

CONTRACT AND SPECIFICATIONS
for
VOICE AND DATA CABLING FOR THE LIBRARY

John P. Bohenko, City Manager
City of Portsmouth, New Hampshire

Prepared by:
City of Portsmouth
Community Development Department

TABLE OF CONTENTS

| | |
|---------------------------------|----|
| INVITATION TO BID | 3 |
| INSTRUCTION TO BIDDERS | 4 |
| AWARD AND EXECUTION OF CONTRACT | 9 |
| AUTHORIZATION AND RELEASE | 11 |
| BIDDER'S QUALIFICATIONS | 12 |
| PROPOSAL FORM | 14 |
| BID BOND | 16 |
| CONTRACT AGREEMENT | 18 |
| NOTICE OF INTENT TO AWARD | 21 |
| NOTICE TO PROCEED | 22 |
| CHANGE ORDER | 23 |
| LABOR AND MATERIAL BOND | 24 |
| MAINTENANCE BOND | 26 |
| CONTRACTOR'S AFFIDAVIT | 27 |
| CONTRACTOR'S RELEASE | 28 |
| INSURANCE REQUIREMENTS | 30 |
| TECHNICAL SPECIFICATIONS | 31 |
| ATTACHMENT A | |

BID #58-06

City of Portsmouth
Community Development Department

Voice and Data Cabling for the Library**INVITATION TO BID**

The City is seeking bids from qualified contractors for voice and data cabling in a newly constructed Library.

Sealed bid proposals, **plainly marked**, (Voice and Data Cabling for the Library Bid Proposal # 58-06) **on the outside of the mailing envelope as well as the sealed bid envelope**, addressed to the Finance/ Purchasing Department, City Hall, 1 Junkins Avenue, Portsmouth, New Hampshire, 03801, will be accepted until **2:00 p.m. Thursday, April 20, 2006**, at which time all bids will be publicly opened and read aloud.

There will be a mandatory walk through on Thursday, April 13, 2006 at 10:00 a.m. Bidders will meet at the job trailer at 175 Parrott Ave.

Specifications and bid proposal forms may be obtained from the Finance/Purchasing Department on the third floor at the above address or on-line at **www.cityofportsmouth.com**, unless otherwise specified.

The project is set to commence on or before June 12, 2006. Completion date will be July 7, 2006.

Bidders must determine the quantities of work required and the conditions under which the work will be performed.

The City of Portsmouth reserves the right to reject any or all bids, to waive technical or legal deficiencies, and to accept any bid that it may deem to be in the best interest of the City.

Each Bidder shall furnish a bid security in the amount of ten percent (10%) of the bid. The Bid Security may be in the form of a certified check drawn upon a bank within the State of New Hampshire or a bid bond executed by a surety company authorized to do business in the State of New Hampshire, made payable to the City of Portsmouth, N.H.

If you have any questions please contact the Finance/Purchasing Department at 603-610-7227.

INSTRUCTION TO BIDDERS

PART 1- BIDDING REQUIREMENTS AND CONDITIONS

1.1 SPECIAL NOTICE TO BIDDERS

- A. Appended to these specifications and instructions is a complete set of bidding and general contract forms. These forms may be detached from the specifications and executed for the submittal of bids.
- B. The plans, specifications, and other documents designated in the proposal form will be considered as part of the proposal, whether attached or not.
- C. Each Bidder must submit with this bid:
 - 1. A statement of Bidders qualifications.
 - 2. A list of subcontractors to be used on this project.

1.2 ISSUANCE OF PROPOSAL FORMS

- A. The City of Portsmouth, herein referred to as the Owner, reserves the right to deny a proposal form to a prospective Bidder or to disqualify a Bidder if the Bidder is in default for any of the following reasons:
 - 1. Lack of competency, or of adequate machinery, plant or other equipment, as revealed by the statement of Bidders qualification required under 1.1(c) of this page or otherwise.
 - 2. Uncompleted work which, in the judgment of the owner, might hinder or prevent the prompt completion of additional work if awarded.
 - 3. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts.
 - 4. Default under previous contracts.
 - 5. Unsatisfactory performance on previous contracts.
 - 6. The proposal is improper or nonconforming as defined in item 1.7 of this section.

1.3 INTERPRETATION OF QUANTITIES IN BID SCHEDULES

- A. The quantities appearing in the bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for actual work performed and accepted in accordance with the contract.
- B. Any scheduled item of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided, and no claim for loss, anticipated profits or costs incurred in anticipation of work not ultimately performed will be allowed due to such increase or decrease.

INSTRUCTION TO BIDDERS(continued)

1.4 EXAMINATION OF PLANS, SPECIFICATIONS AND SITE WORK

- A. The Bidder is expected to examine carefully the site of the proposed work, the plans, standard specifications, supplemental specifications, special provisions and contract forms before submitting a proposal. The submission of a bid shall be considered conclusive evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the contract. It will be conclusive evidence that the Bidder has also investigated and is satisfied with the sources of supply for all materials.
- B. Plans, surveys, measurements, dimensions, calculations, estimates and statements as to the condition under which the work is to be performed are believed to be correct, but the contractors must examine for themselves, as no allowance will be made for any errors or inaccuracies that maybe found therein.

1.5 FAMILIARITY WITH LAWS

- A. The Bidder is assumed to have made himself or herself familiar with all federal and state laws and all local by-laws, ordinances and regulations which in any manner affect those engaged or employed on the work or affect the materials or equipment used in the work or affect the conduct of the work,
- B. The Bidder, if awarded the contract, shall be obligated to perform the work in conformity with said laws, by-laws, ordinances and regulations notwithstanding ignorance thereof. If the Bidder shall discover any provision in the plans or specifications which is in conflict with any such law, by-law, ordinance or regulation the Bidder shall forthwith report it to the City engineer in writing.

1.6 PREPARATION OF PROPOSAL

- A. The Bidder shall submit his or her proposal upon the forms furnished by the Owner.
- B. The Bidder shall specify a lump sum price both in words and figures. All words and figures shall be in ink or typed.
- C. If a unit price or a lump sum bid already entered by the Bidder on the proposal form is to be altered it should be crossed out with ink, the new unit price or lump sum bid entered above or below it and initialed by the Bidder, also with ink.
- D. In case of discrepancy between the prices written in words and those written in figures, the prices written in words shall govern.
- E. The Bidder's proposal must be signed with ink by:
 - 1. The individual, including his name and post office address;

INSTRUCTION TO BIDDERS(continued)

2. one or more general partners of a partnership, including the name and post office address of each general and limited partner;
3. one or more members or officers of each firm representing a joint venture, including the name and post office address of each venturer;
4. one or more officers of a corporation, by one or more members (if member-managed) or managers (if manager-managed) of a limited liability company, including the name of the corporation and its business address must be shown, together with the name of the state in which it is incorporated, and the names, titles and business addresses of the president, secretary and treasurer, OR;
5. by an agent of the contractor legally qualified and acceptable to the owner.

1.7 NONCONFORMING PROPOSALS

- A. Proposals will be considered nonconforming and may be rejected in the Owner's sole discretion for any of the following reasons:
1. If the proposal is on a form other than that furnished by the Owner, or if the form is altered or any portion thereof is detached.
 2. If there are unauthorized additions, conditional or altered bids, or irregularities of any kind which may tend to make the proposal or any portion thereof incomplete, indefinite or ambiguous as to its meaning.
 3. If the Bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

1.8 PROPOSAL GUARANTY

- A. No proposal will be considered unless accompanied by a bid bond, surety, or similar guaranty of the types and in an amount not less than the amount indicated in the proposal form made payable to the "City of Portsmouth". If a bid bond is used by the Bidder it shall be:
1. In a form satisfactory to the Owner;
 2. With a surety company licensed, authorized to do business in, and subject to the jurisdiction of the courts of the State of New Hampshire.
 3. Conditioned upon the faithful performance by the principal of the agreements contained in the sub-bid or the general bid.
 4. In the event any irregularities are contained in the proposal guaranty, the Bidder will have until 5:00 p.m. on the date five days from the date on which bids are opened, to correct any irregularities. If such irregularities are not corrected to the satisfaction of the Owner in its sole discretion, the bid may be rejected.

INSTRUCTION TO BIDDERS(continued)

1.9 DELIVERY OF PROPOSALS

- A. When sent by mail, the sealed proposal shall be addressed to the Owner at the address and in the care of the official in whose office the bids are to be received.
- B. All proposals shall be filed prior to the time and at the place specified in the invitation for bids. Proposals received after the time for opening of the bids will be returned to the Bidder, unopened.

1.10 WITHDRAWAL OF PROPOSALS

- A. A Bidder will be permitted to withdraw its proposal unopened after it has been submitted if the Owner receives a request for withdrawal in writing prior to the time specified for opening the proposals.

1.11 PUBLIC OPENING OF PROPOSALS

- A. Proposals will be opened and read publicly at the time and place indicated in the invitation for bids. Bidders, their authorized agents, and other interested parties are invited to be present.

1.12 DISQUALIFICATION OF BIDDERS

- A. Any or all of the following reasons may be deemed by Owner in its sole discretion as being sufficient for the disqualification of a Bidder and the rejection of his proposal or proposals:
 - 1. More than one proposal for the same work from an individual, firm, or corporation under the same or different name.
 - 2. Evidence of collusion among Bidders.
 - 3. Failure to submit all required information requested in the bid specifications.
 - 4. Such disqualification would be in the best interests of the Owner.
- B. No award will be made to any Bidder who cannot meet all of the following requirements:
 - 1. The Bidder shall not have defaulted or turned the work over to the bonding company on any contract within three years prior to the bid date.
 - 2. The Bidder shall maintain a permanent place of business.
 - 3. The Bidder shall have adequate personnel and equipment to perform the work expeditiously.
 - 4. The Bidder shall have suitable financial status to meet the obligations incidental to the Work.
 - 5. The Bidder shall have appropriate technical experience satisfactory to the City Engineer in the class of work involved.

