STATE OF NEVADA

DEPARTMENT OF TRANSPORTATION

REQUEST FOR PROPOSAL

No. 543-11-067

Project Specifications and Instructions for Submitting a Proposal to Furnish

NDOT Wireless Proof-of-Concept (POC)

in

Carson City, Nevada



Susan Martinovich, P.E., Director Department of Transportation

SECTION I - INSTRUCTIONS TO PROPOSER

The enclosed "Request for Proposal" (RFP) is being advertised and sent to firms for use in submitting information that will be used to select a firm with whom we hope to negotiate an agreement for the described services.

The proposer shall submit six (6) CDs, with each CD containing one (1) typewritten, legible proposal contained within one (1) PDF file. Each CD shall also include a separate PDF file of the proposer's Statement of Qualification Form (for non-engineering). Faxed proposals will not be accepted. Written proposals must be received **NO LATER THAN 3:00 P.M., ON WEDNESDAY, MARCH 14, 2012**, and addressed **exactly** as follows:

Agreement Services
Nevada Department of Transportation
Attn: RFP #543-11-067
1263 South Stewart Street, Room 101
Carson City, NV 89712

Proposals received after the specified deadline or submitted to the wrong location <u>will</u> <u>not</u> be considered and will be disposed of in an appropriate manner suitable to the State.

[Proposers not currently prequalified (or desiring to prequalify) in the enterpriseclass wireless discipline will first be reviewed to determine if they meet the minimum qualification set forth for the discipline. Any proposals submitted that do not meet the minimum prequalification requirements, as outlined below, will be disposed of in an appropriate manner suitable to the State without further review.]

Enterprise-Class Wireless Systems:

Mobile deployments in business are growing at an incredible rate, enabled by increasingly capable devices, faster, less costly, and more reliable wireless systems. The enterprise systems have smarter wireless LAN (WLAN) devices that provide better coverage, capacity, and reliability to NDOT users. The WLAN access points use the latest 802.11 technology to send and receive wireless signals, authenticate users, and virtually segment users to allow management of all access points state-wide. The enterprise wireless system is flexible, affordable, and easier to deploy and manage centrally.

Any proposal received prior to the date and time specified above for receipt of proposals may be withdrawn or modified by written request of the Proposer. To be considered, however, the modified proposal must be received by the time and date specified above. Oral interviews may be conducted for each firm that submits a written proposal.

All materials submitted in accordance with the prescribed deadline become the property of the Nevada Department of Transportation (NDOT) and will not be returned, selection or rejection does not affect this right. The proposal will be signed by a person legally authorized to bind the Proposer. Proposals submitted are considered confidential and copies will not be released to persons requesting them until negotiations are completed and an agreement has been successfully executed. Any request for copies of proposals must be submitted in writing for further consideration by NDOT.

Confidential Information, Trade Secrets and/or Proprietary Information must be sealed in a separate package and clearly marked Confidential. The failure to separate and mark this

information shall constitute a complete waiver of any and all claims for damages caused by release of the information by the State.

There will be a MANDATORY site-walk through held WEDNESDAY, FEBRUARY 1, 2012, AT 9:00 AM, at the NDOT Headquarters, Third Floor Conference Room, 302, 1263 South Stewart Street, Carson City, Nevada 89712. Requirements of this project will be presented at this meeting

There will be a MANDATORY pre-submittal meeting held <u>WEDNESDAY</u>, <u>FEBRUARY 29, 2012, AT 9:00 AM</u>, at the NDOT Headquarters, Third Floor Conference Room, 302, 1263 South Stewart Street, Carson City, Nevada 89712. Requirements of this project will be presented at this meeting.

Please direct all questions concerning this RFP to Agreement Services at (775) 888-7070 or agreeservices@dot.state.nv.us.

Issuance of this RFP shall in no way constitute a commitment by the NDOT to execute an agreement. The NDOT reserves the right to reject any or all proposals received in response to this RFP, or to cancel this RFP if it is deemed in the best interest of the State to do so.

The NDOT reserves the right to issue supplements to this RFP prior to the closing date. In the event it becomes necessary to supplement any part of this RFP, NDOT will provide copies of the supplements to all who have communicated to NDOT Agreement Services that they received the RFP.

The NDOT assumes no financial responsibility in connection with the costs incurred in the preparation and submission of the Proposer's proposal packet.

With this RFP, the Proposer is furnished a copy of the draft agreement. **To maintain consistency between the NDOT and its Consultant's and Independent Contractor's, only those portions of the "Draft Agreement" that are open for negotiation shall be blank.** A pre-negotiation audit may be required by the NDOT's Internal Audit Division. All NDOT audits will be conducted in accordance with AASHTO Uniform Audit and Accounting Guide 2010 which can be found at www.transportation.org. The "lump sum" method of compensation shall be used for the Proposer's services, as set forth in 48 CFR Chapter 1.

Contact with the NDOT personnel, other than Agreement Services, regarding these services will not be allowed during the solicitation period of this request for proposal. Any questions raised by Proposer's must be in writing to Agreement Services, 1263 South Stewart Street, Room 101, Carson City, Nevada 89712, faxed to (775) 888-7101 or email to agreeservices@dot.state.nv.us and received by 3:00 p.m., on WEDNESDAY, FEBRUARY 8, 2012. Written responses will be distributed by the NDOT on or before 3:00 p.m., on WEDNESDAY, FEBRUARY 15, 2012.

SECTION II - DBE REQUIREMENTS

There are no Disadvantage Business Enterprises (DBE) requirements for the project.

SECTION III - NEVADA BUSINESS LICENSE REQUIREMENT

The Nevada State Board of Examiners (BOE) passed a resolution requiring any vendor entering into an agreement with the State of Nevada to perform any work, is contingent upon verification the vendor has a valid and active Nevada Business License and if they are Nevada corporation, LLC, LP, LLP, or LLLP, or non-profit corporation, that their corporation is active and in good standing. Additionally, if they are a corporation, LLC, LP, LLP, or LLLP, or non-profit corporation based out of state, they must be registered as a foreign equivalent in Nevada, in active status and in good standing.

Each Proposer shall clearly state, at time of submittal, their willingness to adhere to this requirement by providing a copy of their Nevada Business License, a copy of their application from the Secretary of State Office or provide a print out of entity status that can be obtained from the Nevada Business Search found on the homepage of the Secretary of State's website www.nvsos.gov.

Award of any RFP is contingent on a Proposer having and holding an active, valid Nevada Business License. A Proposer must satisfy this requirement before execution of the agreement. If a Proposer is unable or unwilling to adhere to this requirement, the NDOT will deem the Proposer as non-responsive and the NDOT shall proceed to negotiate with the next most qualified firm and so on until an acceptable agreement is negotiated.

To apply for your Nevada Business license or to file appropriate formation documents with the Secretary of State's office, please visit www.nvsos.gov. Business licenses can be obtained immediately by applying on-line; paper applications may take 4-8 weeks for processing.

SECTION IV - SELECTION PROCESS

Selection will be based on the factors shown on the attached Evaluation Criteria Form which will be used by a committee(s) to evaluate the written proposal. Based upon the number of written proposals received, a "short list" of candidates may be established and reviewed by a second committee. The second committee will review the written proposals and may conduct interviews. If the NDOT elects to interview, the Proposer shall be notified of the interview schedule. The same attached Evaluation Criteria Form will be used for all reviews and interviews. Failure of a Proposer to appear at the interview will be considered non-responsive, and that firm will be eliminated from any further consideration. The Committees will be comprised of NDOT staff and others representing local entities who shall remain anonymous.

All evaluators may use the information in the firm's prequalification package in addition to the information submitted in the written proposal and [presented at the interview (if applicable)] to arrive at the final ranking. The firms will be ranked and a agreement shall be negotiated following the selection of the Proposer. If an acceptable agreement cannot be reached with the initial Proposer selected, the NDOT shall proceed to negotiate with the next most qualified firm and so on until an acceptable agreement is negotiated.

SECTION V - BACKGROUND

See Attachment A, Wireless Proof of Concept (POC) Requirements.

SECTION VI - SCOPE OF SERVICES

See Attachment A, Wireless Proof of Concept (POC) Requirements.

SECTION VII - PROJECT SCHEDULE

The project should be complete within ninety (90) days after receipt of Notice to Proceed.

SECTION VIII - PROPOSAL CONTENT

Proposals shall be brief and to the point. One section shall be devoted to each topic listed below with sections separated by a divider. The cover letter should not exceed one single-spaced, single-sided $8\frac{1}{2}$ " x 11" page and should include the Proposer's contact person relative to the proposal and the invoice address to which payment shall be made. The proposals shall include:

A. **EVALUATION CRITERIA ITEMS**

1. Section 1 – Project Approach

- a. Describe your team's understanding of project requirements contained in the Scope of Services.
- b. Clearly describe the features for the wireless system
 - i. Components (recommended and optional)
 - ii. Integrated third party applications
 - iii. Conceptual data flow diagrams
- c. Describe the required system administration needed for the following:
 - i. Wireless Access Point Management
 - ii. Wireless User Management
 - iii. Wireless Platform/Appliance Management
 - iv. Provide high level physical and logical diagrams
- d. Identify the maintenance lifecycle of software and hardware from the manufacturer
- e. Support information (i.e. warranty, warranty expiration, technical support telephone numbers, software upgrades, etc. for five years).
 - i. Same business day software and hardware support
 - ii. Next business day software and hardware support
- f. Identify specific methods to be used to complete each project performance requirement.
- g. Identify potential complications or difficulties that might be encountered in the implementation of required services along with suggested resolutions for each.
- h. Provide a general project plan identifying major tasks and milestones that include projected length and timeframe for implementation/deployment.

2. Section 2 – Project Team

- a. Provide a summary of the education and experience with similar projects for each member of the Proposer's staff who will be assigned to this project, including resumes for the project manager and the key principals.
- b. Include a current organizational chart of the project team, including subcontractor(s) with responsibilities of team members identified therein.
- c. Identify the location(s) where actual work will be completed.

- d. Provide a percentage of work to be completed at each location.
- e. Identify the location of the office which will provide primary project control for this project.

3. Section 3 – Past Performance

- a. Describe your firm's experience (within the past three (3) years) with similar projects.
- b. Provide a detailed description of each project listed.
- c. Provide information pertaining to meeting time and budget requirements for each project item listed.
- d. Please provide a reference name and phone number with each past project.
- e. [Provide a completed "Statement of Qualification Form" for Non-Engineering Proposers.] OR [Provide updated Standard Form 330 (no page limit on the Standard Form 330)] [WHICH IS APPLICABLE].
- f. Provide a copy of the Proposer's Nevada State Business License or copy of Secretary of State Application

4. Section 4 – Availability and Capacity

- a. Provide a listing of your firm's technical equipment which will support the wireless system.
- b. Provide a matrix or chart which lists all current projects of the Project Team, the number of hours remaining for completion of each project and the estimated completion date for each project.
- c. In view of this data, describe your team's ability to meet timelines established for this project.
- d. Identify the availability of Proposer's staff to attend meetings and interact with NDOT staff on short notice.

5. Section 5 – Proximity of Project Team

- a. Describe your firm's location in the geographical area.
- b. Describe your knowledge of the locality of the project.

6. **Section 6 – Other Factors**

- a. Provide a detailed training outline
- b. Clearly identify hardware needed. List quantities by floor as well as number of installed hardware (note existing or new procurement requirements).
- c. Provide a cost estimates for all three solutions
 - i. Traditional wireless installation
 - ii. Distributed Antenna System (DAS)
 - iii. DAS using radiating cable

B. PROPOSAL LIMITATIONS

The written proposals shall be limited by the following:

- 1. The total proposal package shall not exceed twenty (20) double-spaced, single-sided 8½" x 11" pages, which does not include the cover letter.
- 2. Statement of Qualifications, DBE Certifications, Nevada Business License, letters, and section dividers without text or graphics do not count towards the page limitations.

3. Pages contained within the proposal which are 11" x 17" will be counted as two (2) pages.

SECTION IX - PROTEST PROCEDURE

In the event an unsuccessful proposer wants to protest the results of selection, the NDOT will accept written protests within 10 calendar days of an official NDOT Notification of Award. An original protest <u>MUST</u> be in writing and filed by mail at the following:

Nevada Department of Transportation ATTN: Administrative Services/Dispute Resolution Office 1263 South Stewart Street, Room 101 Carson City, NV 89712

Copies can be submitted via facsimile to 775-888-7101 or via email to agreeservices@dot.state.nv.us to meet the deadline, with the original to follow.

Protests must include:

- 1. Information about the protesting firm, including firm name, mailing address, phone number and name of the individual responsible for submission of the protest;
- 2. Specific and complete statement(s) of the NDOT's action(s) being protested;
- 3. Specific description of the grounds for the protest;
- 4. Information about the evidence to substantiate the protest, including but not limited to copies of any documents and at least one sworn affidavit substantiating the fact(s) that support grounds for the protest; and
- 5. Description of the relief or correction action sought by the firm.

The following are the only grounds for protesting the award of an agreement under an RFP. All protests base upon other criteria will not be considered.

- 1. Computation error(s) in the scoring were made; or
- 2. The NDOT failed to follow the procedures established in the RFP, or applicable State/Federal laws/regulations; or
- 3. Bias, discrimination or conflict of interest is demonstrated on the part of any member of the evaluation, review or interview committee.

No Stay Pending Final Determination: Agreement negotiations with the selected Proposer/Bidder shall not be stayed during the pendency of any protest. Any agreement with the selected Proposer/Bidder shall be made contingent upon the outcome of any pending protest. Unless otherwise stipulated by the protestor, the NDOT has five (5) working days from receipt of a timely protest to investigate or request additional information. The NDOT's final determination will be made within fifteen (15) working days of the receipt of any requested additional information or the end of the investigation period, which ever is later. A subsequent unsuccessful legal challenge by a protesting firm shall require reimbursement to the NDOT for reasonable attorney's fees and costs.

