The School Board of Miami-Dade County, Florida
Bid # 009-PP04
Wiring, Telecommunication (Furnish and Install, Voice and Data)
SPECIFICATIONS

1.0 GENERAL

1.1 This bid is intended to solicit bids from wiring contractor(s) to furnish materials and labor to install wiring for voice and data systems and to provide underground conduit and raceway in schools and other buildings for Miami-Dade County Public Schools (M-DCPS). The wiring includes copper wires and cables of various sizes and optic fiber cable of various sizes. Installation may be underground or above ground and may or may not be in conduit.

1.2 This bid shall establish a contract at firm unit prices for the purchase of estimated requirements for the items listed in the Bid Proposal Form. All prices shall be firm during the first 180 days of the contract. At the end of the initial contract period, prices may be increased or decreased (increases cannot exceed the percentage increase stated in the price refresh).

1.3 The low bidder will be the Primary Vendor for the initial 180 day period. Up to fifteen (15) bidders, providing the lowest cost may be awarded a contract for wiring. Evaluation's of low bidder(s) for subsequent price refreshes will be solely based on line item pricing indicated on the price refresh form.

1.4 Bidders shall have an established business in Miami-Dade or Broward County with office and staff capable of performing all functions of this bid. Bidder or principal personnel shall have a minimum of seven years experience in installing telecommunications wiring systems using copper and fiber optic cable, involving several hundred telephones or more, and/or four hundred personal computers or more in a local area network. Bidders shall provide proof of their experience in their bid by submitting a work history showing current projects and projects completed within the past seven years, with dates, clients name and address and phone number, number of telephones and number of computers in that client's project(s). Bids that do not include such proof shall be considered non-responsive.

1.5 Bidders shall have a full time employee licensed by the State of Florida as a Specialty Electrical Contractor, for the term of the bid.

1.6 Bidders shall have an agreement with the manufacturer of the cabling hardware that indicates the wiring bidder is a certified installer of the hardware being offered and both the manufacturer and the bidder are jointly responsible for the warranty agreement (proof shall be included in the bid). Bids that do not include a copy of the extended warranty agreement will not be considered. This requirement shall also apply to bidders who function as both manufacturer and installer of the cable systems. Bidders that bid wire and/or cable of one manufacturer and connection hardware such as jacks, panels and cross connects of another manufacturer shall include in their bid a letter from the hardware manufacturer that states that in the event the bidder ceases to be in business during the warranty period, that the hardware manufacturer will perform all required actions to meet the warranty requirements.

1.7 It is the intent of M-DCPS to select up to fifteen (15) contractors to participate in this bid. As the need arises, the awarded vendors will be requested to submit quotations for any single job exceeding the quotation threshold as established by Miami-Dade County Public Schools' Board Policy 6320, BIDDING PROCESS --COMPETITIVE BIDDING REQUIREMENTS, or any amendment thereof. Quotations will be evaluated and the lowest responsive and responsible bidder awarded the specific job. Vendor may provided lower Hourly Labor Rates but may not increase rate provided on bid submission and may provide higher discounts off list, but not lower, than those provided on the bid submission. Single jobs under the quotation threshold, will be awarded to the low vendor of award for this contract. If the vendor is unable to complete by the timeline in the scope of work or per the purchase order, due to current volume of assigned work, the District reserves the right to rotate among the other vendors of award. Each vendor will be utilized as determined by M-DCPS. M-DCPS estimates the value of this contract at approximately seven (7) million dollars.

1.8 In order to assist bidders in understanding the wiring and conduit arrangements used by MDCPS, see the Master Specifications, Divisions 13 and 16. The following link is provided for downloading documents: http://facilities.dadeschools.net/default.aspx?id=masterspecs. The notes are intended to show M-DCPS standards and are based on Electronic Industries Association/Telecommunications Industries Associates (EIA/TIA) standards 568 and 569 and field experience. The notes were originally developed to assist architects and engineers who had little or no experience with telecommunications wiring. Each installation must be designed based on the concepts in these notes. Each installation must be coordinated with ITS, Infrastructure and Systems Support (ISS) project managers. Suggestions to improve these concepts and to reduce costs are solicited.

1.9 Normally in new construction, the conduit with pull-strings and backboards for voice and data will be installed by electrical subcontractor(s) to the general contractor. The wiring contractor(s) shall carefully inspect the conduit work for adequacy and inform the ITS, ISS project manager of any needed changes. In the event that conduit and backboards are required but have not been supplied by the general contractor or electrical sub-contractor, the wiring contractor shall be responsible for installing conduit and backboards in addition to the wiring. In existing buildings, the wiring contractor shall be responsible for installing needed conduit and backboards in addition to the wiring.

1.10 The contractors that will install the various systems equipment will inspect the wiring and report any required changes to the ITS, ISS project manager. The wiring contractor, the equipment contractor, ISS project manager and construction project manager shall cooperate with each other to resolve any problem involving wiring.

1.11 It is recognized that schools may have different architectures and may require different quantities of material. Bidders shall submit price sheets giving unit costs for material and associated installation labor. After award of contract, the contractor shall provide a detailed list of materials and labor for each project. The

wiring contractor shall provide timeframes, riser diagrams, line items, fiber and copper cable specifications and scope of work, which shall be reviewed and approved by ITS, ISS. No work shall be started before approval by ITS Network Expansion Services.

