



KonText Architects, LLC.

Commercial – Government – Consulting

October 30, 2012

Mr. Ted Crawford
State of Wisconsin Facilities Management
101 East Wilson Street, 7th Floor
Madison, WI

Re: **12G2R.03 – Risser Justice Center Data Cabling**
Department of Administration
Administrative Facilities

Dear Ted,

Attached you will find the programming report for the Risser Justice Center Data Cabling replacement. Within that report you will find specific background on the proposed project, scope of work and opinions of probable costs. This report was completed by Hein Engineering Group. In executive summary of this report with further input on ongoing maintenance of the system, I offer you the following scope of work opportunities:

Cable Replacement Option: Complete replacement of fiber optic cabling with plenum rated copper cabling, including removal of existing fiber optical cabling.

Total Estimated Project Cost (Including fees and contingency): **\$431,200**

Maintain Existing Cabling: Maintain existing cabling and continue to replace media conversion devices as needed. Attached is a material quote for an alternative manufacturer of devices, Transition Networks distributed through GraybaR. The quote establishes several price points depending upon quantity purchased. We understand that these devices are compatible to the existing Cisco architecture. In addition, this manufacturer provides lifetime warranties for their products. The following estimated cost is expressed in a range assuming gross purchase to singular purchase of 1200 items.

Total Estimated Device Replacement Cost (Includes sales tax, no fees): **\$125,000 to \$216,000**

The attached report is based on the information available to date and on site visits. If new information becomes available, KonText Architects, LLC, and Hein Engineering Group, reserve the right to amend this report as necessary. If you have any questions, please feel free to contact us.

Sincerely,

KonText Architects, LLC

Kelly B. Thompson
Kelly B. Thompson AIA, CSI

Principal Architect

Attachments:
Hein Engineering Group Programming Report
GraybaR Device Proposal

October 29, 2012

Kelly B. Thompson AIA, CSI
KonText Architects, LLC
404 Hillcrest Drive
Sun Prairie, WI 53590

Re: **12G2R.03 - Risser Center Recabling Project**
Risser Justice Center - Department of Justice
17 West Main Street - Madison, WI

Kelly:

I offer the following observations, recommendations and probable cost estimates for the proposed recabling project on floors four through eight at the Risser Justice Center, located at 17 West Main Street in Madison. The Risser Justice Center houses the Wisconsin Department of Justice(DOJ) and the DOJ data center. The Risser Justice Center facility was built during 2000-2001 and is approximately 11 years old.

Background

This project reviewed the current fiber optic data cabling from IDF closets(two per floor) to station outlets for floors four through eight at the Justice Center. Each floor consists of approximately 27,500 SF for a total project area of about 137,500 SF encompassing five levels, with the data center located on the fifth floor. The facility data cabling is unique in that the data cabling is completely fiber optic from station to switch in the data center. It is our understanding that this facility and another DOJ facility are the only fully fiber optic cabled buildings in the DOA facility system.

On October 10th, the engineer(Michael Hein) walked through the facility with Terri Kopish and Greg Bietler from the DOJ Bureau of Computing Services to observe the cabling installation and existing conditions.

Project Justification

The project justification for replacing the fiber optic cabling with copper horizontal cabling to the IDF closets are outlined in the three point justification memo(Attachment A) provided by the DOJ Bureau of Computing.

Not included in the project report scope is the renovation of the existing fiber optic switches in the data center and adding copper switches in IDF closets. This work and costs would be handled by the DOJ Bureau of Computing Services.

Existing Conditions

Existing data fiber optic cables are terminated on predominately electrified furniture partitions and private offices/conference rooms terminated with individual wall outlets. Drops for electrified furniture partitions is typically in 1-1/4" dia raceway with flexible raceway connectors to the furniture partition(see Attachment B photo). Cable trays are provided to support cabling back to each IDF closet. Typically each IDF closet is provided with one dedicated floor rack to support three(3) 60-port fiber optic patch panels with fiber optic cables extended to the data center fiber optic switches. Typically observed were about 120 cables used per IDF closet FO patch panels. The floor rack has adequate space for copper patch panels and switches.

All cabling is required to be plenum rated as the ceiling space is used as a return air plenum for the HVAC air handler system.

Existing fiber optic cabling would be required to be removed per NEC 800.25 as abandoned cable due to the fire hazard.

Based on our calculations, the raceway drops for furniture partitions would not be capable of providing adequate space at 40% fill for both copper and existing fiber optic cabling.