6. The Bidder shall be registered with the Secretary of State to do business in New Hampshire.
7. The Bidder shall have performed to the satisfaction of the Owner and the City Engineer on previous contracts. A history or record of poor performance will result in disqualification.
8. The Bidder shall have a good reputation for completing a project “on budget.”
9. The Bidder shall not have repeatedly failed to complete work or meet deadlines on previous contracts with Owner or any other party except in those cases where the failure or delay was caused by someone other than Bidder or otherwise excused.

A HISTORY OR RECORD OF POOR PERFORMANCE WILL RESULT IN DISQUALIFICATION.

1.13 MATERIAL GUARANTY AND SAMPLES

- A. Before any contract is awarded, the Bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work.
- B. The Owner may, in its sole discretion, reject said bid based on the contents of said statement or as a result of the failure of the Bidder to submit said statement.

PART 2 AWARD AND EXECUTION OF CONTRACT

2.1 CONSIDERATION OF PROPOSALS

- A. After the proposals are opened and read, they will be compared on the basis of the total price to be charged to perform the work. The results of such comparisons will be immediately available to the public.
- B. In case of a discrepancy between the prices written in words and those written figures, the prices written in words shall govern. In case of a discrepancy between the total shown in the proposal and that obtained by adding the products of the quantities of items and unit bid prices, the latter shall govern.
- C. The right is reserved to reject any or all proposals, to waive technicalities or to advertise for new proposals, if in the sole discretion of the Owner the best interest of the City of Portsmouth will be promoted thereby.

2.2.1 AWARD OF CONTRACT

- A. Within 15 calendar days after the opening of proposals, if a contract is to be awarded, the award will be made to the lowest responsible and qualified Bidder whose proposal complies with all the requirements prescribed. A Responsible Bidder is one who is not disqualified and otherwise has a history and reputation for performing timely, quality work within project budgets.
- B. The successful Bidder will be notified, in writing, mailed to the address on his or her proposal, that his or her bid has been accepted and that the Bidder has been awarded the contract.

2.3. CANCELLATION OF AWARD

- A. The Owner reserves the right to cancel the award of any contract at any time before the execution of such contract by all parties without any liability of the Owner.

2.4 RETURN OF PROPOSAL GUARANTY

- A. All proposal guaranties, except those of the three lowest Bidders, will be returned upon request following the opening and checking of the proposals.
- B. The proposal guaranties of the three lowest Bidders will be returned within ten days following the award of the contract upon request.

2.5 CONTRACT BONDS

- A. At the time of the execution of the contract, the successful bidder shall furnish:
 - 1. Labor and materials payment bond in the sum equal to 100 percent of the contract amount.

INSTRUCTION TO BIDDERS (continued)

- B. At the time of project completion and before the release of retainage, the successful bidder shall furnish:
 - 1. A maintenance bond in the amount equal to 20 percent of the contract amount. Such bond shall guarantee the repair of all damage due to faulty materials or workmanship provided or done by the contractor. The guarantee shall remain in effect for a period of one year after the date of final acceptance of the job by the Owner. The Owner has the option of substituting retainage of 10 percent for the same period.

- C. Each bond shall be:
 - 1. In a form satisfactory to the Owner.
 - 2. With a surety company licensed and authorized to do business and with a resident agent designated for services of process in the State of New Hampshire.
 - 3. Conditioned upon the faithful performance by the principal of the agreements contained in the original bid.

- D. All premiums for the contract bonds are to be paid by the contractor.

2.6 EXECUTION AND APPROVAL OF CONTRACT

- A. The successful Bidder will be required to execute the contract within 10 days following notification of acceptance of its bid.
- B. No contract shall be considered as in effect until it has been fully executed by all parties thereto.

2.6 FAILURE TO EXECUTE CONTRACT

- A. Failure to execute the contract and file acceptable bonds and evidence of insurance within 10 days after notification of acceptance of bid shall be just cause for the cancellation of the award and the forfeiture of the proposal guarantee which shall become the property of the Owner, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible Bidder, or the work may-be re-advertised as the Owner may determine in its sole discretion.

- B. It shall be understood that while pricing this lump sum job, the contractor shall perform quantity take-offs according to the plans provided. The lump sum price listed on the Proposal Form shall be based upon the contractor's own estimate of quantities.

AUTHORIZATION AND RELEASE

As part of the Bid, the Bidder shall execute and submit the Authorization and Release set forth below:

By submitting this Bid, Bidder authorizes Owner, Engineer, and their employees and agents to make such inquiries as they deem necessary to determine whether Bidder's qualifications are satisfactory. Bidder hereby agrees to release and hold harmless Owner, Engineer and any person or entity requested to respond to Owner or Engineer regarding Bidder's qualifications from any and all claims and causes of action related to such inquiries, including without limitation actions for defamation, slander or interference with contractual relations.

Bidder: _____

By: _____

Name: _____

Title: _____

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. Add separate sheets if necessary. **This statement is to be submitted with Bid.**

1. Name of Bidder
2. Permanent Main Office Address
3. Form of Entity
4. When Organized
5. Where Organized
6. How many years has Bidder been engaged in the contracting business under the present name; also state names and dates of previous firm names, if any, and associated names for all principals.
7. Contracts on hand; (schedule these, showing gross amount of each contract and the approximate anticipated dates of completion).
8. General character of work performed by your company.
9. Has Bidder ever failed or refused to complete any work awarded to you?
_____(no)_____(yes). If so, where and why?
10. Has Bidder ever defaulted on a contract or been a party in an action alleging breach of contract?
_____(no)_____(yes). If so, where and why?
11. Has Bidder ever failed to complete a project in the time allotted according to the Contract Documents?
_____(no)_____(yes). If so, where and why?
12. List Bidder's major equipment available for this contract.
13. List Bidder's key personnel such as project superintendent and foremen available for this contract.
14. List recent projects on occupied buildings similar to this project.

15. The City reserves the right to request Bidder's latest Financial Statements certified audited if available, prepared by an independent certified public accountant.

Dated at _____ this _____ day of _____, 20__.

Name of Bidder

BY _____

TITLE _____

State of _____

County of _____

_____ being duly sworn, deposes and says that the Bidder is
_____ of _____
(Name of Organization)

and answers to the foregoing questions and all statements contained therein are true and correct.

Sworn to before me this ____ day of _____, 20__.

Notary of Public

My Commission expires _____

PROPOSAL FORM

Voice and Data Cabling for the Library

CITY OF PORTSMOUTH, N.H.

To the City of Portsmouth, New Hampshire, herein called the Owner.

The undersigned, as Bidder, herein referred to as singular and masculine declares as follows:

1. All interested in the Bid as Principals are named herein.
2. This bid is not made jointly, or in conjunction, cooperation or collusion with any other person, firm, corporation, or other legal entity;
3. No officer, agent or employee of the Owner is directly or indirectly interested in this Bid.
4. The Bidder has carefully examined the site of the proposed work and fully informed and satisfied itself as to the conditions there existing, the character and requirements of the proposed work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this Bid, and the Bidder has carefully read and examined and and all Drawings, Agreement, Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;
5. The Bidder understands that the quantities of work calculated in the Bid or indicated on the Drawings or in the Specifications or other Contract Documents are approximate and are subject to increase or decrease or deletion as deemed necessary by the Portsmouth City Engineer. Any such changes will not result in or be justification for any penalty or increase in contract prices; and agrees that, if the Bid is accepted the Bidder will contract with the Owner, as provided in the Contract Documents, this Bid Form being part of said Contract Documents, and that the Bidder will supply or perform all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other activities required by the Contract Documents in the manner and within the time therein set forth, and that the Bidder will take in full payment therefor the following item prices, to wit:

The Proposal Pricing Sheet (**ATTACHMENT A**) must be completed and submitted with the Bid to determine total cost:

Total Bid compiled by the Bidder:

In Figures \$ _____

In Words \$ _____

PROPOSAL FORM (Continued)

The undersigned agrees that for extra work, if any, performed in accordance with the terms and provisions of the Contract Documents, the Bidder will accept compensation as stipulated therein.

Date

Company

By: _____
Print Name

By: _____
Signature

Title: _____

Business Address

City, State, Zip Code

Telephone: _____

The Bidder has received and acknowledged Addenda No. _____ through _____.

All Bids are to be submitted on this form and in a sealed envelope, plainly marked on the outside with the Bidder's name and address and the Project name as it appears at the top of the Proposal Form.

BID SECURITY BOND

(This format provided for convenience, actual Bid Bond is acceptable in lieu of, if compatible.)

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned

_____, as Principal, and

_____, as Surety, are hereby

held and firmly bound unto _____

IN THE SUM OF _____

as liquidated damages for payment of which, well and truly to be made we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is such that whereas the Principal has submitted to the

A CERTAIN Bid attached hereto and hereby made a part hereof to enter into a contract in writing, hereinafter referred to as the "AGREEMENT" and or "CONTRACT", for

NOW THEREFORE,

- (a) If said Bid shall be rejected or withdrawn as provided in the INFORMATION FOR BIDDERS attached hereto or, in the alternative,
- (b) If said Bid shall be accepted and the Principal shall duly execute and deliver the form of AGREEMENT attached hereto and shall furnish the specified bonds for the faithful performance of the AGREEMENT and/or CONTRACT and for the payment for labor and materials furnished for the performance of the AGREEMENT and or CONTRACT,

then this obligation shall be void , otherwise it shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder in no event shall exceed the amount of this obligation.

The Surety, for value received, hereby agrees that the obligation of said surety and its bond shall be in no way impaired or affected by any extensions of the time within such BID may be accepted, and said Surety does hereby waive notice of any such extension.

BID SECURITY BOND (continued)

IN WITNESS WHEREOF, the parties hereto have duly executed this bond on the _____ day of _____, 20__.

(Name of Principal) L.S.

(SEAL)

BY _____

(Name of Surety)

BY _____

CONTRACT AGREEMENT

Voice and Data Cabling for the Library

THIS AGREEMENT made as of the ____ day of ____ in the year **2006**, by and between the City of Portsmouth, New Hampshire (hereinafter call the Owner) and _____ (hereinafter called the Contractor),

WITNESSETH; that the Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE I- Work - The Contractor shall perform all work as specified or indicated in the Contract Documents for the completion of the Project.