1.12 EXAMINATION OF SPECIFICATIONS: Each bidder is required to examine carefully the specifications and to be informed as thoroughly as possible regarding any and all conditions and requirements that may affect the work to be performed.

1.13 Scheduling of visits to the various schools shall be coordinated by ITS, ISS in order to insure adequate access for the visitors and to minimize disruptions at the schools.

1.14 BID SUBMISSION: Bidders must submit one original and seven hard copies of their bid. Additionally bidder must submit eight electronic copies of their bid and supporting documentation on jump drive or cd.

1.15 NEW SCHOOL CONSTRUCTION: Any site plans for new schools under construction or in design will be available for viewing at the ISS Annex, 2740 N.W. 104 Ct., Miami, Florida 33172, David LaBrie, 305-995-3361. Plans for older schools will be made available from various sources at the time the decision is made to install new wiring at that particular school. No additional allowances shall be made because of lack of knowledge of site conditions unless they are the result of additions or changes requested by M-DCPS's representatives. Awardees, should advise during site walk-through of any conditions or specification issues would impeded the ability to successfully complete the required work.

1.16 CONTRACTOR'S RESPONSIBILITY AND QUALIFICATIONS

2.0 The Contractor shall have in operation a business adequate for and devoted to the installation of Telecommunications wiring systems involving copper wires and fiber optic cable and associated hardware. The intent of this Section is to ensure single source responsibility for all material, and labor proposed by the Contractor.

2.1.1 The Contractor shall manage the installation program, provide transportation, storage of material, testing and installation of all material on an engineer, furnish and install basis. The entire system shall be on a turnkey basis. Various locations are not able to guarantee a secure storage area for the contractors' material, tools, and supplies. Therefore, the contractor shall be responsible for on-site security of his/her material, tools, and supplies until final acceptance.

2.1.2 It is important for M-DCPS to receive timely responses to request for quotations (RFQ). The following is the deadline for timely submission:

AMOUNT OF RFQ	DEADLINE
$5,999.99 or less	2 working days
$6,000.00 to $24,999.99	5 working days
$25,000.00 or greater	10 working days

2.1.3 As a courtesy, ITS, ISS may E-mail a Request for Quotation (RFQ) to the selected contractors; however, it is the responsibility of the contractors to contact ITS, ISS for outstanding RFQ's.

2.1.4 In the event of an emergency, as determined by the Executive Officer of ITS, the bidder that submitted the lowest bid shall be given the first opportunity to respond for the emergency work. If the lowest bidder is unable to respond within an acceptable time period, the work shall be offered to the other contractors. Should none of the contractors selected through this bid be able to respond adequately to the emergency, the work may be done by any other resource that can respond in a timely manner.

2.1.5 PRICES AND PAYMENTS

2.2 All bid prices shall be F.O.B. destination, delivered, and installed at the site intended in Miami-Dade County, Florida, per specifications.

2.2.1 M-DCPS policy allows payment only for goods and services received, therefore, no advance payment can be made for goods not received. MDCPS also reserves the right to provide material.

2.2.2 The following shall be the payment terms on a per location basis.

Partial payment may be made on materials delivered to the intended site. The material received on site must be verified by the ISS project manager. The contractor assumes all responsibility for all materials delivered to the intended site. Total partial payment may not exceed 80% of the total quoted price for the materials, excluding labor. The remaining balance will be paid upon completion, inspection and final acceptance by the ITS Network Expansion Services project manager.

MDCPS will not pay for travel time. Work found to be deficient will be corrected by the vendor at the vendor’s expense prior to any payment being made. The vendor will not be compensated for waste and/or surplus materials. The vendor shall not be paid

for any services which have not been authorized by the MDCPS authorized representative and not accompanied by an MDCPS purchase order.

2.2.3 The contractor may not assign their rights under this contract without prior written approval of M-DCPS. However, no assignment of any contract rights shall relieve the Contractor of any of their obligation under this contract, including, but not limited to their obligation to meet the Bid specifications for labor, material, warranty repair, and replacement of the wiring as required. The Contractor may not assign or transfer their performance obligations under this contract to any other person.

2.2.4 In the event that the obligations and assets of the Contractor are merged or assumed by some other legal entity, the Contractor agrees to provide written notice to M-DCPS or its designee, and M-DCPS shall be given the right to allow the contract to continue under the new ownership or to terminate the contract without penalty. Such election shall be made at the sole discretion of M-DCPS.

2.2.5 INVOICE AND PAYMENT: Vendor shall invoice based on the actual labor hours expended and materials utilized. MDCPS does not pay for travel time. Invoices for Additional Services shall be sent to the M-DCPS, Contract Financial Services (CFS).

The invoice document shall contain the following information:

a. District's purchase order number
b. M-DCPS work order control number
c. Description of work
d. Start date and completion date
e. Work location number and name, incident number, where services were rendered
f. Purchase order line item number MUST match bid line item number and description of materials utilized, quantities and unit prices
g. Any E-Rate invoices MUST include FRN number, Application number, SPIN number and BEN number.