Scope of Work - Replacement Option

The recabling project would require about 1200 cable drops of CAT 6 cable from station outlets to the patch panels in each IDF closet. All new CAT 6 cabling would be plenum rated and meeting current DFD

specifications. We estimate three(3) 48-port copper patch panels per IDF closet or thirty(30) total.

The existing raceway drops(1-1/4") and cable trays would support the new copper cabling requirements. New terminations and data plates would be required at each furniture partition station, along with new terminations of new copper cables at IDF closet patch panels prior to testing cables.

The project will require DOJ personnel to temporary surge employees from current workstations to allow replacement of cabling and will also affect DOJ network planning for the surge spaces required during the work. The Installing Contractor and DOJ will be required to work closely with a planned sequencing schedule for the recabling work to flow smoothly.

Replacing the fiber optic cabling on floors 4 through 8 will not impact the rest of the building network cabling, since all cabling terminates at the 5th floor data center, and fiber optic would be continued as a network riser to the copper patch panels on each IDF floor.

Providing additional cable drops or POE wireless access points would be feasible from a rack capacity standpoint, but are not included in the project cost estimate.

This project does not include any fiber optic cabling to the copper patch panels.

It should be noted that legally-required power is currently available for all IDF closet switches. The project includes new surge strips added to the floor rack serving the copper patch panel.

UPS rack-mounted battery back-up power units not included in the project costs.

On October 16th, the engineer meet with Robert Lux, DOA - DFD Tele-communications engineer, to discuss the project and seek out any input from DFD on the proposed project. Robert Lux was the fiber optic design engineer for the original project during the design and construction of the Risser Center and is familiar with the fiber optic architecture in the building.

Robert sketched out the traditional and fiber to station wiring diagrams to assist with understanding the components involved(Attachment C). He also suggested the project would need further discussions to understand the overall project parameters and objectives, along with costs of the project in order to justify the renovation of existing infra-structure, namely fiber to station cabling.

The recabling project for conversion of existing fiber optic to copper from station to IDF closet patch panels is feasible given existing conditions and cabling infrastructure.

Further discussions are recommended between DOJ and DOA-DFD to identify the overall project objectives, costs and savings beyond the proposed recabling project to encompass the data network design, security, equipment requirements and cabling infrastructure, prior to proceeding with this project.

Opinion of Probable Costs - Replacement Option

The estimated project fiber to copper conversion costs were estimated by Faith Technologies on August 30, 2012(\$290,440), but this estimate did not include the fiber optic cable removal costs. Our cost estimates are based on current costs for specified cable, consulting with local qualified electrical contractors for cable labor and cable testing costs.

<i>Budget Items</i>	<i>Costs</i>
Construction	\$ 350,000
Contingency 10%	\$ 35,000
A/E Fees 8%	\$ 30,800
DFD Mgmt 4%	\$ 15,400
Total Project Cost	\$ 431,200

Project Probable Costs Breakdown - Replacement Option

Demolition FO cable	\$ 0.25/ft 1200 cables @ 150 ft/ea	=	\$ 45,000
Demo fiber patch panels	30 @ \$ 150/ea	=	\$ 4,500
Misc		=	\$ 500
	Demo Total	=	\$ 50,000
CAT 6 cable per DFD	\$ 0.65/ft 1200 cables @ 150 ft/ea	=	\$ 117,000
Labor install cables	\$ 100/ea @ 1200 cables	=	\$ 120,000
Data plate and jack	\$ 15/ea @ 1200 cables	=	\$ 18,000
Termination and Testing	\$ 10/ea @ 2400 jacks	=	\$ 24,000
Misc		=	\$ 1,000
	Cabling Total	=	\$ 280,000
Copper patch panels	30 @ \$ 500/ea	=	\$ 15,000
Power strips	10 @ \$ 400/ea	=	\$ 4,000
Misc		=	\$ 1,000
	Patch Panel Total	=	\$ 20,000
	Construction Total	=	\$ 350,000

If you have any questions, please feel free to contact me.