Attachments:

Attachment A
Evaluation Criteria Form
Statement of Qualification Form (for non-engineering)
Sample Agreement



Nevada Department of Transportation Information Services (IS)



Wireless Proof of Concept (POC) Requirements Detailed Requirements Document

Final Revision

October 26, 2011

Prepared for:

Nevada Department of Transportation 1263 South Stewart Street Carson City, NV 89712-0001

Revision History

Date	Version	Description
02/14/2011	1.0	Initial creation of document
03/09/2011	2.0	Format revision into new template
03/15/2011	3.0	Revision – Address preliminary review comments
04/06/2011	4.0	Revision – Address internal review comments
04/26/2011	4.1	Revision – Removed Site Walk through requirements at prebid meeting and other RFP information.
07/14/2011	4.2	Revision – Integrated comments from ITC committee.
09/02/2011	4.3	Revision – Added floor plans to the document.
10/03/2011	4.4	Revision – Integrated comments from ITC committee
10/04/2011	4.5	Revision – Document format and table changes
10/12/0011	4.6	Revision – Added "Installation and Inspection" section
10/26/2011	5.0	Final Revision – Final Review

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Table 1: List of Commonly Used Abbreviations, Acronyms, and Definitions

ITEM	DESCRIPTION
AAA	Authentication, Authorization, and Accounting
AD	Active Directory
АР	Access Point
BDA	Bi-Directional Amplifiers
BSS	Basic Service Set
COLO	Co-location. Multiple service agencies located within the same building structure.
Captive Web Portal	A security feature that forces an HTTP client on a network to see a web page for authentication before using the Internet normally.
DAS	Distributed Antenna System
dB	Decibels. A unit of measure that compares power or intensity
District, District Office, District HQs, District 1, District 2, District 3, CCHQs	The state of Nevada is broken down into four (4) Districts for management purposes. Each District Headquarters (HQs) manages a metropolitan area and the surrounding area. District 9 is Carson City HQs (CCHQ), District 1 is Las Vegas, District 2 is Reno, and District 3 is Elko. Carson City HQs is located in District 2 and is the HQs for all other Districts.
Hub Network	A hub network is a system of connections arranged like a chariot wheel, in which all data traffic moves along spokes connected to the hub at the center
IDS	Intrusion Detection System
Intercell / Intracell blocking	A security feature that prevents other users on the same access point from seeing another user's computer.
IPS	Intrusion Prevention System
IPSec	Internet Protocol Security IPSec is a open standards for helping to ensure private, secure communications over Internet Protocol (IP) networks through the use of cryptographic security services. The function of IPSec is to provide network-level data integrity, data confidentiality, and data origin authentication.
IS	Information Services (IS)
ISO	Information Security Officer
ISM	Industrial, Scientific, and Medical
Guest Management	A security feature that allows authorized employees the ability to create accounts while keeping the wireless guest network secure by authenticating and reporting on all guest users.

Leaky Cable or Leaky Feeder Cable	A cable that is designed to replace conventional antennas for applications that require very wide bandwidths or use in physical spaces that provide extreme challenges to traditional antenna solutions.
MS Hyper-V	Microsoft Hyper-V, codenamed Viridian. It is a hypervisor-based virtualization system for x86-64 systems.
MSA	Multiple Channel Architecture
МІМО	Multiple-In, Multiple-Out. The use of multiple antennas at both the transmitter and receiver to improve communication performance.
NDOT	Nevada Department of Transportation
OSP	Outside Plant
PM	Project Manager
POC	Proof of Concept
POE	Power Over Ethernet
QoS	Quality of Service
RADIUS	Remote Authentication Dial In User Service (RADIUS) is a security networking protocol that provides centralized Authentication, Authorization, and Accounting management for computers to connect and use network services.
Rate Limiting	A security feature that controls the rate of traffic sent or received through the WAP.
RC	Radiating Cable
RFP	Request for Proposal
RSSI	Received Signal Strength Indicator
SCA	Single Channel Architecture
SLA	Service Levels Agreement
SNR	Signal to Noise Ratio
SONET	Synchronous Optical Networking
SNMP	Simple Network Management Protocol
SSID	Service Set Identification
UNII	Unlicensed National Information Infrastructure
VAR	Value Added Reseller
VAP	Virtual Access Point - A security feature that offers multiple segmented services over the same physical device.

VM	Virtual Machine
VLAN	Virtual Local Area Network
VPN	Virtual Private Network (VPN)
Walled Garden	A security feature that controls the user's access to Web content and services
WAP	Wireless Access Point
Wireless Radio OS	Wireless Radio Operating System (OS)
WIDS	Wireless Intrusion Detection System
WIPS	Wireless Intrusion Prevention System
WLAN	Wireless Local Area Network
WMM	Wi-Fi Multimedia
WMM-PS	WiFi Multimedia-Power Save
WPA/WPA2	WiFi Alliance Protected Access 1.0 and 2.0

1. PURPOSE

The Nevada Department of Transportation (NDOT) is seeking vendors who are willing to assist NDOT on a wireless Proof-of-Concept (POC) that will cover four organizational levels. The areas will encompass portions of key district office buildings, construction crew locations (temporary trailers), maintenance yards, fuel point stations, and maintenance stations (See **Appendix A, page 29**). The result of the project is to confirm the feasibility of deploying a wireless system and identify any potential issues in advance.

After review of the information gathered through this Request for Proposal (RFP), a Return on Investment (ROI) analysis will be done, a project schedule set, and a final budget established. In the RFP, NDOT is requesting that the vendor provide information to help develop an understanding of the various wireless systems, the necessary system components, and the hardware requirements that will complement the existing infrastructure.

The POC RFP will be used as a vehicle to educate NDOT, to obtain information about wireless security practices (such as Authentication, Authorization, and Accounting), and to identify any potential suppliers and system integrators. This RFP and any future vendor presentations do not imply any form of an agreement with candidate suppliers. Responses to the RFP will be used to build and fine-tune the future NDOT statewide wireless RFP.

2. INTENDED AUDIENCE

This document is intended for manufacturers, valued added Resellers (VARs), and other vendors who provide and install wireless systems for premise and Outside Plant (OSP) applications.

3. OVERVIEW

The purpose of the project is to design, install, and test various Radio Frequency (RF) technologies on a controlled install basis. The technologies can range from a standard wireless installation to the use of Radiating Cable (RC). The project will assist in designing installation procedures and testing requirements for future projects. The RFP amount will only allow for a limited installation at designated/preferred test sites.

3.1 Stakeholders

An important task as part of the project was to identify as many issues through collaboration with as many individuals and/or organizational partners who have a vested interest in the outcome of the problem-solving effort. The Stakeholders Matrix Table (next page) identifies all the key stakeholders for the project.

3.2 Scope of Work

The purpose of the project is to design, install, and test various Radio Frequency (RF) technologies on a controlled install basis. The project will dictate the installation procedures and testing requirements to be completed by the installers.

3.2.1 Approved Technologies

- 1. Conventional Wireless Microcell Architecture
- 2. Distributed Antenna System (DAS) using several RF sources, RF cables, Bi-Directional Amplifiers (BDA) / splitters, and several antennas.
- 3. DAS using several RF sources, bi-directional amplifiers (BDA), splitters, and radiating cable (leaky cable or leaky feeder cable).
- 4. Use of any combination of in-building wireless technologies or other recommendations is authorized.

3.2.2 Approved Wireless Architectures

- 1. Single Channel Architecture (SCA)
- 2. Multiple Channel Architecture (MSA)

3.2.3 Budget

- 1. The project has been funded.
- 2. Further funding will be incorporated into the Statewide RFP

3.2.4 Proposed Solutions

1. In order for the vendor to be considered for the project, the vendor must provide a quote on all three recommended technologies

3.2.5 In-Scope

- 1. The project will only allow for limited wireless installations at designated locations at each test site
- 2. NDOT contractors, guests, NDOT users, and other state employees shall have access to the wireless system.
- 3. Conference rooms, fuel points at maintenance stations, lobby areas, and key maintenance yards are considered key test locations.
- 4. The Contractor shall be responsible for installation of all wireless AP and its associated equipment, cabling, materials, and software.
- 5. Laptops, mobile handheld computers, smart phones, and other NDOT approved wireless devices shall have access to the network.
- 6. The wireless system shall provide an enterprise class service level for up-time.
- 7. The wireless system shall provide an enterprise service level for successful packet transmission.
- 8. The coverage for in-building areas shall support a minimum of 13 Mbit/s @ 100 feet from an 802.11n access point.
- 9. The coverage for in-building areas shall support a minimum of 6 Mbit/s @ 85 feet from an 802.11g access point.

- 10. The coverage for outdoor areas shall support a minimum of 13 Mbit/s @ 200 feet from an 802.11n access point.
- 11. The coverage for outdoor areas shall be a minimum of 6 Mbit/s @ 150 feet from an 802.11g access point.
- 12. The wireless system shall be expandable and scalable.

3.2.6 Out-of-Scope

- 1. Support for 802.11a
- 2. Support for 802.11b
- 3. Test Sites beyond a three (3) mile radius from a District HQs and Offices shall not be considered as a test site.
- 4. Test Sites with less than ten (10) occupants shall not be considered as a test site. The only exceptions are Construction Crew offices.
- 5. Test Sites under consideration must have a minimum of T1 (1.544 Mbps) or higher network speed connectivity.
- 6. Coverage for the public shall not be extended outdoors.
- 7. NDOT will be responsible for providing POE enabled switches for the project.

3.2.7 References

References for this document can be found on Appendix B, page 30.

4. SYSTEM REQUIREMENTS

4.1 Consistent WiFi Coverage

The installed system shall have solid, consistent coverage over the entire designated area. Consistent coverage shall result in stable client behavior and consistent data rates which includes few rate changes, less scanning, and less roaming. The system shall be compliant with the IEEE 802.11 standards, protocols, and the additional requirements within this document.

4.1.1 Channel Diversity

In the 2.4 GHz band there shall be three (3) unique channels or Service Set Identification (SSID) available for independent layers of wireless LAN service throughout the coverage area. The channels shall support the following service or users:

- 1. Channel 1 @ 2.4 GHz range NDOT Users (802.11g)
- 2. Channel 6 @ 2.4 GHz range Public (802.11g)
- 3. Channel 11 @ 2.4 GHz range NDOT users (802.11n)

Or

- 1. SSID NDOTUsers @ 2.4 GHz range NDOT Users (802.11g)
- 2. SSID NDOTPublic @ 2.4 GHz range Public (802.11g)
- 3. SSID NDOTNUsers @ 2.4 GHz range NDOT users (802.11n)

4.1.2 Classification of the Wireless System

The wireless system will be implemented as a mobile system. In this particular context, the state of

being mobile refers to areas with limited or partial wireless coverage throughout a building. Full mobility is designated as having 100% coverage to all areas in a building.

The system shall allow for future expandability into full mobility using the existing infrastructure, protocols, software, and hardware. Overlapping areas of coverage shall be able to roam seamlessly.

4.1.3 Expected Capacity

1. Each access point shall be able to support 12 to 15 simultaneous 802.11 data users at the designated rate and at the predetermined areas of coverage.

4.1.4 Centralized Infrastructure Monitoring

The Contractor shall be responsible for the integration and configuration of the wireless devices into NDOT's existing network monitoring system. NDOT has an existing network monitoring system known as Solarwinds Orion Performance Monitor system that NDOT utilizes to monitor all transport devices. The Contractor shall configure and maintain the devices in the existing system in accordance with NDOT Information Services (IS) requirements during the length of the contract.

The system will be used to monitor the following areas utilizing SNMP:

- 1. Uptime
- 2. Downtime
- 3. Response Time
- 4. Packet Loss
- 5. Successful packet transmission

4.1.5 RF Diversity

The system shall be designed for the transmission and reception of multiple RF signals simultaneously operating in different WiFi bands in the 2.4 GHz to 5 GHz range.

In particular the system shall support the following pre or post amendment 802.11-2007 standards:

- 1. 802.11g
- 2. 802.11n-2009

4.1.6 Roaming

The wireless client shall have the ability to transition from one access point and basic service set (BSS) to another while maintaining connectivity for the upper-layer applications such as voice or video.

4.1.7 Supported Telecommunications, Network Standards, and Protocols

The Contractor shall ensure that the Wireless system meets the following standards for functionality and installation as listed in **Appendix C, page 31**.

4.1.8 Wireless Radio OS Requirements

The Contractor is required to provide a radio with the following OS features:

1. 802.1q VLAN Tagging

- 2. Auto-discovery and configuration of APs
- 3. Automatic channel selection
- 4. Automatic power control
- 5. Secure fast roaming (L2 and L3)
- 6. Support RADIUS Authentication (Administrative Management and User Authentication)
- 7. Rogue Access Point Detection and Mitigation
- 8. Stateful Packet Inspection

4.1.9 Wireless Management Architecture

The use of a wireless controller for centralized management and/or use of a smart AP that does not require a wireless controller are authorized for use in the project.

4.1.10 Wireless LAN Controllers and/or Wireless Management Tools

The Contractor is required to provide a management platform from the manufacturer specific to provisioning, alerting, and reporting of the wireless network. The form of the management platform may be a wireless LAN controller or a wireless management tool specific from the vendor or any combination of the controller or management platform.

The system shall have the ability to update all wireless radios en masse, individually, or as selected radios. This type of platform is commonly unique to the manufacturer and in addition to complying with standard SNMP and MIBs may utilize non-standard protocols to address specialized functions. The application may be unique to the project due to the complexities such as equipment selection and implementation type.

The system shall support the following features for each or all access points:

- 1. AP Provisioning
- 2. Alarm/alert Processing
- 3. Capacity Planning
- 4. Captive Portal
- 5. Captive Portal Management (non-admin user provisioning)
- 6. Centralized Configuration
- 7. Centralized Monitoring
- 8. Control Lists
- 9. DNS and DHCP configuration
- 10. Encryption Keys Changes
- 11. Firmware Updates
- 12. Global Policy Management
- 13. RADIUS, Administrative Management and User Authentication
- 14. Stateful Packet Inspection
- 15. Threshold Alarms of User Activity
- 16. Wireless Intrusion Detection System (WIDS)
- 17. Wireless Intrusion Prevention System (WIPS)
- 18. Support Packet Capture or Forwarding for Analysis (Optional)

4.1.11 Wireless Management Platform Approval Process

The Contractor shall obtain prior approval from NDOT IS for the following:

4.1.11.1 Appliance Based Management Platform

Appliances from the manufacturer require prior approval from the IS Network Services Manager and the Information Security Officer (ISO) to ensure compliance with security requirements.

4.1.11.2 Software or Virtual Machine (VM) Based Management Tool

Software or Virtual Machine (VM) based management tools from the manufacturer will require prior approval from the IS Systems Manager and the ISO to ensure compliance with software and security requirements prior to installation of the VM.

If the Contractor provides a Microsoft (MS) Hyper-V based management tool, the Contractor shall be responsible for providing the hardware requirements for the virtual environment to the Systems Manager. The Systems Manager will evaluate the current capacity at NDOT and determine if there are enough resources for the virtual environment. If NDOT does not have the capacity, the Contractor shall be responsible for providing a server or appliance to NDOT. The Contractor will need to contact the Systems Manager to obtain the current server specifications and requirements.

4.1.12 Required Server Specifications and Requirements

If the Contractor provides a software based management tool, the Contractor shall be responsible for providing a server meeting NDOT IS specifications and requirements. The Contractor will need to contact the Systems Manager to obtain the current server specifications and requirements.

4.1.13 Required Server Support Software

In addition to the required minimum server specifications and requirements the Contractor shall provide support software such as antivirus, backup, and recovery software for two (2) years meeting NDOT IS specifications for each server provided. The Systems Manager shall provide a list of the required server support software in addition to the minimum server specifications and requirements.

The Systems Manager will require the following types of software to be installed and must be compatible with the current support software deployed at NDOT:

- 1. Backup
- 2. Recovery
- 3. Antivirus

4.1.14 Wireless System Expandability and Scalability

The wireless system shall be expandable and scalable in the following ways:

- 1. The wireless system shall be scalable and expandable up to five-hundred (500) APs within the same software and hardware platform.
- 2. The system should be capable of scaling to the expected statewide build-out without

requiring excessive additional wireless LAN controllers.

3. On a statewide build-out, a RADIUS server would be located at each major District HQs. This will allow each HQs to act as standalone hub network. The controller and /or access points shall authenticate to the local RADIUS server.

