PLANS AND SPECIFICATIONS
FOR
LAKEWOOD 8TH ADDITION
WATER IMPROVEMENT PROJECT NO. 2015-12
SANITARY SEWER IMPROVEMENT PROJECT NO. 2015-12
MANDAN, NORTH DAKOTA

PREPARED UNDER THE
SUPERVISION OF
TAIT & ASSOCIATES, INC.

This document originally issued and sealed by James Martin, Registration Number PE–2610, on 07/14/15 and the original document is stored at the City of Mandan Administrative Office.

I, JAMES MARTIN, PE, HEREBY CERTIFY THAT THE PREOJECT DESIGN AND PREPARATION OF THESE PLANS AND SPECIFICATIONS WERE CONDUCTED BY ME OR UNDER MY DIRECT SUPERVISION.

JUNE 2015
REVISED: JULY 14, 2015*

TAIT
RISING TO THE CHALLENGE

DISCLAIMER:

All information in the attached files or electronic drawings is considered to be instruments of service by Tait & Associates, Inc. and is to be used solely with respect to the project which they were prepared. These files are not to be used in whole or in part for any purpose or projects outside the scope of work under these contract documents. All electronic drawing files shall remain the property of Tait & Associates, Inc. and in no case shall the transfer of these files to the recipient of this email be considered a sale or transfer of ownership. Tait & Associates, Inc. makes no representation regarding the accuracy of the information, details, dimensions or quantities indicated on these files. These files shall not be considered contract documents. In consideration for receiving these documents, the recipient of these files agrees to the fullest extent permitted by law, to indemnify and hold harmless Tait & Associates, Inc. from and against any claims, damages, losses, and expenses arising out of or resulting from the use, distribution or propagation of these files. By accessing the electronic files contained within this email you agree to the terms and limitations of the aforementioned DISCLAIMER. If you are not authorized to agree to the terms and limitations stated herein or you do not agree to be bound by the terms of this DISCLAIMER, you agree to return all electronic files without accessing, archiving, viewing or otherwise transferring files contained herein to Tait & Associates, Inc. for disposal.

*GALE LOOP CHANGED TO GALE CIRCLE

TAIT
RISING TO THE CHALLENGE

Plans and Specifications for
LAKEWOOD 8TH ADDITION
WATER IMPROVEMENT PROJECT NO. 2015-12
SANITARY SEWER IMPROVEMENT PROJECT NO. 2015-12
Mandan, North Dakota

TABLE OF CONTENTS

END OF TABLE OF CONTENTS

TAIT
RISING TO THE CHALLENGE

SECTION 00100
SOLICITAION FOR BIDS

LAKEWOOD 8TH ADDITION
WATER IMPROVEMENT PROJECT NO. 2015-12
SANITARY SEWER IMPROVEMENT PROJECT NO. 2015-12
MITZEL BUILDERS, INC
MANDAN, NORTH DAKOTA

Sealed bids will be received by Mitzel Builders, Inc., at _____ on or before _____ 2015. At that time bids will privately opened for furnishing of materials, labor, equipment and skill required for construction of **Lakewood 8th Addition, Water & Sanitary Sewer Improvement Project No. 2015-12** and incidental items in and for said Mitzel Builders, Inc., as is more fully described and set forth in plans and specifications therefore, which are now on file at TAIT & Associates, Inc. (TAIT).

Bids shall be upon cash payment on estimated quantities and types of work as included in Bid Form. Contract documents are on file and may be examined at following location:

Office of Engineer: TAIT & Associates, Inc.
2911 North 14TH Street Suite 301
Bismarck, ND 58503

Digital project bidding documents are available by contacting TAIT at (701)258-6397. An optional paper set of project documents is also available for a non-refundable price of $30 per set at TAIT's office.

All bidders must be licensed for full amount of bid as required by Section 43-07-05 and 43-07-12 of North Dakota Century Code. Bid bond will not be required on this project. Successful Bidder will be required to furnish Contract Performance and Payment Bonds in full amount of contract.

Contracts shall be awarded on basis of Owner preference by a responsible and responsive bidder for aggregate sum of all bid items. Owner reserves the right to award one contract to complete the work.

All bids will be contained in a sealed envelope, as noted above; plainly marked showing that such envelope contains a bid for above project. In addition, bidder shall place upon exterior of such envelope the following information:

1. Work covered by the bidder
2. Name of the bidder
3. Separate envelope containing copy of Contractor's License or certificate of renewal.
4. Acknowledgement of the Addenda.

