



ADOA - ASET

Arizona Strategic Enterprise Technology

Project Investment Justification

Version 1.01

A Statewide Standard Document for Information Technology Projects

Project Title:

Capitol Mall Fiber

Agency Name:	Arizona Department of Administration
Date:	03/20/2014
Agency Contact Name:	Gary Hensley
Agency Contact Phone:	
Agency Contact Email:	

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I. Management Summary*

In Fiscal Year 2013 (FY13), the Arizona Department of Administration's Strategic Enterprise Technology Office (ADOA-ASET) Enterprise Infrastructure and Communications (EIC) group, also known as AZNET II, completed a number of initiatives designated to reduce or eliminate single points of failure within the supporting infrastructure of the State Data Center (SDC) environment. Through this process, a detailed assessment of Capitol Mall cabling was conducted to identify the risk of a network outage to State agencies connected to Capitol Mall fiber optic cabling. As a result of this assessment, it was determined that adequate fiber to provide restoration and network services in the event of damage or severing of the current fiber infrastructure does not exist.

ADOA-ASET proposes to add new fiber from the SDC located at 1510 W. Adams St. to the Arizona Department of Transportation (ADOT) Data Center at 206 South 17th Avenue. This will provide five State facilities along the installation path with fiber service restoration capabilities in the event of a catastrophic failure. Additionally, fiber will be upgraded in one State facility that does not meet National Electrical Code (NEC). This proposal also includes providing Capitol Mall fiber backbone support for future service restoration capabilities to the Arizona Industrial Commission, Arizona Department of Environmental Quality, Arizona Tourism Office, Arizona Corporation Commission, and other State facilities located between 800-1500 W. Washington Street.

Project Investment Justification (PIJ) Type*

Yes No Is this document being provided for a Pre-PIJ / Assessment phase?

If Yes,

Identify any cost to be incurred during the Assessment phase.	\$0
Based on research done to date, provide a high-level estimate or range of development costs anticipated for the full PIJ.	\$0

Explain:

[Click here to enter text.](#)

Yes No Will a Request for Proposal (RFP) be issued as part of the Pre-PIJ or PIJ?

II. Business Case

A. **Business Problem***

The fiber cabling backbone infrastructure between the SDC, located at 1510 W. Adams St., and several State facilities does not meet requirements for service restoration. This means extra fiber is not in-place and available for splicing in the event of a catastrophic failure of the current plant. State agency facilities affected include; the Arizona

Attorney General’s Office (AGO), the Arizona Department of Corrections (ADC), and the Arizona Department of Education (ADE).

The ADC building, located at 1645 W. Jefferson St., does not have a dedicated fiber point of entry. The facility is receiving network connectivity from fiber supplying the neighboring ADC building at 1601 W. Jefferson Street. Additionally, fiber running between AGO facilities at 15 South 15th Ave. and 1275 W. Washington St. does not meet NEC requirements. In the event of a fire, this fiber could release poisonous gases.

The conduit path in-place between fiber vault Manhole (MH) #41, located just south of the SDC, to fiber vault MH #427 located at the corner of 15th Ave. and Washington St., is full. The existing conduit is at maximum capacity. As a result, new conduit pathways are required in order to install additional fiber optic cabling.

B. Proposed Business Solution*

ADOA-ASET proposes to install new subterranean fiber on the Capitol Mall from the SDC to five State agency facilities, terminating at the ADOT data center. Along the installation path, fiber will terminate in new Lightguide Interface Units (LIUs) located within Intermediate Distribution Frame (IDF) closets at the following locations:

- AGO - 1275 W. Washington St.
- AGO - 15 S. 15th Ave.
- ADE - 1535 W. Jefferson St.
- ADC - 1601 W. Jefferson St.
- ADC - 1645 W. Jefferson St.

ADOA-ASET is proposing to upgrade fiber plant in the two ADC buildings which are currently sharing or “cross-connecting” fiber between facilities. Additionally, fiber in two AGO facilities will be removed and replaced with NEC compliant cabling (see diagrams). This upgrade will include the proper routing of fiber cables within conduit innerducts. This method will meet NEC requirements.

C. Quantified Benefits*

- | | |
|-------------------------------------|---------------------|
| <input type="checkbox"/> | Service enhancement |
| <input type="checkbox"/> | Increased revenue |
| <input type="checkbox"/> | Cost reduction |
| <input checked="" type="checkbox"/> | Problem avoidance |
| <input checked="" type="checkbox"/> | Risk avoidance |

Explain:

The installation of new fiber cabling will reduce downtime risk and provide fiber service restoration for several State agency facilities at the Capitol Mall. As a result, unused fiber would be available for splicing in the event of a catastrophic failure of current fiber plant. The proposed installation of new fiber will meet performance requirements for

the scheduled AZNet II network refresh for five State facilities mentioned above, as well as, future fiber restoration capability for six State facility locations, as follows:

- 1400 W. Washington St.
- 1300 W. Washington St.
- 1200 W. Washington St.
- 1110 W. Washington St.
- 1010 W. Washington St.
- 800 W. Washington St.

