

DEPARTMENTAL INPUT CONTRACT/PROJECT MEASURE ANALYSIS AND RECOMMENDATION

Rev 1

New contract
 OTR
 CO
 SS
 BW
 Emergency
 Previous Contract/Project No.

Re-Bid
 Other (Access)
 LIVING WAGE APPLIES: YES NO

Requisition/Project No: RQET1600047 TERM OF CONTRACT: 5 year with 2 two-year options-to-renew

Requisition/Project Title:- Dark Fiber Infrastructure Implementation for MDT

Description: Dark Fiber Master Agreement, Maintenance and Support Services

User Department(s): DTPW

Issuing Department: ITD Contact Person: Mirta Lopez Cardosa Phone: 305-596-8690

Estimated Cost: \$24,346,814 Funding Source: Mixed Funding REVENUE GENERATING: No

ANALYSIS

Commodity/Service No: <u> 725-23 </u>	SIC: _____
Trade/Commodity/Service Opportunities	
Contract/Project History of Previous Purchases For Previous Three (3) Years Check Here <u> x </u> if this is a New Contract/Purchase with no Previous History	
EXISTING	2ND YEAR
3RD YEAR	
Contractor:	
Small Business Enterprise:	
Contract Value:	
Comments:	
Continued on another page (s): <u> </u> Yes <u> </u> No	

RECOMMENDATIONS

SBE	Set-Aside	Sub-Contractor Goal	Bid Preference	Selection Factor
		%		
		%		
		%		
		%		

Basis of Recommendation:

Signed: Tiandra Wright Date to SBD: 12/14/2016

Date Returned to PM: _____

2.0 SCOPE OF SERVICES

2.1 Background

Miami-Dade is the largest county in the State of Florida and operates through the Department of Transportation and Public Works (DTPW) an Advanced Traffic Management System (ATMS) that controls approximately 2,760 traffic signals. The County is transforming to a Smart County with a focus on transportation and creating a system that offers multiple mobility options, leverages existing infrastructure, and integrates technology at the highest levels. The goal is to provide mobility solutions creating an intelligent and sensor-based infrastructure that is able to connect with vehicles and provide drivers far-reaching awareness of potential hazards and crash situations. In addition, create a wireless exchange of data among vehicles traveling in the same vicinity offering opportunities for significant safety improvements. The goal is for each vehicle on the roadways to eventually be able to communicate with other vehicles, and create an infrastructure, to improve safety and maximize efficiency of facilities.

2.2 Objectives

The Dark Fiber solicited as part of this RFP will facilitate the following Enhancements:

1. Active Arterial Management using video cameras installed on corridors to view traffic, analyze it, and make informed real-time signal timing changes and leverage traffic analytic services using Bluetooth technology and wireless devices at the controller cabinet to enable real-time congestion mapping.
2. Intelligent Traffic Controllers. An end-to-end solution that includes central software, controller hardware, and vehicle detectors that manage traffic flow efficiently in real-time. With Adaptive Signal Control, where signal timing is changed based on actual traffic demand and adapts to changes of the traffic flow in real-time. Vehicle detectors installed at all sides of a traffic intersection provide accurate traffic information by lane to let the controller know the actual traffic demand of the roadway, so that the controller can make the correct decisions and direct the signals what they should do next. Adaptive Signal Control facilitates vehicle progression and reduce wait times, improving fuel efficiency and reducing greenhouse gas emissions.
3. Detection Systems. Innovative traffic detection system that utilize video feeds from any cameras available and provides analytics such as traffic counts, speeds and density. This emerging technology will allow for a larger deployment of traffic counters with a minimal impact to the infrastructure.

The County is seeking proposals for dark fiber purchase agreement and maintenance services. The objective is to meet and/or exceed telecommunications data service requirements to manage Intelligent Transportation Systems (ITS) devices (intelligent traffic controllers, congestion detectors and integrated camera feeds), automated incident detection and assisting with event management. The County is soliciting all necessary services to deliver a cable system encompassing dark fiber-optic cable in the each of the 12 corridors identified in Section 2.2 County Congestion Management Plan Corridors Phase 1. Contractor services will include design, engineering, splicing and termination, cabling, installation, inspection, construction, restoration, permitting, Maintenance of Traffic (MOT), material procurement, and project management within 12-month period. In addition, the County will include an option to implement County Congestion Management Plan Corridors Phase 2 at its discretion. The County desires single-mode fiber optic cable installed throughout the corridors that follows geometrical, optical, transmission and mechanical parameters described under the ITU-T Recommendation G.650/G.652D. Additionally, the FOC attributes shall be retained amid cabling, installation and maintenance.