Work on the improvement will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before _____ 2015.

Owner reserves the right to reject any and all bids, to waive any informality in any bid, to hold all bids for a period not to exceed 30 days from date of opening bids, and to accept bid deemed most favorable to interest of Owner.

Should Contractor fail to complete work within time required herein or within such extra time as may have been granted by formal extensions of time approved by Owner, there will be deducted from any amount due Contractor the sum of **$1,000** per day and every day that completion of work is delayed. Contractor and his surety will be liable for any excess. Such payment will be as and for liquidated damages.

Substantial completion is defined as when all the utilities have been installed and are operational. Final completion is defined as when all work outstanding at substantial completion (punch list or defect list) has been completed.

Dated this 5 day of June, 2015

Mitzel Builders, Inc.
Mandan, North Dakota

_____

President

SECTION 00200
INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

1.1 Terms used in these **Instructions to Bidders** have the meanings indicated in the General Conditions. Additional terms used in these **Instructions to Bidders** have meanings indicated below:

A. Bidder - One who submits a bid directly to Owner, as distinct from a sub-bidder, who submits a bid to a Bidder.

B. Engineer - Shall mean TAIT & Associates, Inc., Bismarck, North Dakota.

C. Issuing Office - The office from which bidding documents are to be issued and where the bidding procedures are to be administered.

D. Owner - Shall mean Mitzel Builders, Inc.

E. Successful Bidder - Lowest responsible Bidder submitting a responsive bid to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

F. Other terms used in bidding documents and not defined elsewhere have the following meanings, which are applicable to both singular and plural thereof:

1. Base Bid: Is sum stated in bid for which Bidder offers to perform work described in bidding documents as base, to which work may be added or from which work may be deleted for sums stated in alternate bids.

2. Alternate Bid: (Or alternate) is amount stated in bid to be added or deducted from amount of Base Bid if corresponding change in work, as described in bidding documents, is accepted.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.1 Complete sets of the bidding documents may be obtained from the Engineer.

2.2 Complete sets of bidding documents shall be used in preparing bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from use of incomplete sets of bidding documents.

2.3 Owner and Engineer, in making copies of bidding documents available on the above terms, do so only for purpose of obtaining bids for work and do not authorize or confer a license for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.1 To demonstrate Bidder's qualifications to perform the work, within five days of Owner's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.

A. Each bid must contain evidence of Bidder's authority to do business in the state where the project is located or covenant to obtain such qualification prior to award of the contract.

B. Each bid shall contain a copy of the North Dakota Contractor's license or certificate of renewal thereof issued by the Secretary of State enclosed in the outside envelope. No contract shall be awarded to any Contractor unless they are the holder of a license in the State. A bid submitted without this information properly enclosed in outside envelope shall not be read or considered and shall be returned to Bidder.

3.2 Bidder is advised to carefully review those portions of Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.1 Subsurface and Physical Conditions

A. Supplementary Conditions identify:

1. Reports known to Owner of explorations and tests of subsurface conditions at or contiguous to site.

2. Drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the site (except underground facilities).

B. Copies of reports and drawings referenced in Paragraph 4.1.A will be made available by Owner to any Bidder upon request. Those reports and drawings are not part of contract documents, but "technical data" contained therein, upon which Bidder is entitled to rely as provided in Paragraph 4.2 of the General Conditions has been identified and established in Supplementary Conditions if included. Bidder is responsible for any interpretation or conclusion Bidder draws

from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.2 Underground Facilities

A. Information and data shown or indicated in bidding documents with respect to existing underground facilities at or contiguous to the site is based upon information and data furnished to Owner and Engineer by owners of such underground facilities, including Owner, or others.

4.3 Hazardous Environmental Condition

A. Supplementary Conditions identify any reports and drawings known to Owner relating to a hazardous environmental condition identified at the site.

B. Copies of reports and drawings referenced in Paragraph 4.3.A will be made available by Owner to any Bidder upon request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.6 of the General Conditions has been identified and established in Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.4 Provisions concerning responsibilities for adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and underground facilities, and possible changes in bidding documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.2, 4.3, and 4.4 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a hazardous environmental condition at the site, if any, and possible changes in the Contract Documents due to any hazardous environmental condition uncovered or revealed at the site which was not shown or indicated in the drawings or specifications or identified in the Contract Documents to be within scope of Work, appear in Paragraph 4.6 of the General Conditions.