A clean and clearly legible copy of service tickets (AMC) and/or certificates of acceptance shall accompany the invoice. The document(s) shall indicate the technician's name (printed), dates and times services were provided. Service tickets SHALL include the printed and signed name of the work location staff. Certificates of acceptance SHALL include the printed and signed name of the ISS Project Manager.

Invoices could be e-mailed to cfs@dadeschools.net in lieu of US Mail. M-DCPS is tax exempt and therefore does not pay taxes.

Invoices not submitted in accordance with the procedures and requirements defined herein will not be processed for payment and will be returned to the vendor.

2.3 CONTRACT AWARD

It is the intention of M-DCPS to award the contract up to fifteen (15) lowest responsible responsive bidders submitting a bid meeting the specifications.

2.3.1 The School Board of Miami-Dade County reserves the right, before awarding the contract, to require bidders to submit such evidence of their qualifications as it may deem necessary, and may consider any evidence available to it of the financial, technical and other qualifications and abilities of the bidder, including past performance (experience) with other customers of the bidder in making the award in the best interest of the School Board of Miami-Dade County.

2.3.2 Due to statutory budgetary requirements, M-DCPS reserves the right to cancel the Contract at the end of each fiscal year or the end of each year of the contract period. No guarantee is expressed or implied, as to the quantities that will be used during the contract period.

2.4 DOUBT OR DIFFERENCE OF OPINION

Resolution of any doubt or difference of opinion as to the items to be furnished hereunder, the quality of the items, the quality of workmanship, the detail of information in the as-built plant-in-place documents and any other item related to a contract award as a result of this BID shall be handled through the following procedure:

FIRST STEP

BOARD	CONTRACTOR
M-DCPS Project Manager	Vendor Project Manager

SECOND STEP

Supervisor	Equivalent Management
ITS Network Expansion Services	Level

THIRD STEP

Executive Officer	Equivalent Management
Information Technology	Level

Services

FOURTH STEP

Chief Financial Officer or designee	Equivalent Management
Financial Affairs	Level

FIFTH STEP

The School Board of Miami-Dade County	Petition to the Board

2.5 VERIFICATION OF VENDOR FACILITES AND/OR REFERENCES

M-DCPS may, at option, visit the operational facilities of the bidder for the purpose of evaluating the capabilities of the bidder. The bidder shall, at the request of M-DCPS, supply the location where a typical installation of the proposed wiring systems is available for evaluation. It is required that the location be in Miami-Dade or Broward counties.

2.6 WARRANTY

All wiring materials purchased or provided shall be guaranteed by the Contractor against mechanical and electrical defects for a minimum period of twenty five (25) years. Manufacturer's warranties in excess of twenty (25) years shall be provided to M-DCPS at no additional cost. In the event, defects become evident within the fifteen-year warranty period after date of acceptance, the Contractor shall furnish all replacement parts, materials and labor at no cost to M-DCPS. Additionally, contractor(s) shall include a five (5) year warranty on workmanship. Warranty shall begin at system acceptance. Contractor shall include a five year warranty on materials and workmanship.

2.6.1 The warranty on operation shall be that the system meets the performance standards of the latest TIA/EIA 568-B.2 Category 5e standards. All fiber optic cable shall comply with the ITU-TG.652 and ISO/IEC 793-2 type B1 standards. This shall apply to both horizontal link and channel performance as described in TIA/EIA-568-A Annex E and TIA/EIA TSB 67. **All category cabling manufacturers must be able to provide documentation from an independent third-party testing agency that verifies through random sampling that cable components perform at or above the levels contained on their product specification, not simply at or above the standard.**

2.6.2 During the warranty period, the contractor shall maintain an adequate supply of spare parts, either on site or at their local service facility.

2.6.3 Craft persons that install the wiring shall be certified by the manufacturers of the panels and jacks as being qualified to properly install all wiring. The District requires current letters of certification from the manufacturers.

2.7 ADDITIONS, MOVES AND CHANGES (AMC)

2.7.1 After the award of the bid, the contractor shall provide a quote for each project/location, based on bid unit prices. In addition, the contractor shall provide a basic description of the plan used to develop the list of materials. Bidders are requested to provide in their bid a list of their craftsperson's that are currently employed and will work on this bid. The list shall provide names, dates of certification and certificates and shall be updated as personnel changes occur.

2.7.2 Unless otherwise approved by M-DCPS Project Manager, it is agreed that no charges for any AMC's shall be made if work is not based on the original plan or estimate. Authorized AMC's shall be charged by adjusting the prices, based on the price sheets, up or down, as appropriate.

AMC shall be completed within ten (10) business days of notification or as mutually agreed to M-DCPS and awardee(s). Failure to complete work as agreed to will result in a penalty of 10% per day of the total cost of the AMC scope.

2.7.3 Bidders shall state their person-hour labor rates for various skill levels as per line item pricing on Bid Proposal Form.

2.8 LIMITATION OF CONTRACTOR'S LIABILITIES

If the performance of any part of this contract by the contractor is prevented, hindered, delayed or otherwise made impracticable by reason of flood, riot, fire, explosion, war or any other casualty or any other cause of whatever nature that is beyond the control of the Contractor, the Contractor shall be excused from such performance during the continuance of any such happening or event, for as long as such event shall continue to prevent, hinder or delay such performance, provided that in the event of a lockout, or other disturbance, the Contractor shall provide the requirements of this contract using any personnel deemed necessary. This paragraph shall apply to the installation and warranty requirements of this Invitation To Bid (ITB).