A) Such work shall include at Contractor’s expense, all labor, materials, equipment and incidentals as may be necessary for the expeditious and proper execution of the Project.

ARTICLE II - ENGINEER - The City Engineer, or his authorized representative will act as engineer in connection with completion of the Project in accordance with the Contract Documents.

ARTICLE III - CONTRACT TIME - The work will commence in accordance with the Notice to Proceed.

ARTICLE IV - CONTRACT PRICE - Owner shall pay Contractor for performance of the work in accordance with the Contract Documents as shown under item prices in the Bid Proposal.

ARTICLE V – PAYMENT- Upon final acceptance of the work and settlement of all claims, Owner shall pay the Contractor the lump sum Contract Price.

ARTICLE VI - MAINTENANCE BOND-Upon final acceptance of the work, the Owner may elect to accept a Maintenance Bond in the amount of 20% of the contract price with corporate surety in lieu of holding retainagefor trhe guaranty period. Maintenance Bond shall be issued prior to payment.

ARTICLE VII - CONTRACT DOCUMENTS - The Contract Documents which comprise the contract between Owner and Contractor are attached hereto and made a part hereof and consist of the following:

- 8.1 This Agreement
- 8.2 Contractor's Bid and Bonds
- 8.3 Notice of Award, Notice to Proceed
- 8.4 Invitation To Bid and Instruction to Bidders
- 8.5 General Requirements, Summary Of Work, Control of Work, Temporary Facilities, Measurement and Payment, Administrative Requirements, Product Requirements, Execution And Closeout
- 8.6 Standard and Technical Specifications
- 8.7 Insurance Requirements
- 8.8 Attachment A
- 8.9 Drawings
- 8.10 Any modifications, including change orders, duly delivered after execution of this Agreement.

CONTRACT AGREEMENT (continued)

ARTICLE VIII - TERMINATION FOR DEFAULT - Should Contractor at any time refuse, neglect, or otherwise fail to supply a sufficient number or amount of properly skilled workers, materials, or equipment, or fail in any respect to prosecute the work with promptness and diligence, or fail to perform any of its obligations set forth in the Contract, Owner may, at its election, terminate the employment of Contractor, giving notice to Contractor in writing of such election, and enter on the premises and take possession, for the purpose of completing the work included under this Agreement, of all the materials, tools and appliances belonging to Contractor, and to employ any other persons to finish the work and to provide the materials therefore at the expense of the Contractor.

ARTICLE IX - INDEMNIFICATION OF OWNER - Contractor will indemnify Owner against all suits, claims, judgments, awards, loss, cost or expense (including without limitation attorneys' fees) arising in any way out of the Contractor's performance or non-performance of its obligations under this Contract. Contractor will defend all such actions with counsel satisfactory to Owner at its own expense, including attorneys' fees, and will satisfy any judgment rendered against Owner in such action.

ARTICLE X - PERMITS - The Contractor will secure at its own expense, all permits and consents required by law as necessary to perform the work and will give all notices and pay all fees and otherwise comply with all applicable City, State, and Federal laws, ordinances, rules and regulations.

ARTICLE XI - INSURANCE - The Contractor shall secure and maintain, until acceptance of the work, insurance with limits not less than those specified in the Insurance Requirements that are part of this contract.

ARTICLE XII - MISCELLANEOUS -

- 15.1 Neither Owner nor Contractor shall, without the prior written consent of the other, assign, sublet or delegate, in whole or in part, any of its rights or obligations under any of the Contract Documents; and, specifically not assign any monies due, or to become due, without the prior written consent of Owner.
- 15.2 Owner and Contractor each binds himself, his partners, successors, assigns and legal representatives, to the other party hereto in respect to all covenants, agreements and obligations contained in the Contract Documents.
- 15.3 The Contract Documents constitute the entire Agreement between Owner and Contractor and may only be altered amended or repealed by a duly executed written instrument.
- 15.4 The Contract Documents shall be governed by New Hampshire law.

CONTRACT AGREEMENT (continued)

IN WITNESS WHEREOF, the parties hereunto executed this
AGREEMENT the day and year first above written.

NAME OF BUSINESS

BY: _____

TITLE: _____

CITY OF PORTSMOUTH, N.H.

BY: _____
John P. Bohenko

TITLE: City Manager

NOTICE OF INTENT TO AWARD

Date:

TO:

IN AS MUCH as you were the low responsible Bidder for work entitled:

Voice and Data Cabling for the Library

In the City of Portsmouth, New Hampshire, you are hereby notified that the City intends to award the aforesaid project to you.

You are further instructed to immediately take the necessary steps for execution of the Contract within ten (10) calendar days from the date of this Notice.

Within ten (10) calendar days, you must execute the Contract and deliver to the Owner certificates of insurance and payment bonds in the amount of 100% of the Contract Price which you are required to purchase and maintain in accordance with the Contract Documents. The City reserves the right to revoke this Notice if you fail to take the necessary steps to execute this Contract.

City of Portsmouth
Portsmouth, New Hampshire

Judie Belanger,
Finance Director

NOTICE TO PROCEED

DATE:

PROJECT: **Voice and Data Cabling for the Library**

TO:

YOU ARE HEREBY NOTIFIED TO COMMENCE WORK IN ACCORDANCE WITH THE AGREEMENT DATED _____, ON OR BEFORE **June 12, 2006** AND THE DATE OF COMPLETION OF ALL WORK SHALL BE **July 7, 2006**.

CITY OF PORTSMOUTH, N.H.

BY _____

TITLE _____

ACCEPTANCE OF NOTICE

RECEIPT OF THE ABOVE NOTICE TO PROCEED IS HEREBY ACKNOWLEDGED BY

This the _____ day of _____ 2004__

By: _____

Title: _____

CHANGE ORDER

Change Order Number _____ Date of Issuance _____

Owner:

Contractor:

You are directed to make the following changes in the Contract Documents:

Description:

Purpose of Change Order:

Attachments:

CHANGE IN CONTRACT PRICE

CHANGE IN CONTRACT TIME

Original Contract Price:
\$ _____

Original Contract Time:
_____ days

Contract Price prior to this
Change Order:
\$ _____

Contract Time prior to this
Change Order:
_____ days

Net Increase or Decrease of
this Change Order:
\$ _____

Net Increase or Decrease of
this Change Order:
_____ days

Contract Price with all
approved Change Orders:
\$ _____

Contract Time with all
approved Change Orders:
_____ days

RECOMMENDED:

APPROVED:

APPROVED:

by _____

by _____

by _____

by _____

Public Works Director

City Finance

City Manager

Contractor

LABOR AND MATERIAL PAYMENT BOND

(This format provided for convenience, actual Labor and Material Bond is acceptable in lieu, if compatible)

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS:

that _____
as Principal, hereinafter called Contractor, and _____
_____ (Surety Company) a corporation organized and existing under the laws of the State of _____ and authorized to do business in the State of New Hampshire hereinafter called Surety, are held and firmly bound unto the City of Portsmouth, N.H. e, hereinafter called Owner, for the use and benefit of claimants as hereinbelow defined , in the amount of

_____ Dollars (\$ _____), for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____ entered into a contract with Owner for

_____ in accordance

with drawings and specifications prepared by the Public Works Department, 680 Peverly Hill Road, Portsmouth, N.H. 03801, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that the Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract and for the hire of all equipment, tools, and all other things contracted for or used in connection therewith, then this obligation shall be void, otherwise it shall remain in full force and effect, subject however, to the following conditions:

(1) A claimant is defined as one having a direct contract with the Principal or, with a subcontractor of the Principal for labor, material, equipment, or other things used or reasonably required for use in the performance of the Contract. "Labor and material" shall include, but not be limited to, that part of water, gas, power, light, heat, oil and gasoline, telephone service or rental of equipment applicable to the Contract.

(2) The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such a claimant, may sue on this bond for the use of such claimant, prosecute the suit by final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any such suit or any costs or expenses of any such suit, and Principal and Surety shall jointly and severally indemnify, defend and hold the Owner harmless for any such suit, costs or expenses.

(3) No suit or action shall be commenced hereunder by any claimant:

LABOR AND PAYMENT BOND (continued)

(a) Unless Claimant, other than one having a direct contract with the Principal, shall have given notice to all the following:

The Principal, the Owner and the Surety above named, within six (6) calendar months after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of New Hampshire save that such service need not be made by a public officer.

(b) After the expiration of one (1) year following the date on which Principal ceased all work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

(c) Other than in a State court of competent jurisdiction in and for the county or other political subdivision of the State in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere. (4) The amount of this bond may be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed on record against said improvement, whether or not claim for the amount of such lien by presented under and against this bond.

Signed and sealed this _____ day of _____, 20__ . In the presence of:

(Witness) (Principal) (Seal) BY: _____

(Surety Company)

(Witness) (Title) (Seal) BY: _____

Note:

If the Principal (Contractor) is a partnership, the Bond should be signed by each of the partners.

If the Principal (Contractor) is a corporation, the Bond should be signed in its correct corporate name by its duly authorized Officer or Officers.

If this bond is signed on behalf of the Surety by an attorney-in-fact, there should be attached to it a duly certified copy of his Power of Attorney showing his authority to sign such Bonds.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Agreement.

MAINTENANCE BOND

A maintenance bond in the amount of **20%** of the Contract price with a corporate surety approved by the Owner will be required. Such bond shall be provided at the time of Contract completion and shall guarantee the repair of all damage due to faulty materials or workmanship provided or done by the Contractor. This guarantee shall remain in effect for a period of one year after the date of final acceptance of the job by the Owner. Maintenance Bond may be substituted for retainage at the discretion of the Owner.

