services Office, Inc., with its permission

Page 1 of 1



SCHEDULE OF UNDERLYING POLICIES

Insured: SMARTWAVE TECHNOLOGIES LLC
 Effective on and after 08/27/2023 12:01 A.M. Standard Time
 This Schedule is part of Policy Number: UHA J530564 00

CARRIER, POLICY NUMBER & PERIOD	TYPE OF POLICY	APPLICABLE LIMITS OR AMOUNT OF INSURANCE	
(a) Carrier: HANOVER AMERICAN INSURANCE COMPANY Policy Number: ZZA J530557 00 Policy Period: 08/27/2023 TO 08/27/2024	Commercial General Liability ☐ Owned Autos ☐ Non-owned & Hired Autos	\$1,000,000 \$1,000,000 \$1,000,000 \$2,000,000 \$2,000,000	Occurrence/ Each Claim Personal Injury Advertising Injury General Aggregate Product/Completed Operations Aggregate
(b) Carrier: ALLMERICA FINANCIAL BENEFITS Policy Number: AWA J550805 00 Policy Period: 08/27/2023 TO 08/27/2024	Comprehensive Automobile Liability including ☒ Owned Autos ☒ Non-Owned & Hired Autos	Bodily Injury and Property Damage Liability Combined: \$1,000,000 Bodily Injury \$ \$ Property Damage: \$	Each Accident Each Person Each Accident Each Accident
(b) Carrier: HANOVER INSURANCE COMPANY Policy Number: AHA J494149 00 Policy Period: 08/27/2023 TO 08/27/2024	Comprehensive Automobile Liability including ☒ Owned Autos ☒ Non-Owned & Hired Autos	Bodily Injury and Property Damage Liability Combined: \$1,000,000 Bodily Injury \$ \$ Property Damage: \$	Each Accident Each Person Each Accident Each Accident
(c) Carrier: Policy Number: Policy Period:	Garage Liability ☐ Dealers ☐ Service	Bodily Injury and Property Damage Liability Combined: Each Accident Garage Operations \$ \$ \$ Garage Operations \$	Auto Only Other than Auto Only Aggregate Other than Auto Only

An "X" marked in the box provided indicates these broadening or optional coverage are provided in the Underlying Insurance



(d) Carrier: ALLMERICA FINANCIAL BENEFITS Policy Number: W2A J489408 00 Policy Period: 08/27/2023 TO 08/27/2024	Standard Workers' Compensation & Employers' Liability NEW YORK ONLY: The Umbrella Coverage for Workers' Compensation and Employers Liability is not applicable in situations where an employee is subject to the New York Workers' Compensation Law.	Coverage B – Employers Liability Bodily Injury by Accident \$1,000,000 Each Accident Bodily Injury by Disease \$1,000,000 Each Employee \$1,000,000 Aggregate
(d) Carrier: ALLMERICA FINANCIAL BENEFITS Policy Number: WMA J530562 00 Policy Period: 08/27/2023 TO 08/27/2024	Standard Workers' Compensation & Employers' Liability NEW YORK ONLY: The Umbrella Coverage for Workers' Compensation and Employers Liability is not applicable in situations where an employee is subject to the New York Workers' Compensation Law.	Coverage B – Employers Liability Bodily Injury by Accident \$1,000,000 Each Accident Bodily Injury by Disease \$1,000,000 Each Employee \$1,000,000 Aggregate
(e) Carrier: Policy Number: Policy Period:	Liquor Liability	\$ Each Common Cause \$ Other \$ Aggregate \$ Other
(f) Carrier: Policy Number: Policy Period:	Professional Liability	\$ Each Occurrence \$ Each Claim \$ Other \$ Aggregate \$ Other
(g) Carrier: Policy Number: Policy Period:	Directors & Officers Liability	\$ Each Occurrence \$ Each Claim \$ Other \$ Aggregate \$ Other
(h) Carrier: Policy Number: Policy Period:	Stop Gap Liability	Bodily Injury by Accident \$ Each Accident Bodily Injury by Disease \$ Each Employee \$ Aggregate
(i) Carrier: Policy Number: Policy Period:	Abuse and Molestation	\$ Each Occurrence \$ Each Claim \$ Other \$ Aggregate



(j) Carrier: Policy Number: Policy Period:	Foreign	\$ \$ \$ \$	Each Occurrence Each Claim Other Aggregate
(k) Carrier: Policy Number: Policy Period:	Employee Benefits Liability	\$ \$ \$ \$	Each Occurrence Each Claim Other Aggregate
(l) Carrier: Policy Number: Policy Period:	Other	\$ \$ \$ \$	Each Occurrence Each Claim Other Aggregate

An "X" marked in the box provided indicates these broadening or optional coverage are provided in the Underlying Insurance

Countersigned By: _____
Authorized Representative of the Company

Date: _____

HANOVER COMMERCIAL FOLLOW FORM EXCESS AND UMBRELLA POLICY

TABLE OF REFERENCE

	Beginning on Page
I. INSURING AGREEMENTS	
1. Coverage A - Follow Form Excess Liability Insuring Agreement	2
2. Coverage B - Umbrella Liability Insuring Agreement	2
II. DEFENSE AND SETTLEMENT	
1. Coverage A - Follow Form Excess Liability Defense and Settlement	3
2. Coverage B - Umbrella Liability Defense and Settlement	4
III. WHO IS AN INSURED	
1. Coverage A - Follow Form Excess Liability Who Is An Insured	4
2. Coverage B - Umbrella Liability Who Is An Insured	4
IV. COVERAGE TERRITORY	
1. Coverage A - Follow Form Excess Liability	5
2. Coverage B - Umbrella Liability	5
V. SUPPLEMENTAL PAYMENTS	
Applicable to Both Coverage A - Follow Form Excess Liability and Coverage B - Umbrella Liability	5
VI. LIMITS OF INSURANCE	
Applicable to Both Coverage A - Follow Form Excess Liability and Coverage B - Umbrella Liability	6
VII. EXCLUSIONS	
1. Applicable to Both Coverage A - Follow Form Excess Liability and Coverage B - Umbrella Liability	7
2. Applicable to Coverage A - Follow Form Excess Liability Only	8
3. Applicable to Coverage B - Umbrella Liability Only	10
VIII. CONDITIONS	
Applicable to Both Coverage A - Follow Form Excess Liability and Coverage B - Umbrella Liability	12
IX. DEFINITIONS	
Applicable to Both Coverage A. Follow Form Excess Liability and Coverage B. Umbrella	15

HANOVER COMMERCIAL FOLLOW FORM EXCESS AND UMBRELLA POLICY

Various provisions of this policy restrict coverage. Read the entire policy carefully to determine rights, duties and what is and is not covered.

We will not pay sums or perform acts or services unless explicitly provided for in this policy.

Throughout this policy the words **you** and **your** refer to the Named Insured shown in the Declarations and any other person or organization qualifying as a Named Insured under this policy. The words **we**, **us** and **our** refer to the Company providing this insurance.

Other words and phrases that appear in quotation marks have special meaning. Refer to the Definitions Section of this policy.

I. INSURING AGREEMENTS

1. Coverage A - Follow Form Excess Liability Insuring Agreement

- a. We will pay on behalf of the insured those sums in excess of the "underlying insurance" which the insured becomes legally obligated to pay as damages, provided:

- (1) Such damages are covered by "underlying insurance";
- (2) The event which triggers coverage on the "underlying insurance" takes place during the policy period of this insurance, and
- (3) The applicable Limit of Insurance of the "underlying insurance" is exhausted by payment of judgments, settlements, related costs or expenses for damages also covered under this policy. We will not pay if the Limit of Insurance of "underlying insurance" is exhausted by payment for damages to which this insurance does not also apply.

- b. We will not pay damages that the "underlying insurance" does not pay for any reason other than exhaustion of limits of the "underlying insurance" by payment of judgments, settlements, related costs or expenses.
- c. The terms and conditions of the "underlying insurance" in effect at the inception of this policy apply unless they are inconsistent with the terms and conditions of this policy.
- d. The amount we will pay for damages is limited as described in section **VI. LIMITS OF INSURANCE**.
- e. We have no obligation under this insurance with respect to any claim or "suit" settled without our consent.

- f. This policy does not apply to any part of loss within the Limit of Insurance of "underlying insurance", or any related costs or expenses.

- g. No other obligation or liability to pay sums or perform acts or services is covered unless explicitly provided for under section

II. DEFENSE AND SETTLEMENT and section **V. SUPPLEMENTAL PAYMENTS**.

2. Coverage B - Umbrella Liability Insuring Agreement

- a. We will pay on behalf of the insured those sums in excess of the "retained limit" shown in the Declarations which the insured becomes legally obligated to pay as damages because of "bodily injury", "property damage", "personal injury" and "advertising injury" to which this coverage applies, provided:

(1) The:

- (a) "Bodily injury" or "property damage" is caused by an "occurrence"; or
- (b) "Personal injury" and "advertising injury" is caused by an offense arising out of your business;

Which took place within the coverage territory as described in section **IV. COVERAGE TERRITORY**;

- (2) The "bodily injury" or "property damage" occurs during the policy period, and the offense causing "personal injury" or "advertising injury" is first committed during our policy period; and
- (3) Prior to the policy period, no insured and no "employee" authorized by you to give or receive notice of an "occurrence", offense or claim, knew that the "bodily injury", "property

- a. We have the right and duty to defend the insured against any "suit" because of "bodily injury", "property damage", "personal injury" or "advertising injury" to which this insurance applies, even if such "suit" is groundless, false or fraudulent. We have no duty to defend any person or organization against any claim or "suit":
 - (1) To which this insurance does not apply; or
 - (2) If any other insurer has a duty to defend.
- b. Where we have the duty to defend, we may, at our discretion, investigate any "occurrence" or offense and settle any claim or "suit".
- c. Where we have no duty to defend, we have the right to participate in the investigation and settlement of any claim, and defense of any "suit", that we feel may create liability on our part under the terms and conditions of this policy. If we exercise this right, we will do so at our own expense.
- d. Our duty to defend ends when we have used up the applicable Limit of Insurance in the payment of judgments or settlements. However, if the Limits of Insurance of any "underlying insurance" are reduced by defense or claim expense under the terms of that policy, then our duty to defend ends when we have used up the applicable Limit of Insurance in the payment of judgments, settlements, and defense or claim expense as defined in the "underlying insurance".

III. WHO IS AN INSURED

1. Coverage A - Follow Form Excess Liability Who Is An Insured:

The following persons or organizations qualify as an insured:

- a. The named insured stated in Item 1 of the Declarations; and
- b. Any other person or organization qualifying as an insured under the "underlying insurance" but not beyond the extent of any limitation imposed under any contract or agreement.

If coverage provided to an Additional Insured is required by contract or agreement, the most we will pay on behalf of the Additional Insured is the amount of insurance required by the contract, less any amounts payable by "underlying insurance".

Additional Insured coverage provided by this insurance will not be broader than

coverage provided by the "underlying insurance". The inclusion of Additional Insureds does not increase the Limit of Insurance.

2. Coverage B - Umbrella Liability Who Is An Insured:

- a. If you are designated in the Declarations as:
 - (1) An individual, you and your spouse are insureds, but only with respect to the conduct of a business of which you are the sole owner.
 - (2) A partnership or joint venture, you are an insured. Your members, your partners, and their spouses are also insureds, but only with respect to the conduct of your business.
 - (3) A limited liability company, you are an insured. Your members are also insureds, but only with respect to the conduct of your business. Your managers are insureds, but only with respect to their duties as your managers.
 - (4) An organization other than a partnership, joint venture or limited liability company, you are an insured. Your "executive officers" and directors are insureds, but only with respect to their duties as your officers or directors. Your stockholders are also insureds, but only with respect to their liability as stockholders.
 - (5) A trust, you are an insured. Your trustees are also insureds, but only with respect to their duties as trustees.
- b. Each of the following is also an insured:
 - (1) Your "volunteer workers" only while performing duties related to the conduct of your business, or your "employees", other than your "executive officers" (if you are an organization other than a partnership, joint venture or limited liability company) or your managers (if you are a limited liability company), but only for acts within the scope of their employment by you or while performing duties related to the conduct of your business. However, none of these "employees" or "volunteer workers" is an insured for:
 - (a) "Bodily injury", "personal injury" or "advertising injury":

- (i) To you, to your partners or members (if you are a partnership or joint venture), to a co-"employee" while in the course of his or her employment or performing duties related to the conduct of your business, or to your other "volunteer workers" while performing duties related to the conduct of your business;
 - (ii) To the spouse, child, parent, brother or sister of the "employee" or "volunteer worker" as a consequence of paragraph (a)(1) above;
 - (iii) For which there is any obligation to share damages with or repay someone else who must pay damages because of the injury described in paragraphs (a)(1) or (a)(2) above; or
 - (iv) Arising out of his or her providing or failing to provide professional health care services.
- (b) "Property Damage" to property:
- (i) Owned, occupied or used by;
 - (ii) Rented to, in the care, custody or control of, or over which physical control is being exercised for any purpose by;
- you, any of your "employees", "volunteer workers", any partner or member (if you are a partnership or joint venture), or any member (if you are a limited liability company).
- (2) Any person (other than your "employee" or "volunteer worker"), or any organization while acting as your real estate manager.
 - (3) Any person or organization having proper temporary custody of your property if you die, but only:
 - (a) With respect to liability arising out of the maintenance or use of that property; and
 - (b) Until your legal representative has been appointed.
 - (4) Your legal representative if you die, but only with respect to duties as such. That representative will have all your rights and duties under this Coverage Part.

- c. Any organization you newly acquire or form, other than a partnership, joint venture or limited liability company, and over which you maintain ownership or a majority interest, will qualify as a Named Insured if there is no other similar insurance available to that organization. However,

- (1) Coverage under this provision is afforded only until the 90th day after you acquire or form the organization or the end of the policy period, whichever is earlier.
- (2) Coverage does not apply to "bodily injury" or "property damage" that occurred before you acquired or formed the organization; and
- (3) Coverage does not apply to "personal injury" and "advertising injury" arising out of an offense committed before you acquired or formed the organization.

No person or organization is an insured with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a Named Insured in the Declarations.

IV. COVERAGE TERRITORY

1. Coverage A - Follow Form Excess Liability:

With respect to **Coverage A - Follow Form Excess Liability**, this insurance applies anywhere that the applicable "underlying insurance" applies.

2. Coverage B - Umbrella Liability:

With respect to **Coverage B - Umbrella Liability**, this insurance applies anywhere in the world, with the exception of any country or jurisdiction subject to sanctions or embargo by the United States of America.

V. SUPPLEMENTAL PAYMENTS

Applicable to Both **Coverage A - Follow Form Excess Liability** and **Coverage B - Umbrella Liability**

- 1. We will pay the following expenses in addition to the Limit of Insurance with respect to any claim we investigate or settle, or any "suit" against an insured we defend, to the extent such expenses are not covered by "underlying insurance" or "other insurance":
 - a. All expenses we incur.
 - b. Up to \$2,000 for cost of bail bonds required because of accidents or traffic law violations arising out of the use of any vehicle to which this coverage applies. We do not have to furnish these bonds.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**BLANKET WAIVER OF TRANSFER OF RIGHTS OF RECOVERY
AGAINST OTHERS TO US**

This endorsement modifies insurance provided under the following:

HANOVER COMMERCIAL FOLLOW FORM EXCESS AND UMBRELLA POLICY

The following is added to section **VIII. CONDITIONS, 19. Transfer of Your Rights and Duties Under this Policy:**

To the extent required by contract, we waive any right of recovery we may have against any person or organization because of payments we make for injury or damage arising out of your ongoing operations or "your work" for that person or organization and included in the "products-completed operations hazard".