Sincerely,



Michael Hein, PE
HEIN Engineering Group

ENCLOSURES

Attachment A - Typical Furniture Partition Cabling Drop

Attachment B - DOJ Project Justification Memo

Attachment C - Robert Lux Cabling Schematic

ATTACHMENT A



TYPICAL PARTITION CABLING DATA DROP & POWER CONNECTION

ATTACHMENT B

I just need a little bit more justification information for this request. Can you please provide information for the following:

1. Specifically, why the project is needed?

The existing DOJ fiber network switches are end of life and need to be replaced. The industry standard for network infrastructure is copper with a fiber backbone. The price per port for copper switches is much less than fiber, and critical network features such as Power Over Ethernet (POE) and remote management are only available through copper switch ports and/or integrated copper NIC cards. Peripheral network devices such as printers are usually copper and require an additional converter box to interface with the existing DOJ fiber to the desktop infrastructure, fiber network interface cards for desktops have been difficult to source, and fiber patch cables with opti-plug termination are also becoming difficult to source and are much more expensive than comparable copper cables. This project will allow DOJ to replace end of life fiber network switches with industry standard copper switches, will greatly reduce points of failure in our network by making copper to fiber converter boxes unnecessary, will increase throughput from 100Mg to 1Gig, and will allow critical network features not available on fiber .

a. Describe the problems/issues with the existing cable.

Aside from the above cost issues with having to buy additional equipment to interface with the existing fiber cabling, we have found that maintaining and troubleshooting fiber cabling is much more time consuming and expensive than copper and fiber accessories such as NIC's and patch cables with the correct terminations are difficult to get and may not be available in the future. Cat6 copper cabling will provide for faster network operation and will reduce points of failure by removing the additional interface cards and fiber converter boxes.

b. Has the existing condition of the cable negatively impacted DOJ operations?

DOJ needs to procure network interface cards, fiber converter boxes, and power injectors due to the existing fiber cabling per above. Overall maintenance/troubleshooting is much more time consuming and expensive. Remote desktop management, which would save staff time and improve threat response, requires an integrated copper NIC card and is not available on our current fiber infrastructure.

c. How old is the existing fiber network – is it from original construction?

Yes, original construction - 2000.

2. What would be the impact upon DOJ operations if this project were not done or was deferred?

Cost implications described above. The existing floor switches are no longer supported and must be replaced. Copper switches would give us gigabit speeds with existing integrated copper NIC cards. Purchasing new fiber switches would be at least double the cost of new copper switches, but would be limited to 100mb throughput unless all the current fiber desktop NIC cards were also replaced.

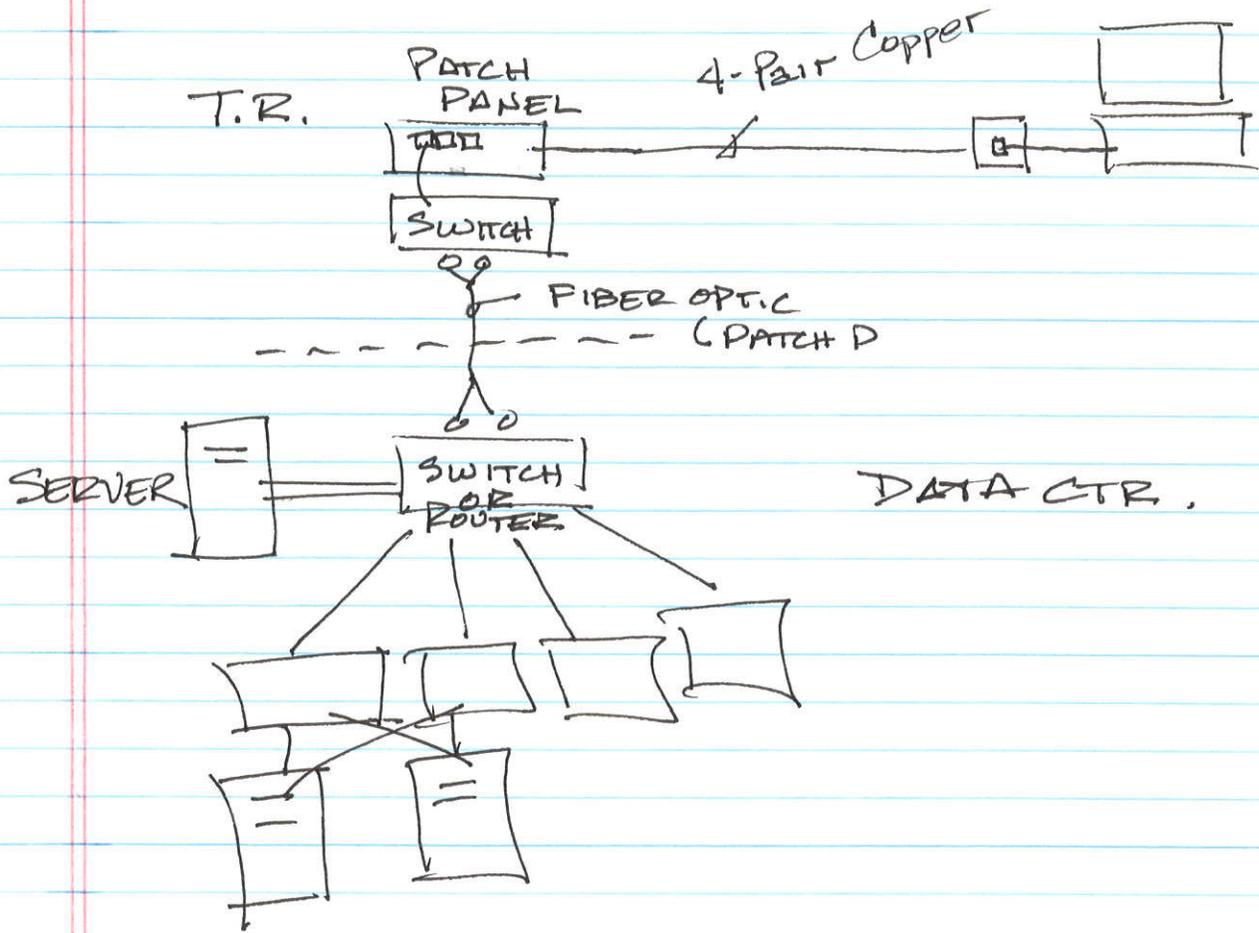
3. Describe why fiber cable is inferior to copper cable.