County
Congestion

Corridor	A Cross Street	Z Cross Street	Included Number of Traffic Controller Cabinet Terminations	Number of Customer Fibers	Total Route Miles
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Management Plan Corridors Phase 1
Exhibit 1 Twelve (12) Corridors

Corridor	A Cross Street	Z Cross Street	Included Number of Traffic Controller Cabinet Terminations	Number of Customer Fibers	Total Route Miles	MDC Facility Tie-In
Miami Gardens Dr	SR-821(Florida Turnpike Ext)	W Dixie Highway	33	4	18.40	North Dade Government Center
163 rd / 167 th Street	US-1	NW 2 Ave	14	4	11.74	North Dade Government Center
Miami Beach	Indian Creek Drive 81 St	63 St	12	4	5.46	North Dade Government Center
NW 36 th Street	Le Jeune Rd (NW 42 Ave)	SR-821 (Florida Turnpike Ext)	26	4	20.28	TSS
Flagler Street	W 27 Ave	W 118 Ave	29	4	15.78	WASD
SW 8 th Street	Brickell Ave (US-1)	SW 177 th Ave (Krome Ave)	53	4	29.25	SPCC
Le Jeune Rd	US-1	Okeechobee Rd	23	4	13.52	WASD
Unity Blvd	SR-821 (Florida Turnpike Ext)	US-1	53	4	46.48	MLK
North Biscayne Blvd	NE 213 St	NE 3 rd St	70	4	19.45	North Dade Government Center
US 1 North Sector	SE 5th St	SW 98th St	39	4	13.03	WASD
US 1 South Sector	SW 104th St	SW 344th St (Palm Dr)	44	4	23.85	South Dade Government Center
SW 88 th (Kendall Drive)	US-1	Krome Ave	36	4	13.50	DPCC
Total			432		230.74	

County Congestion Management Plan Corridors Phase 2 Option
Thirty-Three (33) Corridors

McArthur Causeway/5 St – US -1 to Ocean Dr	McArthur Causeway/5 St – US -1	Ocean Dr	11	4	4.22
Bird Rd (SW 40 St)/SW 42 St – SW 157 Ave to US-1	Bird Rd (SW 40 St)/SW 42 St – SW 157 Ave	US-1	45	4	22.75
SW/NW 8 Ave – SW 8 St to NW 5 St	SW/NW 8 Ave – SW 8 St	to NW 5 St	7	4	3.50
NW 7 Ave – NW 5 St to NW 159 St	NW 7 Ave – NW 5 St	NW 159 St	37	4	20.61
Red Rd (NW 57 Ave) – Okeechobee Rd to NW 202 St	Red Rd (NW 57 Ave) – Okeechobee Rd	NW 202 St	35	4	16.76
Red Rd (SW/NW 57 Ave) – US-1 to Perimeter Rd	Red Rd (SW/NW 57 Ave) – US-1	Perimeter Rd	17	4	11.62
SW 137 Ave – US-1 to SW 8 St	SW 137 Ave – US-1	SW 8 St	29	4	30.95
SW/NW 107 Ave – SW 104 St to NW 36 St	SW/NW 107 Ave – SW 104 St	NW 36 St	31	4	14.76
Sunset Dr (SW 72 St) – SW 157 Ave to US-1	Sunset Dr (SW 72 St) – SW 157 Ave	US-1	23	4	41.27
NW 54 St (Hialeah Dr) – Okeechobee Rd to Biscayne Blvd	NW 54 St (Hialeah Dr) – Okeechobee Rd	Biscayne Blvd	22	4	11.49
SW 112 Ave (S Allapattah Rd) – SR-821 (Florida Turnpike Ext) to US-1	SW 112 Ave (S Allapattah Rd) – SR-821 (Florida Turnpike Ext)	US-1	9	4	5.32
SW/NW 87 Ave – US-1 to NW 58 St	SW/NW 87 Ave – US-1	NW 58 St	30	4	23.50
NW/NE 125/123 St – SR-7 (NW 7 Ave) to N Bayshore Drive	NW/NE 125/123 St – SR-7 (NW 7 Ave)	N Bayshore Drive	17	4	9.63
NW/NE 103 St – Okeechobee Rd to NE 6 Ave	NW/NE 103 St – Okeechobee Rd	NE 6 Ave	38	4	19.56
Okeechobee Rd – N Krome Ave to NW 95 St	Okeechobee Rd – N Krome Ave	NW 95 St	14	4	13.29
Okeechobee Rd – NW 95 St to Le Jeune Rd (NW 42 Ave)	Okeechobee Rd – NW 95 St	Le Jeune Rd (NW 42 Ave)	11	4	18.04
SW 11 St – SW 107 Ave to E Campus Circle inside FIU Campus, continue around E Campus Circle until back to SW 11 St	SW 11 St – SW 107 Ave	E Campus Circle inside FIU Campus, continue around E Campus Circle until	2	4	3.39
NW 12 St – NW 127 Ave to NW 87 Ave	NW 12 St – NW 127 Ave	NW 87 Ave	12	4	7.93
NW 25 St – SR-821 (Florida Turnpike Ext) to NW 72 Ave	NW 25 St – SR-821 (Florida Turnpike Ext)	NW 72 Ave	11	4	4.43
SW/NW 97 Ave – Coral Way to NW 41 St	SW/NW 97 Ave – Coral Way	NW 41 St	11	4	14.45
SW 117 Ave – Coral Way to US-41 (SW 8 St)	SW 117 Ave – Coral Way	US-41 (SW 8 St)	3	4	5.46
Quail Roost Dr - Krome Ave to US-1	Quail Roost Dr - Krome Ave	US-1	14	4	10.97
SW 152 Ave/Campbell Dr/NE 10 Ct - E Palm Dr to US-1	SW 152 Ave/Campbell Dr/NE 10 Ct - E Palm Dr	US-1	6	4	12.36
SW 157 Ave – SW 184 St to US-41 (SW 8 St)	SW 157 Ave – SW 184 St	US-41 (SW 8 St)	15	4	14.30
SW 152 St - US-1 to Krome Ave	SW 152 St - US-1	Krome Ave	17	4	9.70
SW 104 St - US-1 to SW 157 Ave	SW 104 St - US-1	SW 157 Ave	20	4	12.45
SW 56 St - Red Rd (SW 57 Ave) to SW 157 Ave	SW 56 St - Red Rd (SW 57 Ave)	SW 157 Ave	23	4	16.16
Coral Way/SW 3 Ave - US-1 to SR-821 (Florida Turnpike Ext)	Coral Way/SW 3 Ave - US-1	SR-821 (Florida Turnpike Ext)	52	4	14.79
Le Jeune Rd (E 8 Ave) -	Le Jeune Rd (E 8 Ave) -	Opa Locka	19	4	13.07