2.9 MATERIALS AND WORKMANSHIP

All copper wire, fiber optic cable, and component parts furnished shall be guaranteed to be new, meet all requirements of this bid, and be in an operable condition at the time of delivery. No part or attachment shall be substituted or applied contrary to the manufacturer's recommendations and standard practices. **All copper and fiber optic cabling products supplied for installation must be manufactured in the USA and compliant with the American Recovery and Reinvestment Act (ARRA) section 1605.**

2.10 FAILURE TO PERFORM UNDER WARRANTY AGREEMENT

The following option shall be available to M-DCPS and shall be applied, in the event of

failure on the part of the contractor to perform under the warranty agreement, as stated in this bid. This shall be applied on a per location basis.

a) During the warranty period, each failure to respond or correct in a timely manner based on service call level shall obtain a one-month extension of the cost-free warranty maintenance period. In the event, twelve such response failures occur within one year, M-DCPS shall receive a warranty extension for the balance of the year in which the failures occurred, as well as the next full calendar year. This shall be in addition to the five-year and twenty-five-year warranty period.

b) More than six (6) warranty response failures within a six (6) month period may result in termination of the contract. Contractor(s), will be notified in writing, listing the specific areas of non-compliance and/or non-performance. If these are not corrected within the time specified, M-DCPS may, without prejudice to other remedies they may have, apply penalty fees and/or take over the assigned work or such portion thereof as may be in default, and correct and make good the deficiencies.

In such case, the cost thereof, including compensation for supplementary services and expenses made necessary by such default, neglect or failure, may be deducted from any amount due or to become due the Contractor(s) from M-DCPS. If payments then or thereafter due the Contractor(s) are not sufficient to cover such amounts, the Contractor(s) shall pay the difference to M-DCPS.

The following situations are worthy of a NON-COMPLIANCE notification and penalty fee assessment:

NON-COMPLIANCE	PENALTY FEE
Inappropriate or inadequate parts inventory, tools, equipment, software resulting in non-compliance also failure to meet scope of work deadlines.	$1000.00 per occurrence
Damage to property	Repair costs as quoted by General Contractor and/or Vendor.
Deficient and defective workmanship	$1000.00 per call
Failure to comply with School Board policies and procedures (e.g. No-Smoking Zones and access to non-authorized areas)	$50.00 per occurrence

c) Priority One (1) warranty service calls must be given immediate attention and the service must occur before any other service calls. Response to a Priority One (1) must be that a technician must be on site within two (2) working hours of the initial call. If the service cannot be restored to normal operation within eight (8) working hours from time of M-DCPS call, the vendor must contact ISS with restoration plan. Time extension must be approved and agreed to by M-DCPS

Priority Two (2) warranty service calls must be served immediately after the Priority One (1) service call. Response to a Priority Two (2), must be that a technician must be on site within eight (8) working hours or the next business day of the initial call If the service cannot be restored to normal operation within sixteen (16) working hours from time of M-DCPS call, the vendor must contact ISS with restoration plan. Time extension must be approved and agreed to by M-DCPS

Emergency Service Calls must be given immediate attention and the service must occur before any other Service Calls not already in progress. The ISS Project Manager must be given a status update and a technician must respond, and if necessary, have remote access or, be on site within two (2) hours of the initial Emergency Service Call. Service must be restored within six (6) hours of the initial Emergency Call. The following situations shall be considered Emergencies:

a. Failure of school principal or site manager's connectivity.
b. Failure of 20% or more ports
c. Other failures as determined by M-DCPS (e.g. any safety to life issue)

Service Calls that are not an emergency will be considered routine. Routine Service Calls (P2) must be serviced after the Emergency Service Calls. A technician must respond by remote access or on-site within eight (8) work hours. Service must be restored within sixteen (16) work hours.

2.11 TERMINATION OF CONTRACT

The termination of contract shall be governed by the following terms and conditions if the contractor shall be considered in default.

A. Every contractor shall respond via E-mail to each request for quote. In the judgment of M-DCPS, the repeated failure of the contractor to respond to request for quotes (three (3) consecutive times within a six (6) month period) via E-mail may result in the termination of the contract.

B. Should the contractor fail or neglect to execute the work properly and diligently in substantial accord and compliance with the schedule or schedules agreed upon, as

may be determined by M-DCPS, or, if the contractor shall fail or refuse to perform any requirement or provision of the Contract specified to be performed by the contractor, then M-DCPS may immediately take over the work, or such portion thereof as may be in default or arrears, and correct the fault and make good the deficiency, and the cost thereof will be deducted from the contract price and may be withheld from any amount then due or that may become due the contractor from M-DCPS. M-DCPS may complete the work by M-DCPS's own staff or in such a manner and means as M-DCPS may deem necessary or expedient.

2.12 M-DCPS APPROVAL

Contractor's entire responsibility for the correctness and suitability of the work shall not be affected by the grant to, or the exercise or non-exercise by, M-DCPS of its right to inspect, test, review, comment on and approve the work, including, without limitation, drawings, data, and other documents or work provided by contractor.