The industry standard for network infrastructure is copper with a fiber backbone. The price per port for copper switches is much less than fiber, and critical network features such as power over ethernet (POE) and remote desktop management are only available through copper switch ports and/or integrated NIC's. Peripheral network devices such as printers and are usually copper and require an additional converter box to interface with the existing DOJ fiber to the desktop infrastructure, and fiber network interface cards for desktops have been difficult to source. The opti-plug fiber terminations at the desktop are becoming obsolete and patch cords may not be available in the future

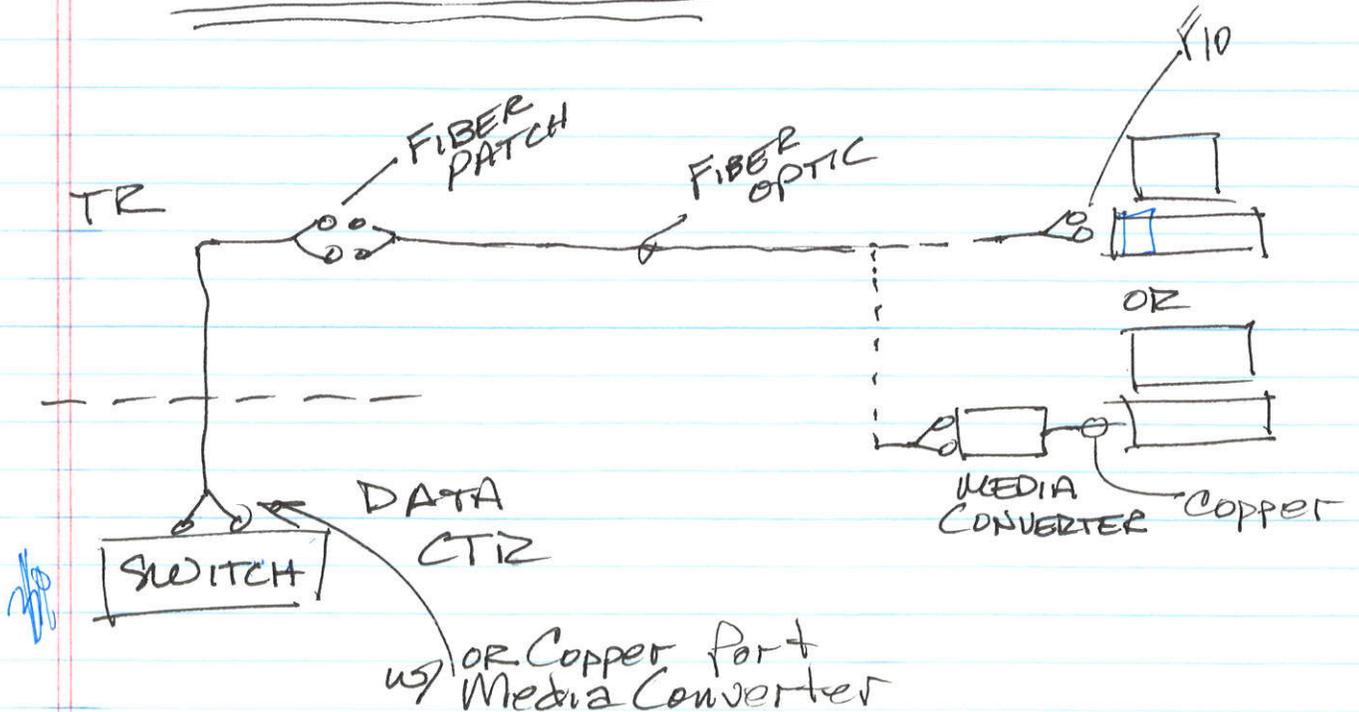
Thanks for your help with this.