Okeechobee Rd to Opa Locka Blvd (NW 135 St)	Okeechobee Rd	Blvd (NW 135 St)			
Biscayne Blvd/NE 6 Ave – NE 79 St to 183 St	Biscayne Blvd/NE 6 Ave – NE 79 St	NE 183 St	18	4	12.11
NE/NW 79 St/E 25 St/E 4 Ave/E 21 St (Hialeah Expressway)/NW 74 St - US-1 to SR-821 (Florida Turnpike Ext)	NE/NW 79 St/E 25 St/E 4 Ave/E 21 St (Hialeah Expressway)/NW 74 St - US-1	SR-821 (Florida Turnpike Ext)	41	4	22.24
SR-916 Opa Locka Blvd/NE 135 St/NW 135 St/W 84 St/Gratigny Parkway - Biscayne Blvd to SR-826 (Palmetto Expressway)	SR-916 Opa Locka Blvd/NE 135 St/NW 135 St/W 84 St/Gratigny Parkway - Biscayne Blvd	SR-826 (Palmetto Expressway)	35	4	15.58
S Miami-Dade Busway - Dadeland Blvd/SW 72 Ct to W Palm Dr	S Miami-Dade Busway - Dadeland Blvd/SW 72 Ct	W Palm Dr	44	4	23.86
Total			719		480.52

of the Miami-Dade County (MDC) Facilities where Proposer can tie-in to the fiber network are as follows:

1. North Dade Justice Center – 15555 Biscayne Boulevard, N. Miami Beach, FL 33160
2. Miami-Dade County Traffic Signals & Signs Division – 7100 NW 36 Street, Miami, FL 33166
3. Miami-Dade County Water & Sewer Department – 3071 SW 38th Ave, Miami, FL 33146
4. Stephen P. Clark Government Center – 111 NW 1 Street, Miami, FL 33128
5. Martin Luther King Office – 2525 NW 62nd Street, Miami, FL 33147
6. South Dade Government Center – 10710 SW 211th Street, Miami, FL 33189
7. Miami-Dade County Information Technology Department – 5680 SW 87 Avenue, Miami, FL 33173

2.3 Tasks

Contractor will facilitate strands of dark fiber along the corridors as set forth in Exhibit 1 Twelve (12) Corridors, and shall construct a fiber system. The County's Cable System will consist of four (4) fibers that terminate at County's traffic controller cabinets located at each street intersection, containing a fiber distribution panel. If County in its sole discretion determines it does not wish to install a traffic controller cabinet at a particular intersection, the cost thereof shall be applied to the construction of a fiber system connecting the County fibers to a traffic controller cabinet at any other street intersection within a corridor.