CONTRACTOR'S AFFIDAVIT

STATE OF _____:

COUNTY OF _____:

Before me, the undersigned, a _____
(Notary Public, Justice of the Peace)

in and for said County and State personally appeared, _____
(Individual, Partner, or duly authorized representative of Corporate)

who being duly sworn according to law deposes and says
that the cost of labor, material, and equipment and
outstanding claims and indebtedness of whatever nature
arising out of the performance of the Contract between

CITY OF PORTSMOUTH, NEW HAMPSHIRE

and _____
(Contractor)

of _____

Dated: _____

has been paid in full for: Voice and Data Cabling for the Library

(Individual, Partner, or duly authorized
representative of Corporate Contractor)

Sworn to and subscribed before me this _____ day
of _____ 20 ____

CONTRACTOR'S RELEASE

KNOW ALL MEN BY THESE PRESENTS that

(Contractor) of _____, County of _____ and
State of _____ do hereby acknowledge
that _____ (Contractor)

has on this day had, and received from the
CITY OF PORTSMOUTH NEW HAMPSHIRE, final and completed payment for the
Construction of:
Voice and Data Cabling for the Library

NOW THEREFORE, the said _____

(Contractor)

for myself, my heirs, executors, and administrators) (for itself, its successors and assigns) do/does by these presents remise, release, quit-claim and forever discharge the City of Portsmouth, New Hampshire, its successors and assigns, of and from all claims and demands arising from or in connection with the said Contract dated _____, and of and from all, and all manners of action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of money, accounts, reckonings, bonds, bills, specifications, covenants, contracts, agreements, promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in law of equity, or otherwise, against the City of Portsmouth, New Hampshire, its successors and assigns, which (I, my heirs, executors, or administrators) (it, its successors and assigns) ever had, now have or which (I, my heirs, executors, or administrators) (it, its successors and assigns) hereafter can shall or may have, for, upon or by reason of any matter, cause, or thing whatsoever; from the beginning of record time to the date of these presents.

CONTRACTOR'S RELEASE (continued)

IN WITNESS WHEREOF, _____

(Contractor)

has caused these presents to be duly executed this ____ day of _____, 20__.

Signed, Sealed and Delivered in the presence of:

(Individual-Contractor) (Seal)

(Partnership-Contractor) (Seal)

(Partner) BY _____ (Seal)

Attested: _____
(Corporation)

(Secretary) BY _____
(President or Vice President)

(Corp. Seal)

INSURANCE REQUIREMENTS

Insurance shall be in such form as will protect the Contractor from all claims and liabilities for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this contract whether such operation by himself or by anyone directly or indirectly employed by him.

AMOUNT OF INSURANCE

- A) Comprehensive General Liability:
Bodily injury or Property Damage - \$2,000,000
Per occurrence/general aggregate
- B) Automobile and Truck Liability:
Bodily Injury or Property Damage \$2,000,000
Per occurrence/general aggregate

Additionally, the Contractor shall purchase and maintain the following types of insurance:

- A) Full Workers Comprehensive Insurance coverage for all people employed by the Contractor to perform work on this project. This insurance shall at a minimum meet the requirements of the most current laws of the State of New Hampshire.
- B) Contractual Liability Insurance coverage in the amounts specified above under Comprehensive General Liability.
- C) Product and Completed Operations coverage to be included in the amounts specified above under Comprehensive General Liability.
- D) Property Insurance-Builders Risk: When the contract is for construction of or addition to building structures, the contractor shall provide Builders Risk Insurance (including perils of fire, extended coverage, and theft) on all work in place and/or materials stored at the site. This insurance shall provide coverage for the full cash value of all completed construction and/or materials stored.

ADDITIONAL INSURED

All liability policies (including any excess policies used to meet coverage requirements) shall include the City of Portsmouth, New Hampshire as named Additional Insured.

- 1) The contractor's insurance shall be primary in the event of a loss.
- 2) The Additional Insured endorsement must include language specifically stating that the entity is to be covered for all activities performed by, or on behalf of, the contractor, including the City of Portsmouth's general supervision of the contractor.
- 3) The City of Portsmouth shall be listed as a Certificate Holder. The City shall be identified as follows:

City of Portsmouth
Attn: Legal Department
1 Junkins Avenue
Portsmouth, NH 03801

SECTION 01000 - GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 INTENT OF CONTRACT

- A. The intent of the Contract is to provide for the construction and completion in every detail of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the terms of the Contract.
- B. The Contractor shall be required to conform to the intent of the plans and specifications. No extra claims shall be allowed for portions of the work not specifically addressed in the plans and specifications but required to produce a whole and complete project, such work will be considered subsidiary to the bid items.

1.2 INCIDENTAL WORK

- A. Unless specifically excepted in the Bid or Technical Specifications, incidental work items for which separate payment is not measured includes, but is not limited to, the following items:
 - 1. Clean up
 - 2. Signs
 - 3. Mobilization
 - 4. Restoration of property
 - 5. Cooperation with other contractors, abutters and utilities.
 - 6. Accessories and fasteners or components required to make items complete and functional.

1.3 ALTERATION OF PLANS OR OF CHARACTER OF WORK

- A. The Owner reserves the right, without notice to Surety, to make such alterations of the plans or of the character of the work as may be necessary or desirable to complete fully and acceptably the proposed construction; provided that such alterations do not increase or decrease the contract cost.
- B. Within these cost limits, the alterations authorized in writing by the Owner shall not impair or affect any provisions of the Contract or bond.
- C. Any such increases or decreases of the quantities as a result from these alterations or deletions of certain items, shall not be the basis of claim for loss or for anticipated profits by the Contractor.
- D. The Contractor shall perform the work as altered at the contract unit price or prices.

1.4 EXTRA WORK ITEMS

- A. Extra work shall be performed by the Contractor in accordance with the specifications and as directed.
 - 1. Extra work performed will be paid for at the contract bid prices or at the price negotiated between the Owner and the Contractor if the item was not bid upon. If no agreement can be negotiated, the Contractor will accept as payment for extra work, cost plus 15% (overhead and profit). Costs shall be substantiated by invoices and certified payroll.
- B. Extra work will be paid for at a price as provided in the Contract documents or if such pay items are not applicable than at a price negotiated between the contractor and the Owner or at the unit Bid price.

- C. If the Owner determines that extra work is to be performed, a change order will be issued.

1.5 CHANGE ORDERS

- A. The Owner reserves the right to issue a formal change order for any increase, decrease, deletion, or addition of work or any increase in contract time or price.
- B. The Contractor shall be required to sign the change order and it shall be considered as part of the Contract documents.

1.6 FINAL CLEAN UP

- A. Before acceptance of the work, the Contractor shall remove from the site all machinery, equipment, surplus materials, rubbish, temporary buildings, barricades and signs.
- B. All parts of the work shall be left in a neat and presentable condition.
- C. On all areas used or occupied by the Contractor, regardless of the contract limits, the Bidder shall clean-up all sites and storage grounds.

1.7 ERRORS AND INCONSISTENCY IN CONTRACT DOCUMENTS

- A. Any provisions in any of the Contract Documents that may be in conflict with the paragraphs in these General Requirements shall be subject to the following order of precedence for interpretation.
 - 1. Technical Specifications will govern General Requirements and Standard Specifications.
 - 2. Shop Drawings will govern Technical Specifications, Standard Specifications and General Requirements.

PART 2 - CONTROL OF WORK

2.1 AUTHORITY OF THE CITY ENGINEER

- A. All work shall be done under supervision of the City Engineer and to his satisfaction.
- B. The City Engineer will decide all questions which may arise as to:
 - 1. the quality and acceptability of materials furnished and work performed;
 - 2. the rate of progress of the work;
 - 3. the interpretation of the plans and specifications;
 - 4. the acceptable fulfillment of the Contract by the Contractor.
- C. The City Engineer will have the authority to suspend the work wholly or in part for such periods as he may deem necessary
 - 1. due to the failure of the Contractor to correct conditions unsafe for workers or the general public;
 - 2. for failure to carry out provisions of the Contract;
 - 3. for failure to carry out orders;
 - 4. for conditions considered unsuitable for the prosecution of the work, including unfit weather; or for any other condition or reason deemed to be in the public interest.
- D. The Contractor shall not be entitled any additional payments arising out of any such suspensions.
- E. The Owner reserves the right to demand a certificate of compliance for a material or product used on the project. When the certificate of compliance is determined to be unacceptable to the

City Engineer the Contractor may be required to provide engineering and testing services to guarantee that the material or product is suitable for use in the project, at its expense.

2.2 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPES

- A. The Contractor shall be responsible for all damage or injury to property of any character:
 - 1. during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work,
 - 2. or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.
- B. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or as a result of the failure to perform work by the Contractor, the Contractor shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing rebuilding, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.
- C. If the Contractor fails to repair, rebuild or otherwise restore such property as may be deemed necessary, the Owner, after 48 hours notice, may proceed to do so, and the cost thereof may be deducted from any money due or which may become due the Contractor under the contract.

2.3 MAINTENANCE DURING CONSTRUCTION

- A. The Contractor shall maintain the work during construction and until the project is accepted.
- B. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and workers to ensure that the structure is kept in satisfactory conditions at all times.

2.4 SAFETY PRECAUTIONS

- A. Upon commencement of work, the Contractor shall be responsible for initiating, maintaining and supervising all safety precautions necessary to ensure the safety of employees on the site, other persons who may be affected thereby, including the public, and other property at the site or adjacent thereto.

2.5 PERMITS

- A. It will be the responsibility of the Contractor to obtain all permits required for the operation of equipment in, or on, all city streets and public ways.

2.6 BARRICADES AND WARNING SIGNS

- A. The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient lights, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the building occupants and the public.
- B. Closed off areas shall be protected by effective barricades. Obstructions shall be illuminated during hours of darkness. Suitable warning signs shall be provided to control and direct traffic in a proper manner, as approved by the engineer.
- C. The Contractor will be held responsible for all damage to the work due to lack of adequate controlling devices.

PART 3 - TEMPORARY FACILITIES

3.1 STORAGE FACILITIES

- A. The Contractor shall not store materials or equipment in a public right-of-way beyond the needs of one working day. Equipment and materials shall be stored in an approved location.
- B. The Contractor shall protect all stored materials from damage by weather or accident and shall insure adequate drainage at and about the storage location.
- C. Prior to final acceptance of the work all temporary storage facilities and surplus stored materials shall be removed from the site.

3.2 WATER FACILITIES

- A. The Owner shall provide the Contractor with reasonable access to water necessary for construction operations at the site.