5. INFRASTRUCTURE COMPATIBILITY AND BUILDING INFORMATION

The installed system shall be compatible with the existing infrastructure, protocols, software, and hardware. The following provides critical information for planning, designing, and implementation of the wireless system.

5.1.1 Priority Coverage Areas

- 1. NDOT Headquarters (HQs) at Carson City
- 2. District HQs at Las Vegas, Sparks, and/or Elko
- 3. NDOT Administrative Support Buildings
- 4. Maintenance Station Offices and/or Maintenance Yard Areas
- 5. Construction Crew Offices (temporary trailers)

5.1.2 Existing Bandwidth Availability

- 1. Most buildings support Ethernet connectivity at 1 Gbit/s.
- 2. An existing 200 Mbit/s link for the production network exists between the NDOT Collocation (COLO) located in Reno, NV to the District HQs Office located at Carson City, NV.
- A leased line T3 running at 45 Mbit/s for the production network exists between the NDOT COLO and District 1 Office (Las Vegas). Four (4) T1s are provisioned from the T3 for telephone and video conferencing.
- 4. An existing 50 Mbit/s link for the production network exists between the NDOT COLO to the District 2 Office (Sparks).
- 5. An existing 50 Mbit/s link for the production network exists between the NDOT COLO to the District 3 Office (Elko).

5.1.3 Site-To-Site Infrastructure and Connectivity

- 1. The majority of the state owned network is Ethernet with a portion dedicated to Synchronous Optical Network (SONET) for video conferencing and telephones.
- 2. Approximately seventy (70) percent of the NDOT facilities are interconnected via fiber. The prevalent protocol used is SONET from facility to facility.
- 3. Approximately fifteen (15) percent of the NDOT facilities are interconnected via Ethernet or SONET over wireless backhaul.
- 4. Approximately fifteen (15) percent of the NDOT facilities are interconnected via carrier provided leased lines

5.1.4 NDOT Carson City HQs Footage Estimates

- 1. NDOT HQs (Carson City) consists of two (2) buildings, a main building with four (4) stories excluding a basement and a single (1) storey detached building which is equal to a combined square footage (sf.) of 118,660 on 6.73 acres.
- 2. The NDOT HQs main building will be a priority with full wireless coverage for all four (4) stories and basement at a combined space of 97,563 sf.
 - a. CCHQs Basement Floor -- See Appendix D, page 33.
 - b. CCHQs First Floor -- See Appendix E, page 34.
 - c. CCHQs Second Floor -- See Appendix F, page 35.
 - d. CCHQs Third Floor -- See Appendix G, page 36.
 - e. CCHQs Fourth Floor See Appendix H, page 37.

5.1.5 District Offices Footage Estimates (Future Installations)

- 1. District 1 HQs (Las Vegas) consists of a main office with one (1) storey excluding a basement, service garages, warehouses, and temporary buildings which is equal to a combined space of 113,844 sf. on 16.18 acres. The district admin building will be the priority with wireless coverage for the first (1st) floor at 6,800 sf.
- 2. District 2 HQs (Sparks) consists of a main office with two (2) stories to include a basement and three service garages which is equal to a combined space of 65,614 sf. on 7.62 acres. The district admin building will be the priority with full wireless coverage for the first (1st) floor and basement at a combined space of 10,734 sf.
- 3. District 3 HQs (Elko) consists of a main office with a one (1) storey and a basement, six (6) warehouses, a service/repair garage, and a storage garage which is equal to a combined space of 53,632 sf. on 14.31 acres. The district admin building will be the priority with full wireless coverage for the first (1st) floor and basement at a combined space of 8,652 sf.

6. FUNCTIONAL REQUIREMENTS

6.1 Performance Requirements

6.1.1 Minimum Performance Specifications for Estimates and Installation

- 1. Standard coaxial cable loss shall not exceed 0.7 dB loss for every 10 feet (3 meters)
- 2. Standard Coaxial connectors loss shall not exceed 0.20 dB loss per coaxial connector
- 3. Radiating cable (leaky cable / leaky feeder cable) loss shall not exceed 1.5dB / 100' @ 400 MHz to 7.5 dB / 100' @ 6 GHz nominal

6.1.2 Designated Coverage Areas

- 1. The coverage for in-building areas shall support a minimum of 13 Mbit/s @ 100 feet from an 802.11n access point.
- 2. The coverage for in-building areas shall support a minimum of 6 Mbit/s @ 85 feet from an 802.11g access point.
- 3. The coverage for outdoor areas shall support a minimum of 13 Mbit/s @ 200 feet from an 802.11n access point.

- 4. The coverage for outdoor areas shall support a minimum of 6 Mbit/s @ 150 feet from an 802.11g access point.
- 5. Coverage areas can be broken down into blocks of coverage equivalent to the area of the circle but must meet the minimum requirements anywhere within the block.

6.1.3 Service Level Agreement (SLA)

- 1. The wireless system shall have a network availability uptime of 99.99%
- 2. The wireless system shall have network latency less than 10 ms round trip through the local wireless infrastructure to the wireless management platform. Data transport through an internal WAN link shall be less than 20 ms round trip to communicate from the client to the wireless management platform.
- 3. The average packet loss shall be less than 1% during a calendar month (30 days)
- 4. The wireless system shall have a successful packet transmission rate of 99% or higher

6.2 Security Requirements

Network Services shall provide the configuration information to the Contractor. The installed system shall comply with following security standards:

- 1. All access points shall be configured for passive discovery.
- 2. The Service Set Identifier (SSID) and the default administrator name and password must be changed prior to installation at NDOT facilities.
- 3. All NDOT user traffic shall utilize Wi-Fi Protected Access Version 2 (WPA2) using Advanced Encryption Standard (AES) 256 bit encryption.
- 4. The wireless system shall provide support for wireless IDS and/or IPS either through a software license or through an additional hardware module.
- 5. The signal-to-noise ratio (SNR) for each access point shall be capable of being monitored through SNMP.
- 6. The wireless access point shall support the following security features either through the access point or with a management system.
 - a. RF Fingerprinting
 - b. Signature Detection
 - c. Frame rate anomaly detection
 - d. Rate limiting for 802.11 management frames
 - e. Detection of MAC address spoofing.
 - f. Rogue detection and mitigation
- 7. Communications to and from the wireless management interface shall use AES 256 bit encryption.

INTERFACE REQUIREMENTS

7.1 User Interfaces

The wireless system shall interact with end users in the following ways.

7.1.1 Contractors (Temporary or Permanent)

Access to the wireless system shall be configured by qualified NDOT helpdesk support staff using

Active Directory (AD). As the Contractor enters the designated wireless area(s) connectivity to the wireless system shall be seemingly transparent. NDOT internet and AD based security policies shall apply to this segment of the network. The user shall be able to access the following resources while connected to the wireless network:

- 1. Intranet
- 2. Internet (data, archived video, audio, etc.,)
- 3. Microsoft Outlook Email Services
- 4. Microsoft Outlook Web Access
- 5. Networked folders
- 6. Other Web Services
- 7. Real-time video

7.1.2 Guests

Access to the wireless system shall be configured by the Guest. The Guest network shall be logically or physically segmented from the NDOT network. The Guest user shall be able to access the following services:

- 1. Internet (data, archived video)
- 2. Other internet based services

7.1.3 NDOT Users

Access to the wireless system shall be configured by qualified NDOT helpdesk support staff using AD. As the NDOT user enters the designated wireless area(s) connectivity to the wireless system shall be seemingly transparent. NDOT internet and AD based security policies shall apply to this segment of the network. The user shall be able to access the following resources while connected to the wireless network:

- 1. Intranet
- 2. Internet
- 3. Microsoft Outlook
- 4. Networked folders
- 5. Other Web Services
- 6. Real-time video

7.1.4 Other State Employees

Access to the wireless system shall be configured by qualified NDOT helpdesk support staff using AD. As the NDOT user enters the designated wireless area(s) connectivity to the wireless system shall be seemingly transparent. NDOT internet and AD based security policies shall apply to this segment of the network. The user shall be able to access the following resources while connected to the wireless network:

- 1. Internet (data, archived video)
- 2. Other internet and intranet based services based on need

7.1.5 Mobile VPN Compatibility

The installed wireless system shall be compatible with NetMotion Mobility XE, Mobile VPN solution. This solution and other like it use Internet Protocol Security (IPSec) to create a Virtual Private Network (VPN) tunnel to secure data transmitted and received from/to the client and the enterprise infrastructure.

7.2 Hardware Interface Requirements

7.2.1 Hardware Requirements:

The hardware interface shall comply with the following specific requirements:

- 1. The radio shall support 802.3ab (1000Base-T)
- 2. The radio shall support multiple 802.11-2007 radios
- 3. The radio shall support Multiple-in, Multiple-Out (MIMO) technology
- 4. The radio shall support POE standards 802.3af or 802.3at (If the radio is POE)

7.3 Software Interface Requirements

7.3.1 Software Requirements

The software interface shall comply with the following specific requirements:

- 1. The radio shall provide Quality of Service (QoS) for voice, video, and data at the radio
- 2. The radio shall support multiple interface options such as:
 - a. Centralized Management through a third party product
 - b. Built-in web-based management (HTTPS)
 - c. A secure Command line interface (CLI)
- 3. The radio shall support remote firmware upgrades
- 4. The radio shall support self tuning and auto power adjustment
- 5. The radio shall support separate DHCP ranges per SSID
- 6. The radio shall support the following wireless services:
 - a. Captive web portal
 - b. Intercell/intracell blocking
 - c. Guest Management
 - d. Rate limiting
 - e. Virtual Access Point (VAP) grouping
 - f. Walled garden
- 7. The radio shall support up to 16 SSIDs per Access Point
- 8. The radio shall support up to 16 independent VLANs
- 9. The radio shall support VPN tunneling and filtering

8. DESIGN AND IMPLEMENTATION CONSTRAINTS

Any hardware of software related to the installed wireless system must meet the design and implementation constraints listed below:

- 1. The wireless systems shall use an Authentication, Authorization, and Accounting (AAA) methodology
- 2. A majority of the 802.1x appliances are from Juniper Networks.
- 3. The wireless system must be compatible with NetMotion Wireless Mobility XE.
- 4. A majority of the video conferencing equipment systems are from Tandberg (Cisco).
 - a. There are fourteen (14) sites that use video and telephone conferencing
 - b. There is a planned expansion of video conferencing to the desktops and/ or laptops utilizing Tandberg/Cisco TelePresence solution
- 5. A majority of the network routers and switches are from Avaya (Nortel).
 - a. A majority, if not all of the switches currently do not have PoE installed.
- 6. A majority of the firewalls are from Juniper Networks.
- 7. The network is monitored using Orion SolarWinds Performance Monitor.
- 8. A majority of the SONET equipment is from Adtran and Ciena (Nortel).
- 9. Some of the existing wireless **backhaul** radios are from various vendors.

9. PROJECT DOCUMENTATION

9.1 System Design Documentation (SDD)

- 1. The Contractor shall create a System Design Document (SDD) available for the review and approval by the Project Manager. The document will be reviewed by Network Services, Systems Management, and the Information Security Officer (ISO). The SDD shall provide a structured set of installation and integration tasks to be performed by the Contractor as part of the installation of the system.
- The Contractor shall install any necessary hardware and software as described in the approved SDD. Installation and maintenance or removal of this equipment shall be coordinated through the Project Manager.
- 3. The Contractor shall document all interfaces necessary to support the project via an Interface Control Document (ICD) subject to the State's review process. The purpose of the ICD is to document all of the functional and physical interfaces necessary to support the system.
- 4. A detailed system design drawing "as-built" must be provided at the close out of the project.
- 5. The Contractor shall generate a System Acceptance Testing Plan for the State's review and approval under which all integrated system components will be tested and accepted by the State.
- 6. The completed System Acceptance Test Plan shall be provided to the NDOT Project Manager as part of the "as-built" package.

9.2 Wireless Site Survey, Report Approval, and Capacity Analysis

The installed wireless system shall be tested in conjunction with the existing infrastructure, protocols, software, and hardware.

9.2.1 Detailed Wireless Site Survey Requirements

A detailed wireless site survey plan shall be conducted to identify crucial design issues. The survey will analyze building floor plans (as-builts), visually inspect the facility, and document usage of site survey tools. The analysis will determine the presence of RF interference and identify optimum installation locations for each access point. The final report shall be a comprehensive document that can be given to any integrator as a deployment document. The document will be clear and precise with profuse pictorial and graphic illustrations.

In addition to the survey, interviews with IS management and the end users are critical to determining the design parameters for the wireless network.

9.2.2 Site Survey Analysis Report

The wireless site survey shall address planning and design of the 802.11 WiFi wireless networks. The final deliverable shall address required wireless coverage, data rates, network capacity, roaming capability (where applicable) and Quality of Service (QoS). The Site Survey Analysis report shall consist of the following:

- 1. Executive Summary Overview of survey
- 2. Tools and Methodology Indicates how the survey was performed
- 3. Spectrum Analysis Existing frequency scan, range analysis, and interference analysis
- 4. Structural Material Analysis Installation considerations
- 5. Analysis of Existing Infrastructure Physical and logical interface design considerations
- 6. Security Implementations Recommendations regarding securing traffic
- 7. Coverage Areas Floor Plan CAD data showing actual coverage and AP placement
- 8. Parts List Suggested components for system implementation

9.2.3 Wireless Site Survey Analysis Test Times

Any wireless testing shall be conducted during business hours at the most congested part of the day of the week during high peak data traffic hours. Fridays are a common furlough day and should be excluded from the testing on these days. Testing should occur between the following hours:

- 1. It is preferred that testing should occur on Mondays which are known to be the highest data traffic peak day.
- 2. Heavy to extremely heavy AM peak usage times are between 7:00 AM to 9:00 AM.
- 3. Extremely heavy to medium peak lunch usage times are between 11:00 AM to 1:00 PM.
- 4. Slightly heavy PM evening peak times are between 3:00 PM to 5:00 PM.

9.2.4 Spectrum Analysis

A spectrum analysis survey shall be conducted in the 2.4 GHz Industrial, Scientific, and Medical (ISM) band and the 5 GHz Unlicensed National Information Infrastructure (UNII) bands. Exact

capacity and coverage requirements shall be addressed at this time.

9.2.5 Range Analysis

A mandatory range analysis shall be conducted to determine the range for 802.11 for designated areas. Smaller cells or collocation may be required due to high density of users or heavy application bandwidth requirements.

9.2.6 Interference Analysis

A mandatory Interference analysis shall be conducted to determine unwanted "RF signals" that occurs at the same time and frequency as a data signal. Interference to wireless networks may come from a variety of sources, such as a microwave oven (MWO), cordless phone, or Bluetooth devices. Most RF interference occurs in the 2.4 GHz band; whereas, the 5 GHz band is still relatively unaffected.

- 1. Microwave Ovens (MWO) Generally causes 30% lower throughput than normal at 10 feet. At two (2) to three (3) feet throughput drops 90%. Spectrum traces shall occur at 10 feet internals from 0 to 50 feet while the source of interference is in use
- 2. 2.4 GHz Cordless -- Generally causes 10% lower throughput than normal in the immediate area while in use. Spectrum traces shall occur at 10 feet internals from 0 to 30 feet while the source of interference is in use.
- 3. Bluetooth Interference Generally causes 20% lower throughput than normal while Bluetooth headset is in use. Spectrum traces shall occur at 10 feet internals from 0 to 30 feet while the source of interference is in use

9.2.7 Approval of Site Survey Analysis Report

The wireless report must be approved by and signed by the NDOT IS Chief prior to proceeding to construction. A qualified NDOT technician shall review the document and provide a recommendation. Any deficiencies in the report shall be addressed by the vendor and/or Contractor at their expense.