ALL OTHER TERMS, CONDITIONS, AND EXCLUSIONS REMAIN UNCHANGED.

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

AZ, GA, IL, ID, IA, LA, NE

THIS ENDORSEMENT APPLIES AS A BLANKET WAIVER
 OF SUBROGATION FOR THOSE PARTIES HAVING A WRITTEN
 CONTRACT WITH THE POLICYHOLDER REQUIRING A WAIVER
 OF SUBROGATION FOR WORKERS COMPENSATION COVERAGE OF THE
 POLICYHOLDERS EMPLOYEES.

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement
 Insured

Effective Policy No.

Endorsement No.
 Premium

Insurance Company

Countersigned by _____

8. RFQ# 240021



CITY OF TUCSON
REQUEST FOR QUALIFICATIONS

240021

JOC FOR DESIGN, INSTALLATION AND MAINTENANCE OF POINT-
TO-POINT/POINT-TO-MULTIPOINT WIRELESS BACKHAUL

Due Date: Tuesday, November 14, 2023

City of Tucson
255 W Alameda St
Tucson, AZ 85701

Procurement portal
<https://secure.procurenow.com/portal/tucson-az>

Public Portal <https://secure.procurenow.com/portal/tucson-az/projects/61377>

PUBLISH DATE: October 18, 2023

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 2 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

Attachments:

A - OFFER_AND_ACCEPTANCE_RFQ

B - SBE Provisions

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 3 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

A. Notice

A.1. CITY OF TUCSON

NOTICE OF REQUEST FOR QUALIFICATIONS NO 240021

JOC for Design, Installation and Maintenance of Point-to-Point/Point-to-Multipoint Wireless Backhaul

The City of Tucson is conducting a competitive One-Step Process to retain approximately up to two (2) contractors for a Job Order Contract (JOC) to provide JOC for Design, Installation and Maintenance of Point-to-Point/Point-to-Multipoint Wireless Backhaul. Individual job orders should not exceed two-hundred and fifty thousand dollars (\$250,000) and the estimated budget for the first year is six-hundred thousand dollars (\$600,000). The term of this contract will be one year with FOUR (4) one-year renewal options. Services will be requested on an as-needed, if-needed basis and the resultant contract is neither exclusive nor a commitment by COT that the Contractor's services will be required.

COT invites interested firms to submit written Statements of Qualifications (SOQ's) relating to this solicitation. A Screening Committee will evaluate firms' qualifications and experience with similar projects.

SUBMITTAL DUE DATE: Tuesday, November 14, 2023 AT 2:00 P.M. LOCAL AZ TIME

PRE-SUBMITTAL CONFERENCE DATE: Wednesday, November 1, 2023

TIME: 11:00 am LOCAL AZ TIME

LOCATION: Microsoft Teams meeting Join on your computer, mobile app or room device Meeting ID: 212 689 645 976 Passcode: 6CByeT Download Teams | Join on the web tel:+1 213 293-2303,,434079341#

[Microsoft Teams Link](#)

QUESTIONS SHALL BE DIRECTED TO: Casey Adams
(520) 837-4128
casey.adams@tucsonaz.gov

Publication Dates: Wednesday, October 18, 2023 and Wednesday, October 25, 2023

Posted Date: Wednesday, October 18, 2023

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 4 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

B. Introduction

B.1. Summary

The City of Tucson Information Technology Department is seeking proposals for the design, installation, monitoring and maintenance of licensed and unlicensed point-to-point and point-to-multipoint wireless links. These links will provide an extension of the City's network to locations where there is no fiber, or redundancy to locations with existing connections both inside and outside city limits.

B.2. Contact Information

Casey Adams

Senior Contract Officer

Email: casey.adams@tucsonaz.gov

Phone: [\(520\) 837-4128](tel:(520)837-4128)

Department:

Information Technology

C. Scope of Work

C.1. Required Services

Bidder shall provide complete end-to-end point-to-point or point-to-multipoint wireless solutions which may require the following:

- Site surveys and field investigation to verify installation requirements and path obstructions/line-of-site.
- Survey reports which may include path maps, terrain profiles, link budgets, antenna heights, path reliability calculations, etc.
- Design drawings which may include installation diagrams, tower elevations, equipment specifications, etc.
- Record drawings ("as-builts") following a final inspection and resolution of any punch list items.
- Installation, including masts, mounts, ballast blocks, grounding and lightning protection, conduit and roof support blocks for conduit, hardware, network and fiber cable, etc.
- Installation of monopoles or free-standing towers, including foundations and any required permits.
- Tower climbing and the use of aerial lifts.
- Remote monitoring. City of Tucson will support remote connectivity to individual IP addresses by VPN.
- Filing for FCC licensing, under City of Tucson's FRN, if applicable.

C.2. Equipment Requirements

- Vendor will offer various equipment options to provide appropriate and cost-effective solutions for differing requirements (path distance, licensed or unlicensed, bandwidths of 100 Mbps to >1 Gbps, reliability).
- Equipment must support out of band network management.

C.3. Maintenance and Support

- Include a minimum of a one-year full warranty for any newly installed link.
- All warranty items, issues, and concerns shall be resolved at no charge to the City of Tucson. This shall include, but not limited to, parts, freight, travel, labor, etc.
- Include an option to renew maintenance services for all active links on an annual basis. Maintenance fees are not expected to include equipment spares/replacement costs.
- Warranty all parts and services provided by any subcontractor as if supplied by the bidder.

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021

Page 6 of 58

RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

- All equipment furnished under the scope of this contract shall be new, current technology, and not approaching end-of-life. Equipment shall be a standard product of the manufacturer of the component to be furnished.
- Provide standard maintenance services from 8 AM to 4 PM Mountain Standard Time, Monday through Friday (excluding City of Tucson holidays), with a response time of 4 business hours and a restoration time of 24 hours.
- Provide an option for 24/7/365 maintenance services on select critical links, with a response time of 2 hours and a restoration time of 6 hours.
- Maintain a local supply of critical equipment spares.
- Bidders are encouraged to separately offer information and pricing regarding products and services related to this proposal.

D. Instruction to Offerors

D.1. DEFINITION OF KEY WORDS USED IN THE SOLICITATION:

For purposes of this solicitation and subsequent contract, the following definitions shall apply:

City (COT): The City of Tucson, Arizona

Contract: The legal agreement executed between the City and the Contractor/Contractor.

Contractor/Consultant: The individual, partnership, or corporation who, as a result of the competitive solicitation process, is awarded a contract by the City.

Contract Representative: The City employee or employees who have specifically been designated to act as a contact person or persons to the Contractor, and is responsible for monitoring and overseeing the Contractor's performance under this Contract.

Director of Business Services: The contracting authority for the City, authorized to sign contracts and addenda thereto on behalf of the City.

May: Indicates something that is not mandatory but permissible.

Offeror: The individual, partnership, or corporation who submits a proposal in response to a solicitation.

Shall, Will, Must: Indicates a mandatory requirement. Failure to meet these mandatory requirements, if they constitute a substantive requirement, may, at the City's sole discretion, result in the rejection of a proposal as non-responsive.

Should: Indicates something that is recommended but not mandatory. If the Offeror fails to provide recommended information, the City may, at its sole option, ask the Offeror to provide the information or evaluate the proposal without the information.

D.2. PRE-SUBMITTAL CONFERENCE:

If scheduled, the date and time of a Pre-submittal conference is indicated in [Notice](#). Attendance at this conference is not mandatory. Written minutes and/or notes will not be available, therefore attendance is encouraged. If an Offeror is unable to attend the Pre-submittal Conference questions may be submitted in writing. Offerors are encouraged to submit written questions, via electronic mail or through the question and answer portal, at least nine days prior to the Request for Qualifications due date to the Contract Officer listed above. The purpose of this conference will be to clarify the contents of this Request for Qualifications in order to prevent any misunderstanding of the City's position. Any doubt as to the requirements of this Request for Qualifications or any apparent omission or discrepancy should be presented to the City at this conference. The City will then determine the appropriate action necessary, if any, and may issue a written addendum to the Request for Qualifications. Oral statements or instructions will not constitute an addendum to this Request for Qualifications.

D.3. INQUIRIES:

Any question related to the Request for Qualifications shall be directed to the Contract Officer whose name appears above. An offeror shall not contact or ask questions of the department for whom the requirement is being procured. The Contract Officer may require any and all questions be submitted in

writing. Offerors are encouraged to submit written questions via electronic mail or through the question and answer portal, at least nine days prior to the submittal due date. Any correspondence related to a solicitation should refer to the appropriate Request for Qualifications number, page and paragraph number. Oral interpretations or clarifications will be without legal effect. Only questions answered by a formal written addendum to the Request for Qualifications will be binding.

D.4. ADDENDUM OF REQUEST FOR QUALIFICATIONS:

The Offeror shall acknowledge receipt of a Request for Qualifications Addendum by signing and submitting the document through the City's online bidding system by the specified due date and time.

D.5. FAMILIARIZATION OF SCOPE OF WORK:

Before submitting a statement of qualifications, each Offeror shall familiarize itself with the Scope of Work, laws, regulations and other factors affecting contract performance. The Offeror shall be responsible for fully understanding the requirements of the subsequent Contract and otherwise satisfy itself as to the expense and difficulties accompanying the fulfillment of contract requirements. The submission of a statement of qualifications will constitute a representation of compliance by the Offeror. There will be no subsequent financial adjustment, other than that provided by the subsequent Contract, for lack of such familiarization.

D.6. PREPARATION OF STATEMENT OF QUALIFICATIONS:

- A. All submittals shall be on the forms provided in this Request for Qualifications package. It is permissible to copy these forms as required. Facsimiles or electronic mail proposals shall not be considered.
- B. At a minimum, your statement of qualification should include the signed Offer form, acknowledge any solicitation addenda and your response to all evaluation criteria.
- C. The Offer page shall be signed by a person authorized to submit an offer. An authorized signature on the Offer Page, solicitation Addendum(s), or cover letter accompanying the submittal documents shall constitute an irrevocable offer to sell the good and/or service specified herein. Offeror shall submit any additional requested documentation, signifying intent to be bound by the terms of the agreement.
- D. The authorized person signing the submittal shall initial erasure, interlineations or other modifications on the submittal.
- E. It is the responsibility of all offerors to examine the entire Request for Qualification package and seek clarification of any requirement that may not be clear and to check all responses for accuracy before submitting a response. Negligence in preparing a submittal confers no right of withdrawal after due date and time.
- F. The City shall not reimburse the cost of developing, presenting, submitting or providing any response to this solicitation.
- G. Offeror must list any subcontractors to be utilized in the performance of the services specified herein. For each subcontractor, details on respective qualifications must be included.

D.7. SUBMITTAL FORMAT:

A statement of qualifications should be submitted on the forms and in the format specified in the solicitation. Any information that the offeror requested to be held as confidential shall be clearly marked as such. The material should be in sequence and related to the solicitation. The sections of the submittal should be organized, clearly identifiable, and should include a minimum of the following sections: the completed Offer Form, all signed addenda, and the offeror's response to the Evaluation Criteria. Failure to include the requested information may have a negative impact on the evaluation of the offeror's submittal.

D.8. EXCEPTIONS TO CONTRACT PROVISIONS:

A response to any Request for Qualifications is an offer to contract with the City based upon the contract provisions contained in the City's Request for Qualifications, including but not limited to, the specifications, scope of services and any terms and conditions. Offerors who wish to propose modifications to the contract provisions must clearly identify the proposed deviations and any proposed substitute language in their submittal. However, the provisions of the Request for Qualifications cannot be modified without the express written approval of the Director or his designee. Proposed modifications or exception to the indemnification language herein shall not be considered. If an offer is returned with modifications to the contract provisions that are not expressly approved in writing by the Director or his designee, the contract provisions contained in the City's Request for Qualifications shall prevail.

D.9. PUBLIC RECORD:

All statements of qualifications submitted in response to this Request for Qualifications shall become the property of the City and shall become a matter of public record available for review subsequent to the award notification.

D.10. CONFIDENTIAL INFORMATION:

The City of Tucson is obligated to abide by all public information laws. If an Offeror believes that any portion of a submittal, offer, specification, protest or correspondence contains information that should be withheld, a statement advising the Contract Officer of this fact should accompany the submission and the information shall be so identified wherever it appears. The City shall review all requests for confidentiality and may provide a written determination to designate specified documents confidential or the request may be denied. If the confidential request is denied, such information shall be disclosed as public information, unless the offeror submits a formal written objection.

D.11. CERTIFICATION:

By signature on the Offer page, solicitation Addendum(s), or cover letter accompanying the submittal documents, Offeror certifies:

- A. The submission of the offer did not involve collusion or other anti-competitive practices.
- B. The Offeror shall not discriminate against any employee or applicant for employment in violation of Federal or State law.

- C. The Offeror has not given, offered to give, nor intends to give at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, meal or service to a public servant in connection with the submitted offer.
- D. The Offeror hereby certifies that the individual signing the submittal is an authorized agent for the Offeror and has the authority to bind the Offeror to the Contract.

D.12. WHERE TO SUBMIT STATEMENT OF QUALIFICATION:

In order to be considered, Offeror must, no later than the Offer Submittal Deadline, submit its Offer electronically through the City's online bidding system, <https://procurement.opengov.com/portalucson-az>.

NOTE: THE ENTIRE OFFER MUST BE IN "SUBMITTED" STATUS IN THE CITY'S ONLINE BIDDING SYSTEM IN ORDER TO BE CONSIDERED. RESPONSES THAT HAVE BEEN CREATED IN THE SYSTEM, BUT THAT ARE NOT IN "SUBMITTED" STATUS BY THE OFFER SUBMITTAL DEADLINE WILL NOT BE CONSIDERED.

D.13. LATE SUBMITTALS:

Late submittals will be rejected.

D.14. OFFER PERIOD:

In order to allow for an adequate evaluation, the City requires an offer in response to this solicitation to be valid and irrevocable for ninety (90) days after the submittal due date and time.

D.15. OFFER & EXECUTION

Offerors shall submit the Offer & Acceptance page located in this RFQ with their submittal, acknowledging (i.e. signature) their intent to enter into negotiations on this solicitation. In addition, Offerors are reminded that if awarded a contract they will be required to agree to the Standard Terms and Conditions for Construction. As such, any exceptions to the Terms and Conditions shall be identified in the Offerors submittal.

D.16. WITHDRAWAL OF SUBMITTAL:

At any time prior to the specified solicitation due date and time, an offeror may formally withdraw the submittal by a written letter, facsimile or electronic mail from the Offeror or a designated representative. Telephonic or oral withdrawals shall not be considered.

D.17. CONTRACT NEGOTIATIONS:

At the completion of the evaluation process, the City may enter into negotiations with the top ranked Offeror to determine fees, and to negotiate any other portion of the Contract deemed by the City to be necessary. In the event that the City is not able to negotiate successfully with the top ranked Offeror, the City shall cease negotiations with that Offeror and either begin negotiations with the next ranked Offeror or may choose to cancel the solicitation in its entirety. In the event that the City is not able to

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 11 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

negotiate successfully with the next ranked Offeror, the City shall cease negotiations with that Offeror and either begin negotiations with the third ranked Offeror or may choose to cancel the solicitation in its entirety. Award shall be made to the Offeror whose submittal and subsequent negotiation is most advantageous to the City

D.18. VENDOR APPLICATION:

Prior to the award of a Contract, the successful offeror shall register with the City's Business Services Department. Registration can be completed at <http://www.tucsonprocurement.com/> by clicking on Vendor Services. Please note that email notifications of newly published solicitations and addenda will be provided to those vendors that select email as their preferred delivery method in their vendor record.