III. Technology Approach

A. *Proposed Technology Solution**

The proposed fiber installation will terminate in six buildings and pass through nine Capitol Mall fiber vault locations as defined below and in the attached diagrams. The bullets below define the scope of work to be performed in or around each location.

- **SDC to MH #41 SDC** - Splice 12 strands of 144 strand fiber in MH #41 to existing unused 144 strand fiber which runs to the existing LIU panel in the AZNet II "Meet Me" location on 2nd floor of the SDC Wide Area Network (WAN) room.
- **MH #41 to MH #427** - Install 4" underground conduit with three 1 ¼" innerducts from MH #41 to MH #427. Include tracer wire inside ducts, permitting, Arizona Blue Stake utilities identification and marking, vehicular traffic lane closure management, construction barricades, and traffic control per State requirements. As-built diagrams to be provided.
- **MH #41 to MH #427 to MH #603** - Install 144 strand fiber south from MH #41 to MH #603. Install 4" underground conduit, if needed, between MH #427 and MH #603.
- **MH #603 to MH #1664** - Install 144 strand fiber going south from MH #603 to ADOT data center at 206 S.17th Ave. ADOT data center has 96 strands of fiber running to MH #1655. There are 72 vacant strands of the 96 strands that pass through MH#1664 to MH #1655. Install splice case in MH #1655. Splice 18 strands of the new fiber into the 72 strand available fiber that terminates in ADOT data center.
- **MH #1292 to 1645 W. Jefferson St. (ADC)** - Install 12 strand fiber from MH #1292 to basement of the ADC administration building at 1645 W. Jefferson Street. Terminate fiber into new 12 port wall mounted LIU located on the 1st floor IDF.
- **MH #1614 to 1601 W. Jefferson St. (ADC)** - Install 12 strand fiber from MH #1614 to the basement of 1601 W. Jefferson Street. Terminate fiber into new 12 port wall mount LIU. There will be 6 strands that will be marked and remain in place for fiber restoration. The remaining 6 strands of fiber will run to MH #1664 and terminate in the existing LIU at ADOT data center.

- **MH #1479 to 1535 W. Jefferson St. (ADE)** - Install 12 strand fiber from MH #1479 to the basement of 1535 W. Jefferson Street. Terminate fiber into new 12 port wall mount LIU. There will be 6 strands that will be marked and remain in place for fiber restoration. The remaining 6 strands of fiber will run to MH #1664 and terminate in the existing LIU at ADOT data center at 206 S. 17th Ave.
- **MH #603 to 15 South 15th Ave. (AGO)** - Install splice case with trays in MH #603. Install 144 strand fiber from MH #603 to the new 144 port IDF LIU located in the basement of 15 S. 15th Ave.
- **15 South 15th Ave. (AGO)** - Install 96 strand plenum fiber and plenum innerduct from basement IDF closet to AGO computer room in the basement of the same building. Splice both ends in two new 96 port LIUs.
- **15 South 15th Ave. (AGO) to 1275 W. Washington St. (AGO)** - Remove single mode fiber from existing pathway between buildings that do not meet NEC requirements. Install one 18" x 18" x 8" National Electrical Manufacturers Association (NEMA) 1 J-box on the west inside wall 1275 W. Washington St. above the 1st floor conference room. Install 144 strand fiber from IDF closet in basement of 15 S. 15th Ave. in existing conduit running between buildings. Continue this run through new 2" EMT conduit to the equipment rack on the east side of the building. Splice 48 strands of the 144 strand fiber between the two buildings and terminate in new 144 port LIU panel.
- **1275 W. Washington St. (AGO)** - Install 2" Electrical Metallic Tube (EMT) conduit with compression fittings and conduit support from 1st floor conference room on west side of 1275 W. Washington St. to 1st floor equipment rack on the east side of building. Install 144 strand fiber from Main Distribution Frame (MDF) data rack on east side of building through EMT conduit to IDF closet to existing conduit system running to MH #1213. A 60 foot coil of fiber will be labeled for service restoration in MH #1213.

Fiber optic strands, including splice connections, will be tested to verify American National Standards Institute (ANSI), Electronic Industries Alliance (EIA), and Telecommunications Industry Association (TIA) standards for fiber infrastructure have been met. All strands will be tested one-way using Optical Time-Domain Reflectometer (OTDR) measurements. Results of testing will be provided and archived for future use.