3.3 TEMPORARY ELECTRICITY

- B. The Owner shall provide the Contractor with reasonable access to electrical power necessary for construction operations at the site.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT OF QUANTITIES (As may be applicable to the Project)

- A. All work completed under the contract will be measured according to the United States standard measure.
- B. The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice. Unless otherwise stated all quantities measured for payment shall be computed or adjusted for "in place" conditions.

4.2 SCOPE OF PAYMENT

- A. The Contractor shall receive and accept compensation provided for work in the contract as full payment for furnishing all materials and for performing all work under the contract in a complete and acceptable manner and for all risk, loss, damage or expense of whatever character arising out of the nature of the work or the prosecution thereof.
- B. The Contractor shall be liable to the Owner for failure to repair, correct, renew or replace, at his own expense, all damage due or attributable to defects or imperfections in the construction which defects or imperfections may be discovered before or at the time of the final inspection and acceptance of the work.
- C. No monies, payable under the contract or any part thereof, shall become due or payable if the Owner so elects, until the Contractor shall satisfy the Owner that the Contractor has fully settled or paid all labor performed or furnished for all equipment hired, including trucks, for all materials used, and for fuels, lubricants, power tools, hardware and supplies purchased by the Contractor and used in carrying out said contract and for labor and parts furnished upon the order of said Contractor for the repair of equipment used in carrying out said contract; and the Owner, if he so elects, may pay any and all such bills, in whole or in part.

4.3 PAYMENT PROCEDURES

- A. Submit Application for Payment after completion of Project closeout procedures with release of liens and supporting documentation. Include consent of surety to final payment and insurance certificates.

4.4 COMPENSATION FOR ALTERED QUANTITIES

- A. Except as provided for under the particular contract item, when the accepted quantities of work vary from the quantities in the bid schedule, the Contractor shall accept as payment in full, so far as contract items are concerned, at the original contract unit prices for the accepted quantities of work done. No allowance will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense on the part of the Bidder and subsequent loss of expected reimbursements therefore or from any other cause.
- B. Extra work performed will be paid for at the contract bid prices or at the price negotiated between the Owner and the Contractor if the item was not bid upon. If no agreement can be negotiated, the Contractor will accept as payment for extra work, cost plus 15% (overhead and profit). Costs shall be substantiated by invoices and certified payroll.

4.5 FINAL ACCEPTANCE AND FINAL PAYMENT

- A. Upon due notice from the Contractor of presumptive completion of the entire project, the City Engineer will make an inspection. If all construction provided for and contemplated by the contract is found complete to his satisfaction, this inspection shall constitute the final inspection and the City Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of the final inspection.
- B. If the City Engineer's inspection discloses any work in whole or in part, as being unsatisfactory, the City Engineer will give the Contractor the necessary instructions for correction of such work, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the City Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

4.6 GENERAL GUARANTY AND WARRANTY OF TITLE

- A. Neither the final certification of payment nor any provision in the contract nor partial or entire use of the improvements embraced in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express or implied warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the date of final acceptance of the work. The Owner will give notice of defective materials and work with reasonable promptness.
- B. No material, supplies or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease purchase or other agreement by which an interest therein or in any part thereof is retained by the Seller or supplier. The Contractor shall warrant good title to all materials, supplies and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Owner free from any claims, liens or charges. Neither the Contractor nor any person, firm or

corporation furnishing any material or labor for any work covered by this Contract shall have the right to a lien upon any improvements or appurtenances thereon.

Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontractors and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

4.7 NO WAIVER OF LEGAL RIGHTS

- A. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or be stopped from recovering from the Contractor or his Surety, or both, such overpayment as it may sustain by failure on the part of the Contractor to fulfill his obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.
- B. The Contractor, without prejudice to the Contract, shall be liable to the Owner for latent defects, fraud or such gross mistakes as may amount to fraud, and as regards the Owner's right under any warranty or guaranty.

4.8 TERMINATION OF CONTRACTOR'S RESPONSIBILITY

- A. Whenever the improvement provided for by the Contract shall have been completely performed on the part of the Contractor and all parts of the work have been released from further obligations except as set forth in his bond and as provided in Section 4.5 above.

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY OF WORK

- A. Project: **LIBRARY VOICE AND DATA CABLING Bid # 58-06**
- B. Owner: **City of Portsmouth NH**
- C. Construction Manager: **North Branch Construction**
- D. The Work consists of installation of voice and data cable per drawings and technical specifications.

1.2 SCHEDULE

- A. Work of SECTION 16750 is to begin on June 12, 2006, and be complete by July 7, 2006 unless changed by the Owner or Construction Manager (CM). The Contractor will comply with any changes in the Work Schedule determined by the CM.

1.3 WORK RESTRICTIONS

- A. Project access is controlled by the CM retained by the City.
- B. Contractor will comply with the CM's Site Safety Program Requirements.
- C. Smoking is not allowed inside the building.
- D. Contractor's Use of Premises: During construction, Contractor will have limited use of area indicated. Contractor's use of premises is limited as follows:
 - 1. Perform construction only during normal working hours (7 AM to 6 PM Monday thru Friday, other than holidays), unless otherwise agreed to in advance by Owner.
 - 2. Clean up work areas and return to a useable condition at the end of each work period.

1.4 WORK IN OTHER DIVISIONS AND BY OTHER CONTRACTORS

- A. The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.
- B. If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Owner apparent discrepancies or defects in such construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discovered.

END OF SECTION 01100

SECTION 01300 - ADMINISTRATIVE REQUIREMENTS

PART 1- GENERAL

1.1 PROJECT MANAGEMENT AND COORDINATION

- A. Project access is controlled by a Construction Manager retained by the City. Coordinate construction with the Site Construction Manager to ensure efficient and orderly installation of each part of the Work.
- B. Conduct progress meetings with Owner at Project site as needed. Record minutes and distribute to parties involved, including Owner.

1.2 SUBMITTAL PROCEDURES

- A. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 1. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
 - 2. Identify deviations from the Contract Documents.
 - 3. Submit three (3) copies of each submittal.
- B. Include the following information on each submittal:
 - 1. Project name.
 - 2. Date.
 - 3. Name and address of Contractor.
 - 4. Name and address of subcontractor or supplier.
- C. Owner will review each action submittal, mark as appropriate to indicate action taken, and return copies less those retained. Compliance with specified requirements remains Contractor's responsibility.
- D. Construction Schedule Submittal Procedure:
 - 1. Submit schedule within 10 days after date established for Commencement of the Work. Distribute copies to Owner, Construction Manager, and parties required to comply with dates.
 - 2. Revise the schedule after each meeting or activity where revisions have been made. As Work progresses, mark each bar to indicate actual completion. Distribute revised copies to Owner, Construction Manager, and parties required to comply with dates.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. Product Data: Mark each copy to show applicable choices and options. Include the following:
 - 1. Data indicating compliance with specified standards and requirements.
 - 2. Notation of coordination requirements.
 - 3. For equipment data, include rated capacities, dimensions, weights, required clearances, and furnished specialties and accessories.
- B. Shop Drawings: Submit Project-specific information drawn to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submit 1 reproducible print and 1 blue- or black-line print on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches. Include the following:

1. Dimensions, profiles, methods of attachment, large-scale details, and other information, as appropriate for the Work.
 2. Identification of products and materials.
 3. Notation of coordination requirements.
 4. Notation of dimensions established by field measurement.
- C. Samples: Submit Samples finished as specified and identical with the material proposed. Where variations are inherent in the material, submit sufficient units to show full range of the variations. Include name of manufacturer and product name on label.

2.2 INFORMATION SUBMITTALS

- A. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

END OF SECTION 01300

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Provide products of same kind from a single source. The term "product" includes the terms "material," "equipment," "system," and similar terms.
- B. Product Substitutions: Substitutions include products and methods of construction differing from that required by the Contract Documents and proposed by Contractor after award of the Contract.
 - 1. Submit three (3) copies of each request for product substitution.
 - 2. Submit requests within 10 days after signing the Contract.
 - 3. Submit requests in time to permit processing of request and subsequent submittals, if any, sufficiently in advance of when materials are required in the Work. Do not submit unapproved substitutions on Shop Drawings or other submittals.
 - 4. Identify product to be replaced and provide complete documentation showing compliance of proposed substitution with applicable requirements. Include a full comparison with the specified product, a list of changes to other Work required to accommodate the substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
 - 5. Architect will review the proposed substitution and notify Contractor of its acceptance or rejection.
- C. Comparable Product Submittal:
 - 1. Submit three (3) copies of each request for approval of products as comparable to basis-of-design products. Submit requests in time to permit processing of request and subsequent submittals, if any, sufficiently in advance of when materials are required in the Work. Do not submit unapproved products on Shop Drawings or other submittals.
 - 2. Identify product to be replaced and provide complete documentation showing compliance of proposed product with applicable requirements. Include a full comparison with the specified product.
 - 3. Architect will review the proposed product and notify Contractor of its acceptance or rejection.
- D. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Deliver products to Project site in manufacturer's original sealed container or packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 4. Store materials in a manner that will not endanger Project structure.
 - 5. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. Provide products that comply with the Contract Documents, are undamaged, and are new at the time of installation.
 - 1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
- B. Select products to comply with all of the following that are applicable:
 - 1. Where only a single product or manufacturer is named, provide the item indicated. No substitutions will be permitted.
 - 2. Where two or more products or manufacturers are named, provide one of the items indicated. No substitutions will be permitted.
 - 3. Where products or manufacturers are specified by name, accompanied by the term "available products" or "available manufacturers," provide one of the named items or comply with provisions for "comparable product" to obtain approval for use of an unnamed product or manufacturer.
 - 4. Where a single product is named as the "basis-of-design" and no other manufacturers are named, provide the named product or comply with provisions for "comparable product submittal" to obtain approval for use of a product of another manufacturer.
 - 5. Where a product is described with required characteristics, provide a product that complies with those characteristics.
 - 6. Where compliance with performance requirements is specified, provide products that comply and are recommended in writing by the manufacturer for the application.
 - 7. Where compliance with codes, regulations, or standards, is specified, select a product that complies with the codes, regulations, or standards referenced.
- C. Unless otherwise indicated, Owner will select color, pattern, and texture of each product from manufacturer's full range of options that includes both standard and premium items.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01600

SECTION 01701 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 CLOSEOUT SUBMITTALS

- A. Record Drawings: Maintain a set of the Shop Drawings as Record Drawings. Mark to show installation that varies from the Work originally shown.
- B. Operation and Maintenance Data: Organize data into three-ring binders with identification on front and spine of each binder and pocket folders for folded sheet information. . Include the following:
 - 1. Manufacturer's operation and maintenance brochures.
 - 2. Emergency instructions.
 - 3. Spare parts list.
 - 4. Wiring diagrams.
 - 5. Copies of warranties.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, plumb, smooth, clean, and free of deleterious substances; substrates within installation tolerances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Verify layout information shown on Drawings, in relation to property survey and existing benchmarks, before laying out the Work.
- C. Prepare substrates and adjoining surfaces according to manufacturer's written instructions, including, but not limited to, filler and primer application.
- D. Take field measurements as required to fit the Work properly. Where fabricated products are to be fitted to other construction, verify dimensions by field measurement before fabricating and, when possible, allow for fitting and trimming during installation.