D.19. CITY OF TUCSON BUSINESS LICENSE:

It is the responsibility of the Contractor to have a City of Tucson Business License throughout the life of this contract or a written determination from the City's Business License Section that a license is not required. At any time during the contract, the City may request the Contractor to provide a valid copy of the business license or a written determination that a business license is not required. For questions contact the City's Business License Section at (520) 791-4566 or email at license@tucsonaz.gov

D.20. UPON NOTICE OF INTENT TO AWARD:

The apparent successful offeror shall sign and file with the City, within five (5) days after Notice of Intent to Award, all documents necessary to the successful execution of the Contract.

D.21. AWARD OF CONTRACT:

Notwithstanding any other provision of the Request for Qualification, the City reserves the right to:

- A. waive any immaterial defect or informality; or
- B. reject any or all proposals, or portions thereof; or
- C. reissue the Request for Qualifications.

A response to this solicitation is an offer to enter into negotiations and contract with the City based upon the terms, conditions, and specifications contained in the City's solicitation. Submittals do not become contracts unless and until they are executed by the City's Director of Business Services and the City Attorney. All of the terms and conditions of the solicitation shall be incorporated in the Contract, unless any of the terms and conditions are modified by a solicitation addendum, a contract addendum, or by mutually agreed terms and conditions in the final contract documents

D.22. SUBMITTAL RESULTS:

The name(s) of the successful offeror(s) will be posted on the Business Services Department's Internet site at <https://procurement.opengov.com/portalucson-az/contracts> upon issuance of a Notice of Intent to Award or upon final contract execution.

D.23. PROTESTS:

A protest shall be in writing and shall be filed with the Director of Business Services. A protest of a Request for Qualification shall be received at the Business Services Department not less than five (5) working days before the Request for Qualification due date. A protest of a proposed award or of an award shall be filed within ten (10) days after issuance of notification of award or issuance of a notice of intent to award, as applicable. A protest shall include:

- A. The name, address, and telephone number of the protestant;
- B. The signature of the protestant or its representative;
- C. Identification of the Request for Qualification or Contract number;
- D. A detailed statement of the legal and factual grounds of protest including copies of relevant documents; and
- E. The form of relief requested.

D.24. EVALUATION PROCESS OVERVIEW:

All submittals shall be evaluated in accordance with Arizona Revised Statutes Title 34 Chapter 6 and the evaluation criteria stated herein. The evaluation process and contract award shall include:

D.25. REQUEST FOR QUALIFICATION

- A. An appropriately qualified selection committee shall evaluate the statements of qualifications and performance data that are submitted in response to the City's request for qualifications for the proposed contract.
- B. If determined by the City and included by the City in the request for qualifications, conduct discussions with at least the number of persons or firms to be included on the short list as stated in the request for qualifications but not more than the number of persons or firms to be included on the short list plus two as specified in the request for qualifications regarding the contract and the relative methods of approach for furnishing the required professional services or construction services.
- C. In order of preference, based on criteria established and published by the selection committee and included in the request for qualifications, select a short list of persons or firms the selection committee deems to be the most qualified to provide the professional services or construction services. The number of persons or firms on the short list shall be the number of persons or firms specified in the request for qualifications. Those firms may then be asked to provide Presentations/Interviews with the selection committee. Criteria for the Presentation/Interviews may be different than those listed in the RFQ with the Interviewees being provided the criteria and weighting prior to the Presentations/Interviews.
- D. The City shall enter into negotiations for a contract with the highest qualified person or firm for the professional services or for the construction services. The negotiations shall include consideration of compensation and other contract terms that the City determines to be fair and reasonable to the City. In making this decision, the City shall take into account the estimated value, the scope, the complexity and the nature of the professional services or construction

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 13 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

services to be rendered. If the City is not able to negotiate a satisfactory contract with the person or firm considered to be the most qualified at compensation and other contract terms the City determines to be fair and reasonable, the City shall formally terminate negotiations with that person or firm. The City may undertake negotiations with the next most qualified person or firm in sequence until an agreement is reached or a determination is made to reject all persons or firms on the short list. If a contract for construction services is entered into pursuant to this subsection, construction shall not commence until the City and contractor agree in writing on a fixed price or a guaranteed maximum price for the construction to be commenced.

E. The contract file shall contain the basis on which the award is made.

E. Selection Process

E.1. ONE-STEP - STATEMENT OF QUALIFICATIONS (SOQ)

For One-Step solicitations, a qualified committee will evaluate the SOQ's submitted and determine the offeror(s) most qualified to enter into negotiations for a contract.

E.2. STATEMENT OF QUALIFICATIONS (SOQ)

All submittals shall include any and all forms provided in this solicitation package. It is permissible to copy these forms as required. The offer form shall be submitted with a signature by the person authorized to sign the submittal. Erasures, interlineations, or other modifications in the submittal shall be initialed by the person authorized to sign the submittal. Periods of time, stated as a number of days, shall be in consecutive calendar days. It is the responsibility of all offerors to examine the entire solicitation package and seek clarification of any requirement that may not be clear and to check all responses for accuracy before sending in a submittal. Negligence in preparing a submittal confers no right of withdrawal after due date and time.

Submittals for the project shall be limited to the items listed below. Firms are advised to follow guidelines and submit only the requested information.

- A. Cover Letter
- B. Statement of Qualification in response to the Evaluation Criteria
- C. Signed Offer Page
- D. Acknowledgement of any and all RFQ Addenda

E.3. COVER LETTER

Expressing interest in the project and identifying a single individual as point of contact for any future correspondence. (Suggested 2 Pages maximum)

E.4. EVALUATION CRITERIA :

Firms will be screened based on evaluation of the following criteria, which are listed in relative order of importance:

- A. Qualifications and Experience of the Firm
- B. Experience and Qualifications of the Team
- C. Method of Approach and Available resources to Complete Work
- D. Subcontractor Selection Plan

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 15 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

E.5. OFFER PAGE

Providing contact information and signed requiring that the selected firm agree to enter into negotiations with the City to provide the material or service in compliance with all terms, scope of work, conditions, specifications, and addenda in the solicitation.

E.6. ACKNOWLEDGEMENT OF ANY AND ALL RFQ ADDENDA

Pursuant to [Instruction to Offerors](#), "Addendum of Request for Qualifications":.

E.7. GENERAL

A. Additional Investigations:

The City reserves the right to make such additional investigations as it deems necessary to establish the competency and financial stability of any firm submitting a response to this Request for Qualifications.

B. Prior Experience:

Experiences with the City and entities that evaluation committee members represent shall be taken into consideration when evaluating qualifications and experience.

F. Special Terms and Conditions

F.1. City of Tucson Construction Services Agreement

The City's Construction Services Agreement is included and will be incorporated into the resulting contract. The Contractor will be required to sign and comply with the requirements.

F.2. Basis for Awarding Individual Job Orders

In the event the City awards more than one contract for these services, individual job orders will be awarded based upon consideration of the firm's ability to complete the work expeditiously and the proposed cost. The City intends to request price and schedule proposals from all contracted firms for each individual job order. However, when quoting individual job orders is impracticable, the City reserves the right to award job orders as it deems to be in its best interest. Scope, schedule, price, and liquidated damages (if applicable) are agreed upon in a fully executed Notice to Proceed letter prior to Contractor beginning the work.

The Contractor shall be available on a five-day work basis throughout the term of the contract unless notified in writing by the City that this requirement may be temporarily waived due to the Contractor's approved written request or a reduced need by the City. The Contractor must be available to commence work on assignments within one week from award of an individual job order.

F.3. Contract Term and Renewal

The term of this contract shall commence upon award and shall remain in effect for a period of one (1) year, unless terminated, canceled or extended as otherwise provided herein. The Contractor agrees that the City of Tucson shall have the right, as its sole option, to renew the Contract for one year with FOUR (4) one-year renewal options, or portions thereof. If the City chooses to exercise this option, all terms, conditions, and provisions of the original contract shall remain the same and apply during the renewal period with the possible exception of fee basis and minor scope additions and/or deletions.

F.4. Price Adjustment

The City will review fully documented requests for fee basis adjustments after any contract has been in effect for one (1) year. Adjustments will only be made at the time of contract renewal or extension, except for financial emergencies, and will be a factor in the renewal/extension review process. The City will determine whether the requested adjustment or an alternate option is in the best interest of the City. Any adjustment will be effective on the first day of the contract renewal or extension.

F.5. Compensation and Method of Payment

In consideration of the performance of the services described in the Scope of Services of each individual job order and pursuant to the master Scope of Work herein, the City shall pay the Contractor in accordance with the negotiated contract rates, and the Contractor shall charge the City only in accordance with those same rates.

Compensation under this contract should not exceed two-hundred and fifty thousand dollars (\$250,000) per individual job order unless a waiver is requested of and granted by the Business Services Department.

The City of Tucson reserves the right to adjust the individual job limit at time of annual contract renewal upon written approval from the Director of Business Services. The City will pay the Contractor following the submission of itemized invoice(s) for the service rendered. No payment shall be issued prior to receipt of material or service and correct invoice.

All requests for payment shall follow a format to be approved by the City Representative. Invoices shall be submitted monthly on a job-by-job basis.

F.6. Bonding Requirements

Contractor shall file with the City, prior to the time of execution of the contract and annually, if the term of this contract is extended by the City, payment and performance bonds in the forms prescribed by the City. The bonds must cover all construction performed under job orders. The amount of the bonds provided by the Contractor must always be at least equal to the total amount of the contract prices for construction work under job orders issued and not complete. Contractor agrees to provide such additional bonding as may be required to satisfy this requirement, as provided under A.R.S. 34-610. Bonds may be provided as follows: annual bonds in the amount designated by the agency, or bonding per each individual job. Successful contractor(s) will designate bonding methodology prior to contract award.

F.7. Small Business Enterprise (SBE) Program Requirements

The Job Order Contractor shall be required to comply with SBE Program requirements, if goals are applicable, on projects that meet or exceed the Formal Solicitation Threshold established by the Tucson Procurement Code, currently at one hundred thousand dollars (\$100,000). Program requirements are codified in Chapter 28, Article XIII of the Tucson Procurement Code. The Job Order Contractor shall submit to the Department of Procurement, Business Enterprise & Compliance Program via the city's Project Manager, after the project proposal phase, either a completed offeror's statement of proposed SBE Participation Plan or an Affidavit of Good Faith Efforts indicating whether the request is for a full or partial waiver.

The SBE Plan must include:

- A. The name of the SBE subcontractors/suppliers;
- B. The type and scope of work or service each SBE will perform;
- C. The dollar value of each SBE's subcontract;
- D. The dollar value of the prime contractor's self-performed work if claiming SBE credit;
- E. The total dollar value of SBE work performed and percentage of the contract value.
- F. If the contract goal is not met, evidence of good faith efforts.
- G. An approved plan or waiver request must be in place prior to issuance of the Notice To Proceed (NTP) for individual project construction.

A signed offer in response to this RFQ represents the offerors's intent to comply with the SBE program. Also see: SBE Program Provisions for Alternative Project Delivery Method (APDM) for Construction Services.

F.8. Performance Rating

At the completion of each term or termination of this contract, the City may evaluate the Contractor based on performance under this Contract. This rating may be used in the overall evaluation of the Contractor when applying for future work with the City.

F.9. Right To Audit

The City and its authorized representatives shall have the right, upon reasonable written notice to Contractor, to cause an audit to be made of the Contractor's books and records which relate to its operations under this Contract. The audit shall be limited to the term of this Contract. The City shall have the right to examine and to make copies of or extracts from all financial and related records (in whatever form they may be kept, whether written, electronic, or other) relating to or pertaining to this Contract kept by or under the control of the Contractor, including, but not limited to those kept by the Contractor, its employees, agents, assigns, successors and subcontractors. Such records shall include, but not be limited to, accounting records, subcontractor records, payment vouchers and invoices.

The Contractor shall at any time requested by City, whether during or after completion of this Contract, and at Contractor's own expense make such records available for inspection and audit (including copies and extracts of records as required) by City. Such records shall be made available to City during normal business hours at the Contractor's office, place of business, an agreed to location, mailed or provided electronically. If, as a result of such audit, the Contractor is liable to the City for the payment of any sum, Contractor shall promptly pay such sum to the City together with interest thereon at the rate of one percent (1%) per month from the date such sums should have been paid. Payment shall be made within 90 days from presentation of City's findings to Contractor.

If the audit discovers substantive findings related to fraud, misrepresentation, or non-performance, City may recoup the costs of the audit work from the Contractor. The City's rights under this provision shall survive the expiration or termination of the Contract.

F.10. Contract Addenda

The Procurement Department has the sole authority to:

- A. Amend the contract or enter into supplemental verbal or written agreements;
- B. Grant time extensions or contract renewals;
- C. Otherwise modify the scope or terms and provisions of the contract.

The contract shall only be modified with the approval of the Department of Procurement. Except in the case of documented emergency, approval must be granted prior to performance. Any contract modification not explicitly approved by the Department of Procurement through a written contract addenda or change order is performed at the sole risk of the Contractor and may not be eligible for payment by the City.

F.11. Pre-award Meeting

A pre-award meeting may be held (and may be mandatory) with successful offerors where City representatives will review the terms and conditions of the contracts and final awards will be made. Award for any firm out of compliance with the DBE/SBE requirements under another JOC will be delayed until requirements are met.

F.12. Child/Sweat-Free Labor Policy

The Contractor shall comply with all applicable provisions of the United States Federal and State Child Labor and Worker's Right laws and agrees if called upon to affirm in writing, that they, and any subcontractor involved in the provision of goods to the City, are in compliance.

F.13. Federal Immigration Laws and Regulations

Contractor warrants that it complies with all Federal Immigration laws and regulations that relate to its employees and complies with A.R.S. § 23-214(A) and that it requires the same compliance of all subcontractors under this Contract. Contractor acknowledges that pursuant to A.R.S. § 41-4401 and effective September 30, 2008, a breach of this warranty is a material breach of this Contract subject to penalties up to and including termination of this Contract. The City retains the legal right to audit the records of the Contractor and inspect the papers of any employee who works for the Contractor to ensure compliance with this warranty and the Contractor shall assist in any such audit. The Contractor shall include the requirements of this paragraph in each contract with subcontractors under this Contract.

If the Contractor or subcontractor warrants that it has complied with the employment verification provisions prescribed by sections 274(a) and 274(b) of the Federal Immigration and Nationality Act and the E-verify requirements prescribed by A.R.S. § 23-214(A), the Contractor or subcontractor shall be deemed to be in compliance with this provision. The City may request proof of such compliance at any time during the term of this Contract by the Contractor and any subcontractor.

F.14. City of Tucson Business License

It is the responsibility of the Contractor to have a City of Tucson Business License throughout the life of this contract or a written determination from the City's Business License Section that a license is not required. At any time during the contract, the City may request the Contractor to provide a valid copy of the business license or a written determination that a business license is not required. Application for a City Business License can be completed at <http://www.tucsonaz.gov/etax>. For questions contact the City's Business License Section at (520) 791-4566 or email at tax-license@tucsonaz.gov.