Notwithstanding anything to the contrary herein, the County's Cable System shall also include those fibers installed by Contractor to connect each corridor to an optical node, and the Purchase Price shall include Contractor's costs to construct up to one-quarter (1/4) route mile of such fibers per corridor. County shall have the right to use only the fibers within the Cable designated as the County's Cable System.

The following performance requirements need to be tested upon completion of installation and splicing of fiber optic cables to ensure signal quality.

2.3.1 SPLICE TESTING

Contractor requires bi-directional OTDR (Optical Time Domain Reflectometer) testing of individual splices. To ensure acceptable splices prior to closing and sealing the splice case, Contractor uses the OTDR to monitor all splicing activity as it is performed. Splice cases are sealed immediately after testing. This test is:

2.3.1.1 Mass Fusion OTDR Splice Test

Every fiber at each mass fusion splice point will be tested bi-directionally at 1550nm with an OTDR capable of long range and high resolution testing. The maximum allowable individual splice loss is .35 dB bi-directionally averaged, and the fiber will be re-spliced up to 2 times, if the splice still exceeds .35 dB.

However, if the average bi-directional splice loss of all splices across the entire tested span is .2 dB or less, then the individual splice loss of .35 dB or greater will be acceptable.

2.3.1.2 Single Fusion OTDR Splice Test

Every fiber at each single fusion splice point will be tested bi-directionally at 1550nm with an OTDR capable of long range and high resolution testing. The average splice loss of all individual splices, where a mass fusion splice machine is not used, in a span cannot exceed the Contractor NT loss standards of 0.15 dB bi-directionally averaged. Individual splice losses are the average of the OTDR splice loss measurements made in both directions.

2.3.2 FIBER OPTIC CABLE TESTING

2.3.2.1 Contractor performs various tests on spliced and terminated fiber optic cable spans to ensure fiber optic cables are working according to cable manufacturers specifications, including-one end-to-end power test in both directions at the 1550nm wavelength on terminated fiber and one end-to-end OTDR test for each fiber in both directions at the 1550nm wavelength on all fiber ends.

2.3.2.2 Mass Fusion OTDR Splice Test

Every fiber in a segment span will be tested bi-directionally at 1550nm with an OTDR capable of long range and high resolution testing. The maximum allowable individual splice loss is .35 dB bi-directionally averaged, and the fiber will be re-spliced up to 2 times, if the splice still exceeds .35 dB. However, if the average bi-directional splice loss of all splices across the entire tested span is .2 dB or less, then the individual splice loss of .35 dB or greater will be acceptable.

2.3.2.3 Single Fusion OTDR Splice Test

Every fiber in a segment span will be tested bi-directionally at 1550nm with an OTDR capable of long range and high resolution testing. The average splice loss of all individual splices, where a mass fusion splice machine is not used, in a span cannot exceed the loss standards of 0.15 dB bi-directionally averaged. Individual splice losses are the average of the OTDR splice loss measurements made in both directions.

2.3.2.4 End-to-End Test

Every fiber of each terminated span is tested in both directions from end-to-end using a 1550nm stabilized light source and power meter. The total loss of any span shall not exceed the maximum loss per span as calculated below.

$[Two (2) \text{ connector} \times .60] + [(#) \text{ of splices} \times 2 \text{ dB}] + [\text{specified cable loss per km} \times \text{length of cable in km}] =$
maximum acceptable loss

2.3.2.5 Bi-directional OTDR Span Test

A signature trace of each fiber will be taken in each direction at 1550nm with an OTDR capable of long range and high resolution testing.

2.4 Training

The Contractor shall provide training plan that includes direct training of approximately ten (10) Network Engineers.

The Contractor's training program shall include formal and informal instruction, models, manuals, and diagrams. All materials used in the programs, such as models, manuals, mockups, and drawings, shall be of durable construction and shall become the property of the County. Training materials shall be updated as required during the course of instruction to conform to the latest version of hardware installed in the County's Cable System.