3.2 CUTTING AND PATCHING

- A. Do not cut structural members or operational elements without prior written approval of Owner.
- B. For patching, provide materials whose installed performance will equal or surpass that of existing materials. For exposed surfaces, provide or finish materials to visually match existing adjacent surfaces to the fullest extent possible.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned. Clean exposed surfaces and protect from damage. If applicable, prepare surfaces for field finishing.
- B. Clean Project site and work areas daily, including common areas.

3.4 FINAL CLEANING

- A. Clean each surface or item as follows before requesting inspection for certification of Substantial Completion:
1. Remove labels that are not permanent.
 2. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication.

3.5 CLOSEOUT PROCEDURES

- A. Substantial Completion: Before requesting Substantial Completion inspection, complete the following:
1. Advise Owner of pending insurance changeover requirements.
 2. Submit specific warranties, maintenance agreements, and similar documents.
 3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities.
 4. Submit Record Drawings and Specifications, operation and maintenance manuals and similar final record information.
 5. Deliver tools, spare parts, extra materials, and similar items.
 6. Complete startup testing of systems and instruction of operation and maintenance personnel.
 7. Remove temporary facilities and controls.
 8. Advise Owner of changeover information related to Owner's occupancy, operation, and maintenance.
 9. Complete final cleaning requirements, including touchup painting.
 10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. On receipt of a request for inspection, Owner will proceed with inspection or advise Contractor of unfulfilled requirements. Owner will prepare the Certificate of Substantial Completion after inspection or advise Contractor of items that must be completed or corrected before the certificate will be issued.
- C. Request inspection for certification of Final Completion, once the following are complete:
1. Submit a copy of Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
 2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- D. Owner will reinspect the Work on receipt of notice that the Work has been completed.
1. On completion of reinspection, Owner will prepare a final Certificate for Payment. If the Work is incomplete, Owner will advise Contractor of the Work that is incomplete or obligations that have not yet been fulfilled.

END OF SECTION 01701

SECTION 16750 - VOICE AND DATA COMMUNICATION CABLING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Summary: Includes wire, cable, connecting devices, installation, and testing for wiring systems to be used as signal pathways for voice and high-speed data transmission.
- B. Comply with NFPA 70.
- C. Coordinate premises wiring Owner's telecommunications and LAN equipment suppliers.

1.2 REFERENCE STANDARDS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. All publications are intended to be the most current editions unless otherwise specifically shown.
- B. Except where otherwise noted all material and workmanship shall conform to the following standards:
 - 1. ANSI/TIA/EIA 568-B Series Commercial Building Telecommunications Wiring Standard
 - 2. ANSI/TIA/EIA 569-A Commercial Building Standard for Telecommunications Pathways and Spaces
 - 3. ANSI/TIA/EIA 606-A Administration Standard for Telecommunications Infrastructure of Commercial Buildings
 - 4. ANSI/TIA/EIA 607 Commercial Building Grounding and Bonding Requirements for Telecommunications
 - 5. ASTM E 814-00 Fire Tests of Through-Penetrations Fire Stops
 - 6. National Electrical Code
 - 7. ANSI/NFPA 101, 1985 Life Safety Code
 - 8. ANSI/NESC 1997, National Electrical Safety Code
 - 9. ANSI/IEEE Std. 1100-1992 Recommended Practice for Powering and Grounding Sensitive Electronic Equipment in Industrial and Commercial Power Systems.
 - 10. FCC "The Code of Federal Regulations, FCC 47 CFR 68"

1.3 SUBMITTALS

- A. Materials and Equipment List: The Contractor shall submit for approval a complete list of all materials, equipment and accessories proposed for work in accordance with these specifications and Contract Drawings. The list shall include complete catalog identification numbers and models or system designator, quantities, options, configurations and catalogs "cuts."
- B. As Built Drawings: The Contractor shall provide one set of reproducible drawings depicting the final installation details, including final cable locations, quantities and routing, upon completion of the project. The Contractor shall also provide as built drawings in electronic format, in AutoDesk AutoCAD 2000 format.
- C. Documentation: The Contractor shall provide a listing in spreadsheet format of all horizontal and backbone cables, indicating type of cable, origination and termination points and length. The Contractor shall provide this documentation in a format to be approved in advance by the City.

- D. Record Drawings: The Contractor shall maintain and keep up to date a complete record set of drawings that will show every change from the Contract Drawings.

1.4 QUALITY ASSURANCE

- A. The Contractor shall conduct regular inspections of all construction and installation work under the control of the Contractor. The Contractor shall generate punch lists, noting any and all deficiencies in the installation of the cabling. A copy of the punch list will be provided to the Contractor's installation personnel, any subcontractors of the Contractor and the City. The punch list will be accompanied by statements specifying what actions will be taken to resolve open issues as well as target dates for the resolution of problems on the punch list.

1.5 WARRANTY

- A. The Contractor shall warrant all cable system components to be free of defective material and workmanship for a period of a minimum of fifteen years after final acceptance. The Contractor shall remove and replace any cable and equipment components found to be defective within the warranty period.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall deliver materials factory packaged in containers or reels. All materials shall be stored in a clean dry space. The Contractor shall handle all materials carefully to avoid damage.
- B. Each reel of cable provided by the Contractor shall be inspected for physical damage. Any reel or cable container found to be damaged to the extent that cable integrity may be affected shall be returned to the supplier for replacement.
- C. The Contractor shall inspect all hardware (distribution shelves, connectors, etc.) prior to installation. Any damaged or faulty equipment will be replaced.

PART 2 - PRODUCTS

2.1 FIBER OPTIC BACKBONE CABLE SUBSYSTEM

- A. Single mode fiber cable used shall have the following optical characteristics:
 - 1. Size: Core/Cladding 8 to 9/125um
 - 2. Attenuation: 1.00 dB/km at 1310nm - tight buffered, inside plant 1.00 dB/km at 1550nm - tight buffered, inside plant
- B. Multimode fiber cable used shall have the following characteristics:
 - 1. Size: Core/Cladding 62.5/125um
 - 2. Attenuation: 3.5 dB/km at 850nm; 1.2 dB/km at 1310nm
 - 3. Bandwidth: 160MHz at 850nm; 500MHz at 1300nm
- C. Fiber optic cable shall be rated by the manufacturer for use in high speed wide and local area network environments.
- D. Inside backbone cable shall consist of tight-buffered cable consisting of multiple fiber bundles and a dielectric central strength member. The outer jacket shall meet the NEC requirements for OFNR rating, except in locations where plenum rated cable is required.
- E. The fiber backbone subsystem shall consist of six (6) strands of single mode and six (6) strands of multimode fiber from the first floor telephone/data entrance room (room 113A) to the second floor computer room (room 215).

F. Acceptable manufacturers: Avaya, Siecor, or approved equal.

2.2 FIBER DISTRIBUTION PANELS

- A. Panels used for terminating fiber optic cables shall be of the distribution type. Except as noted on the drawings, all distribution panels shall be rack mounted except where noted otherwise on the Drawings. Panels shall be low profile, and selected to occupy minimum rack spaces.
- B. Distribution panels shall have both termination bays and splice bays, with the proper number of SC panels/mounting plates with stainless steel couplers and splice organizer trays plus 20% for expansion. All distribution and patching equipment shall be installed for the appropriate fiber type and count, as shown on the Drawings.
- C. Acceptable manufacturers: Avaya, Siecor, or approved equal.

2.3 FIBER CABLE SC CONNECTORS

- A. SC compatible connector couplings shall be able to accommodate ceramic or plastic SC compatible connectors. The contractor shall use couplings specifically rated by the manufacturer for gigabit Ethernet applications.
- B. Multimode and single mode fiber connectors shall be stainless steel SC compatible, epoxy type, with ceramic tips. The maximum average attenuation specifications shall be as follows:
 - 1. Single mode: .8dB/connector
 - 2. Multimode: .5dB/connector
- C. Acceptable manufacturers: Avaya, Siecor, or approved equal.

2.4 FIBER OPTIC PATCH CABLES

- A. Fiber patch cables shall be 3-meter duplex SC-to-SC fiber patch cords for all fiber distribution panel ports. Provide four (4) multimode and four (4) single mode fiber patch cables.
- B. The Contractor shall provide cable management rings and support brackets for routing and support of all fiber patch cables.
- C. Acceptable manufacturers: Avaya, Siecor, or approved equal.

2.5 COPPER CABLE BACKBONE SUBSYSTEM

- A. The copper cable backbone system shall consist of the following:
 - 1. One (1) 50 pair Category 5 CMR copper cable from the first floor telephone/data entrance room (room 113A) to the second floor computer room (room 215).
 - 2. 110 type wiring blocks and appropriate connectors and clips.
 - 3. Two (2) four-pair category 6 copper cables from the first floor telephone/data entrance room (room 113A) to the second floor computer room (room 215).
- B. Acceptable manufacturers: Avaya, Superior Essex, or approved equal.