9.2.8 Post Installation Bandwidth and Capacity Analysis

- 1. Bandwidth throughput testing shall be completed at increments of 50 feet until no signal is received from the AP in all four directions (North, South, West, and East).
- 2. Capacity analysis shall be provided on the average number of users per AP.

9.3 Submittal Process for Equipment, Reports, Plans, and Materials

The Contractor shall send five (5) copies of their submittals to the Project Manager. The submittal shall include all design documentation, installation plans, equipment, and materials that will be installed during the course of the project. This includes, but is not limited to:

- 1. Antenna Specifications
- 2. CAT5 Cabling Specifications
- 3. Ethernet Switch Requirements
- 4. POE blades / POE Switches Requirements
- 5. Proposed Support Software Specifications
- 6. Radio / Radio OS Specifications

- 7. RF Amplifier Specifications
- 8. RF Cabling Specifications
- 9. Server Specifications
- 10. Wireless Management Platform Specifications (appliance, controller, and/or software)
- 11. Other documentation, materials, and equipment related to the project.

Once a vendor has been selected, the Project Manager shall distribute the submittals to Network Services and Systems Management sections.

10. INSTALLATION COMPLIANCE, PROJECT INSPECTION, AND INTEGRATION

10.1 Detailed Requirements

10.1.1 Installation Compliance Standards

The wireless systems shall be designed and installed in compliance with the following standards:

- 1. TIA-568-C.1 Commercial Building Telecommunications Cabling Standard
- 2. TIA-606-A Administration Standard for Commercial Telecommunications
- 3. J-STD-607-A Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications Infrastructure
- 4. TIA-758-A Customer-owned Outside Plant Telecommunications Infrastructure Standard

10.1.2 Installation Constraints

- The contractor shall provide the devices names and MAC addresses of all the wireless radios
 to the Project Manager one (1) week prior to installation. This will allow NDOT IS to reserve
 IP address to specific MAC addresses
- 2. The data and RF cabling shall be installed and tested on each floor prior to wireless radio installation
- 3. The wireless access points will be benched tested by the Contractor with access point's final configuration prior to installation. The radios will operate and function in a simulated NDOT environment for 48 hours. At, a minimum the radio should be configured with the following information:
 - a. Device name based on location, floor #, and room #/area
 - b. IP address, Subnet Mask, and Gateway
 - c. DNS addresses
 - d. SNMP Community Strings
- 4. The wireless access points will be deployed in phases starting with the third floor, room #312
- 5. As the access points are powered up the Contractor's technicians will build and integrate each radio into the following devices:
 - a. Wireless management tool and/or WLAN controller
 - b. NDOT's network management tool

c. RADIUS server

10.1.3 Building Construction and Conditions

For estimates, the building construction type and working condition have been listed:

- 1. The NDOT HQs main building
 - a. The CCHQs building was constructed in 1961
 - b. The building is constructed of reinforced solid rebar concrete
 - c. The walls are 3000 psi 28 days for cure time.
 - d. Anticipate running flexible duct
 - e. Cable entry points may be over populated
 - f. Concrete firewalls run East to West
 - g. Drilling through firewalls is restricted
 - h. Each floor has North and South wiring closets

10.1.4 Project Inspection

- 1. The SDD and the ICD must be approved by NDOT IS prior to work being started
- A work plan must be submitted and approved by the NDOT detailing the work that needs to be completed, the hours it will take to complete, and the number of people needed to complete the work.
- 3. The Contractor shall notify the designated NDOT technician 48-hours prior to work being performed.
- 4. A qualified NDOT technician shall inspect and document the area 24-hours prior to the Contractor performing work.
- 5. A qualified NDOT technician shall be present for the duration of the work.
- 6. A qualified NDOT technician shall inspect and document the work completed by the Contractor.
- 7. The NDOT technician shall be required to sign-off on any work performed by the Contractor.

10.1.5 Wireless Integration Responsibilities

The Contractor shall assist with integration for NDOT Information Services (IS). The intent is to assist IS in the integration of the wireless system into NDOT's network management tool and RADIUS server for device and user authentication. The Contractor shall test each access point for the following:

- 1. AP Connectivity (Up/Up, Up/Down, and Down/Down scenarios). The exact monitored services shall be defined by NDOT.
- 2. SNMP threshold reporting (successful packet transmission < 99.99%, sag in power, etc.). The exact monitoring scenarios shall be defined by NDOT.
- 3. RADIUS authentication (valid authentication to/from devices and wireless user authentication)

10.1.6 Wireless Training Requirement

The Contractor shall provide training specific to the provided management software/platform, access point OS, firmware versions, and hardware that was installed within the project boundaries. The training shall be equivalent to three (3) working days or 24 hours (non-

continuous) *onsite* for up to eight (8) personnel. The cost of training shall be inclusive of the lump sum amount per access point and the management software/platform.

Training Requirements:

- 1. The training personnel shall be an authorized installer and trainer from the manufacturer of the equipment and software.
- 2. The training should be tailored towards the management of the wireless system.
- 3. **Audience**: The audience for training is an experienced network engineer and a network manager that maintains an enterprise-class router and switch environment.
- 4. The training shall be a mixture of classroom and hands-on training utilizing the installed system.
- 5. Classroom instruction shall not exceed 50% of training time. The rest should be allocated to hands-on or labs.

The training shall cover the following:

- 1. Wireless Service Analysis (Conducting and reviewing RF spectrum analysis traces high level)
- 2. Wireless Network Administration (Add, Move, or Delete clients or wireless networks)
- 3. Deploying Configuration Methodologies
 - a. Captive web portal
 - b. Intercell/intracell blocking
 - c. Guest Management
 - d. Rate limiting
 - e. Virtual Access Point (VAP) grouping
 - f. Walled garden
- 4. Provisioning WLAN services
- 5. Rogue Detection and Mitigation
- 6. Managing Administrative Access, Alerts, Triggers, and Reporting
- 7. Wireless Management Strategies (to include management through RADIUS)
- 8. Wireless Policy Management (Authentication, Authorization, and Accounting)
- 9. Troubleshooting Clients and Wireless Networks

11. SYSTEM ACCEPTANCE, WARRANTY, AND CLOSE OUT DOCUMENTATION

11.1 Detailed Requirements

11.1.1 System Acceptance Test

The wireless system shall undergo a thirty (30) day System Acceptance Test (SAT) meeting the following conditions:

- Any failure such as the wireless controller malfunctioning (OS crash, hardware failure, etc.,)
 will constitute as a major failure. The test clock will be reset to day 1 once the wireless
 controller has been replaced.
- 2. Any failure such as a wireless access point malfunctioning will constitute as a minor failure. The main test will continue, the AP will be replaced, and the test for that individual AP will continue from the time the AP failed.
- 3. In the event of a massive failure of multiple access points ≥ 30%, the multiple access points shall be replaced, and the SAT testing shall be reset to day 1.
- 4. When testing for a major or minor device reaches ≥ fourteen (14) days the clock will be stopped, the equipment replaced, and the test will continue from the time the major or minor device failed.

11.1.2 Wireless System Hardware, Installation, and Software Warranty

- 1. The wireless system shall be warranted against any hardware defect for a period of one (1) year after system acceptance.
- 2. The wireless system shall be warranted against any installation defect for a period of one (1) year after system acceptance.
- 3. The wireless system shall have one (1) year of software support from the manufacturer after system acceptance.
- 4. NDOT reserves the right to purchase five (5) years of software and hardware support in advance or year-by-year at a fixed cost per year indicated by year in the vendor submission.

11.1.3 Close-Out Documentation

The Close-Out Documentation shall consist of:

- 1. Site survey analysis report
- 2. As-builts
- 3. Installation Test Report

11.1.4 Final Submission Document (As-Built)

The Final Submission document shall meet the following format:

- 1. **Cover Sheet:** Cover sheets are required for final test results with:
 - a. Reviewer's signature
 - b. Date
 - c. Statement indicating the installation complies with the requirements of the RFP.
- 2. **Contractor Review:** The Contractor's employee who has reviewed the spectrum traces is required to sign or initial the traces. Flag any discrepancies that may exist with a short description of the proposed corrective action such re-locating an AP.
- 3. **Bandwidth Throughput Summary Sheet:** The Installation Contractor shall supply to the Project Manager a summary sheet of all tests results at the indicated distances from the access point.
- 4. **Final Submission:** Submit to the Project Manager a hard copy and a digital media copy with an index.

12. VENDOR RESPONSES

12.1 Detailed Requirements

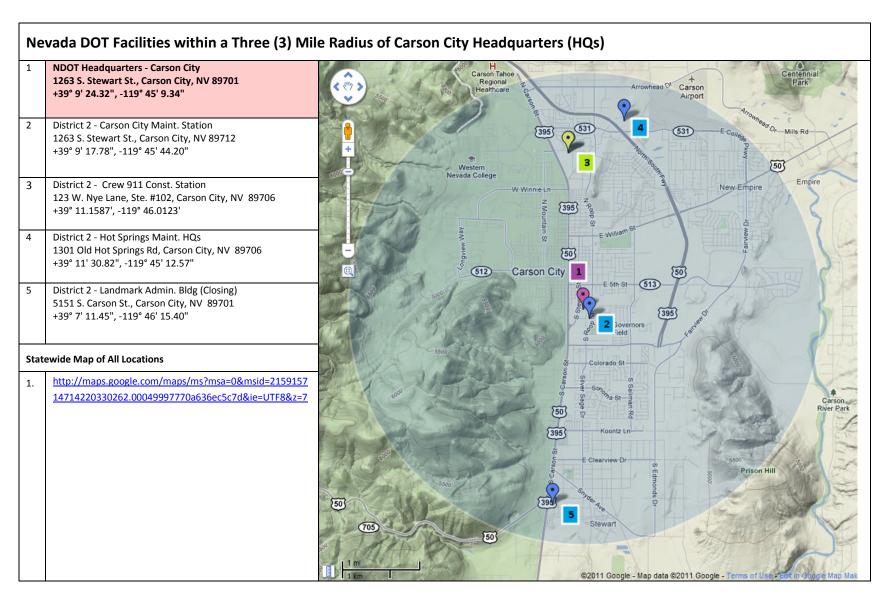
12.1.1 Vendor Responses

The vendor shall provide generalized pricing for all systems, components, licensing, implementation, training, and support specified as well as any onetime and reoccurring costs and an estimate of ongoing costs for the proposed solution over a five (5) year period.

12.1.2 Estimates

The estimates should be based on the cost to assess the building, install, configure, and train the personnel to utilize the equipment and software. This cost should be spread across the number of needed wireless access points and wireless management controllers/appliances/software.

Appendix A. District 2 Test Locations



Appendix B. References

A variety of resources was used to compile this technical document. Additional resources and information can be found at the following web sites below:

Radiating Cable and/or Distributed Antenna System (DAS) Design Considerations

- AirCell® Broadband In-Building Products Brochure. (2010). Pearl, MS: Trilogy Communications, Inc.

 Retrieved from http://www.trilogycoax.com/pdf/wireless/brochure/AirCell Broadband InBuilding.pdf
- Enterprise Wireless LAN Distributed Antenna System Delivers High Performance Voice and Data. (2008).

 Denver, CO: Novarum. Retrieved from http://www.novarum.com/documents/IWDASTestingV3.pdf
- In Building Wireless and Distributed Antenna System (DAS) Solutions. (2009) Greenville, NC: LBA Group, Inc., Retrieved from http://www.lbagroup.com/associates/in-building-wireless-distributed-antenna-system.php
- Radio Frequency Systems (RFS) Stay Connected, RFS Online Bulletin. (2008) *Radiating Cable Revealed*. Retrieved from

http://www.rfsworld.com/stayconnected/index.php?p=659&l=1&listName=stayconnected_en_issues&indexVal=29

Network and Wireless Design Considerations

- 802.11n WLAN Coverage Estimator (2011). Mountain View, CA: AirTight Networks, Retrieved from http://www.airtightnetworks.com/home/solutions/80211n/80211n-wlan-coverage-estimator.html
- Campus Wireless Networks Validated Reference Design Version 3.3.2. (2009). Sunnyvale, CA: Aruba Networks, Retrieved from http://www.arubanetworks.com/technology/design guides.php#5.0ReferenceDesigns
- Coleman, David D., & Westcott, David A. (2009). *Certified Wireless Network Administrator Official Study Guide*, Indianapolis, In: Wiley Publishing, Inc.
- Enterprise 802.11 Security Considerations and Vendor Solutions. (2004). Behesda, MD: SANS, retrieved from http://www.sans.org/reading_room/whitepapers/wireless/enterprise-80211-security-considerations-vendor-solutions 1457
- Firetide HotPoint 5000 Wireless Access Points. (2010). Los Gatos, CA: Firetide, LLC

 Retrieved from http://www.firetide.com/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=3196
- *HiveAP 350 Series 802.11n Access Points.* (2011). Sunnydale, CA: Aerohive Networks, Inc., retrieved from http://www.aerohive.com/products/access-points/hiveap-350
- Indoor Access Points: Site Survey and Planning. (2009). Sunnyvale, CA: Aruba Networks, Retrieved from http://www.arubanetworks.com/pdf/technology/DIG Aruba Site Survey.pdf

Appendix C. Supported Telecommunications, Network Standards, and Protocols

IEEE Standards	Description		
✓ 802.1p	Quality of Service, 8-level transmission priorities		
✓ 802.1q	VLAN Tagging		
✓ 802.1x	Port-based NAC		
✓ 802.3ab	1000 Base-TX		
✓ 802.3af or 802.3at	PoE / PoE +		
✓ 802.11-2007	Amendment roll-up of 802.11a, b, d, e, g, h, i, & j by IEEE		
✓ 802.11n -2009	Enhancements for Higher Throughput (HT)		
✓ 802.11r-2008	Fast Basic Service Set (BSS) Transition		

IETF	Description
✓ RFC 768	UDP
✓ RFC 791	IP
✓ RFC 792	ICMP
✓ RFC 793	TCP
✓ RFC 826	ARP
✓ RFC 854	TELNET
✓ RFC 894	IP over Ethernet
✓ RFC 1112	IGMPv1
✓ RFC 1213	Management Information Base (MIB)
✓ RFC 1901	SNMP v2c
✓ RFC 2030	SNTP
✓ RFC 2131	DHCP
✓ RFC 2236	IGMPv2
✓ RFC 2818	HTTP over TLS (HTTPS) for Device Management
✓ RFC 2865	RADIUS
✓ RFC 3413	SNMP V3. SNMPv2c is an acceptable replacement.
✓ RFC 4450	Secure Shell Version

Wi-Fi Alliance Standards	Description
✓ Wi-Fi Protected Access point 1.0 and 2.0	WPA/WPA2
✓ Wi-Fi Multimedia	WMM