4.5 On request, Owner will provide Bidder access to site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a bid. Bidder shall fill all holes and clean up and restore site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable laws and regulations relative to excavation and utility locates.

4.6 Reference is made to Supplementary Conditions for the identification of the general nature of other work that is to be performed at the site by Owner or others (such as

utilities and other prime contractors) that relates to the work contemplated by these bidding documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

4.7 It is the responsibility of each Bidder before submitting a bid to:

A. Examine and carefully study bidding documents, and other related data identified in bidding documents;

B. Visit site and become familiar with and satisfy Bidder as to general, local, and site conditions that may affect cost, progress, and performance of the work;

C. Become familiar with and satisfy Bidder as to all federal, state, and local laws and regulations that may affect cost, progress, and performance of the work;

D. Carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions relating to existing surface or subsurface structures at the site (except underground facilities) that have been identified in Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of hazardous environmental conditions, if any, at the site that have been identified in the Supplementary Conditions as containing reliable "technical data";

E. Consider information known to Bidder; information commonly known to contractors doing business in the locality of site; information and observations obtained from visits to site; bidding documents; and site-related reports and drawings identified in bidding documents, with respect to effect of such information, observations, and documents on (1) cost, progress, and performance of the work; (2) means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by bidding documents; and (3) Bidder's safety precautions and programs;

F. Agree at time of submitting its bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for determination of its bid for performance of the work at price(s) bid and within times required, and in accordance with other terms and conditions of bidding documents;

G. Become aware of general nature of work to be performed by Owner and others at site that relates to work as indicated in bidding documents;

H. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in bidding documents and confirm that written resolution thereof by Engineer is acceptable to Bidder; and determine that bidding documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of the work.

4.8 Submission of a bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception bid is premised upon performing and furnishing work required by bidding documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by bidding documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in bidding documents and written resolutions thereof by Engineer are acceptable to Bidder, and that bidding documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the work.

ARTICLE 5 - PRE-BID CONFERENCE

5.1 A pre-bid conference will not be held.

ARTICLE 6 - SITE AND OTHER AREAS

6.1 Site is identified in bidding documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the bidding documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the work are to be obtained and paid for by Contractor.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

7.1 All questions about the meaning or intent of bidding documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the bidding documents. Questions received less than ten days prior to the date for opening of bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.2 Addenda may be issued to clarify, correct, or change bidding documents as deemed advisable by Owner or Engineer.

ARTICLE 8 - BID SECURITY

8.1 A Bid bond is not required.

ARTICLE 9 - CONTRACT TIMES

9.1 Work on improvement will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before _____, 2015.

ARTICLE 10 - LIQUIDATED DAMAGES

10.1 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 - SUBSTITUTE AND "OR-EQUAL" ITEMS

11.1 Contract, if awarded, will be on the basis of materials and equipment specified or described in bidding documents, or those substitute or "or-equal" materials and equipment approved by Engineer and identified by Addendum. Materials and equipment described in bidding documents establish a standard of required type, function and quality to be met by any proposed substitute or "or-equal" item. No item of material or equipment will be considered by Engineer as a substitute or "or-equal" unless a written request for approval has been submitted by Bidder and has been received by Engineer at least 3 days prior to the date for receipt of bids. Burden of proof of the merit of proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS AND OTHERS

12.1 If Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the effective date of the agreement, the apparent successful Bidder, and any other Bidder so requested, shall within five days after bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before Notice of Award is given, request apparent successful Bidder to submit a substitute, without an increase in bid.

12.2 If apparent successful Bidder declines to make any such substitution, Owner may award contract to next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to giving of Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after effective date of the agreement as provided in Paragraph 6.6 of the General Conditions .

12.3 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 - PREPARATION OF BID

13.1 Bid Form is included with the bidding documents. Additional copies may be obtained from Engineer.

13.2 All blanks on the Bid Form shall be completed in ink and Bid Form signed in ink. Erasures or alterations shall be initialed in ink by person signing Bid Form. Bid price shall be indicated for each section, bid item, alternative, adjustment unit price item, and unit price item listed therein. In the case of optional alternatives the words "No Bid", ''No Change", or ''Not Applicable" may be entered.

13.3 Bid by a corporation shall be executed in corporate name by president or a vice-president or other corporate officer accompanied by evidence of authority to sign. Corporate seal shall be affixed and attested by secretary or an assistant secretary. Corporate address and state of incorporation shall be shown.

13.4 Bid by a partnership shall be executed in partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. Official address of partnership shall be shown.