2.6 HORIZONTAL CABLE SUBSYSTEM

- A. The horizontal cable subsystem will be a complete Category 6 installation. Horizontal cables shall consist of 4 twisted pair PVC cable, except in areas requiring plenum-rated cable, as shown on the floor plans. The standard faceplate shall include two category 6 outlets. Vendors shall provide pricing to include cables, patch panels and faceplates.

- B. Horizontal copper cable runs shall not exceed 90 meters from the outlet to the wiring closet termination point. If cable routing requires horizontal runs in excess of 90 meters, the Contractor shall notify the City in advance of installation.
- C. Cross connects to the telephone system should use krone blocks.
- D. Acceptable manufacturers: Avaya, Superior Essex, Mohawk/CDT, or approved equal.

2.7 STATION CABLE FACEPLATES AND JACKS

- A. All data/voice faceplates shall be able to accommodate different types of modules/jacks that can be used interchangeably. All data/voice faceplates used shall have a capacity of a minimum of four RJ45S modular jacks.
- B. Data and voice communications jacks shall meet all performance requirements as specified in the most current version of the EIA/TIA 568B Category 6 standard, and will be wired to accommodate the 568B wiring sequence.

2.8 CATEGORY 6 PATCH PANELS

- A. Category 6 patch panels shall meet the EIA/TIA requirements for Category 6 cross connect and switching hardware.
- B. The Contractor shall provide Category 6 RJ45 patch panels in all wiring closets adequate to support all installed Category 6 cables, plus 20% growth in each wiring closet.
- C. Category 6 patch panels shall include wire management components that shall be used for routing of communications cable to and from telecommunications panels and equipment. These components shall include:
 - 1. Wire slots to organize cables
 - 2. Cable brackets for support and routing
 - 3. Strain relief clips
 - 4. Wire management panels
- D. Acceptable RJ45 patch panel manufacturers: Avaya, Leviton, Ortronics, or approved equal.

2.9 EQUIPMENT CABINETS

- A. The Contractor shall mount RJ45 patch panels and fiber distribution panels in 72” high, 19” lockable equipment cabinets or open racks, as required per Section 3.1.A., located on each floor. Cabinets will be equipped with sliding shelves to allow for ease of access to front and back of equipment. Coordinate the configuration of rack/cabinet-mounted components with the City. The cabinets/racks shall include accessories including cable management, power strips, fans (in enclosed cabinets) and be able to support LAN electronics, patch panels, 110 blocks and fiber distribution shelves.
- B. Bidders must provide a rack layout and obtain approval from the City.
- C. Acceptable manufacturers: Chatsworth Products or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General Instructions
 - 1. General Cable Infrastructure Requirements

- a. There will be one (1) cable distribution point located in the second floor computer room (room 215).
 - 1) The City has provided floor plans that identify the first floor telephone/data entrance room (room 113A) and the second floor computer room (room 215). The plans also identify the quantity of faceplates to be installed in each room. Exact locations within each room are not available at this time, so pricing should make reasonable assumptions as to the exact locations.
 - 2) The first floor telephone/data entrance room (room 113A) will serve as the entrance for any outside cabling. This is a secured space, so an enclosed equipment cabinet is not required. An open rack will suffice.
 - 3) The second floor computer room (room 215) will serve as the MDF for data and voice services in the building. Fiber riser cables will originate from this room as previously defined. This is the endpoint of the backbone cable from the first floor telephone/data entrance room (room 113A). This is a secured space, so an enclosed equipment cabinet is not required. An open rack will suffice.
 - b. All work shall be done at such times, as the City shall deem appropriate. Work shall not begin in any area without specific notification of, and approval by the City and Construction Manager.
 - c. The Contractor shall install all provided and furnished materials in accordance with manufacturer's specifications, recommendations and guidelines. Copies of the manufacturer's guidelines, specifications and recommendations shall be provided by the Contractor to the City and shall be made available on site to the Contractor's personnel.
 - d. Install all wiring and cabling in accordance with the National Electrical Code where the provisions of the NEC are applicable.
 - e. Installation shall be in conformance to generally acceptable telecommunications means and methods and the manufacturers specifications. Stress on any cable during installation shall not exceed manufacturers specifications. All splicing and connectorization will be in accordance with industry-standard practices.
2. Fiber Optic Cable Plant Installation
 - a. All fiber cable shall be terminated in SC connectors mounted in fiber distribution centers. The contractor shall use fiber pigtailed and splice trays at all distribution points.
 - b. All fiber optic cables shall be installed in inner duct to protect and isolate it.
 - c. Fiber optic cable shall be installed in accordance with manufactures specifications. The Contractor shall not exceed the maximum pulling tension or minimum bend radius of the cable.
 3. Copper Inside Plant Backbone Subsystem
 - a. All cables shall be terminated in Category 6 patch panels.
 - b. All copper inside plant copper cable shall be installed in accordance with manufacturers specifications.
 - c. The Contractor shall not exceed the maximum pulling tension or minimum bend radius of the cable.
 4. Horizontal Cabling
 - a. The configuration of jacks and faceplates shall be as specified on the attached Drawings. The drawings identify the number of faceplates in each room, but not

- the exact location. Proposers are requested to provide alternative pricing for two-jack (one voice and one data) and three-jack (one voice and two data) faceplates.
- b. The Contractor shall provide electrical service boxes to at each outlet location.
 - c. The Contractor shall install appropriate cable support hardware. In no instance shall the Contractor attach cables to any other support hardware in the ceiling space. The Contractor shall utilize cable bridle rings attached to hanger rod supports to secure the cable to the point of entry to the stub-up. Cable shall be supported at spacing of 48" or less depending on the weight of the bundle. Under no circumstances shall cable be laid on suspended ceiling or draped across other conduits, pipes, ducts, or other facilities installed along the path of the cable. When any cable is pulled through a conduit, a dragline is to be left in place in the conduit to facilitate the installation of future cables.
 - d. Cabling shall not be run exposed. In cases where there is no access to ceiling spaces, the use of metallic surface mounted raceway will be permitted.
5. Route Preparation, Drilling and Coring
- a. The Contractor shall coordinate the drilling of any required holes in the concrete slab, sheet rock walls and any other required building penetrations with the City and Construction Manager.
6. Termination
- a. The Contractor shall terminate all conductors of all cables. Each copper backbone cable pair shall be terminated contiguously on 110 type wiring blocks. Terminations shall be in color code sequence from left to right and from top to bottom on each block for each cable. Patch panels shall be labeled in a permanent legible fashion, in accordance with TIA/EIA 606-A standards, in a format approved in advance by the City.
 - b. Fiber strands shall be field terminated in rack-mounted fiber distribution panels on SC connectors according to the specification of the manufacturer. Only tool kits and consumables that are specified by the manufacturer shall be utilized. Completed SC connectors shall be placed into the sleeve of the fiber termination panel from left to right in color code sequence. Strands shall be protected and secured within the fiber panel to ensure both strain relief and bend radius. The fiber cable shall be tie wrapped (this means the total cable with all strands inside of outer jacket) at the point of entry of the patch panel to prevent strain on the strands. Where required, to secure the fiber optic cable from pulling tension, the Kevlar strength members shall be separated from the fiber strands and attached to the panel by a clamp. Fiber connectors shall be terminated on SC connectors using manufacturer-approved methods.
 - c. The Contractor shall terminate horizontal cables in modular jack inserts at the outlet in accordance with the floor plans, using the 568B wiring sequence. Apply voice and data decal outlet labels, and blank inserts to the faceplate and snap in place. Apply numbered outlet labels prior to completion of testing. The City's Representative shall approve the labeling scheme in advance. Testing is not considered complete in the absence of automated labeling.
 - d. The Contractor shall terminate horizontal cables on rack mounted Category 6 RJ45 patch panels as shown on the Drawings, according to the 568B wiring sequence. Site Survey
7. Prior to placing any cable, penetration, etc. the Contractor shall survey the site to see that job conditions do not impose any obstructions that would interfere with the safe and satisfactory placement of the cables, and arrange to remove any obstructions with the

City. The Contractor shall provide shop drawings for approval by the City prior to starting work.

8. The Contractor is responsible for notifying the City as soon as field conditions prevent proper installation. Claims will not be entertained after cable pulling has started.
9. The Contractor shall verify site conditions and dimensions of equipment to ensure access for proper installation of equipment without disassembly that will void warranty, and shall report in writing to the City prior to purchase or shipment of equipment involved, on conditions that may prevent proper installation.

B. Inspection

1. All cable shall be inspected as it is pulled off the reel for any obvious defects. If defects are observed, further use of the cable from this reel will be halted.

C. Pulling Tension

1. No cable shall be installed with a pulling tension exceeding the maximum recommended by the manufacturer. Pulling tension should be monitored with a tension gauge.
2. If multiple cables are to be pulled at one time, the Contractor shall make the necessary allowances to back off the pulling tension of the bundle.
3. Cable pulls shall be protected by means of an overload cutoff or breakaway clutch set at least 10% below the cable manufacturers maximum recommended pulling tension.

D. Bend Radii

1. All cables shall be installed with a bend radius greater than recommended by the manufacturer.

E. Slack

1. The Contractor shall install sufficient slack prior to termination and patching.
2. Prior to shutdown, the Contractor shall be required to leave slack for riser cables to provide some degree of flexibility and for service rearrangement.

F. Securing Methods

1. The Contractor shall provide tie wraps, riser cable support grips, vertical and horizontal cable trays in wiring closets, and equipment rooms, D-rings and strain relief based upon field conditions to maintain orderly cable organization.
2. The Contractor shall be responsible for securing all cabling in a way to satisfy any structural engineering requirements.
3. The Contractor shall obtain required structural engineering related information for any item that may affect the infrastructure of the building, and submit the information to the City's Representative for prior review and approval.
4. The Contractor shall provide suspended platforms, threaded rods, strap hangers, brackets, shelves, stands or legs as necessary for floor, wall or ceiling mounting of equipment provided under this Section. The Contractor shall provide steel supports and hardware for proper installation of hangers, anchors, guides, etc., and shall provide cut sheets, weights, and other pertinent data required for proper coordination of equipment support.
5. Tie wraps shall be used at approximately 24-inch intervals to secure cable in cable trays and to provide strain relief at termination points.