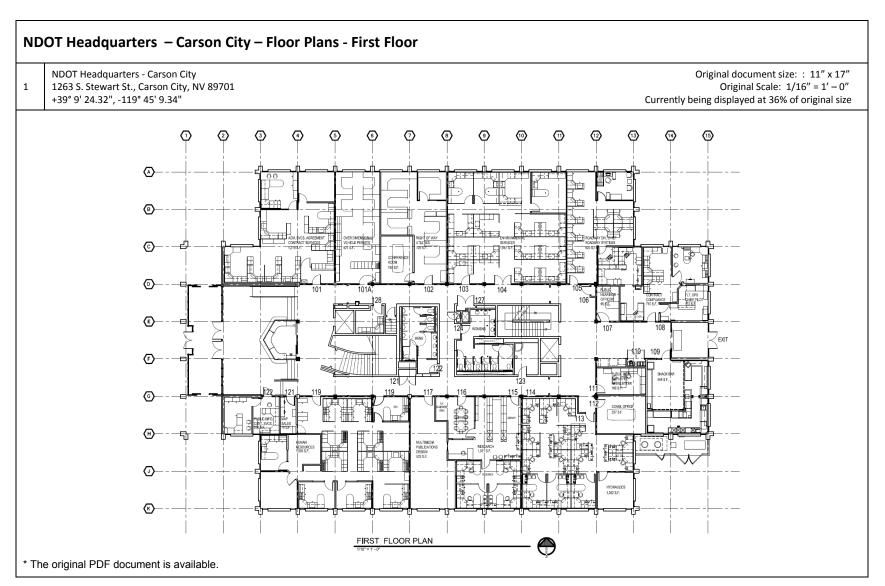
,	Wi-Fi Multimedia Power Save	WMM-PS
,	Wi-Fi Certified for 802.11a/b/g/n	Compatibility certification from third party

Installation Standards	Description					
✓ TIA-568-C.1	Commercial Building Telecommunications Cabling Standard					
✓ TIA-606-A	Administration Standard for Commercial Telecommunications					
✓ J-STD-607-A	Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications Infrastructure					
✓ TIA-758-A	Customer-owned Outside Plant Telecommunications Infrastructure Standard					

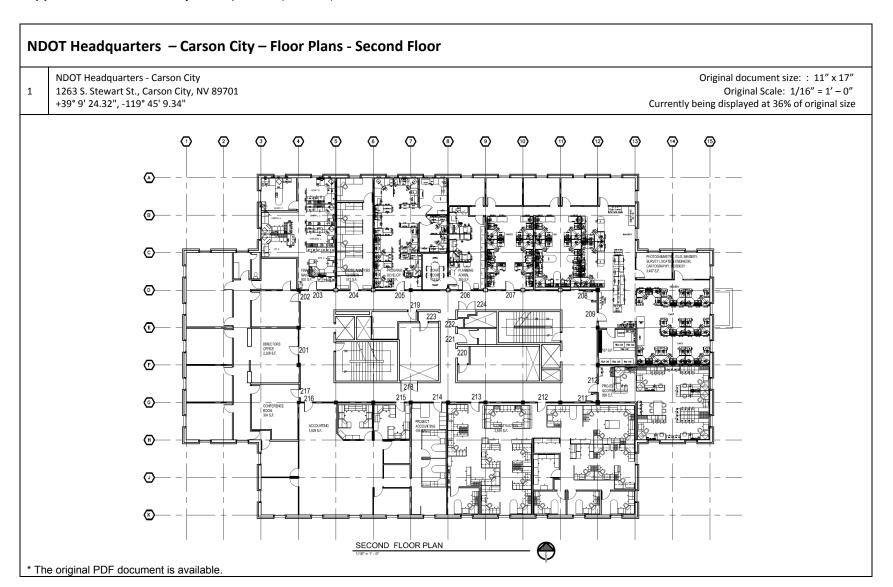
Appendix D. Carson City Headquarters (CCHQs), Basement Floor

NDOT Headquarters - Carson City - Floor Plans - Basement Floor NDOT Headquarters - Carson City Original document size: : 11" x 17" 1263 S. Stewart St., Carson City, NV 89701 Original Scale: 1/16'' = 1' - 0''+39° 9' 24.32", -119° 45' 9.34" Currently being displayed at 36% of original size ➂ **⊙ O** SHACK BAR STOR. 005 (E) 013A € **⊚** ⊕ **①** -(K)-BASEMENT FLOOR PLAN * The original PDF document is available.

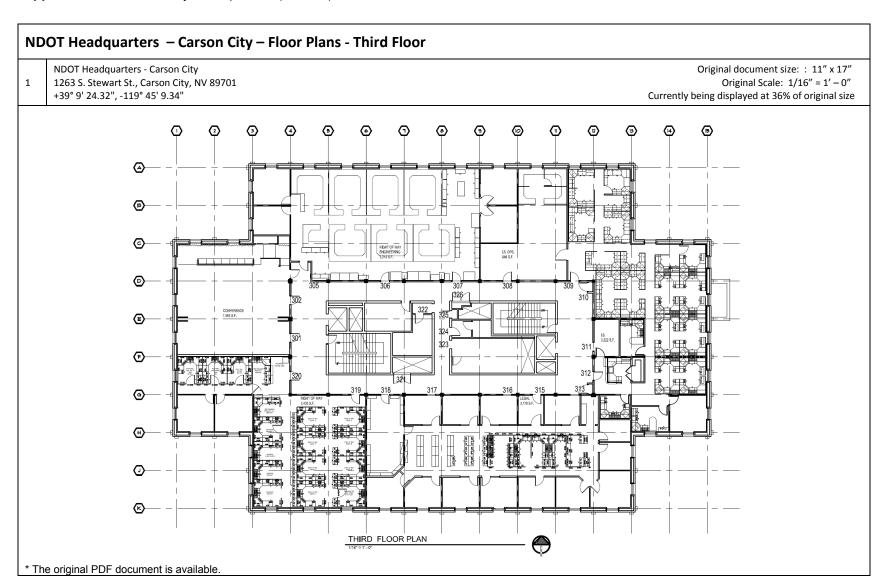
Appendix E. Carson City Headquarters (CCHQs), First Floor



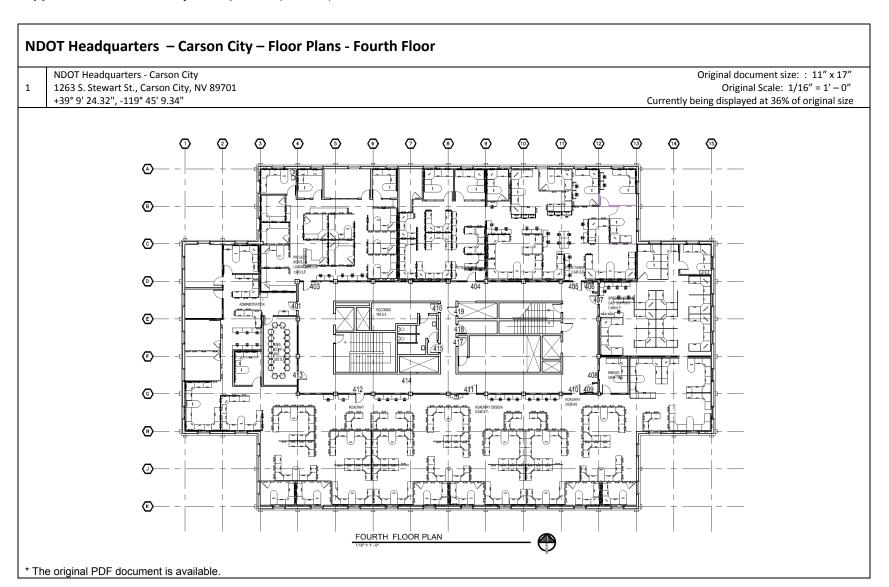
Appendix F. Carson City Headquarters (CCHQs), Second Floor



Appendix G. Carson City Headquarters (CCHQs), Third Floor



Appendix H. Carson City Headquarters (CCHQs), Fourth Floor



NOTES:		

NDOT Information Services

Detailed Requirements Document

EVALUATION CRITERIA FORM

PROJECT DESCRIPTION:	
PROPOSER:	
SUB-CONTRACTOR(S):	

SOB-CO	NIRACIO	K(5)		
		EVALUATION ITEMS	MAX SCORE	SCORE
1. I	Project App	proach:		
	a.	Describe your team's understanding of project		
		requirements contained in the Scope of Services.		
	b.	Clearly describe the features for the wireless system		
		i. Components (recommended and optional)		
		ii. Integrated third party applications		
		iii. Conceptual data flow diagrams		
	C.	Describe the required system administration needed for		
	o.	the following:		
		iv. Wireless Access Point Management		
		v. Wireless User Management		
		vi. Wireless Oser Management		
		vii. Provide high level physical and logical diagrams		
	d.			
	u.	Identify the maintenance lifecycle of software and hardware from the manufacturer		
	0			
	e.	Support information (i.e. warranty, warranty expiration,		
		technical support telephone numbers, software		
		upgrades, etc. for five years).		
		viii. Same business day software and hardware		
		support		
		ix. Next business day software and hardware		
	_	support		
	f.	Identify specific methods to be used to complete each		
		project performance requirement.		
	g.	Identify potential complications or difficulties that might		
		be encountered in the implementation of required		
		services along with suggested resolutions for each.		
	h.	Provide a general project plan identifying major tasks		
		and milestones that include projected length and		
		timeframe for implementation/deployment.		
Positive	es:			
Concer				
2. I	Project Tea			
	a.	Provide a summary of the education and		
		experience with similar projects for each		
		member of the Proposer's staff who will be		
		assigned to this project, including resumes for		
		the project manager and the key principals.		
	b.	Include a current organizational chart of the		
		project team, including subcontractor(s) with		
		responsibilities of team members identified		
		therein.		
	C.	Identify the location(s) where actual work will be		
		completed.		
	d.	Provide a percentage of work to be completed at each		
		location.		
	e.	Identify the location of the office which will		

		provide primary project central for this project		
Poolitives:		provide primary project control for this project.		
Positives:				
Concerns:				
			T	
3. Past Perfe	ormar	ICE:		
	a.	Describe your firm's experience (within the past three		
		(3) years) with similar projects.		
	b.	Provide a detailed description of each project listed.		
	C.	Provide information pertaining to meeting time and		
		budget requirements for each project item listed.		
	d.	Please provide a reference name and phone number		
	_	with each past project.		
	e.	[Provide a completed "Statement of Qualification Form"		
		for Non-Engineering Proposers.] OR [Provide updated		
		Standard Form 330 (no page limit on the Standard Form 330)] [WHICH IS APPLICABLE].		
	f.	Provide a copy of the Proposer's Nevada State		
	1.	Business License or copy of Secretary of State		
		Application		
Positives:		, ppilodion	I	
1 03111403.				
Concerns:				
			Τ	
4. Availabili	ty and	i Capacity:		
	a.	Provide a listing of your firm's technical equipment which		
		will support the wireless system.		
	b.	Provide a matrix or chart which lists all current projects of		
		the Project Team, the number of hours remaining for		
		completion of each project and the estimated completion		
		date for each project.		
	C.	In view of this data, describe your team's ability to meet		
	انہ	timelines established for this project.		
	d.	Identify the availability of Proposer's staff to attend		
Docitivos		meetings and interact with NDOT staff on short notice.		
Positives:				
Concerns:				
	v of D	roinet Team(s):		
o. Proximity	y OI P	roject Team(s):		
	a.	Describe your firm's location in the geographical area.		
	b.	Describe your knowledge of the locality of the project.		
Positives:				
Concerns:			Т	
6. Other Fa	actors	S:		
	a.	Provide a detailed training outline		
	b.	Clearly identify hardware needed. List quantities by floor		
		as well as number of installed hardware (note existing or		
		new procurement requirements).		
	C.	Provide a cost estimates for all three solutions		
		x. Traditional wireless installation		
		xi. Distributed Antenna System (DAS)		
		xii. DAS using radiating cable		

Positives:			
Concerns:		100	
Committee Member	 Date		

State of Nevada Department of Transportation

STATEMENT OF QUALIFICATION FORM FOR NON-ENGINEERING CONSULTANTS

The Statement of Qualification Form must be completed in full (*please include one additional copy*). Additional information, resumes, brochures and a letter of interest should be returned to:

Agreement Services Nevada Department of Transportation 1263 South Stewart Street, Rm. 101 Carson City, NV 89712

1.	Date prepared:
2.	Firm's name:
3.	Firm's address:
	Phone: FAX:
4.	Is your local office the main office? or branch office? or sole office?
5.	Year your firm was established:
6.	Year your local office was established:
7.	Location of:
	a. Main office:
	b. Local office:
8.	Year former firm(s) were established:
	a
	b
	C
	d
9.	Name, title, telephone number, address and e-mail address of one principal in firm who may be contacted: a
10.	List locations of other offices (no more than five):
	Address Telephone No. of Personnel
	a
	b
	C
	d
	e.

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11.	To	otal employees presently employ	/ed:			
	a.	At your local (Northern Nevada	a) office:			
		At your local (Southern Nevad	a) office:			
	b.	In your firm:				
12.	Ву	category, give the number of p	rojects your firm is	working on / h	as worked:	
			Current/Active	Last 5	<u>′ears</u>	
	a.	Public/Governmental				
	b.	Commercial				
	C.	Residential				
	d.	Other				
13.	U	EVADA DEPARTMENT OF TRA ILIZATION OF MINORITY AND Is your firm certified as a mino business? Yes No	O WOMEN-OWNE	D BUSINESSE n-owned or dis	S. abled veteran-owned	
		If yes, by what governmental a				
14.	SF et	PECIALTY (Discipline):		_(i.e.: Planning	g, DBE Supportive S	ervices
Revie	I.	Briefly describe your specialty provides. Use additional form: Select three recent projects th reference that the NDOT may	s for any additional	types of spec	alty work.	
		PROJECT NAME	REFER	FNCF	TELEPHO	NF
		11002011774112			()	
					()	
					()	
					()	
				o Da	ate:	

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15. List all professional, technical and key members on staff in your local office. Indicate **YEARS OF EQUIVALENT-FULL-TIME EXPERIENCE** per each of the areas of professional expertise listed below. (Duplicate additional sheets, if needed)

NAME	TITLE	EDUC.	YEARS	OF EXPI	ERIENCE		Enter	<u>Al</u> (F : YE	REAS Refer ARS	S(S) (ence OF E	<u>OF PI</u> Area : QUI\	ROFE s of E /ALE	SSIC Exper	ONAI tise (<u>EXF</u> Codes -TIME	PERT s Belo E EXF	ISE DW) PERIENCE *
		DG/YR	LOCAL OFFICE	FIRM	CAREER TOTAL	А	В	С	D	Е	F	G	Н	ı	J	К	OTHER
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OTHERS (define below) *(∑= Career Total) A. **CLAIMS REVIEW** G. SCENIC BYWAYS B. DBE SUPPORTIVE SERVICES Н. C. MULTI-MODAL TRANSPORTATION SYSTEMS D. PARTNERING FACILITATORS E. K. PLANNING - AVIATION, RAIL AND TRANSIT PHOTOGRAMMETRY (MAPPING) F.