F.15. Cooperative Purchasing

Any Contract resulting from this solicitation shall be for the use of the City of Tucson. In addition, public and nonprofit agencies that have entered into a Cooperative Purchasing Agreement with the City of Tucson's Department of Procurement are eligible to participate in any subsequent Contract. See https://ucsonprocurement.com/coop_partners.aspx and click on Cooperatives for a list of the public and

CITY OF TUCSON
 BUSINESS SERVICES DEPARTMENT
 SHARED SERVICES PROCUREMENT DIVISION
 255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
 Page 20 of 58
 RESPONSIBLE CONTRACT OFFICER: Casey Adams
 PH: (520) 837-4128

nonprofit agencies that have currently entered into Cooperative Purchasing Agreements with the City of Tucson. Additionally, this contract is eligible for use by the Strategic Alliance for Volume Expenditures (SAVE) cooperative. See <https://www.mesaaz.gov/business/purchasing/save> for a listing of participating agencies. The parties agree that these lists are subject to change. The City, as a lead agency, accrues costs to solicit, award and administer cooperative contracts. As part of the negotiation process, the City will be requesting Offerors to consider providing the City a cooperative administrative fee or rebate in the form of a percentage of sales based upon other agencies spend. The City's spend would not be included in the administrative fee consideration. The successful contractor's will have the ability to market this contract to all of the City's cooperative partners which results in a cost savings to the contractor by not having to compete on separate solicitations. The administrative fee should not be a cost added to the contract pricing but a cost sharing of the marketing savings the contractor receives by not having to participate in additional solicitation processes. Any orders placed to, or services required from, the successful Contractor(s) will be requested by each participating agency. Payment for purchases made under this agreement will be the sole responsibility of each participating agency. The Contractor may negotiate additional expenses incurred as a result of participating agencies' usage of this contract (i.e., freight charges, travel related expenses, etc.). The City shall not be responsible for any disputes arising out of transactions made by others. The Contractor(s) will provide an electronic copy of the complete Contract to the City of Tucson Department of Business Services upon receipt of the Notice of Intent to Award. At the City's request, the successful Contractor(s) may also be requested to provide an electronic copy of the complete Contract to a participating agency.

F.16. Constituent CLAIMS:

With regard to claims arising out of or related to this contract that are filed against the Contractor, the Contractor or Contractor's representative is required to provide notice to the City's Procurement Department and Risk Manager within 60 calendar days following the date of the receipt by the Contractor of such claim. The notice to the City must include the following information: (1) the date of the incident or occurrence that is the basis of the claim; (2) the damages identified in the claim; (3) the date of the Contractor's written response to the claim; and (4) a copy of Contractor's written response to the claim. Notification shall be deemed sufficient if given by (a) registered or certified mail, postage prepaid, return receipt requested, (b) private courier service, or (c) facsimile addressed to the respective addresses of the parties as first above written or at such other addresses as the respective parties may designate by like notice from time to time.

City of Tucson

Business Services Department Risk Management

255 W. Alameda, 6th floor 255 W. Alameda, 5th floor

Tucson, Arizona 85701 Tucson, Arizona 85701

Facsimile: 520-791-4735 Facsimile: 520-624-2061

The Contractor acknowledges that the City may use contract performance, including performance of the requirements of this paragraph, in the City's consideration of future contract awards; and that in connection with future contracting opportunities with the City, Contractor may be required to provide documentation demonstrating compliance with this paragraph.

F.17. CONFIDENTIALITY OF RECORDS:

The Contractor shall establish and maintain procedures and controls that are acceptable to the City for the purpose of assuring that no information contained in its records or obtained from the City or from others in carrying out its functions under the Contract shall be used by or disclosed by it, its agents, officers, or employees, except as required to efficiently perform duties under the Contract. Persons requesting such information should be referred to the City. Information pertaining to individual persons shall not be divulged other than to employees or officers of Contractor as needed for the performance of duties under the Contract, unless otherwise agreed to in writing by the City.

F.18. HUMAN RELATIONS:

Contractor shall abide by the provisions of the Tucson City Code Chapter 28, Article XII.

F.19. LICENSES:

Contractor shall maintain in current status all Federal, State, and local licenses and permits required for the operation of the business conducted by the Contractor as applicable to this Contract.

F.20. NON-EXCLUSIVE CONTRACT:

Any contract resulting from this solicitation shall be awarded with the understanding and agreement that it is for the sole convenience of the City of Tucson. The City reserves the right to obtain like goods or services from another source when necessary.

F.21. EMPLOYMENT OF ALIENS ON PUBLIC WORKS PROHIBITED:

Contractor and all subcontractors shall warrant that it complies with A.R.S §34-301 as follows:

- A. A person not a citizen or ward of the United States shall not be employed upon or in connection with any state, county or municipal works for employment.
- B. This section shall not be construed to prevent the working of prisoners by the state or a county or municipality thereof on street, road or other public work, nor shall the provision of this section apply to the employment of any teacher, instructor or professor authorized to teach in the United States under the teacher exchange program as provided by federal statutes or the employment of university or college faculty members.

F.22. DUPLEXED/RECYCLED PAPER:

In accordance with efficient resource procurement and utilization policies adopted by the City of Tucson, the Contractor shall ensure that, whenever practicable, all printed materials produced by the Contractor in the performance of this Contract are duplexed (two-sided copies), printed on recycled paper and labeled as such.

F.23. Americans with Disabilities Act (ADA)

The Contractor shall comply with all applicable provisions of the Americans with Disabilities Act of 1990 (Public Law 101-336, 42 U.S.C. 12101-12213, 47 U.S.C. 225 and 611, and all regulations thereto), and the Arizonans with Disabilities Act of 1992 (A.R.S. 41-1492 et seq., and all regulations pertaining thereto.

F.24. Applicable Law

This Contract shall be governed, and the City and Contractor shall have all remedies afforded to each, by the Tucson Procurement Code and the law of the State of Arizona. State law claims shall be brought only in Pima County Superior Court.

F.25. Assignment Delegation

No right or interest in this Contract shall be assigned by the Contractor without prior written permission of the City, and no delegation of any duty of the Contractor shall be made without prior written permission of the City's Director of Business Services. The City shall not unreasonably withhold approval and shall notify the Contractor of the City's position by written notice.

F.26. CHILD/SWEAT-FREE LABOR POLICY

The Contractor shall comply with all applicable provisions of the United States Federal and State Child Labor and Worker's Right laws and agrees if called upon to affirm in writing, that they, and any subcontractor involved in the provision of goods to the City, are in compliance.

F.27. CONTRACT DOCUMENTS

The following listed documents constitute the Contract Documents and they are all as fully a part of this Agreement as if repeated herein:

- A. This Request for Qualifications (including Appendices and Addenda)
- B. General Conditions for Construction
- C. Statement of Qualifications
- D. Insurance Certifications
- E. Performance and Payment Bonds

In the event of any inconsistency between any of the terms of the documents enumerated above, such inconsistency shall be resolved by giving precedence to the terms of the above documents in the order listed. Anything in these Contract Documents to the contrary notwithstanding, the provisions of all pertinent general public laws of the State of Arizona in effect at the time of the execution of the Contract shall be a part of the Contract between the parties and shall take precedence over all of the other Contract Documents.

F.28. EMPLOYMENT OF ALIENS ON PUBLIC WORKS PROHIBITED

Contractor and all subcontractors shall warrant that it complies with A.R.S §34-301 as follows:

A. A person not a citizen or ward of the United States shall not be employed upon or in connection with any state, county or municipal works for employment.

B. This section shall not be construed to prevent the working of prisoners by the state or a county or municipality thereof on street, road or other public work, nor shall the provision of this section apply to the employment of any teacher, instructor or professor authorized to teach in the United States under the teacher exchange program as provided by federal statutes or the employment of university or college faculty members.

F.29. FEDERALLY FUNDED PROJECTS

For projects that are identified as being federally funded, Federal Labor Standards will be applicable to that project. All Federal forms are attached and will be incorporated into any resulting contract(s)*. It shall be mandatory upon the Contractor(s) to whom the contract is awarded, and upon subcontractors working on this project to comply with the following:

A. Davis Bacon Act: (AZ Wage Decision) Minimum wage rate, withholding, payroll, apprentice, subcontracting, and termination provisions.

B. Work Hour and Safety Standards Act: overtime pay and safety.

C. Mandatory Preconstruction meeting for Prime Contractor and all listed subcontractors

D. HUD Maintenance Wage Rates

F.30. GUARANTEE

The Contractor shall guarantee all work under the Contract against defects of material workmanship for a minimum of two years from the date of completion.

F.31. NUMBER OF CONTRACTS TO BE AWARDED

The City intends to award approximately up to two (2) contracts for the services described herein

F.32. WRITTEN CERTIFICATION PURSUANT TO A.R.S. §35-394

If Contractor engages in for-profit activities and has at least ten full time employees, Contractor certifies that Contractor does not currently, and agrees for the duration of the contract that it will not, use: 1) the forced labor of ethnic Uyghurs in the People's Republic of China; 2) any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; and 3) any contractors, subcontractors or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China. If Contractor becomes aware during the term of the contract that it is not in compliance with the written certification, it must notify the City within five business days after becoming aware of the noncompliance. This Contract will be automatically terminated 180 days after the date of the notice unless Contractor has, before the end of that period, notified the City that the noncompliance has been remedied.

G. Insurance Requirements

G.1. The Contractor agrees to:

- A. Obtain insurance coverage of the types and amount required in this section and keep such insurance coverage in force throughout the life of this contract. All policies will contain an endorsement providing that written notice be given to the City at least thirty (30) calendar days prior to termination, cancellation, or reduction in coverage in any policy.
- B. The Commercial General Liability, Commercial Automobile Liability and umbrella policies where applicable will include the City as an additional insured with respect to liability arising out of the performance of this contract. Such additional insured shall be covered to the full limits of liability purchased by the Contractor, even if those limits of liability are in excess of those required by this Contract. The Contractor agrees that the insurance hereunder will be primary and that any insurance carried by the City will be excess and not contributing.
- C. Provide and maintain minimum insurance limits as applicable.

G.2. Commercial General Liability

Policy shall include Bodily Injury, Property Damage, Personal Injury and Broad Form Contractual Liability:

Each Occurrence: \$1,000,000

General Aggregate: \$2,000,000

Products & Completed Operations Aggregate: \$2,000,000

Personal and Advertising Injury: \$1,000,000

Blanket Contractual Liability: \$1,000,000

G.3. Commercial Automobile Liability

Policy shall include Bodily Injury and Property Damage, for any owned, Hired, and/or Non-owned vehicles used in the operation, installation and maintenance of facilities under this agreement.

Combined Single Limit: \$1,000,000

G.4. Worker's Compensation (Applicable to the State of Arizona)

Per Occurrence: Statutory

Employer's Liability: \$1,000,000

Disease Each Employee: \$1,000,000

Disease Policy Limit: \$1,000,000

*Sole Proprietor/Independent Contractor designation is given to those who desire to waive their rights for workers' compensation coverage and benefits as outlined in ARS§ 23-901 and specifically ARS §

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 25 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

23-961 (O). If applicable, please request the Sole Proprietor/Independent Contractor form from the Contract Officer listed in the solicitation.

G.5. Professional Liability (Errors & Omissions)

Each Claim: \$1,000,000

Annual Aggregate: \$2,000,000

G.6. Claims Made Insurance Coverage

If any or part of the required insurance is written on a claims-made basis, any policy retroactive date must precede the date of the contract and the Contractor must maintain such coverage for a period not less than three (3) years following contract expiration, termination or cancellation.

G.7. Additional Insurance Requirements

All Policies, excluding Employment Practices Liability and Professional Liability (Errors & Omissions), shall include or be endorsed to include the following provisions:

- A. A waiver of subrogation endorsement in favor of the City of Tucson, for losses arising from work performed by or on behalf of the Contractor (Including Worker's Compensation).
- B. The insurance afforded the contractor shall be primary insurance and that any insurance carried by the City of Tucson and its agents, officials or employees shall be excess and not contributory.
- C. Coverage provided by the Contractor shall not be limited to the liability assumed under the indemnification provisions of this Contract.

G.8. Notice of Coverage Modifications

Any changes material to compliance with this contract in the insurance policies above shall require (10) days written notice from the contractor to the City of Tucson. Such notice shall be sent directly to the Procurement Division.

G.9. Acceptability of Insurers

Contractors insurance shall have an "A.M. Best" rating of not less than A-VII. The City of Tucson in no way warrants that the required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

G.10. Verification of Coverage

Contractor shall furnish the City of Tucson with certificates of insurance (ACORD form or equivalent approved by the City of Tucson) as required by this Contract. The certificates for each insurance policy are to be signed by an authorized representative.

All certificates and endorsements are to be received and approved by the City of Tucson before work commences. Each insurance policy required by this Contract must be in effect at or prior to

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 26 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

commencement of work and remain in effect for the duration of the contract and two (2) years after completion. Failure to maintain the insurance policies as required by this Contract, or to provide evidence of renewal upon the City's request, is a material breach of contract.

All certificates required by this Contract shall be sent directly to the Procurement Division.

The City of Tucson project/contract number and project description shall be noted on the certificate of insurance. The City of Tucson reserves the right to require complete copies of all insurance policies required by this Contract at any time.

G.11. Subcontractors

Contractors' certificate(s) shall include all subcontractors as insureds under its policies or Contractor shall furnish to the City of Tucson separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to the minimum requirements identified above.

G.12. Exceptions

In the event the Contractor or sub-contractor(s) is/are a public entity, then the Insurance Requirements shall not apply. Such public entity shall provide a Certificate of Self- Insurance.

H. Standard Terms and Conditions for Construction

H.1. DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof: Addendum - written or graphic instrument issued prior to the due date which clarifies, corrects or changes the Solicitation.

Architect/Engineer - the person licensed to practice architecture/engineering by the State of Arizona and who is identified as the Architect/Engineer of Record by affixing his/her seal upon the Contract plans, drawings, specifications and related documents. May be utilized to provide construction administration services.

Bonds - bid, performance and payment bonds and other instruments of security.

Change Order - a document approved by the City Contract Representative and which is signed by the Contractor and the City's Director of Procurement or duly authorized designee and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Completion time, issued on or after the effective date of the Contract.

City - means the City of Tucson, Arizona, a municipal corporation.

City Contract Representative - the City official administering the Contract for the City of Tucson.

Completion Time - the number of consecutive calendar days agreed to by the City and Contractor for completion of the Work, which may be revised by written Change Order.

Construction – the process of building, altering, repairing, improving or demolishing any public structure or building or other public improvements of any kind to any real public property.

Construction Services – either of the following for construction-manager-at-risk, design-build and job-order-contracting project delivery methods:

- a) construction, excluding services, through the construction-manager-at-risk or job-order-contracting project delivery methods;
- b) a combination of construction and, as elected by the City, one or more related services, such as finance services, maintenance services, operations services, design services and preconstruction services.

Contract - the written agreement and all associated attachments, drawings, addenda and change orders executed between the City and the Contractor covering the Work to be performed.

Contract Price - the amount payable by the City to the Contractor for satisfactory completion of the Work, and as specified in the Contract as may be amended by written Change Order, or, in the case of a job-order contract, in the Notice to Proceed.

Contract Officer - the City official who conducts the solicitation process to secure a Contractor for the Work and who acts under the authority and direction of the City's Director of Procurement and in accordance with the Tucson Procurement Code.

Contractor - the person, firm or corporation with whom the City has entered into the Contract.

Design-Build – the process of entering into and managing a contract between the City and a contractor in which the Contractor agrees to both design and build a structure and in which design and construction services may be in sequential or concurrent phases, and which may include finance services, maintenance services, operations services, design services and preconstruction services.