The Contractor's shall provide all relevant training materials in original, unprotected software and video file formats, such as AutoCad, Flash, DIVX, Word, Visio and/or Excel, to allow County to easily create manuals and training materials for targeted audiences. The selected Proposer shall provide training syllabus, schedules, and manuals for the training program.

2.5 Maintenance and Support Services

County requires Maintenance and Support Services from Contractor for the County's Cable System, which shall be purchased on a Corridor by Corridor basis. Maintenance and Support Services shall include:

- A. Routine maintenance, emergency restoration, Sunshine State One Call of Florida (SSOCOF) design and/or operational locate services, tie-in services, and County's access rights to County's Cable System, and relocation and condemnation policies.
- B. Contractor shall notify the County in advance of planned or intrusive activities on County's Cable System that may impair or eliminate signal continuity. Intrusive cable activities are those which will require Contractor to directly handle a County's fiber, ribbon or buffer tube and are typically scheduled during the "off-peak" hours (typically 6 PM to 6 AM local time). Contractor shall use commercially reasonable efforts to perform intrusive activities outside of off-peak hours, but reserves the right to perform intrusive activities at any time with seventy two (72) hours prior notice. Emergency repairs are not subject to the seventy two (72) hour notification requirement. Non-intrusive cable activities and all other maintenance measures, which do not physically expose a County's buffer tube, ribbon, or fiber, may be performed during regular business hours.
- C. Contractor shall maintain a twenty four (24) hour Network Operations Center ("NOC") to service requests made under this Agreement. When County has a service request that falls under the scope of this Agreement, it will call the NOC via a toll-free number to be provided to County. The NOC will open a service ticket for the work to be performed. The NOC will track the service ticket until the service request has been satisfactorily completed.
- D. Contractor uses advanced fiber testing systems, which continuously monitor and analyze the performance of the County's Cable System in an itemized, point-by-point, process and performs Optical Time Domain Reflectometer (OTDR) on inactive Contractor maintenance fibers to ensure that microbends are not being introduced into the County's Cable System. OTDR readings are used to find potential problems, such as pinched or twisted fiber, tight coils, tight overlash, or rubbing cable. Contractor uses an OTDR capable of reading a .05dB loss level and documents all test results. This reading is dependent upon the OTDR average time, pulse width, and span strength.

2.6 County's Cable System Maintenance

The selected Proposer shall be responsible for the following in association with the County's Cable System Maintenance:

- A. The Contractor shall perform routine maintenance on the County's Cable System. Routine maintenance shall include but not limited to inspections of the County's Cable System, maintenance on the general construction of the County's Cable System, changes to the manholes to the County's Cable System and general upkeep of the County's Cable System. Further Contractor makes commercially reasonable efforts to maintain marker posts along the Shared Cable System path which identify the Corridor and are typically placed near splice locations, points where the route changes direction, and typically within 1,000 feet of the previous marker or where applicable.
- B. The Contractor shall subscribe to local utility locate services for the County's Cable System. Contractor responds to local, state, or federal authorities for compliance or cooperation with utility locate services. Upon notification, Contractor will use commercially reasonable efforts to coordinate the marking of County's Cable System for utility development, general construction, and landscaping in the area and will coordinate and execute routine and emergency locates.
- C. Upon notification by County that County's Cable System is damaged, impaired, or not functioning, Contractor will make commercially reasonable efforts to respond to requests for emergency restoration within two (2) hours. Contractor will make commercially reasonable efforts to ensure that specific preparations are made to maintain the readiness and accessibility of the personnel, materials, and equipment required for response to emergency restoration conditions.
- D. Contractor will be responsible for all temporary and permanent repairs to County's Cable System.
- E. Contractor will coordinate all aspects of both temporary and permanent restoration activities.
- F. Contractor will maintain contracts to have the appropriate personnel, material, and equipment on call to perform emergency restoration/repair.
- G. Contractor will provide emergency escalation lists upon acceptance of the County's Cable System.

- H. Contractor personnel will take the lead in coordinating all aspects of both temporary and permanent restoration activities, and shall have the right to determine, in its sole discretion, the solution and means of implementation which is in the best interest of all parties.
- I. When a temporary cable is used for repair, Contractor will make commercially reasonable effort to restore all "assigned" fibers as a priority. All activities will be coordinated by Contractor to ensure that all parties have the safest and most efficient repair.

2.7 Schedule

County Congestion Management Plan Corridors Phase 1 shall be complete no later than one (1) year post Notice to Proceed.