G. Protection

1. During installation, and prior to final acceptance, the Contractor shall protect finished and unfinished work against damage and loss. In the event of such damage or loss, the Contractor shall replace or repair such work at no additional cost to the City.

2. As cable is installed, care must be taken to avoid nicks, kinks or other damage to the cable. Cable is to be labeled at each end as specified. Provide strain relief at each termination point and enough slack to easily re-terminate the cable, if required later.

H. Cable Routes And Clearances

1. Unshielded twisted pair cable shall be routed so as to maintain the following minimum distances from power sources:

| Condition | Minimum Separation Distance | | |
|---|-----------------------------|-------------------|--------------------|
| | <2 kVA | 2-5 kVA | >5 kVA |
| Unshielded power lines or electrical equipment in proximity to open or nonmetal pathways | 127 mm (5 in) | 305 mm (12 in) | 610 mm (24 in) |
| Unshielded power lines or electrical equipment in proximity to grounded metal conduit pathway | 64 mm (2.5 in) | 152 mm (6 in) | 305 mm (12 in) |
| Power lines enclosed in a grounded metal conduit (or equivalent shielding) in proximity to a grounded metal conduit pathway | | 76 mm (3 in) | 152 mm (6 in) |
| Electrical motors and transformers | | | 1220 mm (48 in) |

I. Grounding

1. Metallic sheathed cables shall be bonded and grounded. Riser cables shall be bonded to the metal frames of the mounting hardware in the TR using bonding clamps appropriate to the size of the cable. The MC shall be grounded to building ground in accordance with local practice. Cable trays are to be grounded and bonded for safety per NEC standards.
2. Each TR will have a single ground point. This point is bonded to the integral building grounding system or to the local structural steel. All grounding and bonding in each TR will be connected to that point either directly or through the use of ground bus connections.
3. All cables with a metallic component, which enter a TR from outside a building, shall be grounded at the point of entrance with appropriate lightning protection.
4. All external cables, which enter a building, shall conform to the bonding and grounding requirements described in the NEC.

J. Splicing

1. No splicing of any cables will be performed unless otherwise pre-approved in writing by the City.

K. Materials Management

1. Equipment and materials shall be properly stored, adequately protected and carefully handled to prevent damage until acceptance.
2. The Contractor shall ensure delivery of cable, factory-packaged in containers or on reels. The Contractor shall provide storage of all components, including rental of containers or other suitable methods as specified.

L. Fire Stopping

1. The Contractor shall suitably fire stop all riser shaft openings; horizontal sleeve penetrations, both ends of any horizontal conduits and all slot cuts in walls and under the raised access floors which are needed to facilitate cable access/egress.

M. Protection/Restoration Of Premises

1. The Contractor shall, as required, during the progress of work, remove and properly dispose of resultant dirt and debris and keep premises clean. Upon completion of work, the Contractor shall remove equipment and unused material provided for work.

N. Quality Assurance

1. The work shall be executed in full accordance with the current rulings of the latest applicable standards and all rulings by state, utility, and local authorities. Where codes conflict, the more stringent shall apply. Where the specification requirements exceed the requirements of these authorities, codes, and standards, the specification requirements shall prevail.
2. The Contractor shall replace any imperfect or rejected work with work conforming to the requirements of the specification and shall be satisfactory to the City without extra cost to the City.
3. The Contractor shall report to the City promptly in writing, whenever plans or specifications are believed to be at variance with these requirements and shall not proceed with such work until further instructed in writing by the City.

3.2 TESTING**A. General Instructions**

1. The Contractor shall thoroughly test all cables and connectors that they furnish and install. The City requires certification that all pairs were tested and found to be 100% reliable end-to-end (block-to-block and block-to-receptacle); bad pairs/punch-downs and/terminations shall not be used, but rather be corrected and/or replaced at no additional cost to the City. The Contractor shall present all testing plans to the City for approval prior to the start of testing. The Contractor shall provide all labor, test equipment, and tools necessary to verify proper operation prior to final acceptance by the City.
2. Prior to any testing, the Contractor shall provide the City with a two (2) day minimum advance notice of the date testing is to begin. All test results shall be documented, and submitted to the City for review.
3. The Contractor will repair or replace all cable, connectors, and equipment supplied by the contractor, which do not meet acceptance criteria.
4. Successful completion of all tests indicated below is required for acceptance.

B. Replacement

1. Any cable, connector, or wiring block, patch panel or other device furnished by the Contractor which tests below manufacturer's standards shall be replaced at no additional cost. The replacement shall be re-tested to verify compliance.

C. Testing Procedures

1. The Contractor shall provide the necessary test equipment to conduct the tests.
2. Field tests may be required to be performed in the presence of the City and/or its duly authorized representatives. The Contractor shall provide written documentation reporting the results of all tests.

D. Fiber Optic Cable Test Procedures

1. Following the physical installation and termination of the fiber optic cables, the Contractor shall conduct any pre-checkout tests deemed necessary prior to the conduct of formal acceptance tests with the City.
2. The Contractor shall verify continuity of all optical fiber strands.

3. The Contractor shall be responsible to perform optical loss (attenuation) measurements and Optical Time Domain Reflectometer (OTDR) tests. Contractor shall document such items as the personnel involved in the testing, type of equipment utilized, equipment settings, the date tested, reel number (or cable ID when tested post-installation) and strand number. The Contractor shall be responsible to supply sufficient cable for the installation and to take whatever action is necessary to provide such cable at no additional cost to the City.
4. The Contractor shall provide written certification, including actual trace records in As Built Drawings, that the optical loss for each strand is within the limits established.
5. If a fiber cable loss exceeds either the established optical loss or the manufacturer's standards, the Contractor shall first clean the connections at both ends and retest the cable. If loss is still excessive, the Contractor shall inspect the connections. Repolishing or connector replacement may be required. If the connector terminations are determined to be acceptable, the cable may be defective. An Optical Time Domain Reflectometer (OTDR) shall be used to locate cable breaks and points at which losses occur.
6. In the event that the fiber continues to test outside of acceptable specifications, the Contractor shall replace the cable at no additional cost to the City in accordance with the City's schedule.

E. Physical Inspection

1. Prior to the conduct of any transmission testing, the following visual inspections shall be performed:
 - a. Verify that cable has been installed to comply with contract documents.
 - b. Check for physical damage to Distribution Panels and Termination Blocks.
 - c. Verify that outlets have been securely mounted and properly labeled.
 - d. Check that all cabling is properly jacketed, installed and labeled at both ends (to the appropriate block/panel in the closet and MDF).
 - e. Verify that all cable bends are within the manufacturer's minimum bend radius allowed.
 - f. Check and demonstrate that all cable shields have been correctly grounded or bonded.
 - g. Verify that the cable is properly supported for termination and long-term placement (approvals must be obtained from the City).
 - h. Verify that all cables are properly supported and independent of any other support/hanger rods in the ceiling space.
 - i. Verify that cables have been terminated properly and in proper color code sequence.

F. Copper Cable Transmission Tests

1. Electrical tests of copper cables shall be performed only with connectors installed and cables punched down. Copper Riser and horizontal cables shall be tested End-to-End from termination point to termination point via the appropriate punch-down on the termination block. 100% testing of all pairs on all cables is required. Manufacturer standard test equipment shall be employed in addition to any special test gear required.
2. For copper backbone/riser cables, the Contractor shall attach the test equipment in the Main Equipment Room from the punch-down/termination block and at the punch-down/termination block or distribution panel in the closet.
3. All pairs of each cable shall be electrically tested for:
 - a. Continuity - the measured resistance value shall be recorded.

- b. Opens
 - c. Ground Faults
 - d. Correct Termination - for the unshielded twisted pair, the correct color code shall be punched down to be appropriate block/pin on the 110 block
 - e. Reversals (Correct Polarity)
 - f. Splits
 - g. Crosses
4. The Contractor shall create a punch list of bad pairs and re-terminate and, as necessary, replace any defective cables, connectors and/or panels.

G. Horizontal Station Cable Testing

1. Perform testing, and certify Category 6 compliance on all horizontal cable subsystems and channels. All components of each horizontal subsystem must be of the Category 6 rating (cable, jack insert, patch panel, patch and station cables), and the entire channel, including all components, must be tested end-to-end. Test results will be documented on hard copy media and listed by outlet.
2. The Contractor shall identify the test equipment and procedures that will be followed to complete and document the testing.
3. Test measurements shall be conducted for bandwidth up to 250MHz, and include the following:
 - a. Insertion loss
 - b. Delay
 - c. Delay skew
 - d. NEXT
 - e. PSNEXT
 - f. Return loss
 - g. ELFEXT
 - h. PSELFEXT
 - i. ACR
 - j. PSACR

3.3 CABLE SYSTEM DOCUMENTATION

A. General Instructions

1. The Contractor shall provide documentation enumerating termination panels and every cable run. Any additional documentation not explicitly listed that the Contractor feels should be provided to facilitate a complete, working installation prior to acceptance by the City shall also be supplied.
2. Documentation of all installed cable, manhole racking diagrams and splicing diagrams shall be provided in an electronic database. Fiber optic OTDR test results shall be provided in hardcopy format.

B. CLEANING

1. The Contractor shall clean up each work area at the end of each day. Remove all cartons, debris, etc. as the work progresses, and finally at completion of the work of this Section.
2. Just prior to inspection for substantial completion the Contractor shall perform all final cleaning and sealing of equipment required to bring the installation to optimum appearance.

END OF SECTION 16750

Voice and Communication Cabling for the Library
Bid#58-06

PROPOSAL PRICING

| Item | Quantity | Unit Price Purchase | Extended Price Purchase | Unit Price Install | Extended Price Install | Annual Maint. |
|------------------------|----------|------------------------|----------------------------|-----------------------|---------------------------|---------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| TOTALS FOR PAGE | | | | | | |