Design Services – architect services, engineer services or landscape architect services. **Director of Procurement** – the person acting as Director of the City's Department of Procurement and who has authority to award and revise City solicitations and contracts for construction, construction services, and construction-related services as necessary.

Drawings - the graphic and pictorial portions of the contract, wherever located and whenever issued, showing the configuration, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

Estimate for Payment - a form furnished by the City or an approved form submitted by the Contractor in lieu of city furnished form, and is required to be used when submitting requests for payments for work actually performed and materials supplied during a an agreed-to preceding period of time.

Field Order - a written order or directive issued by the City Contract Representative that orders minor changes in the Work.

Final Completion Date - the calendar date when the Work is one hundred percent (100%) complete as determined by the City.

Finance Services – financing services for the Work.

Job-Order-Contracting – a project delivery method in which the contract is a requirements contract for indefinite quantities of construction and in which specified job orders are issued during the contract and may include finance services, maintenance services, operations services, preconstruction services and design services.

Liquidated Damages – a sum set forth in the Contract documents that will be deducted from any monies due to the Contractor, not as a penalty, but in lieu of actual damages for late completion of the work.

Maintenance Services – routine maintenance, repair and replacement of existing facilities, structures, buildings or real property.

Notice to Proceed - a written notice given by the City to the Contractor fixing the date on which the Completion time will commence and upon which the Contractor shall start to perform the Contractor's obligations under the Contract. In the case of a job order, it may also contain the specifications exclusive to the job order as well as consideration for the Contractor.

Operations Services – routine operation of existing facilities, structures, buildings or real property. **Preconstruction Services** – services during the design stage of the Work.

Contract

Public Inspector(s) - that person or persons provided by the public authorities having code jurisdiction and who perform day-to-day inspections of the Work for compliance with applicable codes.

Schedule of Values - a schedule submitted by the Contractor setting forth the values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the City Contract Representative may require. This schedule must be submitted before the

Contractor submits its first application for progress payment and shall be used as a basis for reviewing and approving payments to the Contractor.

Shop Drawings - drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the Contractor to illustrate, in detail, how some portion of the Work shall be fabricated and/or installed, and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a supplier and submitted by the Contractor to illustrate material or equipment for some portion of the Work.

Specifications - those portions of the Contract, or Notice to Proceed if a Job Order, consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Substantial Completion – a written declaration of the date upon which the City, in its sole discretion, determines the Work is substantially complete such that the City has beneficial use and/or occupancy. Upon substantial completion, the right of the City to assess liquidated damages for time after the date of substantial completion ceases, except as allowed for failure to meet final completion within thirty days of substantial completion.

Tucson Procurement Code – in addition to applicable State statutes and applicable Federal regulations and requirements, the municipal ordinance that governs the construction services contracting process as well as contract administration processes including the resolution of contract claims, disputes and controversies.

The Work - the entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract, or, in the case of a job-order contract, within individual Notices to Proceed. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract and/or Notice to Proceed, as appropriate.

H.2. THE CONTRACT

- A. The documents in the Contract include any addenda, drawings, change orders and approved Contractor submittals.
- B. The Contract comprises the entire agreement between the City and the Contractor concerning the Work and supersedes any prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by an instrument in writing and fully executed by the authorized parties to the Contract.

H.3. INTENT OF THE CONTRACT

- A. The intent of the Contract is to include all labor, materials, equipment, transportation and all other costs and expenses necessary for the proper execution and completion of the Work by the Contractor.
- B. The Contractor shall take no advantage of any apparent error or omission in the plans, estimated quantities or specifications. In the event the Contractor discovers such an error or omission after contract award, the Contractor shall immediately notify the City Contract

Representative. The City Contract Representative shall then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the contract.

- C. The Contract shall be construed in accordance with the laws of the State of Arizona, and all such laws regulating the construction of public works by the City are hereby incorporated herein by reference and made a part hereof.
- D. Materials or work described in words, which have a well-known technical or trade meaning, shall be held to refer to such recognized standards.
- E. The organization of the Contract into divisions, sections or articles is merely for the purpose of convenient reference, and neither the headings nor divisions shall have any legal or Contractual significance and shall not control the division of the Work by the Contractor among the various subcontractor or trades.
- F. The Contractor shall include all utility fees, permits, licenses, etc. including sewer connection fees in each estimate or proposal submitted.

H.4. EXECUTION

Execution of the Contract by the Contractor is a representation that the Contractor has thoroughly examined the Contract.

H.5. OWNERSHIP OF THE CONTRACT

The Contract, including, but not limited to, the drawings and specifications, is the property of the City and is not to be used by the Contractor or any subcontractor on other projects outside the scope of the Work without the express written consent of the City.

H.6. LINES OF AUTHORITY AND COMMUNICATIONS

- A. The City's Director of Procurement is the City official with overall authority and responsibility for the award and administration of City Contracts. The Director of Procurement or his designated Procurement Department representative after consultation with the City Contract Representative has the ultimate authority to resolve disputes concerning Contract performance and to stop the Work whenever such stoppage may be necessary to ensure the proper execution of the Work.
- B. The City Contract Representative is the designated representative of the particular City department for which the Work is being constructed (the "user department") or the City department which is responsible for the oversight of the work.
- C. Day-to-day administration of the Contract is the responsibility of the City Contract Representative. The City Contract Representative is the City's representative during the prosecution of the Work and shall act as surveillance and technical advisor for the City. The City Contract Representative duties are more fully described in "City Contract Representative's General Authority and Responsibilities".
- D. The Contractor shall supervise and direct the Work and shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures, and

for coordinating all portions of the Work, unless the Contract gives other specific instructions concerning these matters. The Contractor's duties and responsibilities are more fully described in Article 4 of these Contract conditions.

- E. Except where the Contract otherwise provides or where direct communication has been specifically authorized, the Contractor shall initially communicate with the City Contract Representative.

H.7. CITY CONTRACT REPRESENTATIVE'S GENERAL AUTHORITY AND RESPONSIBILITIES

- A. Unless the Contractor is responsible for the design of the Work, the City Contract Representative shall furnish to the Contractor, free of charge unless it is provided otherwise in the Contract, up to three copies of drawings, specifications and instructions available for the execution of the Work. The City Contract Representative may furnish additional clarifications or interpretations in writing or by drawings as may be necessary for the proper progress and execution of the Work. Such additional clarifications and interpretations shall be furnished with reasonable promptness, and the Contractor shall not do work without drawings or written clarifications where needed. All drawings, specifications and copies thereof furnished by the City Contract Representative are City property. They are not to be used on other work and, with the exception of the signed Contract, and are to be returned to the City Contract Representative at the completion of the Work.
- B. The City Contract Representative shall make general surveillance of the Work. By making sufficient periodic visits to the site of the Work, the City Contract Representative will become thoroughly familiar with the progress and quality of completed portions of the Work, and will assess if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract.
- C. The City Contract Representative will decide all questions which may arise as to the quality and acceptability of materials furnished and Work performed and as to the rate of progress of the Work, and all questions which may arise as to the interpretation of the drawings and specifications.
- D. The City Contract Representative shall have the authority to reject work that is not in conformity with the Contract and to order additional inspections and testing of the Work. The City Contract Representative's failure during the progress of work to discover or reject materials or work not in accordance with the plans, specifications or contract documents shall not be considered an acceptance of the work or materials or a waiver of defects. Neither the failure of the City Contract Representative to properly perform inspections, tests or approvals required by the contract documents nor the activities or duties of the City Contract Representative in the administration of this contract shall relieve the Contractor from the contractor's responsibility for the means, methods, techniques, sequences or scheduling of the construction or the obligation to perform the work in strict accordance with the contract documents.
- E. The City Contract Representative shall conduct an initial review of, and approve or deny, written Change Orders submitted by the Contractor, and may prepare Change Orders and provide field clarifications and corrections. All Change Orders shall be approved by the

Director of Procurement or his designee prior to any work being done. However, in emergencies endangering life or property, the City Contract Representative may take action and issue orders which are deemed necessary to avert the loss of life or property.

- F. The City Contract Representative, pursuant to Article 10 of these General Conditions, shall make recommendations to the Contract Officer as to all claims of the Contractor.
- G. The City Contract Representative will review and process the Contractor's monthly Estimates for Payment, as more fully set forth in Article 7 of these General Conditions.
- H. The City Contract Representative will conduct inspections to determine the dates of Substantial Completion and Final Completion and will certify such dates to the Contract Officer.
- I. The City Contract Representative will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility.

H.8. PUBLIC INSPECTIONS

- A. Unless otherwise specifically provided in the Contract, Public Inspectors who perform day-to-day inspections of the Work for compliance with applicable codes will have authority to require compliance with drawings, specifications and applicable codes, and may provide clarification of any unspecified or unclear item or situation.
- B. If the drawings or specifications, laws, ordinances, or any public authority requires any work to be specially tested or approved, the Contractor shall give the City Contract Representative timely notice of its readiness for inspection. If the inspection is by an individual, authority or entity other than the City Contract Representative or the Public Inspectors, the Contractor shall advise the City Contract Representative of the date fixed for such inspection.
- C. All tests, inspections or approvals required to be performed by the City Contract Representative, Public Inspectors, or other authorities or entities shall not relieve the Contractor of their obligation to perform the Work in accordance with the Contract.

H.9. SPECIAL INSPECTIONS AND TESTING OF MATERIALS

- A. All equipment and materials used in the construction of the Work, especially those upon which the strength and durability of the structure may depend, will be subject to adequate inspection and testing in accordance with accepted standards, to establish conformance with specifications and suitability for the use intended, as determined by the City Contract Representative.
- B. The performance of tests and the engagement of testing laboratories or agencies must have the prior approval of the City Contract Representative. Except as provided in this section, the City will pay for approved tests and services rendered by the approved laboratory or agency in addition to the Contract price for construction.
- C. When initial tests indicate that any portion of the Work is not in conformance with the Contract because of faulty workmanship, the Contractor shall be required to pay for necessary re-tests.

When initial tests indicate that the work is in conformance with the Contract, any re-testing that's ordered by the City shall be paid for by the City.

H.10. CONTRACTOR'S REVIEW OF CONTRACT AND SITE CONDITIONS

- A. It shall be the duty of the Contractor to carefully study and compare all drawings, specifications and instructions. If any discrepancies, errors, omissions or inconsistencies are discovered in the drawings or specifications, or between the drawings and specifications, or there are any conflicts between existing site conditions and the requirements of the drawings and specifications, the Contractor shall immediately call all such discrepancies to the attention of the City Contract Representative.
- B. The Contractor shall be required to use, for data and dimensions, figures marked on the drawings in preference to what the drawings may measure to scale; but in the absence of figured dimensions, scale dimensions may be used with the prior written concurrence of the City Contract Representative. The Contractor shall verify all dimensions shown and check all measurements in connection with any present building or buildings, level or grades, walks, driveways or other existing conditions before executing any work. Errors or inconsistencies shall be reported to the City Contract Representative immediately. It is the responsibility of the Contractor to provide BLUESTAKE verification of underground utilities on and off the construction site.
- C. Change orders will not be issued to cover any cost, loss or expense for additional labor or materials required to rectify any error or inconsistency in the drawings and specifications unless prior notification is given by the Contractor to the City Contract Representative.
- D. The Contractor shall perform the Work in accordance with the Contract and with shop drawings, product data and samples that have been approved by the City Contract Representative.
- E. Notwithstanding the above provisions, if the Contractor is responsible for the design of the Work, the Contractor shall ensure the accuracy and completeness of the drawings, specifications and instructions. If any discrepancies, errors, omissions or inconsistencies are discovered in the drawings or specifications, or between the drawings and specifications, or there are any conflicts between existing site conditions and the requirements of the drawings and specifications, the Contractor shall immediately call all such discrepancies to the attention of the City Contract Representative and shall be responsible for any required corrective action.

H.11. CONTRACTOR'S SUPERVISION

- A. The Contractor shall efficiently and continuously supervise and direct the Work, using its best skill and attention. Unless the Contract specifically provides otherwise, the Contractor shall be solely responsible for and shall exercise control over construction means, methods, techniques and procedures and shall coordinate the sequences of all portions of the Work.
- B. The Contractor shall ensure that the key personnel submitted in response to the Request for Qualifications and assigned to this Contract are available throughout the term of the Contract. In the event that the Contractor requests substitution of key personnel, the Contractor shall

obtain prior approval from the City for key personnel substitution. The Contractor shall ensure that substituted personnel are equally qualified and capable. Information on the qualifications of proposed substitutes shall be provided to the City for its consideration and approval prior to substitution taking place.

- C. The Contractor agrees that it is as fully responsible to the City for the acts and omissions of its subcontractors and of persons, either directly or indirectly employed by the Contractor, as it is for the acts and omissions of persons directly employed by the Contractor.

H.12. MATERIALS AND LABOR; WARRANTY

- A. Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, equipment, tools, construction equipment and machinery, water, gas, heat, utilities, transportation, and other facilities and services necessary for the execution, completion and delivery of the Work within the specified Completion Time.
- B. The Contractor shall pay all applicable taxes associated with the Work 4.3.3 The Contractor warrants to the City that all materials and equipment furnished under the Contract will be new unless otherwise specified, and that all of the Work will be of good quality, free from faults and defects and in conformance with the Contract. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.
- C. The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Agency. The Contractor shall receive, inventory, store, inspect, protect, distribute, and install Agency furnished material unless otherwise specified. The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used. The Contractor shall be held responsible for all material delivered to the contractor. Deductions shall be made from any monies due the Contractor to make good any shortages or deficiencies, from any cause whatsoever and for any damage which may occur after such delivery, and for any late delivery charges.
- D. The Contractor will be held to furnish all work as specified in the Contract. After a price proposal for the Work has been accepted by the City, changes of brand named, trade named, trademarked, patented articles, or any other substitutions will be allowed only by written order signed by the City Contract Representative. Unless otherwise agreed to via Change Order, the City shall receive all benefits of the difference in costs.
- E. Materials not conforming to the requirements of the specifications, whether in place or not, shall be rejected and shall be promptly removed from the site of the work, unless otherwise directed by the City Contract Representative. No rejected material, the defects of which have been corrected, shall be returned to the work site until such time as approval for its use has been given by the City Contract Representative.

H.13. CONSTRUCTION SCHEDULES AND SUBMITTALS

- A. Before commencing the Work, the Contractor shall provide the City Contract Representative with a construction schedule for the Work, fixing the dates at which various pre-determined

events shall occur in order to promote a timely completion of the various parts of the Work in accordance with the Contract. The schedule may be revised from time to time as may be required by conditions of the Work, but shall not exceed time limits, or any extensions thereof, set forth in the Contract or in the individual job order, as appropriate.

- B. The Contractor shall prepare and keep current for the City Contract Representative's approval, a schedule of submittals which shall be coordinated with the Contractor's construction schedule and allow the City Contract Representative reasonable time to review such submittals.
- C. After review, the City Contract Representative, with reasonable promptness, shall approve these shop or setting drawings, product data, samples and sequences for conformance with the design concept of the project, the approved construction schedule, and other requirements of the Contract.
- D. The Contractor shall make any corrections required by the City Contract Representative and re-submit such corrected materials to the City Contract Representative for approval. Any correction or change that will result in a design or function change or in an increase or decrease in the Contract price must also receive the prior approval of the City's Director of Procurement or his designee.
- E. The Contractor shall perform no portion of the Work requiring submittal and review of shop drawings, product data, samples or schedules until the respective submittals have been approved by the City Contract Representative, and shall not deviate from such submittals after final approval by the City Contract Representative.
- F. As-builts documents must be provided to the City by the Contractor within thirty days of substantial completion. The City reserves the right to withhold final payment until complete as-builts have been received in good order by the City Contract Representative.