SERVICE AGREEMENT
This Agreement, made and entered into the day of, 20 by and between the STATE OF NEVADA, acting by and through its DEPARTMENT OF TRANSPORTATION (hereinafter "DEPARTMENT") and [insert Name and Address] (hereinafter "SERVICE PROVIDER"). Individually they are each a "Party" and collectively they are the "Parties."
WITNESSETH:
WHEREAS, the Director of the DEPARTMENT may, pursuant to Nevada Revised Statutes (hereinafter "NRS") Chapter 333 & Chapter 408, contract for technical services that may be required; and
WHEREAS, NRS Chapter 333 authorizes heads of state departments to contract for the services of independent contractors; and
WHEREAS,, [insert project identification] is necessary for [insert why, i.e. safety, congestion, local entity request, etc.] (hereinafter "PROJECT"); and
WHEREAS, SERVICE PROVIDER's services will be of benefit to the DEPARTMENT and to the people of the State of Nevada.
NOW, THEREFORE, in consideration of the premises and of the mutual covenants hereinafter contained, it is agreed by and between the Parties as follows:
ARTICLE I - SCOPE OF SERVICES
1. The SERVICE PROVIDER agrees to [insert summary; be specific or reference and insert Attachment A - Scope of Services] attached hereto and incorporated herein.
2. The SERVICE PROVIDER agrees to furnish all labor, materials, services, equipment, tools and other expenses necessary to perform the professional services required under the terms of this Agreement, except as specifically provided otherwise herein.
3. The SERVICE PROVIDER agrees to comply with all requirements contained in the underlying Request for [Proposal/Approach], which is incorporated into this Agreement by reference. [IF APPLICABLE]
ADTIQUE II. DEDECOMANICE
ARTICLE II – PERFORMANCE
1. The term of this Agreement shall be from the date first written above through and including,, unless a change extending the term is further agreed to by written amendment signed by all parties to this Agreement and approved by appropriate
official action of the governing body of the DEPARTMENT prior to such term expiration date.

Agreement Number_____

- 2. In the event that the SERVICE PROVIDER performs or causes to be performed any work after: (a) the Agreement's expiration date as set forth within this Agreement, as it may be amended from time to time through written amendment signed by the parties hereto and approved by appropriate official action of the DEPARTMENT's governing body, prior to such expiration date; or (b) termination of this Agreement prior to the expiration date set forth within this Agreement; then the DEPARTMENT shall make no payment for work performed following the expiration or termination dates, and the SERVICE PROVIDER shall forfeit any and all right to payment for such work.
- 3. The SERVICE PROVIDER, on behalf of itself, its spouses, heirs, executors, administrators, successors, subrogees, servants, insurers, attorneys, independent representatives, personal representatives, agents, and assigns, does hereby waive, release, and forever discharge the State of Nevada, the DEPARTMENT, and each and every of their departments, divisions, agencies, officers, directors, agents, contractors, and employees, from any and all claims, demands, liens, liability, actions, causes of action, and suits for damages, at law and in equity, in any way connected with or arising from the SERVICE PROVIDER's provision of services and work performed following termination of this Agreement, and/or following the expiration date of this Agreement, as it may be amended from time to time through written amendment signed by the parties hereto and approved by appropriate official action of the DEPARTMENT's governing body, prior to such expiration date.
- 4. Neither the State of Nevada, the DEPARTMENT, nor any of their departments, divisions, agencies, officers, directors, agents, contractors, and employees, shall have authority to extend this Agreement beyond the expiration date set forth within this Agreement, unless such extension is set forth within a written amendment signed by the parties hereto and approved by appropriate official action of the DEPARTMENT's governing body prior to such expiration date. The SERVICE PROVIDER shall not rely upon any oral or written representations expressed extrinsic to a written amendment signed by the parties hereto and approved by appropriate official action of the DEPARTMENT's governing body prior to such expiration date, purporting to alter or amend this Agreement, including but not limited representations relating to the extension of the Agreement's expiration date.
- 5. Paragraphs 1 through 4 of this Article II-Performance, shall survive the termination and expiration of this Agreement.
- The SERVICE PROVIDER shall not proceed with said work until a copy of this Agreement is fully executed, signed by all individuals on the signatory lines below (hereinafter the "Final Execution Date"), and the Agreement is received by the SERVICE PROVIDER, which shall then constitute the written "Notice to Proceed" from the DEPARTMENT. The SERVICE PROVIDER shall notify the DEPARTMENT in writing of the exact date of commencement. If the SERVICE PROVIDER does commence said work prior to receiving said Notice to Proceed or prior to the Final Execution Date, the SERVICE PROVIDER shall forfeit any and all right to reimbursement for that portion of the work performed prior to said dates. Furthermore, the SERVICE PROVIDER shall not rely on the terms of this Agreement in any way, including but not limited to any written or oral representations and warranties made by the DEPARTMENT or any of its agents, employees, or affiliates, or on any dates of performance, deadlines, indemnities, or any other term contained in this Agreement or otherwise prior to the Final Execution Date and/or Notice to Proceed. In the event the SERVICE PROVIDER violates the provisions of this Section, the SERVICE PROVIDER waives any and all claims and damages against the DEPARTMENT, its employees, agents, and/or affiliates, including but not limited to monetary damages and/or any other available remedy at law or in equity arising under the terms of this Agreement.

- 7. The SERVICE PROVIDER agrees to complete the PROJECT within _____ [calendar/working] days of the commencement day of the PROJECT and agrees to pay to the DEPARTMENT, the sum of _____ and ___/100 Dollars (\$_____.__) for each and every calendar day past said date when the delay is caused by negligence, lack of adequate resources or any other cause within the SERVICE PROVIDER's direct control. These damages are not intended as a penalty. Damages are difficult to ascertain and the Parties agree that this amount is a reasonable estimate of presumed actual damages. [IF APPLICABLE]
- In the event the DEPARTMENT discovers a SERVICE PROVIDER's error or omission before its discovery by the SERVICE PROVIDER, the DEPARTMENT shall not unreasonably delay in notifying SERVICE PROVIDER of such error or omission. DEPARTMENT's notice to SERVICE PROVIDER shall specify the maximum time period SERVICE PROVIDER will be allowed for correction. The SERVICE PROVIDER shall make all necessary corrections resulting from its errors and omissions, and shall without delay make any corrections necessitated by the negligence, lack of adequate resources or any other cause within the SERVICE PROVIDER's control, and shall make such corrections without additional SERVICE PROVIDER shall track all related costs for the correction. Acceptance of the professional services by the DEPARTMENT will not relieve the SERVICE PROVIDER of the responsibility for any subsequent correction of any such errors and omissions, and the clarification of any ambiguities. The SERVICE PROVIDER will be responsible for additional costs in subsequent related construction resulting from its errors or omissions. Should the DEPARTMENT use its own personnel, supplies or equipment to remedy the deficiency, all such costs incurred by the DEPARTMENT shall be deducted from the sum due or which may become due to the SERVICE PROVIDER. In the event all such costs and charges incurred by the DEPARTMENT exceed the sum which would have been payable under this Agreement, then the SERVICE PROVIDER shall reimburse the DEPARTMENT the amount of said excess.
- 9. The SERVICE PROVIDER shall assign one individual throughout the life of this Agreement who shall have overall PROJECT responsibility unless illness or termination requires replacement.
- 10. A key person is defined as any individual identified by the SERVICE PROVIDER in its proposal as being part of the team to be assigned to the PROJECT. The SERVICE PROVIDER acknowledges and agrees, that the award of this Agreement was based, in part, on its ability to manage the PROJECT, and the qualifications, experience, and capacity of the SERVICE PROVIDER's aforementioned key persons and team. The SERVICE PROVIDER represents, warrants and covenants that such key persons are and will continue to be available to undertake and perform all services identified herein and fulfill the roles identified in its proposal. The SERVICE PROVIDER shall notify the DEPARTMENT in writing within ten (10) calendar days when a key person leaves the PROJECT team.
- a. If a key person leaves the PROJECT team, the SERVICE PROVIDER shall promptly propose a replacement within thirty (30) calendar days to and for the DEPARTMENT's review and written consent.
- b. The DEPARTMENT shall have the unilateral right to terminate this Agreement:
- (1) If a key person leaves the PROJECT team for a reason other than death, retirement, incapacitation or leaving SERVICE PROVIDER's employment (including the

employment with SERVICE PROVIDER's affiliates, subsidiaries and parent companies/organizations);

- (2) If a key person listed by the SERVICE PROVIDER in its proposal to perform or supervise various aspects of design is changed or leaves the PROJECT team; or
- (3) If the DEPARTMENT does not accept the SERVICE PROVIDER's proposed key person replacement.
- c. If this Agreement is terminated pursuant to the above, the SERVICE PROVIDER shall be paid for actual costs incurred for all services rendered and accepted by the DEPARTMENT and an amount of fee proportional to the work completed as of the date of termination. Additionally, the SERVICE PROVIDER shall not be entitled to any settlement costs, if any. Such termination will not occur if the SERVICE PROVIDER provides a replacement that is acceptable to the DEPARTMENT within thirty (30) calendar days of the date when the key person is changed or has left the PROJECT team.
- 11. The SERVICE PROVIDER shall at all times maintain control over and have complete responsibility for all services performed pursuant to this Agreement by the SERVICE PROVIDER and any of its subcontractors.
- 12. The SERVICE PROVIDER warrants that all deliverables and professional services produced under this Agreement shall be completed in a workmanlike manner consistent with standards in the trade, profession or industry. The standard of care applicable to SERVICE PROVIDER's services will be of the degree of skill and diligence normally employed by service providers performing the same or similar services at the time said services are performed.
- 13. This Agreement, and any amendments, may be suspended temporarily, either wholly or in part, by the DEPARTMENT upon oral notice confirmed in writing within ten (10) calendar days, when the DEPARTMENT determines that conditions beyond the control of the SERVICE PROVIDER are unfavorable to its satisfactory continuation of work. Should such conditions be encountered, the time for completion may be extended in an amount determined by the DEPARTMENT to be equivalent to the delay. Requests for suspension of time by the SERVICE PROVIDER must have the written approval of the DEPARTMENT. No allowance shall be made for delay or suspension of the services solely due to the fault of the SERVICE PROVIDER.
- 14. An alteration ordered by the DEPARTMENT which substantially changes the services provided for by the expressed intent of this Agreement will be considered extra professional services, and shall be specified in a written amendment signed by all Parties, which will set forth the nature and scope thereof. The method of payment for extra professional services shall be specified at the time the amendment is written.
- 15. The SERVICE PROVIDER shall not assign or subcontract, any of the professional services performed under this Agreement without the prior written approval of the DEPARTMENT. The SERVICE PROVIDER will, subsequent to obtaining written approval from the DEPARTMENT, provide the DEPARTMENT with a copy of the contract or agreement for professional services. The SERVICE PROVIDER shall require any subcontractor to comply with all provisions of 48 CFR Chapter 1, Part 31, in its agreement with the subcontractor, if the SERVICE PROVIDER subcontracts any professional services contemplated by this Agreement. The SERVICE PROVIDER will be responsible for any costs or deficiencies resulting from

noncompliance if the subcontractors fail to comply with 48 CFR Chapter 1, Part 31. Any attempted assignment of rights or delegation of duties under this agreement, without prior written consent of the DEPARTMENT shall be void.

- 16. The SERVICE PROVIDER agrees to complete and sign Attachment C "AFFIDAVIT REQUIRED UNDER SECTION 112(c) of Title 23 United States Code, Act of August 27, 1958 and Part 29 of Title 49, Code of Federal Regulations, November 17, 1987," Attachment D "CERTIFICATION REQUIRED BY SECTION 1352 of TITLE 31, UNITED STATES CODE, RESTRICTIONS OF LOBBYING USING APPROPRIATED FEDERAL FUNDS," and "INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES," attached hereto and incorporated herein. [Re-letter Attachments if applicable.]
- 17. This Agreement is contingent upon the verification that the SERVICE PROVIDER has a valid and active Nevada Business License and is in good standing in all areas of the Secretary of State's business requirements. If the SERVICE PROVIDER is an out of state provider, the SERVICE PROVIDER must be registered as a foreign business entity equivalent in Nevada, in active status and in good standing.

ARTICLE III - TERMINATION

- 1. The DEPARTMENT may terminate this Agreement without cause **[insert number]** [calendar/working] days after service of a termination letter to the SERVICE PROVIDER. In the event this Agreement is terminated in this manner, the SERVICE PROVIDER shall be paid for the cost of the professional services which have been completed and accepted by the DEPARTMENT up to the date of termination.
- 2. The continuation of this Agreement beyond the current biennium is subject to and contingent upon sufficient funds being appropriated, budgeted, and otherwise made available by the Nevada State Legislature and/or federal sources. The DEPARTMENT may terminate this Agreement, and the SERVICE PROVIDER waives any and all claims for damages, effective immediately upon receipt of written notice, or any date specified therein, if for any reason the DEPARTMENT's funding from state and/or federal sources is not appropriated or is withdrawn, limited or impaired.
- 3. A default or breach may be declared with or without termination. This Agreement may be terminated by either Party upon written notice of default or breach to the other Party as follows:
- a. If the SERVICE PROVIDER fails to provide or satisfactorily perform any of the professional services called for by this Agreement within the time requirements specified in this Agreement or within any granted extension of those time requirements; or
- b. If any state, county, city or federal license, authorization, waiver, permit, qualification or certification required by statute, ordinance, law or regulation to be held by the SERVICE PROVIDER to provide the goods or services required by this Agreement is for any reason denied, revoked, debarred, excluded, terminated, suspended, lapsed or not renewed; or
- c. If the SERVICE PROVIDER becomes insolvent, subject to receivership, or becomes voluntarily or involuntarily subject to the jurisdiction of a bankruptcy court; or

- d. If DEPARTMENT materially breaches any material duty under this Agreement and any such breach impairs the SERVICE PROVIDER's ability to perform; or
- e. If it is found by the DEPARTMENT that any quid pro quo or gratuities in the form of money, services, entertainment, gifts or otherwise were offered or given by the SERVICE PROVIDER, or any agent or representative of the SERVICE PROVIDER, to any officer or employee of the State of Nevada with a view toward securing an agreement or securing favorable treatment with respect to awarding, extending, amending or making any determination with respect to the performing of such agreement.
- 4. Termination upon a declared default or breach may be exercised after service of written notice and the subsequent failure of the defaulting Party, within fifteen (15) calendar days of service of that notice, to provide evidence, satisfactory to the aggrieved Party, showing the declared default or breach has been corrected. Such correspondence shall be deemed to have been served on the date of postmark.
- 5. In the event of the SERVICE PROVIDER's breach of this Agreement, all costs and charges incurred by the DEPARTMENT, together with the cost of completing the work under this Agreement, shall be deducted from any money due or which may become due to said SERVICE PROVIDER. If expenses exceed the sum which would have been payable under this Agreement, then the SERVICE PROVIDER shall be liable and shall pay to the DEPARTMENT the amount of said excess.
- 6. This Agreement shall be terminated when the professional services contemplated and covered by this Agreement have been completely performed by SERVICE PROVIDER, and all items of professional services have been approved and accepted by the DEPARTMENT.