13.5 Bid by a limited liability company shall be executed in name of firm by a member and accompanied by evidence of authority to sign. State of formation of firm and official address of firm shall be shown.

13.6 Bid by an individual shall show the Bidder's name and official address.

13.7 Bid by a joint venture shall be executed by each joint venture member in the manner indicated on the Bid Form. Official address of joint venture shall be shown.

13.8 All names and titles shall be typed or clearly printed in ink below signatures.

13.9 Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on Bid Form. Bids in which all issued Addenda are not acknowledged will be considered incomplete and will not be read.

13.10 Postal and e-mail addresses and telephone number for communications regarding the bid shall be shown.

13.11 Bid shall contain evidence of Bidder's authority and qualification to do business in state where project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of contract and attach such covenant to the bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

13.12 Bidder may substitute a computer printed spreadsheet bid schedule for bid schedule found in Bid Form (Section 00300). Substitute schedule shall be attached to the last page of supplied Bid form (Section 00300).

A. The following information shall appear on top of each page of the computer printed bid schedule:
   1. Project Name
   2. Date of Bid Opening
   3. Location (as defined in Solicitation for Bids)
   4. Description of Work (from Solicitation for Bids)
   5. Page Number
   6. Bidder's Name and Address
   7. Acknowledgement of Addenda

B. Substitute bid schedule shall be printed on sheets of approximately the same size as bid schedule in the Bid Form, and words and numerals shall be clear and legible. Each page shall be arranged, numbered, and contain the same bid items as corresponding bid schedule in the Bid Form. Column headings shall be the same as those in standard bid schedule furnished with specifications.

C. Each bid item shall be separated from bid item above and below it by one or more blank spaces. Solid lines for separating columns and items are not required, but dashed lines may be placed either vertically or horizontally.

D. Total sum(s) of bid shall be entered at the same relative location as on standard bid schedule.

E. Bidder, or authorized representative, shall sign substitute bid schedule in ink on last page of computer printout. Signer's name and title shall be printed below or beside signature. Person signing the schedule shall sign and complete the Affidavit in Bidders Proposal, as normally required.

F. In case of discrepancies between item descriptions or quantities in the bid schedule on the Bid Form (Section 00300) and those on computer printed bid schedule, bid schedule on the Bid Form (Section 00300) will govern. Any omitted items or missed items will be considered as "zero", and no payment will be considered for that item.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.1 Lump Sum

A. Bidders shall submit a bid on a lump sum basis for the base bid and include a separate price for each alternate described in the bidding documents as provided for in the Bid Form. Price for each alternate will be amount added to or deleted from base bid if Owner selects the alternate. In comparison of bids, alternates will be applied in the same order as listed in the Bid Form.

14.2 Unit Price

A. Bidders shall submit a bid on a unit price basis for each item of work listed in bid schedule.

B. Total of all estimated prices will be sum of products of estimated quantity of each item and corresponding unit price. Final quantities and contract price will be determined in accordance with paragraph 11.3 of the General Conditions.

C. Discrepancies between multiplication of units of work and unit prices will be resolved in favor of unit prices. Discrepancies between indicated sum of any column of figures and correct sum thereof will be resolved in favor of correct sum.

14.3 Allowances

A. For cash allowances bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in Contract Documents, in accordance with paragraph 11.2.B of the General Conditions.

ARTICLE 15 - SUBMITTAL OF BID

15.1 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form. Unbound copy of Bid Form is to be completed and submitted with bid security other required documents.

15.2 Bid shall be submitted no later than date and time prescribed and at place indicated in advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, plainly marked with project title (and, if applicable, designated portion of project for which bid is submitted), name and address of Bidder, and shall be accompanied by bid security and other required documents. If bid is sent by mail or other delivery system, sealed envelope containing bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." Mailed bid shall be addressed to address shown on advertisement or Invitation to Bid.

15.3 Attached to the outside of opaque sealed bid envelope shall be a separate sealed envelope identifying the name of the Bidder and containing the following:

A. Copy of current Contractor's License or renewal certificate

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.1 Bid may be modified or withdrawn by an appropriate document duly executed in same manner that a bid must be executed and delivered to place where bids are to be submitted prior to date and time for opening of bids.

16.2 If within 24 hours after bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to reasonable satisfaction of Owner that there was a material and substantial mistake in preparation of its bid, that Bidder may withdraw its bid, and bid security will be returned. Thereafter, if work is rebid, that Bidder will be disqualified from further bidding on the work.