H.14. DOCUMENTS AND SAMPLES AT THE WORK SITE

Unless otherwise directed by the City's Contract Representative, the Contractor shall maintain at the Work site a complete file of the drawings, specifications, addenda, change orders and other approved modifications, in good order and marked to reflect changes and selections made during construction, together with all approved shop drawings, product data, samples and similar required submittals. Such files shall be made available to the City Contract Representative and Public Inspectors upon request.

H.15. PROTECTION AND USE OF SITE - (SIGNS, UTILITIES, WATER, SANITATION, TRAFFIC, ETC.)

- A. The City will provide land, rights-of-way and easements for all work specified in the Contract. The Contractor shall confine their apparatus, the storage of materials and the operations of its workmen to limits indicated by law, ordinances, permits or directions of the City Contract Representative, and shall not unreasonably encumber the premises with their material and equipment.
- B. Contractor shall prevent any damage to pipes, sewers, computer and phone lines, conduits or other structures, including public and/or private lawns, gardens, shrubbery and trees

encountered in the Work, and shall hold the City harmless from damages for any injury done to such pipes, structures or property during the course of the Work.

- C. Work shall be accomplished so that there will be a minimum of traffic interruption and inconvenience, discomfort or damage to the public.
- D. The Contractor shall supply safe drinking water for all Contractor employees at the Work site. Water from existing fire hydrants may be made available to the Contractor upon his request to the City's Water Department through the City's Contract Representative. In such cases where the City elects to provide hydrant water, the Contractor will be provided a meter for the fire hydrant and will be charged the City's current rate for all water used. A deposit for the meter will be required by the City's Water Department.
- E. If archaeological, historical or paleontological features are encountered or discovered during any activity related to the Work, the Contractor shall stop work immediately at that location and shall take all reasonable steps to secure the preservation of those features. The City Contract Representative will make arrangements for the proper treatment of the affected portion of the Work site. The Contractor shall not resume work in the affected portion without the prior approval of the City Contract Representative.
Extensions in the Completion time for delays resulting from the discovery of archaeological, historical or paleontological features, if such discovery results in a delay to the progress of the Work, may be claimed by the Contractor in accordance with Article 10 of these General Conditions.

H.16. CLEANING UP

- A. The Contractor shall at all times keep the construction site and surrounding area free from accumulations of waste material or rubbish caused by operations under the Contract. Upon completion of the Work, the Contractor shall remove all rubbish, tools, equipment, scaffolding and surplus materials from the site and surrounding areas and leave the area "broom clean" or its equivalent, unless otherwise instructed by the City Contract Representative.
- B. If the Contractor fails to clean up as provided in the Contract, the City may do so and the cost thereof shall be charged against the Contractor.

H.17. EMERGENCIES

- A. In an emergency affecting the safety of life or property, the Contractor, without special instruction or authorization from the City Contract Representative, is hereby permitted, authorized and directed to act at its own discretion to prevent threatened loss or injury.
- B. Except in the case of an emergency requiring immediate remedial work, any work performed after regular working hours, on Saturdays, Sundays or legal holidays shall be performed without additional expense to the City unless such work has been specifically requested and approved by the City Contract Representative.
- C. The Contractor shall file with the City Contract Representative the names, addresses and telephone numbers of their employees who can be contacted at any time in case of emergency. These Contractor representatives must be fully authorized and equipped to correct

unsafe or excessively inconvenient conditions on short notice by the City or the Public Inspectors.

H.18. PERMITS, FEES AND NOTICES

- A. The Contractor shall, at their expense, obtain all necessary permits and licenses for work performed under the Contract, and shall give all necessary notices required by laws, ordinances, rules, regulations and lawful orders of public authorities pertaining to performance of the Work, public health and safety.
- B. If the Contractor knowingly performs work which is not in compliance with such laws, ordinances, rules, regulations or orders, without such notice to the City Contract Representative, the Contractor shall assume full responsibility for such Work and shall bear all costs attributable thereto.

H.19. ROYALTIES AND PATENTS

- A. The Contractor shall pay all royalties and license fees.
- B. The Contractor and the surety shall defend any suit or proceeding brought against the procuring agency, during the prosecution or after the completion of the work, based on a claim that manufacture, sale, or use of any method, process, machine, technique, design, living thing, genetic material, or composition of matter, or any part thereof, furnished or used under this Contract constitutes an infringement of any patent, trademark, or copyright, and the Contractor shall pay all damages and costs awarded therein, against the procuring agency and any affected third party or political subdivision. If manufacture, sale, or use of said method, process, machine, technique, design, living thing, genetic material, or composition of matter, or any part thereof, is in such suit held to constitute infringement and if manufacture, sale, or use of said method, process, machine, technique, design, living thing, genetic material, or composition of matter, or part thereof, is enjoined, the Contractor shall, at its own expense, either procure for the procuring agency the right to continue manufacture, sale, or use of said method, process, machine, technique, design, living thing, genetic material, or composition of matter, or part thereof, or, subject to Engineer's approval, replace same with noninfringing method, process, machine, technique, design, living thing, genetic material, or composition of matter, or part, or modify it so it becomes noninfringing.
- C. If appropriate, the Contractor shall furnish the City Contract Representative satisfactory evidence of patent licenses or patent releases covering City-specified proprietary materials, equipment, devices or processes, as the case may be.

H.20. PROTECTION OF PERSONS AND PROPERTY

- A. The Contractor shall be responsible for initiating, maintaining, supervising and directing all safety precautions and programs in connection with the performance of the Contract.
- B. The Contractor shall be responsible for the protection of all Work until completion and final payment is made, including any material or equipment to be incorporated whether in storage on or off the Work site.

- C. The Contractor shall, at their own expense, replace damaged or lost material, or repair damaged parts of the Work or of other property at the work site or adjacent thereto, and the Contractor and their sureties shall be liable therefore.
- D. The Contractor shall assume all risks from floods and casualties and shall make no claim for damages for delay from such causes. However, a reasonable extension of time on account of such delays may be allowed, subject to the conditions contained in Article 6 of these General Conditions.
- E. In the event the Contractor encounters on the work site material reasonably believed to be a hazardous material, such as asbestos or polychlorinated biphenyl (PCB), the Contractor shall immediately stop work in the area affected and report the condition to the City Contract Representative.
- F. The Contractor shall take all necessary precautions for the safety of employees on the work site and other persons who may be affected thereby, and shall comply with all applicable provisions of Federal, State and Municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. The Contractor shall erect and properly maintain at all times, as required by the condition and progress of the Work, all necessary safeguards for the protection of workmen and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hod hoists, well holes, elevator hatchways, scaffolding, window openings, stairways and falling materials.
- G. The Contractor warrants it is fully familiar and shall comply with all of the safety requirements of the Occupational Safety and Health Act (29 U.S.C. Sections 641-678, or as amended or recodified from time to time). Also the Hazard Communication Act relating to the use of hazardous materials (29 C.F.R. 1910-1200, or as amended or recodified from time to time), as promulgated by the Federal Government and as implemented by the State of Arizona, and that it will be solely responsible for all fines and penalties provided for by law for any violation of such Act and, furthermore, shall require all subcontractors to comply with such Acts and with the provisions of this section. Any claims arising out of alleged violations of such Acts are covered by the indemnification set forth in "Indemnification".

H.21. INDEMNIFICATION

To the fullest extent permitted by law, Contractor, its successors, assigns and guarantors, will indemnify and hold harmless the City and its officials, employees, volunteers, and agents, from and against all allegations, demands, proceedings, suits, actions, claims (including but not limited to claims of patent, trademark, or copyright infringement), liability, damages, losses, expenses (including but not limited to attorney fees and court costs, including the cost of appellate proceedings, and all claim-adjusting-and-handling expenses) or disbursements of any kind or nature, that may be asserted against, imposed on, or incurred by any of them, to the extent caused by the negligent, reckless, or intentional wrongful acts or omissions of Contractor or any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable relating to work, services and/or products provided under this Contract.

If a court of law determines that this section is void because the language used does not comply with A.R.S. § 34-226, then the words or phrases that cause the provision to violate the statute will be deemed

to have been retroactively modified in a way that complies with the statute but retains Contractor's indemnity obligations to the fullest extent not inconsistent with the statute.

H.22. SUBCONTRACTS

- A. The Contractor shall ensure that the assigned to this Contract are available throughout the term of the Contract. In the event that the Contractor requests substitution of subcontractors, the Contractor shall obtain prior approval from the City for subcontractor substitution. The Contractor shall ensure that substituted subcontractors are equally qualified and capable. Information on the qualifications of proposed substitutes shall be provided to the City for its consideration and approval prior to substitution taking place.
- B. In job-order-contracting, by appropriate written agreement, the Contractor agrees that each subcontractor has been notified in writing of the negotiated amount or coefficient agreed to for billing purposes. Furthermore, by appropriate written agreement, the Contractor agrees that each subcontractor shall be bound to the Contractor by the terms of this Contract. In the event of a conflict between the substance of a written subcontract and the language of this Contract, the language of this Contract shall prevail.
- C. Contractor shall ensure that each subcontract shall preserve and protect the rights of the City under the Contract with respect to the work to be performed by the subcontractor. Where appropriate, the Contractor shall require each subcontractor to enter into similar agreements with sub-subcontractors. In this connection, the Contractor shall make available to each subcontractor, prior to execution of any subcontract, copies of the Contract provisions to which the subcontractor will be bound. Subcontractors shall also make copies of applicable portions of the Contract available to their respective subcontractors.
- D. Each subcontract will require the subcontractor to submit to the Contractor applications for payment in such reasonable time as to enable the Contractor to apply for payment to the City in a timely manner, including any claims for extras, extensions of time, and damages for delays or otherwise to the Contractor in the manner provided in the Contract for like claims by the Contractor upon the City.
- E. The Contractor further agrees:
 - 1. To be bound to the subcontractor by all the obligations that the City assumes to the Contractor under this Contract, and by all provisions thereof affording remedies and redress to the Contractor from the City.
 - 2. To promptly pay the subcontractor in accordance with applicable State statute.
 - 3. That, at all times, the subcontractors' total payments shall be proportionate to the value of the labor and materials provided by them. Payment may be preconditioned upon the subcontractors providing the Contractor with requested significant partial or final lien waivers.
 - 4. To pay the subcontractor to such extent as may be provided by the Contract or the subcontract, if either of these provides for earlier or larger payments than the above.

5. To ensure timely payment to subcontractors for their work as performed and for materials fixed in place, less any applicable retention, despite any delay by the City in making payments to the Contractor for any cause not the fault of the subcontractor.
 6. To share or forward, as appropriate, with its subcontractors or, as appropriate, with the City, any fire insurance money received by the Contractor under the insurance provisions of the Contract.
 7. That no claim for services rendered or materials furnished by the Contractor to the subcontractor shall be valid unless written notice thereof is given by the Contractor to the subcontractor during the first ten (10) days of the calendar month following that in which the claim originated.
 8. To give the subcontractor an opportunity to be present and to submit evidence in any Contractual claim, controversy or dispute.
- F. Nothing in this Article shall create any obligation on the part of the City to pay to, or to see to the payment of, any sums to any subcontractor, except as may otherwise be required by law.
- G. Each subcontract agreement for a portion of the Work is hereby assignable by the Contractor to the City provided that:
1. Assignment is effective at the sole option of the City and only upon termination of the Contract for cause pursuant to Article 9 of these General Conditions, and only for those subcontract agreements which the City determines to accept by notifying the subcontractor in writing, and
 2. Assignment is subject to the prior rights of the surety obligated under the Bonds relating to the Contract.

H.23. SEPARATE CONTRACTS

- A. The City reserves the right to perform construction or operations related to the Work with the City's own forces and to let separate Contracts in connection with other portions of the Work or other construction or operations on the Work site.
- B. The Contractor shall afford other Contractors on the Work site reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate its work with theirs.
- C. The City Contract Representative shall coordinate the activities of the City's own forces and of each separate Contractor with the work of the Contractor. The Contractor and all other Contractors on the Work site shall be required to review their construction schedules and cooperate with the City Contract Representative in coordinating the various portions of the Work with the schedules of such separate contractors.
- D. If any part of the Contractor's work depends, for proper execution or results, upon the work of any other contractor, the Contractor shall inspect and promptly report to the City Contract Representative any defects in such work that render it unsuitable for continuance of the Contractor's Work. Failure to inspect and report may constitute an acceptance of the other

contractor's work as fit and proper for the reception of the Contractor's Work, except as to defects not then reasonably discoverable.

- E. Costs caused by the Contractor because of delays or by improperly timed activities or defective construction shall be borne solely by the Contractor.
- F. If the Contractor causes damage to any separate contractor on the site, the Contractor, upon due notice, agrees to settle with such separate contractor by agreement or arbitration, if he will so settle. If such separate contractor sues the City on account of any damage alleged to have been so sustained, the City shall notify the Contractor, who shall defend such proceedings and, if any judgment against the City arises therefrom, the Contractor shall pay or satisfy it.
- G. Should separate contractors on the Work cause any damage, cost or loss to the Contractor, the City shall not be held responsible or liable therefore in any way other than extensions of completion time in accordance with Article 6 of these General Conditions.

H.24. TIME

- A. Unless otherwise provided in the Contract, the Completion Time is the number of calendar days, including authorized time extensions, specified for completion of the Work.
- B. Completion Time shall commence on the day specified in the Notice to Proceed. The date shall not be postponed on account of the failure of the Contractor, or of any of its subcontractors to take any action required to commence the Work.
- C. The date of Substantial Completion is the date certified by the City Contract Representative pursuant to "Substantial Completion" of these General Conditions. It is expressly agreed that the time for completion is a reasonable time, considering average climatic conditions and usual industrial conditions prevailing in the Tucson area.
- D. The term "day" as used in the Contract shall mean calendar day.
- E. By execution of the Contract documents, or by concurrence with the Notice to Proceed in the case of a job order, the Contractor acknowledges that the time described is a reasonable period for a competent Contractor to complete the Work.
- F. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the agreed upon time frame. If the Contractor is delayed on any portion of the Work for any reason whatsoever, it shall expeditiously proceed on other portions of the Work which are not affected by such delay.

H.25. LIQUIDATED DAMAGES

- A. The amount of liquidated damages shall be as specified in the Contract documents, or, in the case of a joborder, in the Notice to Proceed.
- B. The Contractor has been put on notice that the City shall enforce the liquidated damages set forth in the Contract documents or Notice to Proceed.
- C. The Contractor agrees that the City will incur damages if the Contractor fails to complete the Work within the Completion time or any approved extensions thereof and that the liquidated damages specified in the Contract or, in the case of a job-order, in the Notice to Proceed,

represents a fair and equitable approximation of the City's damages. Each calendar day that the Contractor shall fail to achieve Substantial Completion after the calendar date agreed to for the completion of the Work provided for in the Contract, the sum set forth in the Contract documents will be deducted from any monies due the Contractor, not as penalty, but as liquidated damages; provided however, that due account will be taken of any adjustments of the Completion time for the completion of the work allowed under the Contract.

Permission allowing the Contractor to continue and finish any part of the Work after the time fixed for its completion or after the date to which the time for completion may have been extended shall in no way operate as a waiver on the part of the City of any of its rights under the Contract.