B. *Technology Environment*

1535 (ADE), 1601 (ADC), 1645 (ADC) W. Jefferson St. - The existing network fiber connection from 1645 originates (cross-connects) from 1601. Fiber feeding the buildings at 1535, 1601, and 1645 do not have splice cases inside fiber vaults (MHs #1479, #1614, #1292) making fiber restoration very time consuming in the event of a catastrophic failure.

If the fiber on Washington St. leading to additional agencies was severed, it would result in loss of network connectivity to six State facilities, affecting several agencies, until new

fiber could be installed. This could result in multiple weeks of lost network connectivity while new fiber strands were ordered and installed.

The current conduit installed between 1275 W. Washington St. and 15 S. 15th Ave. is full. Installed items include coax cabling for security cameras, and fiber which does not meet NEC code. In the event of a fire, this fiber could release poisonous gases. Removing the fiber that does not meet code is the most cost effective approach to installation of new fiber strands between these buildings while meeting current code requirements.

C. Selection Process

CenturyLink will serve as the prime contractor for installation of the proposed fiber and conduit. CenturyLink will sub-contract the fiber install to Team Fishel. Team Fishel was selected because they have provided fiber services to the State Data Center and Capitol Mall with favorable results. Team Fishel is familiar with the existing fiber plant and provides all the services necessary to complete this project.

IV. Project Approach

A. Project Schedule*

Project Start Date: 4/21/2014 **Project End Date:** 5/30/2014

B. Project Milestones

Major Milestones	Start Date	Finish Date
Order Materials	4/21/2014	4/21/2014
Fiber Installation	5/5/2014	5/16/2014
Build Conduit between MH41 and MH427 (MH603 as needed)	5/12/2014	5/16/2014
As-Built Diagrams / Warranty Documents	5/19/2014	5/23/2014
Walk through with EIC Program Manager/Technical Engineer	5/26/2014	5/30/2014

V. Roles and Responsibilities

A. Project Roles and Responsibilities

Agency Director: Brian C. McNeil, ADOA Director
Agency CIO: Aaron V. Sandeen, ADOA Deputy Director, State CIO
Project Sponsor: Gary Hensley, Assistant Director, Chief Networking Officer, ADOA-ASET
Project Manager (PM): Allan Gazza, ADOA-ASET
Technical Engineer: Aaron Freyermuth, AZNet II

B. Project Manager Certification

- Project Management Professional (PMP) Certified
- State of Arizona Certified
- Project Management Certification not required

C. Full-Time Employee (FTE) Project Hours

Total Full-Time Employee Hours	40
Total Full-Time Employee Cost	\$0

VI. Risk Matrix, Areas of Impact, Itemized List, PIJ Financials

VII. Project Approvals

A. Agency CIO Review*

Key Management Information	Yes	No
1. Is this project for a mission-critical application system?	X	
2. Is this project referenced in your agency's Strategic IT Plan?	X	
3. Is this project in compliance with all agency and State standards and policies for network, security, platform, software/application, and/or data/information as defined in http://aset.azdoa.gov/security/policies-standards-and-procedures , and applicable to this project? If NO , explain in detail in the "XI. Additional Information" section below.	X	
4. Will this project transmit, store, or process sensitive, confidential or Personally Identifiable Information (PII) data? If YES , in the "XI. Additional Information" section below, describe what security controls are being put in place to protect the data.		X
5. Is this project in compliance with the Arizona Revised Statutes (A.R.S.) and GRRC rules?	X	
6. Is this project in compliance with the statewide policy regarding the accessibility to equipment and information technology for citizens with disabilities?	X	

B. Project Values*

The following table should be populated with summary information from other sections of the PIJ.

Description	Section	Number or Cost
Assessment Cost (if applicable for Pre-PIJ)	II. PIJ Type - Pre-PIJ Assessment Cost	\$
Total Development Cost	VII. PIJ Financials tab	\$176,796.86
Total Project Cost	VII. PIJ Financials tab	\$176,796.86
FTE Hours	VI. Roles and Responsibilities	40

C. Agency Approvals*

Contact	Printed Name	Signature	Email and Phone
Project Manager:	Allan Gazza		
Agency CIO:	Aaron Sandeen		
Agency Information Security Officer:	Mike Lettman		
Project Sponsor:	Gary Hensley		
Agency Director:	Brian C. McNeil		

VIII. Optional Attachments

A. *Vendor Quotes*

IX. Glossary

X. Additional Information

Links:

[ADOA-ASET Website](#)

[ADOA-ASET Project Investment Justification Information Templates and Contacts](#)

Email Addresses:

[Strategic Oversight](#)

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