ARTICLE IV - COST

1.	"The	lump	sum"	method	of	compensation	shall	be	used	for	the	SERVICE
PROVIDER's	service	es.										

2.	The total cost of the	e services by the	SERVICE PRO	OVIDER shall	not exceed the
sum of	and _	/100 Dollars (\$).	[IF APPLICA	BLE: Payment
will be based	on actual quantities d	lelivered/services	provided.]		

- 3. The cost of the work to be performed under this Agreement will be paid for by the DEPARTMENT [upon completion, monthly, bi-weekly, quarterly, semi-annual, or yearly] and upon acceptance of the work. [IF APPLICABLE The DEPARTMENT will certify the work and enumerate all costs of the work by utilizing the bid proposal (Quote if applicable). Payment will be based upon the prices shown in the Bid Proposal (Quote if applicable), attached hereto and incorporated in Attachment F.] [Note: Re-letter Attachments if applicable.]
- 4. No additional costs shall be allowed to the SERVICE PROVIDER for assistance by, or services of others, except by express permission in writing by the DEPARTMENT.
- 5. The DEPARTMENT shall pay the SERVICE PROVIDER in installments, based upon monthly progress reports showing the status of the professional services and the degree of completion. The DEPARTMENT, at its discretion, may by written notification waive this limitation.

ARTICLE V - SCHEDULE OF PAYMENTS

- 1. The SERVICE PROVIDER shall submit a signed invoice *[insert: monthly, bi-weekly, quarterly, semi-annually, yearly, upon completion]* for all services rendered along with one copy of substantiating documentation. The invoice must be submitted on the SERVICE PROVIDER's stationery using the DEPARTMENT's format or submitted on the DEPARTMENT's standard invoice form. The DEPARTMENT will utilize its normal accounting procedure in the payment of the invoices submitted. *[IF APPLICABLE: The Fixed Fee shall be paid monthly and shall be calculated as a percentage of the direct salary plus overhead costs of that month's invoice until the full agreed fee is paid.]*
- 2. Payment will be made for one hundred percent (100%) of the amount of each invoice until a maximum of ninety percent (90%) of the total Agreement costs have been billed by the SERVICE PROVIDER. Thereafter, payment for the remaining ten percent (10%) of the total Agreement costs shall be withheld by the DEPARTMENT, until such time as the professional services delivered by the SERVICE PROVIDER have been completely accepted by the DEPARTMENT. The final audit shall be performed after the release of the retained amount, and may cause an adjustment of payments to the DEPARTMENT or to the SERVICE PROVIDER. No interest shall be paid to the SERVICE PROVIDER on this retained amount or any adjustment of payments.
- 3. The DEPARTMENT reserves the right to inspect and approve the professional services performed before payment is made to the SERVICE PROVIDER. Payment will be withheld for deliverables and professional services the DEPARTMENT determines to be unsatisfactory in that they have not been provided in a workmanlike manner consistent with standards in the trade, profession or industry. Payment shall remain unpaid until the professional services are completed in accordance with the standards and work requirements defined in this Agreement. In such an event, the DEPARTMENT will provide the SERVICE PROVIDER with a written explanation as to why payment has been withheld.
- 4. The total cost of services for this Agreement, is the negotiated amount identified in Article IV, Paragraph 2. This amount was based upon the SERVICE PROVIDER's costs and fixed fee as well as the costs and fixed fees, if any, of all of its subcontractors. If a subcontractor does not expend all funds allocated to it for services identified in its agreement with the SERVICE PROVIDER, a copy of which shall be provided to the DEPARTMENT prior to issuance of the Notice to Proceed, the SERVICE PROVIDER shall not redistribute or expend such funds without the prior written approval of the DEPARTMENT. Failure to notify the DEPARTMENT prior to the use of such funds will constitute grounds for denial of reimbursement for such expenditures.
 - 5. Payment of invoices, interest penalties, and discounts shall be paid as follows:
- a. The SERVICE PROVIDER shall be paid within sixty (60) calendar days of a postmarked invoice which is complete, correct, and undisputed by the DEPARTMENT.
- b. The DEPARTMENT shall have twenty (20) calendar days after postmark of an invoice to dispute any or all of the charges on that invoice. The undisputed amount shall be paid to the SERVICE PROVIDER within sixty (60) calendar days of the date of postmark. The disputed amount shall be negotiated and resolved in good faith by both Parties and paid within forty (40) calendar days after the date the corrected invoice is received by the DEPARTMENT or is approved by both Parties for payment

- c. If the DEPARTMENT fails to pay the SERVICE PROVIDER the undisputed amount within sixty (60) calendar days after the postmark date of the invoice, the interest penalty assessed to the DEPARTMENT shall be one percent (1%) of the undisputed amount per month, not to exceed a total of One Thousand and No/100 Dollars (\$1,000.00).
- d. Payment of penalties shall not apply to the final payment or bill pertaining to this Agreement as determined by the post audit.
- 6. The prevailing party in an action to enforce this Agreement is entitled to reasonable attorney's fees and costs.

ARTICLE VII - MISCELLANEOUS PROVISIONS

- 6. The SERVICE PROVIDER shall be responsible for and shall comply with all applicable federal, state, and local government obligations and DEPARTMENT policies and procedures. The SERVICE PROVIDER will be responsible for and shall pay all taxes, assessments, fees, premiums, permits, and licenses required by law. Real property and personal property taxes are SERVICE PROVIDER's responsibility in accordance with NRS Chapter 361. The SERVICE PROVIDER warrants that it has a valid business license. The SERVICE PROVIDER agrees to be responsible for and shall pay any such government obligations not paid by its subcontractors during performance of this Agreement. The DEPARTMENT may set-off any consideration due against any delinquent government obligation.
- 7. It is expressly understood that the SERVICE PROVIDER is an independent contractor, and is subject to all statutes and laws, including NRS 333.700 relating to independent contractors. Nothing contained in this Agreement shall be deemed or construed to create a partnership or joint venture, to create relationships of an employer-employee or principal-agent, or to otherwise create any liability for the DEPARTMENT whatsoever with respect to the indebtedness, liabilities, and obligations of the SERVICE PROVIDER or any other party. Neither the SERVICE PROVIDER nor its employees, agents or representatives shall be considered employees, agents or representatives of the DEPARTMENT.
- 8. The SERVICE PROVIDER shall be solely responsible for its own employees, and the DEPARTMENT shall have no obligation with respect to:
 - a. Withholding of income taxes, FICA or any other taxes or fees;
 - b. Industrial insurance coverage:
 - c. Participation in any group insurance plans available to employees of the DEPARTMENT;
 - d. Participation or contributions by either the SERVICE PROVIDER or the DEPARTMENT to the Public Employees Retirement System;
 - e. Accumulation of vacation leave or sick leave; or
 - f. Unemployment compensation coverage provided by the DEPARTMENT.

The SERVICE PROVIDER shall indemnify and hold the DEPARTMENT harmless from, and defend the DEPARTMENT against, any and all losses, damages, claims, costs, penalties, liabilities, and expenses arising or incurred because of, incident to, or otherwise with respect to any such taxes, fees, insurance, contributions, leave or coverage.

9. Unless expressly provided in this Agreement, the SERVICE PROVIDER shall not engage or use the devices and/or services of the DEPARTMENT's personnel without the prior written consent of the DEPARTMENT.

- 10. The SERVICE PROVIDER shall, before commencing professional services under the provisions of this Agreement, furnish to the DEPARTMENT proof of worker's compensation insurance as required by the NRS.
- 11. The SERVICE PROVIDER shall furnish a Certificate of Errors and Omissions Insurance with a minimum limit of One Million and No/100 Dollars (\$1,000,000.00).
- 12. The SERVICE PROVIDER shall furnish a Certificate, Declarations Page and an Endorsement designating the DEPARTMENT as an additional insured evidencing Commercial General Liability Insurance with a minimum limit of One Million and No/100 Dollars (\$1,000,000.00) per occurrence. These policies shall be maintained for the entire period of this Agreement. The policies shall include a 30-day advance written notice of any cancellation of said policies. The SERVICE PROVIDER shall furnish the DEPARTMENT with certificates of such insurance prior to commencement of professional services.
- 13. All insurance required by this Agreement shall be placed with insurers with a rating from the current issue of Best's Key Rating Guide of no less than A-: VII.
- 14. The DEPARTMENT has the option of requesting, at any time, a meeting with the SERVICE PROVIDER or its authorized representative to discuss and review PROJECT status and the SERVICE PROVIDER shall furnish thereafter a copy of the minutes of such meetings to the DEPARTMENT.
- 15. The SERVICE PROVIDER has total responsibility for the accuracy and correctness of data prepared under the terms of this Agreement, and shall check all such material accordingly for completeness, missing items, correct multipliers and consistency. The deliverables shall be reviewed by the DEPARTMENT for conformity with the DEPARTMENT's procedures and contract terms. The SERVICE PROVIDER acknowledges that review by the DEPARTMENT does not include detailed review or checking of major components and related details or the accuracy of such deliverables, and the DEPARTMENT's review shall not relieve the SERVICE PROVIDER of its total responsibility for the accuracy and correctness of data prepared under the terms of this Agreement.
- 16. The SERVICE PROVIDER shall appear as an expert witness on behalf of the DEPARTMENT in any subsequent court action which involves any of the services required by this Agreement. Compensation for services rendered in this regard will be paid at a rate to be negotiated at the time such services are necessary.
- Agreement, all professional services inclusive of research, investigation and analysis data, reports (including files on disks), computations, tabulations, original drawings and design files (including CAD information on disks), correspondence input from external sources (including subcontractors), etc., shall be delivered to and become the property of the DEPARTMENT, without limitation. Reuse of said materials, information or data, during performance or following termination of this Agreement, on any other project or for any other purpose except as provided for herein, shall be at the DEPARTMENT's discretion and the DEPARTMENT's sole decision. The SERVICE PROVIDER shall not utilize any materials, information or data obtained as a result of performing the services called for in this Agreement in any commercial or academic publication or presentation without the express written permission of the DEPARTMENT. The SERVICE PROVIDER shall not reference an opinion of an employee or agent of the DEPARTMENT obtained as a result of performing the services called for in this Agreement, in

any publication or presentation, without the written permission of the employee or agent to whom the opinion is attributed, in addition to the permission of the DEPARTMENT. [IF APPLICABLE]

- 18. All design drawings must be created and delivered to the DEPARTMENT in Microstation "dgn" format. Drawing files converted to Microstation format from AutoCad, from other formats will not be accepted by the DEPARTMENT. Files must be delivered using CD-ROM (ISO 9660) or tape (QIC 80). If the files require fewer than five (5) 3.5" floppy disks, the floppy disks may be substituted in lieu of CD-ROM or the tape. Files may be delivered compressed using "WINZIP 5.5" software. Delivery of a hard copy of design drawings shall also be required. All files must adhere to the DEPARTMENT's standards. [IF APPLICABLE]
- 20. All reports and notes for special provisions shall be delivered to the DEPARTMENT on 3.5" floppy disks, compact disc or flash drive, using the most current version of **[Microsoft Word/ WordPerfect]**. Delivery of a hard copy of reports and notes for special provisions shall also be required. **[IF APPLICABLE]**
- 21. The SERVICE PROVIDER agrees that any reports, materials, studies, photographs, negatives, drawings or other documents prepared by the SERVICE PROVIDER in the performance of its obligations under this Agreement shall be the exclusive property of the DEPARTMENT. The SERVICE PROVIDER shall remit all such documents to the DEPARTMENT upon completion, termination or cancellation of this Agreement or upon written request of the DEPARTMENT. The SERVICE PROVIDER shall not use, willingly allow or cause to have such documents used for any purpose other than performance of the SERVICE PROVIDER's obligation under this Agreement, without the prior written consent of the DEPARTMENT. **[IF APPLICABLE]**
- 22. The SERVICE PROVIDER and successors, executors, administrators, and assigns of the SERVICE PROVIDER's interest in the professional services or the compensation herein provided shall be bound to the DEPARTMENT to the full legal extent to which the SERVICE PROVIDER is bound with respect to each of the terms of this Agreement.
- 23. The SERVICE PROVIDER warrants that they have not employed or retained any company or persons (other than a bona fide employee working solely for the SERVICE PROVIDER) to solicit or secure this Agreement and that SERVICE PROVIDER has not paid or agreed to pay any company or persons (other than a bona fide employee working solely for the SERVICE PROVIDER) any fee, commission, percentage, brokerage fee, or any other gifts contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, the DEPARTMENT shall have the right to annul this Agreement without liability, or, in its discretion, to deduct from the Agreement price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.
- 24. Any dispute arising under this Agreement as to performance, compensation, and the interpretation of satisfactory fulfillment of the terms of this Agreement shall be decided by the DEPARTMENT. It is the intent of the DEPARTMENT to resolve disputes at the lowest level possible. Nothing herein contained shall impair either of the Parties' right to file suit in the state district courts of the State of Nevada.
- 25. During the performance of this Agreement, the SERVICE PROVIDER, for itself, its assignees and successors in interest agrees as follows:

- a. Compliance with Regulations: The SERVICE PROVIDER shall comply with all of the regulations relative to nondiscrimination in federally-assisted programs of 49 C.F.R. Part 21 as they may be amended from time to time (hereinafter "Regulations"), which are herein incorporated by reference and made a part of this Agreement.
- b. Nondiscrimination: The SERVICE PROVIDER, with regard to the professional services performed by it during the Agreement, shall not discriminate on the grounds of race, color, age, religion, sex, creed, handicap, or national origin in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The SERVICE PROVIDER shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices, when the Agreement covers a program set forth in Appendix B of the Regulations.
- c. Solicitations for Subcontracts, Including Procurement of Materials, and Equipment: In all solicitations either by competitive bidding or negotiation made by the SERVICE PROVIDER for professional services to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the SERVICE PROVIDER of the SERVICE PROVIDER's obligations under this Agreement and the Regulations relative to nondiscrimination on the grounds of race, color, age, religion, sex, creed, handicap or national origin.
- d. Information and Reports: The SERVICE PROVIDER shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its facilities as may be determined by the DEPARTMENT or the Federal Highway Administration (FHWA) to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a SERVICE PROVIDER is in the exclusive possession of another who fails or refuses to furnish this information, the SERVICE PROVIDER shall so certify to the DEPARTMENT, or the FHWA as appropriate, and shall set forth what efforts it has made to obtain the information.
- e. Sanctions for Noncompliance: In the event of the SERVICE PROVIDER's noncompliance with the nondiscrimination provisions of this Agreement, the DEPARTMENT shall impose such Agreement sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:
 - 1. Withholding of payments to the SERVICE PROVIDER under the Agreement until the SERVICE PROVIDER complies, and/or
 - 2. Cancellation, termination or suspension of the Agreement, in whole or in part.
- f. Agreements with subcontractors will include provisions making all subcontractor records available for audit by the DEPARTMENT or the FHWA.
- g. Incorporation of Provisions: The SERVICE PROVIDER will include the provisions of Paragraphs (a) through (f) above in every subcontract including procurement of materials and leases of equipment, unless exempt by Regulations, order, or instructions issued pursuant thereto. The SERVICE PROVIDER will take such action with respect to any subcontract or procurement as the DEPARTMENT or the FHWA may direct as a means of enforcing such provisions including sanctions for non-compliance. In the event SERVICE PROVIDER becomes involved in, or is threatened with litigation by a subcontractor or supplier as a result of such direction, the SERVICE PROVIDER may request the DEPARTMENT to

enter into such litigation to protect the interests of the DEPARTMENT and the SERVICE PROVIDER may request the United States to enter into such litigation to protect the interests of the United States.