Once substantial completion is granted, the Contractor shall achieve final completion within thirty (30) calendar days, unless otherwise agreed upon. If final completion does not occur within the agreed upon number of days, liquidated damages will commence on the first day after the agreed days, until final completion occurs.

H.26. DELAYS AND TIME EXTENSIONS

- A. It is agreed that the City's only liability for any delay from any cause shall be limited to granting a time extension to the Contractor and that no extended general conditions for any delay will be applicable unless agreed to by the City. There is no other obligation, express or implied, on the part of the City to the Contractor for delay from any cause.
- B. Force Majeure
 - 1. Except for payment of sums due, neither party shall be liable to the other nor deemed in default under this Contract if and to the extent that such party's performance of this Contract is prevented by reason of Force Majeure. The term "Force Majeure" means a major occurrence that is beyond the control of the parties affected and occurs without its fault or negligence. Force Majeure shall not include late performance by a sub-contractor unless the delay arises out of a Force Majeure occurrence in accordance with this Force Majeure term and condition.
 - 2. If either party is delayed at any time in the progress of the work by Force Majeure, the delayed party shall immediately notify the other party in writing of such delay of the commencement thereof, and shall specify the causes of such delay in such notice. Such notice shall be hand-delivered or mailed certified-return receipt and shall make a specific reference to this article, thereby invoking its provisions. The delayed party shall cause such delay to cease as soon as practicable and shall notify the other party in writing when it has done so. The time of completion shall be extended by contract modification for a period of time equal to the time that results or effects of such delay prevent the delayed party from performing in accordance with this Contract.
- C. The completion time shall be extended when delay in completion of the Work by either the Contractor or the subcontractors is due to any preference, priority or allocation order duly issued by the Federal Government.
- D. Time extensions shall only be granted for delays caused by the City, changes authorized in accordance with "Uncovering and Correction of Work; Changes in the Work" section of this agreement, or delays pursuant to this section.

- E. Should a dispute arise between the Contractor and the City regarding a delay or time extension, the Contractor shall continue progress on the Work until the dispute is resolved.

H.27. CONTRACT PRICE; REQUEST FOR PAYMENT; SCHEDULE OF VALUES

- A. The Contract amount or coefficient stated in the Contract documents or, in the case of a job order, in the Notice to Proceed, plus or minus any authorized adjustments, is the amount payable by the City to the Contractor for performance of the Work under the Contract or for a specific job order.
- B. During the course of construction, the Contractor shall request payment for work actually performed during the preceding month or some other time period as mutually agreed to, using "ESTIMATE FOR PAYMENT" forms, which are furnished by the City or a City approved form submitted by the Contractor. Completed forms shall be submitted to the City Contract Representative. A schedule of values and an updated project schedule shall accompany the request for payment.

H.28. SUBSTANTIAL COMPLETION

- A. When the Contractor considers that the Work, or a portion thereof which the City has agreed to accept separately, is ready for its intended use, it shall notify the City Contract Representative in writing that the Work, or the agreed upon portion thereof, is substantially complete and request the City Contract Representative to issue a Certificate of Substantial Completion. Within a reasonable time thereafter, the City Contract Representative will make an inspection of the Work, or the designated portion thereof, to determine the status of completion. If the inspection discloses any item that is not in accordance with the Contract, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item. The Contractor shall then submit a request for a re-inspection by the City Contract Representative. When the Work or designated portion thereof is determined to be substantially complete, the City Contract Representative will prepare a Certificate of Substantial Completion for signature of the parties, fixing therein the date of Substantial Completion and establishing the responsibilities of the City and Contractor, pending final payment by the City, for security, maintenance, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall finish all items on the punch list attached to the certificate.
- B. Warranties required by the Contract shall commence on the date of Final Completion for a period of two years, except where a specific provision of the Contract provides otherwise.

H.29. CERTIFICATION AND PAYMENT

- A. The City by mutual agreement may make progress payments on Contracts of less than ninety days and shall make monthly progress payments on all other Contracts as provided for in this paragraph. Payment to the Contractor on the basis of a duly certified and approved estimate for payment of the work performed during the preceding calendar month under the Contract may include payment for material and equipment. An estimate of the work submitted shall be deemed approved and certified for payment after seven days from the date of submission unless before that time the City or the City's designee prepares and issues a specific written finding setting forth those items in detail in the estimate of the work that are not approved for

payment under the Contract. The City may withhold an amount from the progress payment sufficient to pay the expenses the City reasonably expects to incur in correcting the deficiency set forth in the written finding. The progress payments shall be paid on or before fourteen days after the estimate of the work is certified and approved. The estimate of the work shall be deemed received by the City on submission to any person designated by the City for the submission, review or approval of the estimate of the work.

- B. On completion and acceptance of each separate building, public work or other division of the Contract on which the price is stated separately in the Contract, except as qualified in paragraph 7.2.5, payment may be made in full, less authorized deductions. In preparing estimates, the material and equipment delivered on the site to be incorporated in the job shall be taken into consideration in determining the estimated value by the architect, engineer or other person, as specified in the Contract.
- C. The Contractor shall pay to the Contractor's subcontractors or material suppliers and each subcontractor shall pay to the subcontractor's subcontractor or material supplier, within seven days of receipt of each progress payment, unless otherwise agreed in writing by the parties, the respective amounts allowed the Contractor or subcontractor on account of the work performed by the subcontractors, to the extent of each subcontractor's interest, except that no Contract for construction services may materially alter the rights of any Contractor, subcontractor or material supplier to receive prompt and timely payment as provided under this section. The payments to subcontractors or material suppliers shall be based on payments received pursuant to this section. Any diversion by the Contractor or subcontractor of payments received for work performed on a Contract, or failure to reasonably account for the application or use of those payments, constitutes grounds for disciplinary action by the Registrar of Contractors. The subcontractor or material supplier shall notify the Registrar of Contractors and the City in writing of any payment less than the amount or percentage approved for the class or item of work as set forth in this section.
- D. A subcontractor may notify the City in writing requesting that the subcontractor be notified by the City in writing within five days from payment of each progress payment made to the Contractor. The subcontractor's request remains in effect for the duration of the subcontractor's work on the project.
- E. Nothing in this section prevents the Contractor or subcontractor, at the time of application and certification to the City or Contractor, from withholding the application and certification to the City or Contractor for payment to the subcontractor or material supplier for unsatisfactory job progress, defective construction work or materials not remedied, disputed work or materials, third party claims filed or reasonable evidence that a claim will be filed, failure of a subcontractor to make timely payments for labor, equipment and materials, damage to the Contractor or another subcontractor, reasonable evidence that the subcontract cannot be completed for the unpaid balance of the subcontract sum or a reasonable amount for retention.
- F. If any payment to a Contractor is delayed after the date due interest shall be paid at the rate of one per cent per month or fraction of a month on the unpaid balance as may be due.
- G. If any periodic or final payment to a subcontractor is delayed by more than seven days after receipt of the periodic or final payment by the Contractor or subcontractor, the Contractor or subcontractor shall pay the subcontractor or material supplier interest, beginning on the eighth

day, at the rate of one per cent per month or fraction of a month on the unpaid balance as may be due.

- H. Notwithstanding anything to the contrary in this section, this section applies only to amounts payable in a construction services Contract for construction and does not apply to amounts payable in a construction services Contract for design services, preconstruction services, finance services, maintenance services, operations services and other related services.
- I. The City Contract Representative, with reasonable dispatch, will review the contents of the ESTIMATE FOR PAYMENT submitted by the Contractor, determine the sufficiency of the estimate, satisfy himself that the City has received full value, certify the estimate and submit it through normal channels for payment.
- J. Neither the certification nor payment made to the Contractor, nor partial or entire use or occupancy of the Work by the City shall constitute an acceptance of any portion of the Work.

H.30. FINAL COMPLETION AND FINAL PAYMENT

Upon receipt of notice from the Contractor that the Work is ready for final inspection and upon receipt of a request for final payment, the City Contract Representative will determine that all items on the punch list have been completed or corrected and the City will make payment for such work or portion thereof as provided for in the Contract.

H.31. PAYMENT WITHHELD

- A. If the City Contract Representative is unable to certify a request for payment in whole or in part because, after observing the Work and the data comprising the ESTIMATE FOR PAYMENT, the City Contract Representative determines that the Work has not progressed or the quality of the Work is not in accordance with the Contract, the City Contract Representative shall promptly notify the Contractor. If the City Contract Representative and the Contractor cannot agree on a revised amount, the City Contract Representative will promptly issue a certificate for payment in an amount they determines is justified.
- B. The City Contract Representative or other City official, as a result of subsequently discovered evidence, may also withhold or nullify the whole or a part of any certification to such extent as may be necessary to protect the City from loss on account of:
 - 1. Defective work not remedied.
 - 2. Third party claims filed or reasonable evidence indicating probable filing of such claims.
 - 3. Failure of the Contractor to make payments properly to subcontractors or for labor, materials, or equipment.
 - 4. Reasonable doubt that the Work can be completed for the unpaid balance of the Contract amount, or reasonable evidence that the Work will not be completed within the Completion time and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay.
 - 5. Damage to another contractor or to the City.

6. Damage to the real or personal property of another and failure to repair or replace the same.
 7. Persistent failure to carry out the Work in accordance with the Contract.
- C. When the grounds for withholding payment have been corrected to the satisfaction of the City Contract Representative or other City official concerned, the City shall proceed to process any amounts due.

H.32. CONSENT OF SURETY/LIEN WAIVERS AND AS-BUILT DRAWINGS

Final payment shall become due when the Contractor provides to the Contract Officer a Consent of Surety Certificate from their bonding company, or lien waivers, at the Contract Officer's discretion and all completed as-built drawings.

H.33. PARTIAL UTILIZATION

- A. The City may occupy or use any portion of the Work which the City and the Contractor agree constitutes a separately functioning and usable part of the Work that can be used by the City without significant interference with the Contractor's performance of the remainder of the Work. Such use or occupancy may commence whether or not the portion is substantially complete, provided the City and the Contractor have accepted in writing their mutual responsibilities regarding the used portion, including but not limited to insurance coverage, maintenance and utilities.
- B. Partial use or occupancy of the Work by the City shall not constitute acceptance of Work not complying with the requirements of the Contract.

H.34. UNCOVERING OF WORK

- A. Piping, wiring, ducts, etc., shall not be covered up before proper inspection, approval and certificates, if required, are issued. Should any work that is designated for inspection by the City Contract Representative or the Contract before covering is covered before such inspection, it must be uncovered by the Contractor at their expense when examination is ordered by the City Contract Representative.
- B. If a portion of the Work not designated by the City Contract Representative or the Contract for inspection has been covered and the City Contract Representative or a Public Inspector orders such work uncovered for inspection, the Contractor shall immediately uncover such work. If such uncovered work is found to be in accordance with the Contract, an appropriate Change Order shall be issued to compensate the Contractor for the expense of uncovering and replacing the work. If such work is found to be not in compliance with the Contract, the Contractor shall pay such costs, unless the condition was caused by the City or a separate Contractor.
- C. The City shall not be responsible for or bear the cost of any re-examination and replacement occasioned by defects in the work caused by subcontractors.

H.35. CORRECTION OF WORK

- A. Correction of Work Before Final Payment: The Contractor shall promptly remove from the site of the Work all materials and/or associated portions of the Work rejected by the City Contract Representative as failing to conform to the Contract, whether incorporated or not, and the Contractor shall promptly replace and reexecute the Work in accordance with the Contract, without expense to the City, and shall bear the expense of making good the work of other contractors destroyed or damaged by such removal or replacement. If the Contractor does not remove such rejected Work and/or materials within a reasonable time, fixed by written notice, the City may remove it and may store the materials at the expense of the Contractor.
- B. Should the Contractor fail to repair such defective material and/or workmanship or to make replacements within five (5) calendar days after written notice by the City, it is agreed that the City may, at its sole discretion, make such repairs and replacements and the actual cost of the required labor and materials shall be chargeable to and payable by the Contractor or his surety.

H.36. CHANGES IN THE WORK

- A. The City Contract Representative may order extra work or make changes by altering, adding to or deducting from the Work, the Contract price being adjusted accordingly by Change Order without invalidating the Contract. All such work shall be executed under the conditions of the original Contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.
- B. If, instead of requiring corrections or removal of work not conforming to the requirements of the contract, the work is determined to be acceptable with diminished value in the sole judgment of the City Contract Representative, a change order shall be issued incorporating the necessary revisions in the contract, including an appropriate reduction in the contract price. Such a change order does not require the signature or approval of the Contractor. Such acceptance of non-conforming work shall not constitute a waiver of any other work required under this contract.
- C. The value of any extra work or change ordered under the Contract shall be determined in one or more of the following ways:
 - 1. By estimate and acceptance in a lump sum.
 - 2. By unit prices in the Contract or subsequently agreed upon prices.
 - 3. By a fixed fee.

H.37. SUSPENSION OF THE WORK FOR CAUSE; CITY'S RIGHT TO PERFORM THE WORK

- A. If the Contractor fails to correct Work which is not in accordance with the Contract, or persistently fails to carry out the Work in accordance with the Contract, the Contract Officer, after consultation with the City Contract Representative, may order the Contractor in writing to stop the Work, or any portion of the Work, until the cause for such order has been eliminated.

- B. If the Contractor fails to prosecute the Work properly or fails to perform any provision of this Contract, the City may, five (5) days after written notice to the Contractor, and without prejudice to any other remedy the City may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor and its surety shall be liable to the City for such deficiency.

H.38. TERMINATION BY THE CITY FOR CAUSE

- A. The City, upon certification by the City Contract Representative, without prejudice to any other right or remedy of the City and after giving the Contractor seven (7) days written notice, may terminate this Contract as to all or any part of the Work for any of the following reasons:
1. If the Contractor abandons the Work, or unnecessarily delays the Work.
 2. If the Contractor should persistently or repeatedly refuse or fail to supply enough properly skilled workers or proper materials or competent subcontractor.
 3. If the Contractor fails to make payment to subcontractor for materials or labor in accordance with the respective agreements between the Contractor and the subcontractor or as expressly set forth herein.
 4. If the Contractor persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction, or persistently violates the conditions or covenants of this Contract.
 5. If the Contractor should be adjudged bankrupt.
 6. If the Contractor should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of its insolvency.
 7. If the Contractor is otherwise in substantial breach of a provision of the Contract as determined by the City.
- B. Upon termination of the Contract for any of the above reasons, the City, subject to any prior rights of the surety, may:
1. Take possession of the Work and of all materials, equipment, tools, and construction equipment and machinery at the Work site or adjacent thereto belonging to the Contractor.
 2. Accept assignment of subcontracts pursuant to Subsection 5.1.8 of Article 5 of these General Conditions.
 3. Finish the Work by whatever reasonable method the City may deem expedient. In completing the Work by a new contractor or by doing the Work itself, the City may use such equipment, materials, supplies, machinery, implements, tools and plant of the Contractor in the City's possession and may make all necessary repairs and replacements thereto.
- C. If the City terminates the Contract for one of the reasons stated in this section, the Contractor shall not be entitled to receive any further payment.
- D. The cost of fully completing the Work provided for under any new contract shall include the sum or sums of money to be paid by the City to other Contractors, all costs of repairs and

replacements of machinery, implements, tools and plant of the Contractor hereunder, and also all sums of money paid for additional management and administrative services, including but not limited to the cost of the City Contract Representative's additional services and added expenses made necessary by the termination of the Contract.