No failure or delay by M-DCPS to insist on strict performance or observance by Contractor of any of the terms or conditions of the Contract, or to exercise any right or remedy under the Contract shall operate as a waiver thereof by M-DCPS; nor shall any single or partial exercise of any such right or remedy preclude any other further exercise thereof or the exercise of any other right or remedy under the contract.

2.13 SEVERABILITY AND COUNTERPARTS

If any part of the contract is held to be invalid, void or otherwise unenforceable, the other parts of the contract shall continue in full force and effect unless the severance of the portion held unenforceable would render impossible performance in accordance with the purposes of the contract.

2.14 ADDITIONAL INFORMATION REQUIRED OF THE BIDDER

The bidder is requested to provide a statement giving the following information regarding the bidder(s) support activities.

1. The number of support persons on duty during the normal workweek and on weekends.
2. The extent of the technical training and years of experience of personnel.
3. An escalation chart for problem resolution.
4. The location of the bidder's local facility.

2.15 ACCEPTANCE AND TESTING

Acceptance is and shall be understood and agreed to be acceptance of the entire project for a location by M-DCPS and not on an individual system basis. The date of acceptance is defined as the date of verification of successful testing and completion of plant-in-place drawings and associated information. Representatives of ITS Infrastructure and Systems Support Services and the Contractor shall mutually agree as to the date of

acceptance. This shall be done on a per location basis. Where valid printouts of the test results shall be provided in electronic form (Jump Drive, CD or E-mail) prior to the final walkthrough inspection. Reference numbers provided by ITS shall be depicted on all of the following documentation. Below are the tests that shall be performed:

A. Copper Wiring Tests

Every pair of copper wires shall be tested for their appropriate characteristics. The tests shall be as follows: attenuation, near-end crosstalk, line mapping, length, capacitance, DC loop resistance, and attenuation-to-crosstalk ratio.

A printout of 100% of these test results is required. The tests shall be conducted using certified cable tester. The test signal frequency shall be 100 MHz or shall be a sweep frequency from 1 MHz to 550 MHz. Automatic testing that gives results in terms of pass or fail criteria is acceptable if the criteria is clearly stated and conforms to EIA/TIA Bulletin TSB40 criteria or better.

Transmission Characteristics must be guaranteed to meet or exceed the outlined specifications (no typical or average performances will be accepted):

a) DC resistance of any conductor shall not exceed 9.38 Ohms per 100m max. At 20°C. Measured in accordance with ASTM D 4566.

b) The mutual capacitance of any pair at 1 kHz for 100m of cable shall not exceed 5.1 nF .

c) DC resistance unbalance between any two conductors of any pair shall not exceed 3% when measured at or corrected to 20°C in accordance with ASTM D 4566.

d) The capacitance unbalance to ground at 1 kHz of any pair shall not exceed 330 pF per 100m.

e) Structural return loss, return loss, insertion loss, equal level far-end crosstalk, and power sum equal level far end crosstalk shall be guaranteed up to a frequency of 350 MHz.

f) Structural return loss swept measurement for 100m or longer shall meet or exceed the following:

Frequency (MHz)	1.0	4.0	10.0	20.0	31.25	62.5	100	250	350	500	550
Max. SRL(dB)	20.0	23.6	26.0	26.0	25.0	23.5	22.5	20.5	19.8	19.0	18.8

g) The maximum insertion loss of any pair in a cable for a length of 100m (328ft) shall be less than the following:

Frequency (MHz)	1.0	4.0	10.0	20.0	31.25	62.5	100	250	350	500	550
Max. Insertion Loss (dB)	2.0	3.8	5.9	8.4	10.6	15.3	19.7	32.6	39.5	48.6	51.4

h) The NEXT coupling loss between pairs in a cable shall be greater than or equal to the following:

Frequency (MHz)	1.0	4.0	10.0	20.0	31.25	62.5	100	250	350	500	550
NEXT Loss Worst Pair (dB)	79.3	70.3	64.3	59.8	56.9	52.4	49.3	43.3	41.2	38.8	38.2

i) The PSNEXT coupling loss between pairs in a cable shall be greater than or equal to the following:

Frequency (MHz)	1.0	4.0	10.0	20.0	31.25	62.5	100	250	350	500	550
PSNEXT Loss Worst Pair (dB)	77.3	68.3	62.3	57.8	54.9	50.4	47.3	41.3	39.2	36.8	36.2

j) The ACRF loss between pairs in a cable for a length of 100m (328ft) shall be greater than or equal to the following:

Frequency (MHz)	1.0	4.0	10.0	16	31.25	62.5	100	250	350	500	550
ACRF Loss Worst Pair (dB)	72.8	60.7	52.8	48.7	42.9	36.8	32.8	24.8	21.9	18.8	17.9

k) The PSACRF loss between pairs in a cable for a length of 100m (328ft) shall be greater than or equal to the following:

Frequency (MHz)	1.0	4.0	10.0	16.0	31.25	62.5	100	250	350	500	550
PSACRF Loss Worst Pair (dB)	69.8	57.7	49.8	45.7	39.9	33.8	29.8	2189	18.9	15.8	14.9

l) The return loss between pairs in a cable shall meet or exceed the following:

Frequency (MHz)	1.0	4.0	10.0	20.0	31.25	62.5	100	250	350	500	550
Min. RL (dB)	20.0	23.6	26.0	26.0	25.0	23.5	22.5	20.5	19.80	19.0	18.8

m) Minimum longitudinal and transverse conversion loss (LCL & TCL) for a length of 100m (328ft)shall meet or exceed the following:

Frequency (MHz)	1.0	4.0	10.0	31.25	62.5	100	200	250	350	500	550

LCL & TCL (dB)	50.0	44.0	40.0	35.1	32.0	30.0	27.0	26.0	24.0	23.0	22.6

n) Minimum equal level transverse conversion loss (EL TCTL) for a length of 100m (328ft) shall meet or exceed the following:

Frequency (MHz)	1.0	4.0	10.0	16.0	20.0	30.0
EL TCTL (dB/100m)	35.0	23.0	15.0	10.9	9.0	5.5

o) The propagation delay of any pair at from 1 to 250 MHz for a length of 100m (328ft) shall meet or exceed the following

Frequency (MHz)	1.0	4.0	10.0	20.0	31.25	62.5	100	200	250 -550
Propagation Delay (ns)	570	552	545	542	540	539	538	537	536

B. Optic Fiber Tests

Every multi-mode fiber optic strand shall be measured for distance and end-to-end for power loss at 850 nm and 1300 nm. The optical loss per mated connector pair shall not exceed 1.5 db. The loss through any type of fiber splice shall not exceed
0.3 db. The maximum loss of the fiber strand without connectors and splices shall not exceed 3.75 db/km at 850 nm and not exceed 1.0 db/km at 1300 nm. At minimum the multimode fiber shall be 50um, 850nm, low metal content, complying with the ITU-TG.652 and ISO/IEC 793-2 type B1 standards, the modal bandwidth, equal or greater than 2000mhz/km. On an individual job basis, manufacturers' specifications of the fiber to be installed shall be provided with each quote.

Every single-mode fiber optic strand shall be measured for distance and end-to-end power loss at 1310 nm and 1550 nm. The optical loss per mated connector pair shall not exceed 1.5 db. The maximum loss of the fiber strand without connectors and splices shall not exceed 1.5 db at 1310 nm and 1550 nm. The single mode fiber shall be 50um, 850nm, low metal content, single-mode, fiber-optic, complying with the ITU-TG.652 and ISO/IEC 793-2 type B1 standards. On an individual job basis, manufacturers' specifications of the fiber to be installed shall be provided with each quote.

Applicable fiber shall comply with the appropriate category in TIA-568-C.3 and meet the following macrobend specification:

Mandrel Diameter (mm)	Number of Turns	Induced Attenuation (dB)	
		850 nm	1300 nm
37.5	100	≤ 0.05	≤ 0.15

15	2	≤ 0.1	≤ 0.3
7.5	2	≤ 0.2	≤ 0.5

C. Extended Warranty Agreement: where applicable, the twenty five-year warranty certificate shall be considered part of the warranty agreement, i.e. in new construction.

D. Provide As-built drawings for all quoted bid jobs. These drawings shall be clearly printed and will depict all jack locations.

1. The location of all telephone, data and intercom wiring closets and backboards and terminal blocks.
2. Routing of feeder cables to each closet, backboard, and terminal block.
3. Location and number of each jack.
4. A riser diagram showing all closets, backboards and terminal blocks.
5. Detail of each cross-connect and punch-down block identifying pairs to each jack.

2.16 It is recognized that until the various items of equipment utilized are installed, that errors and/or problems will not be known. The contractor shall cooperate fully with M-DCPS and the equipment contractors to repair any problems that are found during or after the various systems are activated.

2.17 In the event that during the warranty period it becomes evident that a pattern of chronic malfunctions and/or failures develop which severely limits the use of the equipment and which the contractor has been unable to remedy, M-DCPS shall notify the contractor in writing, listing the specific malfunctions and/or failures to be remedied and the time in which the remedies are to be accomplished. If the remedies are not accomplished within the specified time, M-DCPS may declare the contractor in default and issue a new purchase order to the second lowest bidder to replace the installed wiring and to continue the work of new installations. M-DCPS shall be accountable to the contractor in default for portions of the work performed by him/her which is re-used, however M-DCPS shall be reimbursed by the contractor in default for funds previously paid for the wiring being replaced by the new contractor. If the faulty installation is partially usable it shall remain in place and be serviced under the warranty until replacement is installed.

2.18 <u>PERMITS AND LICENSES</u>

The contractor shall be responsible for obtaining any necessary construction and installation permits and licenses and shall comply with all federal, state, and local codes and ordinances without additional cost to M-DCPS.

This work will be generally accomplished under the auspices of the Annual Maintenance Permit issued to each facility. The vendor may not be responsible for obtaining this Permit. However, a specific building permit may be required for any category of work administered and supervised by any MDCPS department other than Maintenance Operations and certain projects defined by the Florida Building Code.

2.19 INSURANCE

Prior to commencing work under this bid, the contractor shall obtain and maintain without interruption the insurance as outlined in special conditions. The contractor agrees to furnish a fully completed certificate of insurance signed by an authorized representative of the insurer providing such insurance coverage.