- 26. In the event federal funds are used for payment of all or part of this Agreement, the SERVICE PROVIDER, for itself, its assignees and successors in interest agrees as follows:
- a. Debarment and/or Suspension: The SERVICE PROVIDER certifies that neither it nor its subcontractors, nor their principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.
- b. ADA: The SERVICE PROVIDER and subcontractor shall comply with all terms, conditions, and requirements of the Americans with Disabilities Act of 1980, as amended, and regulations adopted thereunder contained in 49 C.F.R., Part 27, and any relevant program-specific regulations.
- c. Civil Rights: The SERVICE PROVIDER and subcontractor shall comply with the requirements of the Civil Rights Act of 1964, as amended, the Rehabilitation Act of 1973, as amended, and any relevant program-specific regulations, and shall not discriminate against any employee or person offered employment because of race, national origin, creed, color, sex, religion, age, disability or handicap condition, including AIDS and AIDS-related conditions.
- 27. Each party agrees to keep and maintain under generally accepted accounting principles full, true and complete records and documents pertaining to this Agreement and present, at any reasonable time, such information for inspection, examination, review, audit and copying at any office where such records and documentation are maintained. It is expressly understood that the duly authorized representatives of the DEPARTMENT and the FHWA shall have the right to inspect/audit the professional services and charges of the SERVICE PROVIDER whenever such representatives may deem such inspection to be desirable or necessary. Such records and documentation shall be maintained for three (3) years after final payment is made.
- 28. To the fullest extent permitted by law, the SERVICE PROVIDER shall defend, indemnify and hold harmless—the State of Nevada, and the employees, officers and agents of the State of Nevada from any liabilities, damages, losses, claims, actions or proceedings, including, without limitation, reasonable attorney's fees, that are caused by the negligence, errors, omissions, reckless or intentional misconduct of the SERVICE PROVIDER or the employees or agents of the SERVICE PROVIDER in the performance of this Agreement.
- 29. The SERVICE PROVIDER shall use its own vehicles and the DEPARTMENT is not responsible for the payment of any premiums, deductible or assessments on any insurance policies purchased by the SERVICE PROVIDER.
- 30. The SERVICE PROVIDER warrants that all deliverables and work produced under this Agreement shall be completed in a workmanlike manner consistent with standards in the trade, profession or industry.
- 31. The SERVICE PROVIDER is required to register as a vendor with the Nevada State Controller's office. The Registration Substitute IRS Form W-9 can be accessed at http://controller.nv.gov/VendorServices/VendorServices.html. The SERVICE PROVIDER will

follow the Registration Instructions, complete the Registration Substitute IRS Form W-9 and submit it to the State Controller's Office.

- 32. The SERVICE PROVIDER agrees that, prior to any sale, transfer, business name change, change in principals or any other occurrence that alters or this Agreement in any way, the SERVICE PROVIDER shall notify the DEPARTMENT of such intent at least seven (7) business days prior to making said change.
- 33. All notices or other communications required or permitted to be given under this Agreement shall be in writing and shall be deemed to have been duly given if delivered personally in hand, by telephonic facsimile with simultaneous regular mail, or mailed certified mail, return receipt requested, postage prepaid on the date posted, and addressed to the other Party at the address set forth below:

FOR DEPARTMENT: Susan Martinovich, P.E., Director

Attn:

Nevada Department of Transportation

Division:

1263 South Stewart Street Carson City, NV 89712

Phone (775) [insert phone number]

Fax: [insert fax number]

E-mail: [insert e-mail address]

FOR SERVICE PROVIDER: [insert: Name

Agency/Company

Mailing Address, City, State Zip Code Physical Address, City, State Zip Code

Phone: (___) __-

Fax:

E-mail: _______

- 34. This Agreement and the rights and obligations of the Parties hereto shall be governed by, and construed according to, the laws of the State of Nevada. The Parties consent to the exclusive jurisdiction of the Nevada state district courts for enforcement of this Agreement.
- 35. As used herein the term "SERVICE PROVIDER" shall include the plural as well as the singular, and the feminine as well as the masculine.
- 36. Neither Party shall be deemed to be in violation of this Agreement if it is prevented from performing any of its obligations hereunder for any reason beyond its control, including, without limitation, strikes, inmate disturbances, acts of God, civil or military authority, act of public enemy, or accidents, fires, explosions, earthquakes, floods, winds, failure of public transportation, or any other similar serious cause beyond the reasonable control of either Party. In such an event the intervening cause must not be through the fault of the Party asserting such an excuse, and the excused Party is obligated promptly to perform in accordance with the terms of the Agreement after the intervening cause ceases.
- 37. In connection with the performance of work under this Agreement, the SERVICE PROVIDER agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, sexual orientation or age, including, without

limitation, with regard to employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including without limitation apprenticeship. The SERVICE PROVIDER further agrees to insert this provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

- 38. The SERVICE PROVIDER shall keep confidential all information, in whatever form, produced, prepared, observed or received by the SERVICE PROVIDER to the extent that such information is confidential by law or otherwise required by this Agreement.
- 39. Pursuant to NRS 239.010, information or documents may be open to public inspection and copying. The DEPARTMENT will have the duty to disclose unless a particular record is confidential by law or a common law balancing of interests.
- 40. The SERVICE PROVIDER shall provide a minimum of fifty-one percent (51%) of the combined value of all items of work covered by this Agreement. The SERVICE PROVIDER shall not assign or subcontract any of the work performed under this Agreement without the prior written approval of the DEPARTMENT. The SERVICE PROVIDER shall, prior to obtaining written approval from the DEPARTMENT, provide the DEPARTMENT with a copy of the subcontract or subagreement for said work. Any assignment of rights or delegation of duties under this Agreement, without the prior written consent of the DEPARTMENT, shall be void.
- 41. The illegality or invalidity of any provision or portion of this Agreement shall not affect the validity of the remainder of the Agreement and this Agreement shall be construed as if such provision did not exist. The unenforceability of such provision shall not be held to render any other provision or provisions of this Agreement unenforceable.
- 42. Except as otherwise provided for by law or this Agreement, the rights and remedies of the Parties shall not be exclusive and are in addition to any other rights and remedies provided by law or equity, including, without limitation, the recovery of actual damages and the prevailing party's reasonable attorney's fees and costs.
- 43. It is specifically agreed between the Parties executing this Agreement that it is not intended by any of the provisions of any part of this Agreement to create in the public or any member thereof a third party beneficiary status hereunder, or to authorize anyone not a Party to this Agreement to maintain a suit for personal injuries or property damage, or pursuant to the terms or provisions of this Agreement.
- 44. The Parties hereto represent and warrant that the person executing this Agreement on behalf of each Party has full power and authority to enter into this Agreement and that the Parties are authorized by law to perform the services set forth herein.
- 45. This Agreement constitutes the entire agreement of the Parties and such is intended as a complete and exclusive statement of the promises, representations, negotiations, discussions, and other agreements that may have been made in connection with the subject matter hereof. Unless an integrated attachment to this Agreement specifically displays a mutual intent to amend a particular part of this Agreement, general conflicts in language between any such attachment and this Agreement shall be construed consistent with the terms of this Agreement. Unless otherwise expressly authorized by the terms of this Agreement, no modification or amendment to this Agreement shall be binding upon the Parties unless the same is in writing and signed by the respective Parties hereto.

IN WITNESS WHEREOF, the authorized representatives of the SERVICE PROVIDER
and the DEPARTMENT have caused their names to be signed hereon on the date first above
written

SERVICE PROVIDER: [insert Name]	State of Nevada, acting by and through its DEPARTMENT OF TRANSPORTATION					
	Director					
Name & Title (Print)	Approved as to Legality and Form:					
	Deputy Attorney General					

Attachment C AFFIDAVIT REQUIRED UNDER SECTION 112(c) of Title 23 United States Code, Act of August 27, 1958 and

Part 29 of Title 49, Code of Federal Regulations, November 17, 1987.

STATE OF]
COUNTY OF		ss
		(Name of party signing this affidavit
and the Proposal Form)		(title) being duly sworn
do depose and say: That	than directly or in	(name of person, firm, directly, entered into agreement, participated in
		in restraint of free competitive bidding in
		xcept as noted below to the best of knowledge,
the above named and its princil		
voluntarily excluded from co (b) Have not within a three civil judgment rendered ac connection with obtaining, local) transaction or contrantitrust statutes or comm destruction of records, mak (c) Are not presently in governmental entity (Fede enumerated in paragraph (b (d) Have not within a three	e-year period preceptions them for continuation of entire and published for or or or all, State or loce of this certification of this certification of the period period preception or or or or the certification of the ce	proposed for debarment, declared ineligible, or ns by any Federal department or agency: seding this proposal been convicted of or had a commission of fraud or a criminal offense in stain, or performing a public (Federal, State or olic transaction; violation of Federal or State element, theft, forgery, bribery, falsification or nts, or receiving stolen property; therwise criminally or civilly charged by a al) with commission of any of the offenses on; and receding this application/proposal had one or cal) terminated for cause or default.
(Insert Exceptions, attach addit	ional sheets)	
determining bidder responsibil with the party. For any excer initiating agency, and dates of	lity and whether office indication noted, indication indication. Providual sanctions. The	It in denial of award, but will be considered in or not the Department will enter into contract rate on an attached sheet to whom it applies, ding false information may result in criminal failure to furnish this affidavit and required
		Signature
		Title
		nae
Sworn to before me this	day of	, 20
		Signature
(SEAL)		Notary Public, Judge or other Official

Attachment D

CERTIFICATION REQUIRED BY SECTION 1352 OF TITLE 31, UNITED STATES CODE RESTRICTIONS OF LOBBYING USING APPROPRIATED FEDERAL FUNDS

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

- (1) No Federal appropriate funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

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

	Name (please type or print)	
	Signature	
_	Title	

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

- Identify the type of covered Federal action for which lobbying activity in and/or has been secured to influence the outcome of a covered Federal action.
- 2. Identify the status of the covered Federal action.
- 3. Identify the appropriate classification of this report. If this is a follow up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
- 4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
- 5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
- Enter the name of the Federal agency making the award or loan commitment. Include at least one
 organizational level below agency name, if known. For example, Department of Transportation, United
 States Coast Guard.
- 7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
- 8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
- 9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
- 10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.
 - (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, first Name, and Middle Initial (MI).
- 11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. It this is a material change report, enter the cumulative amount of payment made or planned to be made.
- 12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
- 13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
- Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.
- 15. Check whether or not a SF-LL-A Continuation Sheet(s) is attached.
- 16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

DISCLOSURE OF LOBBYING ACTIVITIESComplete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

Approved by OMB 0348-0046

Type of Federal Actions: a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	Status of Federal Action a. bid/offer/application c. Initial award d. post-award	1:	3. Report Type: a. initial filing b. material change For Material Change Only: year quarter date of last report			
6. Federal Department/Agency:		7. Federal Program Nam	e/Description:			
		CFDA Number, if appl				
8. Federal Action Number, <i>if</i> know:		9. Award Amount, <i>if</i> kno \$	own:			
10. a. Name and Address of Lobbying Entity (if individual, last name, first name, MI):	b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):					
(attach Continuation Sheet(s) SF-LLL-A, if necessary)		(attach Continuation Sheet(s) SF-LLL-A, if necessary)				
12. Form of Payment (check all that apply): a. cash b. in-kind; specify: nature value	13. Type of Payment (check all that apply): a. retainer b. one-time fee c. commission d. contingent fee e. deferred f. other; specify:					
14. Brief Description of Services Performed or to be Perform contacted, for Payment indicated in Item 11:	ned and Date(s) of Service, in	cluding officer(s), employee	e(s), or Member(s)			
	<u> </u>					
16. Information requested through this form is authorized by title 31 U.S.C. lobbying activities is a material representation of fact upon which reliance wa this transaction was made or entered into. This disclosure is required pursuar information will be reported to the Congress semi-annually and will be availaperson who fails to file the required disclosure shall be subject to a civil penal not more than \$100,000 for each such failure.	as placed by the tier above when nt to 31 U.S.C. 1352. This able for public inspection. Any	Print Name:	Date:			
Federal Use Only:			Authorized for Local Reproduction Standard Form - LLL			

Attachment E Service Providers Cost Certification of Final Indirect Costs

Firm Name:
Indirect Cost Rate Proposal:
Date of Proposal Preparation (mm/dd/yyyy)://
Agreement Period (mm/dd/yyyy to mm/dd/yyyy):/ to/to
I the undersigned, certify that I have reviewed the proposal to establish final indirect cost rates for the fiscal period as specified above and to the best of my knowledge and belief
1.) All costs included in this proposal to establish final indirect cost rates are allowable in accordance with the cost principles of the Federal Acquisition Regulations (FAR) of title 48, Code of Federal Regulations (CFR), part 31.
2.) This proposal does not include any costs which are expressly unallowable under the cost principles of the FAR of 48 CFR 31.
All known material transactions or events that have occurred affecting the firm's ownership, organization and indirect cost rates have been disclosed.
Signature:
Name of Certifying Official (Print):
Title:
Date of Certification (mm/dd/yyyy): / /

Attachment G

WORKER'S COMPENSATION INSURANCE AFFIDAVIT (Required under Section 2 of Nevada Revised Statutes (NRS) 616B.627 of July 1, 2001)

STATE OF		l ss
COUNTY O	F	} 55
l,		(Name of sole proprietor
signing thi	s affidavit	(title) being
duly sworn	do depose and say that:	
(a)		is of NRS 616B.659, I have not elected to be tions and provisions of Chapters 616A to
(b)	I am otherwise in compliance wit	th those terms, conditions and provisions.
result in c		eement. Providing false information may ive sanctions. The failure to furnish this ning work under this agreement. Signature
		Title
Sworn to be	efore me this day of	, 20
		Signature
(SEAL)	Nota	ry Public, Judge or other Official

Per Diem Rates Allowed State Employees (For Information Only)

- Effective July 1, 2007 all State employees will be required to use the GSA per diem rates for in-state and out-of-state travel. The website address is www.gsa.gov and click on Per Diem Rates for the most current rates and information. Rates do vary by season; therefore rates should be verified prior to all travel.
- 2) Meals will be reimbursed in accordance with the meals and incidental expense (M&IE) allowance for the primary destination.
- 3) Employees must deduct the M&IE allowance for all meals that are included in registration or conference fees. The breakdown for the M&IE can be found on the GSA website under Meals and Incidental Expense Breakdown.
- 4) Receipts will be required for all lodging. The maximum allowance for lodging is the amount the employees are eligible to be reimbursed; therefore, all taxes and fees are included in the maximum lodging allowance.
- 5) If the GSA website does not recognize the county in which the employee is traveling, the rate defaults to the standard CONUS location reimbursement rate. These rates may vary, please verify all rates prior to employee travel.
- 6) A copy of the current GSA allowance for lodging and M&IE must be included with the employee travel claim.