- E. If the unpaid balance of the Contract price exceeds costs of finishing the Work, such excess may, at the City's discretion, be paid to the Contractor. If such costs exceed the unpaid balance, the City may sell all materials, supplies, machinery, implements, tools and plant of the Contractor's then on hand, at public sale, on giving the Contractor twenty (20) days notice of the time and place of such sale, and the net proceeds derived from the sale of said property shall be applied against such costs. Should the amount received from the sale be insufficient to pay such deficiency, the Contractor and its surety shall be liable to pay the amount of the deficiency.

H.39. SUSPENSION BY THE CITY FOR CONVENIENCE

- A. The City may, without cause, order the Contractor in writing to suspend or interrupt the Work in whole or in part for such period of time as the City may determine whenever such suspension or interruption would be in the best interest of the City.
- B. If the City suspends the Work for convenience, an adjustment shall be made for substantiated increases in the cost of performance of the Contract, if any, including profit on the increased cost of performance, caused by suspension or interruption. No adjustment shall be made to the extent:
1. That performance is, was or would have been so suspended or interrupted by another cause for which the Contractor is responsible, or
 2. That an equitable adjustment is made or denied by the City.

H.40. TERMINATION BY THE CITY FOR CONVENIENCE

- A. The performance of the Work under this Contract may be terminated by the City, in whole or in part, in accordance with this clause whenever the City reasonably determines that such termination is in the best interest of the City. Any such termination shall be effected by delivery to the Contractor of a written Notice of Termination specifying the extent to which performance of the Work is terminated, and the date upon which such termination becomes effective.
- B. If the Contract is terminated by the City as provided herein, the Contractor shall receive compensation for any Work performed and accepted, together with profit in proportion to the Work performed and accepted.
 The compensation shall include payment for contractual obligations reasonably incurred prior to termination. No amount shall be allowed for anticipated profit on unperformed Work.
- C. In the event the City terminates the Work, in whole or in part, for cause pursuant to "Termination by the City for Cause" and the termination is later deemed to be unjustified, then such termination shall be automatically deemed a termination for convenience and the provisions of this Section shall apply.

- D. Termination of the Contract or portion thereof by the City for convenience shall not relieve the Contractor of their contractual responsibilities for the Work completed, nor shall it relieve the surety of its obligation for and concerning any just claim arising out of the Work completed.

H.41. CONTRACTOR'S RIGHT TO TERMINATE CONTRACT

- A. The Contractor may terminate the Contract for any of the following reasons:
1. If the Work should be stopped under an order of any court of competent jurisdiction or other public authority for a period in excess of one (1) month through no act or fault of the Contractor or of anyone directly or indirectly employed by him.
 2. If the City has failed to pay the Contractor within sixty (60) days after the date when any sum is certified for payment by the City Contract Representative, or
 3. If repeated suspensions or interruptions ordered by the City pursuant to "Suspension by the City for Convenience" total in the aggregate more than one hundred percent (100%) of the total number of days scheduled for completion, or one hundred twenty (120) days in any three hundred sixty-five (365) day period, whichever is less.
- B. If one of the above reasons exists, the Contractor may, upon seven (7) additional days, written notice to the City Contract Representative, stop Work and terminate the Contract and recover payment from the City for all Work executed and accepted by the City and any loss sustained upon any plant or materials and reasonable profit and damages.

H.42. CLAIMS AND DISPUTES

- A. City Contract Representative's Resolution of Claims and Disputes; Review by Contract Officer
10.1.1 This Article relates to claims for additional compensation and any other differences between the parties arising under and by virtue of the Contract. Such claims are to be resolved at the earliest possible time and at the first responsible level so as to increase the possibility that such matters will be resolved without the vexation of an administrative hearing process, arbitration or litigation.
- B. All claims, including but not limited to, claims relating to adjustments or interpretations of the Contract, payments of money, or other relief with respect to the terms of the Contract, shall be referred initially in writing to the City Contract Representative for action. The responsibility to substantiate claims shall rest with the party making the claim.
- C. Claims by either party must be made within twenty-one (21) days after the event giving rise to the claim or within twenty-one (21) days after the claimant first becomes aware of the condition giving rise to the claim, whichever is later.
- D. Pending final resolution of a claim, the Contractor shall proceed diligently with performance of the Contract and the City shall continue to make payments in accordance with the Contract.
- E. The City Contract Representative shall, within twenty-one (21) days of receipt of a claim, issue one of the following:

1. Issue a decision either rejecting or approving the claim.
 2. Suggest an equitable compromise of the claim.
 3. Provide a schedule to the Contractor indicating when they expect to be able to take action, which shall be within a reasonable time.
- F. The City Contract Representative may require the submission of additional documentation from the Contractor to facilitate a decision.
- G. The Contractor shall have ten (10) days from the date of the City Contract Representative's final decision rejecting or approving a claim, or suggesting a compromise, within which to accept or object to the decision.
Failure of the Contractor to accept or object to the decision in writing within such ten (10) day period shall be deemed an acceptance of the decision. If the Contractor rejects the decision of the City Contract Representative in writing within such ten (10) day period, the matter shall be referred to the Contract Officer for de novo review.
- H. The Contract Officer shall have sixty (60) days from receipt of a written objection by the Contractor to the City Contract Representative's final decision, or such longer period as the parties may stipulate in writing, to review the matter and issue a response in accordance with Article IX of the Tucson Procurement Code. During such period, the Contract Officer may require such additional documentation or testimony as deemed necessary to support his/her response.

H.43. GOVERNING LAW

This Contract shall be governed, and the City and Contractor shall have all remedies afforded to each, by the Tucson Procurement Code and the law of the State of Arizona. State law claims shall be brought only in Pima County Superior Court.

H.44. WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last known business address known to the party giving notice.

H.45. CONFLICT OF INTEREST

The City shall also have the right to terminate this Contract pursuant to the conflict-of-interest provisions of A.R.S. Sec. 38-511 and to exercise any and all remedies provided in such statute. The City may cancel this Contract if any person significantly involved in negotiating, drafting, securing or obtaining this Contract for or on behalf of the City of Tucson becomes an employee in any capacity of any other party or a consultant to any other party with reference to the subject matter of this Contract.

H.46. INDEPENDENT CONTRACTOR

- A. It is understood that each party shall act in its individual capacity and not as an agent, employee, partner, joint venturer, or associate of the other. An employee or agent of one party shall not be deemed or construed to be the employee or agent of the other party for any purpose (current as of 10-29-14).
- B. The Contractor shall not be entitled to compensation in the form of salaries, holidays, paid vacation, sick days, or pension contributions by the City. The City of Tucson will not provide any insurance coverage to the Contractor, including Worker's Compensation coverage. The Contractor is advised that taxes, social security payments, and other withholdings shall not be withheld from a City payment issued under this Contract and that Contractor should make arrangements to directly pay such expenses. Contractor is responsible for compliance with the Affordable Care Act for Contractor and any of Contractor's employees (current as of 10-29-14).

H.47. GRATUITIES

The City may, by written notice to the Contractor, cancel this Contract if it is found that gratuities, in the form of entertainment, gifts or otherwise, were offered or given by the Contractor or any agent or representative of the Contractor, to any officer or employee of the City amending, or the making of any determinations with respect to the performing of such contract. In the event this Contract is canceled by the City pursuant to this provision, the City shall be entitled, in addition to any other rights and remedies, to recover or withhold from the Contractor the amount of the gratuity.

H.48. PROVISIONS REQUIRED BY LAW

Each and every provision of law and any clause required by law to be in the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

H.49. SEVERABILITY

The provisions of this Contract are severable to the extent that any provision or application held to be invalid shall not affect any other provision or application of the Contract which may remain in effect without the invalid provision or application.

H.50. INTERPRETATION - PAROL EVIDENCE

This Contract is intended by the parties as a final expression of their agreement and is intended also as a complete and exclusive statement of the terms of this agreement. No course of prior dealings between the parties and no usage of the trade shall be relevant to supplement or explain any term used in this Contract. Acceptance or acquiescence in a course of performance rendered under this Contract shall not be relevant to determine the meaning of this Contract even though the accepting or acquiescing party has knowledge of the nature of the performance and opportunity to object.

H.51. RIGHTS AND REMEDIES

No provision in this document or in the Contractor's response shall be construed, expressly or by implication as a waiver by either party of any existing or future right and/or remedy available by law in the event of any claim or default or breach of contract. The failure of either party to insist upon the strict performance of any term or condition of the contract or to exercise or delay the exercise of any right or remedy provided in the Contract, or by law, or the acceptance of materials or services, obligations imposed by this Contract or by law, and shall not be deemed a waiver of any right of either party to insist upon the strict performance of the Contract.

H.52. RIGHT TO ASSURANCE

Whenever one party to this Contract in good faith has reason to question the other party's intent to perform, the former party may demand that the other party give a written assurance of this intent to perform. In the event that a demand is made and no written assurance is given within five (5) days, the demanding party may treat this failure as an anticipatory repudiation with this Contract.

H.53. MISCELLANEOUS PROVISIONS

- A. Advertising Contractor shall not advertise or publish information concerning this Contract without prior written consent of the City's Director of Business Services.
- B. Affirmative Action Contractor shall abide by the provisions of the Tucson Procurement Code Chapter 28, Article XII.
- C. Americans with Disabilities Act The Contractor shall comply with all applicable provisions of the Americans with Disabilities Act (Public Law 101-336, 42 U.S.C. 12101, et seq.) and applicable Federal regulations under the Act.
- D. Equal Pay The Contractor shall comply with the applicable provisions of the Equal Pay Act of 1963 (Pub.L. 88-38, 29 U.S.C. section 206(d)); Title VII of the Civil Rights Act of 1964 (Pub.L. 88-352, 42 U.S.C. 2000e et seq.; and, the Lily Ledbetter Fair Pay Act of 2009 (Pub.L. 111-2).
- E. Exclusive Possession All services, information, computer program elements, reports and other deliverables created under this Contract are the sole property of the City of Tucson and shall not be used or released by the Contractor or any other person except with prior written permission by the City.
- F. Israel Boycott – Acceptance of the contract warrants that the vendor is in compliance with A.R.S. § 35-393 and does not participate in a boycott of Israel as that term is defined within A.R.S. § 35-393.
- G. Liens All materials, services, and other deliverables supplied to the City under this Contract shall be free of all liens other than the security interest. Security interest shall extinguish upon full payment made by the City. Upon the City's request, the Contractor shall provide a formal release of all liens.
- H. Overcharges by Antitrust The City maintains that, in actual practice, overcharges resulting from antitrust violations are borne by the purchaser. Therefore, to the extent permitted by law, the Contractor hereby assigns to the City any and all claims for such overcharges as to the materials or services used to fulfill the Contract.

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 54 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

- I. Right to Inspect The City may, at reasonable times, and at the City's expense, inspect the place of business of a Contractor or subcontractor which is related to the performance of any Contract as awarded or to be awarded.
- J. Subsequent Employment The City may terminate this Contract without penalty or further obligation pursuant to A.R.S. Section 38-511 if any person significantly involved in initiating, negotiating, securing, drafting, or creating the Contract, on behalf of the City, is or becomes, at any time while the Contract or any extension of the Contract is in effect, an employee of, or a contractor to, any other party to this Contract with respect to the subject matter of the Contract. Termination shall be effective when written notice from the City's Director of Business Services is received by the parties to this Contract, unless the notice specifies a later time.

H.54. WAGE COMPLIANCE

Contractor shall pay their eligible employees the highest of:

- A. the City of Tucson minimum wage
- B. the State of Arizona minimum wage
- C. if applicable, the prevailing wage required by Davis-Bacon and Related Acts

Contractor shall cooperate with all efforts of the City of Tucson's Labor Standards Unit (LSU) to monitor and ensure compliance with applicable labor standards to include, but not be limited to, the following:

- Providing copies of pertinent documentation upon request
- Cooperating with audits and interviews
- Abiding by deadlines and adhering to due dates for determinations and appeals filings

Contractor agrees to educate their employees on the applicable wage(s) that law requires them to minimally be paid.

All timely complaints that are received by the LSU will be evaluated in accordance with the procedures posted on the LSU's webpage: www.tucsonaz.gov/minimumwage

CITY OF TUCSON
 BUSINESS SERVICES DEPARTMENT
 SHARED SERVICES PROCUREMENT DIVISION
 255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
 Page 55 of 58
 RESPONSIBLE CONTRACT OFFICER: Casey Adams
 PH: (520) 837-4128

I. Evaluation Phases

No.	Evaluation Criteria	Scoring Method	Weight (Points)
1.	QUALIFICATIONS AND EXPERIENCE OF THE FIRM: (45 points) - Submit qualifications of the firm and explain why your firm is especially well qualified to perform the required services. - Describe your firm's ability to provide the required performance and payment bonds. - List the Arizona contractor licenses held by the firm. - Provide the experience of the proposed firm on similar contracts. Identify type and location of similar work and provide specific references that may be contacted.	Points Based	10 (25% of Total)
2.	EXPERIENCE AND QUALIFICATIONS OF THE TEAM: (35 points) Provide experience and qualifications of key team members including any licenses, registrations or certifications applicable to the proposed work. Include resumes.	Points Based	10 (25% of Total)
3.	Method of Approach and Available Resources to Complete the Work: (15 points) - Provide a brief synopsis of the firm's QA/QC & Safety Plans. - Describe the firm's Training Plan for Lift Platforms and Fall Protection. - Describe the firm's Training Plan for Excavation Protection - List/describe the test and operating equipment that will be used.	Points Based	10 (25% of Total)
4.	Subcontractor Selection Plan: (5 points) Submit a proposed Subcontractor Selection Plan pursuant to ARS 34-603. The plan must describe procedures to be used in selecting subcontractors, and that selection shall be based on a combination of qualifications and price. Include information on how compliance with SBE/DBE subcontractor participation goals will be met.	Points Based	10 (25% of Total)

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page **56** of **58**
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 57 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

J. Vendor Questionnaire

J.1. Forms to be Filled Out

Cover Letter

Technical Proposal

Offer Page

Cover Letter*

Please upload your cover letter

*Response required

Technical Proposal*

Please upload your technical proposal per the evaluation criteria.

*Response required

Offer Page*

Please upload the Offer page.

*Response required

J.2. City of Tucson Business License

Do you have a City of Tucson Business License?

☐ Yes

☐ No

 If yes, please upload the business license here.

CITY OF TUCSON
BUSINESS SERVICES DEPARTMENT
SHARED SERVICES PROCUREMENT DIVISION
255 W. ALAMEDA, 6TH FLOOR, TUCSON, AZ 85701

REQUEST FOR QUALIFICATIONS NO. 240021
Page 58 of 58
RESPONSIBLE CONTRACT OFFICER: Casey Adams
PH: (520) 837-4128

OFFER AND ACCEPTANCE

OFFER

TO THE CITY OF TUCSON:

The Undersigned hereby offers and shall furnish the material or service in compliance with all terms, scope of work, conditions, specifications, and amendments in the Request for Qualifications which is incorporated by reference as if fully set forth herein.

For clarification of this offer, contact:

Company Name

Name: _____

Address

Title: _____

City State Zip

Phone: _____

Signature of Person Authorized to Sign

Fax: _____

Printed Name

E-mail: _____

Title

ACCEPTANCE OF OFFER

The Offer is hereby accepted. The Contractor is now bound to sell the materials or services specified in the Contract. This Contract shall be referred to as Contract No. _____.

CITY OF TUCSON, a municipal corporation

Approved as to form:

Awarded:

This _____ day of _____ 20____

This _____ day of _____ 20____

As Tucson City Attorney and not personally
personally

As Director of Business Services and not