2.21 PATENTS AND ROYALTIES

The Bidder, without exception, shall indemnify and save harmless, M-DCPS and its employees from liability of any nature or kind, including cost and expenses for or on account of any copyrighted or unpatented invention, process or articles manufactured or used in the performance of the contract, including its use by M-DCPS. If the bidder uses any design, device or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the proposed prices shall include all royalties or costs arising from the use of such design, device, or materials in any way involved in the work.

2.22 LIQUIDATED DAMAGES

As a result of the contractor's survey and subsequent approval by ITS Network Expansion Services, the contractor will have established a schedule, which shall state the number of calendar days after commencement of work that the work will be completed. Time of completion of each installation and/or project shall be given by this schedule, which may be adjusted by mutual agreement of the contractor and M-DCPS, Florida. The time of completion shall be of the essence. Should the contractor fail to complete the work or obtain acceptance within the time agreed to, and provided the contractor has not previously obtained an extension from M-DCPS, a minimum sum of $500.00 shall be deducted from the contract price for each calendar day of delay as liquidated damages. If the contract price exceeds $50,000, then 1-1/2% of the contract price shall be deducted for each day of delay as liquidated damages. This deduction shall be applied to each installation individually. The contractor consents and agrees that it is not necessary for M-DCPS to prove monetary loss.

2.23 CONTRACT MANAGER

2.23.1 The contractor shall designate an individual acceptable to M-DCPS to perform the contractor's program management function. The Contract Manager shall provide a single point interface between M-DCPS and the contractor on all matters concerning the contract. The contract manager shall provide on demand status/progress reports and attend monthly status meetings throughout the contract period as required by M-DCPS.

2.23.2 After award of contract, the Contract Manager shall be in residence in South Florida and shall be available to M-DCPS on a schedule that shall be mutually agreed to by M-DCPS

and the contractor.

2.23.3 An M-DCPS, ITS and ISS Supervisor shall designate an ISS Bid Administrator to manage the contract for M-DCPS.

2.23.4 For individual projects The ISS Project Manager shall inspect all installation materials and workmanship and ensure contract compliance for final acceptance. The wiring contractor's Contract Manager shall interface with and cooperate with M-DCPS ISS Project Manager, the construction project manager and the equipment contractor.

2.24 ADDITIONS OR CHANGES DURING INSTALLATION

2.24.1 The Contract Manager or contractor shall not accept requests or agree to perform services beyond the contract requirements from persons other than authorized personnel of M-DCPS, ITS. All requests for additions and/or changes shall be directed to and handled by authorized personnel of M-DCPS ITS, ISS.

2.24.2 M-DCPS, without invalidating the Contract, may order changes in the work within the general scope of the Contract consisting of additions, deletions or other revisions.

2.24.3 The cost or credit to M-DCPS resulting from a change in the work shall be determined in one of the following ways:

1) By mutual acceptance of a properly itemized lump sum amount supported by sufficient substantiating data to permit evaluation, if not listed in the Contract Documents.
2) By unit, prices stated in the Contract Documents or subsequently agreed upon.

2.25 FAMILIARITY WITH LAWS

The bidder is presumed to be familiar with all Federal, State and Local Laws, Ordinances, Code Rules and Regulations that may in any way affect the work. Ignorance on the part of the bidder shall in no way relieve him/her from responsibility. Bidders are advised that M-DCPS and the Florida Department of Education may have additional requirements beyond those contained in the locally accepted Building Codes.

2.26 INDULGENCE

Indulgence by M-DCPS of any nonconformance by the contractor does not constitute a waiver of any rights under this agreement.

2.27 SUB-CONTRACTS

a) Nothing contained in the specifications shall be construed as creating any contractual relationship between any subcontractor and M-DCPS.

b) The Contractor shall be as fully responsible to M-DCPS for the acts and

omissions of the sub-contractor and of persons employed by them as he/she is for acts and omissions of persons directly employed.

2.28 EMPLOYEES OF THE CONTRACTOR AND SUB-CONTRACTOR

All employees of the contractor and sub-contractor shall be considered to be at all times the sole employees of the contractor or sub-contractor under the contractor's sole direction and not an employee or agent of M-DCPS. The contractor and sub-contractor shall supply competent and physically capable employees, and M-DCPS may require the contractor to remove an employee it deems careless, incompetent, or insubordinate and whose continued employment on M-DCPS property is not in the best interest of M-DCPS. Each employee shall have and wear proper identification on the job and have already met the background screening requirements of M-DCPS.

3.0 TECHNICAL INFORMATION

3.1 DEFINITIONS

Wiring: shall be considered to include all copper wires, copper multi conductor cables, fiber optic strands and multi strand fiber optic cable. The words wire and cable are intended to have the same meaning and are used interchangeably.

Telecommunications Wiring: Shall be construed to mean the wire and cable for voice and data.

Conduits: shall be construed to include all metal and plastic tubing, all cable trays and ducts in which telecommunications wiring may be installed. These items are also referred to as raceways.

3.2 Architects and engineers have been requested to provide a basic design for telecommunications for a new school building as follows:

a) A main equipment room shall be in or near the administration offices of a school.

b) There shall be satellite equipment rooms and/or wiring closets in each building.

c) Within a building there shall be a wiring closet for approximately every 20 to 25 rooms or offices.

d) The locations of the satellite rooms and wiring closets shall be such that the maximum wire distance from a room or closet to a jack is 250 feet and the maximum wire distance between equipment rooms and wiring closets is 300 feet.