ATTACHMENT C

TRADITIONAL



FIBER TO THE DESK





650 S. 108TH ST.
 WEST ALLIS WI 53214-1134
 Phone: 608-443-3818
 Fax: 608-255-3656

To: KONTEXT ARCHITECTS
 404 HILLCREST DRIVE
 SUN PRAIRIE WI 53590
 Attn: KELLY
 Phone:
 Fax:
 Email: bryan.tews@graybar.com

Date: 10/30/2012
Proj Name:
GB Quote #: 216547342
 Valid From: 10/30/2012
 Valid To: 11/29/2012
 Contact: Bryan Tews
 Email: bryan.tews@graybar.com

Proposal

We Appreciate Your Request and Take Pleasure in Responding As Follows

Item	Quantity	Supplier	Catalog Nbr	Description	Price	Unit	Ext.Price
Notes: PRICES BASED OFF OF QUANTITY ORDERED AND GRAYBAR CAN CHANGE PRICING FOR PRODUCT AN ANYTIME.							
100	1 EA	TRANS NTRK	J/FE-CF-04	FAST ENET 100BASETX TO 100BASEFX ST	\$170.75	1	\$170.75
GB Part #: 25163605 UPC #: ***Item Note:*** Price for order of 1-49 pieces.							
200	50 EA	TRANS NTRK	J/FE-CF-04	FAST ENET 100BASETX TO 100BASEFX ST	\$146.84	1	\$7,342.00
GB Part #: 25163605 UPC #: ***Item Note:*** Price for order of 50-99 pieces.							
300	100 EA	TRANS NTRK	J/FE-CF-04	FAST ENET 100BASETX TO 100BASEFX ST	\$121.08	1	\$12,108.00
GB Part #: 25163605 UPC #: ***Item Note:*** Price for order of 100-499 pieces.							
400	500 EA	TRANS NTRK	J/FE-CF-04	FAST ENET 100BASETX TO 100BASEFX ST	\$110.29	1	\$55,145.00
GB Part #: 25163605 UPC #: ***Item Note:*** Price for order of 500-999 pieces.							

This equipment and associated installation charges may be financed for a low monthly payment through Graybar Financial Services (subject to credit approval). For more information call 1-800-241-7408 to speak with a leasing specialist.

To learn more about Graybar, visit our website at www.graybar.com

24-Hour Emergency Phone#: 1-800-GRAYBAR

Subject to the standard terms and conditions set forth in this document. Unless otherwise noted, freight terms are F.O.B. shipping point prepaid and bill. Unless noted the estimated ship date will be determined at the time of order placement.

To: KONTEXT ARCHITECTS
404 HILLCREST DRIVE
SUN PRAIRIE WI 53590
Attn: KELLY

Date: 10/30/2012
Proj Name:
GB Quote #: 216547342

Proposal

We Appreciate Your Request and Take Pleasure in Responding As Follows

Item	Quantity	Supplier	Catalog Nbr	Description	Price	Unit	Ext.Price
500	1,000 EA	TRANS NTWRK	J/FE-CF-04	FAST ENET 100BASETX TO 100BASEFX ST	\$98.10	1	\$98,100.00

GB Part #: 25163605 UPC #:

Item Note: **Price for order of 1000+ pieces.**

This equipment and associated installation charges may be financed for a low monthly payment through Graybar Financial Services (subject to credit approval). For more information call 1-800-241-7408 to speak with a leasing specialist.

To learn more about Graybar, visit our website at www.graybar.com

24-Hour Emergency Phone#: 1-800-GRAYBAR

Subject to the standard terms and conditions set forth in this document. Unless otherwise noted, freight terms are F.O.B. shipping point prepaid and bill.
Unless noted the estimated ship date will be determined at the time of order placement.