3.3 Conduit design for the above has been requested as follows:

a) There shall be a minimum of three conduits of a minimum of 2" diameter from the

main equipment room to each satellite room or wiring closet. ITS, ISS for adequacy shall review the actual quantities and sizes of the conduit during the design phases of the project.

b) ITS, ISS shall review for adequacy the actual quantities and sizes of the conduit during the design phases of the project.

c) The quantities and sizes of this conduit shall be determined during the design phase of the project and shall be reviewed by ITS Network Expansion Services.

d) No conduit smaller than 3/4" shall be used to any voice or data outlet.

3.4 It is recognized that there are various ways of laying out a conduit system for wiring from the various satellite rooms and wiring closets. The design shall be based on the following requirements

a) Every classroom except the computer laboratories shall have a voice jack, and eight LAN jacks. Computer laboratories will have one voice jack. The data jacks will be distributed around the room in wire-mold. If the distance between the laboratory and nearest wiring closet is less than 100 feet then all jacks are run to the wiring closet. If the distance is greater than 100 feet from the nearest closet then a terminal cabinet will be placed in the room and all data jacks will be terminated in the terminal cabinet. A fiber optic cable will be installed from a terminal cabinet to the nearest wiring closet containing fiber.

b) The voice jack and the data jacks shall be connected to a satellite room or closet using 4-pair category 5e cable. Fiber optic cable shall be used between the main equipment room and satellite rooms and closets. Multi-pair copper cable shall be used between the main telephone room and satellite rooms and closets for the voice jack.

c) There shall be no daisy chaining of outlet boxes except where approved by ITS ISS.

3.5 Wire termination at the various equipment rooms and wiring closets shall be as follows:

a) In all schools the voice panel is a punch-down and the others are category 5e & 6 patch panels.

b) All jacks shall be hard wired to their respective panels.

c) All copper pairs used for voice shall be protected at both ends of the cable if the cable leaves and enters a building.

d) At the MDF the voice panel shall be hard wired to the cable protectors.

e) The fiber optic cable shall be terminated in a suitable interface unit that provides for fan-out of the strands and termination in LC-type (Single Mode) or SC-type (Multi Mode) connectors. The number of strands and arrangement of separation and fan-out shall be approved by ITS Infrastructure Systems Support.

f) Cable management shall be included in all installations to neatly organize all patch cables at each IDF and MDF locations. Patch Cables should be of appropriate length for cabinet, rack or shelf where applicable.

3.6 Installation and configuration of, data switches and Network management station.

a) Vendor shall be required to install as directed by OIT ISS at all specified IDF's and MDF.

4.0 INSTALLATION PRACTICES

4.1 All wiring and terminations shall be installed according to the best industry practices and manufacturer's specifications. Cable not in conduit shall meet fire codes and all cable shall be neatly run and have proper mechanical protection. Cables shall be supported by bridle rings and ties to permanent supports. In any new installations fiber optic cable shall be continuous, without splices. **All horizontal cable and fiber shall be plenum rated. All cable in raceway concealed in concrete slab on grade or buried below shall be deemed wet and outdoor water resistant cable & is required. All fiber shall be Indoor/Outdoor Plenum rated.**

4.2 It is agreed and understood that the installation work may require mechanical work such as removal of ceiling tiles, drilling holes in walls and floors and similar changes to an existing building. Contractors shall restore such disturbed areas to original condition. Note that some buildings may have interlocking tile ceilings as well as drop-in type ceiling tiles. Tiles damaged by the contractor shall be replaced by the contractor at no cost to M-DCPS.

4.3 All wiring shall be concealed to the maximum extent practical. When retrofitting existing systems, existing conduits, floor ducts and power poles shall be used where possible. This will require the removal of existing wiring and replacement with new wiring.

4.4 At retrofit locations, the existing systems shall be maintained in operation to the maximum extent possible while the new systems are being installed. It is understood that there may be reductions in service and that various locations may be out of service while they are being replaced. It will be necessary to cooperate with the building personnel to reduce interruptions to a minimum.

4.5 Prior to performing any work the contractor and M-DCPS's representative shall determine if a hazard exists. If, during the work, asbestos is suspected or discovered the contractor shall immediately notify the ISS Project Manager who will contact M-DCPS's safety office and designated M-DCPS personnel. The Asbestos Abatement office will determine if a hazard exists. If there is a hazard all work will stop at that location until the hazard is abated by M-DCPS.

4.6 No PVC conduit shall be used above ground but may be installed underground. If PVC is installed underground it shall be no smaller than 1" diameter and shall be no less than schedule 40 type. Metal conduit shall be used at the end of underground PVC where the run leaves the earth and enters a building if it enters through an outside wall and is exposed.

4.7 Overhead Conduit shall be mounted ten feet above the floor or as high as practical if the ten feet height is not possible.

The types of conduit, wire and the locations where each type may be used shall be governed by Miami-Dade County Public Schools Master Specifications, Divisions 13 and 16. These documents can be found at http://facilities.dadeschools.net/default.aspx?id=masterspecs