ARTICLE 17 - OPENING OF BIDS

17.1 Bids will be opened at time and place indicated in advertisement or Invitation to Bid and, unless obviously non-responsive, privately considered.

ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.1 All bids will remain subject to acceptance for period of time stated in Bid Form, but Owner may, in its sole discretion, release any bid and return bid security prior to end of this period.

ARTICLE 19 - EVALUATION OF BIDS AND AWARD OF CONTRACT

19.1 Owner reserves the right to reject any or all bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional bids. Owner further reserves the right to reject bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner also reserves the right to waive all informalities not involving price, time, or changes in the work and to negotiate contract

terms with successful Bidder. Owner reserves the right to reject bid of any Bidder if Owner believes it would not be in best interest of project to make award to that Bidder whether because bid is not responsive or Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner.

19.2 More than one bid for the same work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one bid for the work may be cause for disqualification of that Bidder and rejection of all bids in which that Bidder has an interest.

19.3 In evaluating bids, Owner will consider whether or not bids comply with prescribed requirements, and such alternates, unit prices and other data, as may be requested in Bid Form or prior to Notice of Award.

19.4 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of work for which identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in Supplementary Conditions.

19.5 Owner may conduct such investigations as Owner deems necessary to establish responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of work in accordance with Contract Documents.

19.6 If contract is to be awarded, Owner will award contract to lowest responsible Bidder whose bid is in best interests of project.

ARTICLE 20- CONTRACT SECURITY AND INSURANCE

20.1 Article 5 of General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the successful Bidder delivers the executed agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21- SIGNING OF AGREEMENT

21.1 When Owner issues a Notice of Award to the successful Bidder, it shall be accompanied by required number of unsigned counterparts of the agreement along with other Contract Documents which are identified in agreement as attached thereto. Within 10 days thereafter, successful Bidder shall sign and deliver the required number of counterparts of agreement and attached documents to Owner. After Owner's attorney

has reviewed and approved submitted documents, Owner shall deliver one fully signed counterpart to successful Bidder.

ARTICLE 22- STATE LAWS AND REGULATIONS

22.1 All applicable laws, ordinances and the rules and regulations of authorities having jurisdiction over construction of project shall apply to contract throughout.

ARTICLE 23- RETAINAGE

23.1 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the agreement.

SECTION 00300
BID FORM
LAKEWOOD 8TH ADDITION
WATER IMPROVEMENT PROJECT NO. 2015-12
SANITARY SEWER IMPROVEMENT PROJECT NO. 2015-12
MITZEL BUILDERS, INC
MANDAN, NORTH DAKOTA

ARTICLE 1 - BID RECIPIENT

1.1 This bid is submitted to:

Mitzel Builders, Inc.
Lee Roy Mitzel
2401 46th Ave. SE, #101
Mandan, ND 58554

1.2 The undersigned bidder proposes and agrees, if this bid is accepted, to enter into an Agreement with Owner in the form included in the bidding documents to perform all work as specified or indicated in bidding documents for prices and within times indicated in this bid and in accordance with other terms and conditions of bidding documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGEMENTS

2.1 Bidder accepts all of terms and conditions of Instructions to Bidders, including without limitation those dealing with disposition of bid security. This bid will remain subject to acceptance for 30 days after bid opening, or for such longer period of time that bidder may agree to in writing upon request of Owner.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.1 In submitting this bid, bidder represents that:

A. Bidder has examined and carefully studied bidding documents, other related data identified in bidding documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

B. Bidder has visited site and become familiar with and is satisfied as to general, local, and site conditions that may affect cost, progress, and performance of the work.

C. Bidder is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance of the work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions relating to existing surface or subsurface structures at the site (except underground facilities) that have been identified in SC-4.2 as containing reliable "technical data," and (2) reports and drawings of hazardous environmental conditions, if any, at the site that have been identified in SC-4.6 as containing reliable "technical data."

E. Bidder has considered information known to bidder; information commonly known to contractors doing business in locality of the site; information and observations obtained from visits to site; bidding documents; and site-related reports and drawings identified in bidding documents, with respect to effect of such information, observations, and documents on (1) cost, progress, and performance of work; (2) means, methods, techniques, sequences, and procedures of construction to be employed by bidder, including applying specific means, methods, techniques, sequences, and procedures of construction expressly required by bidding documents; and (3) bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.1.E above, bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this bid for performance of the work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the bidding documents.

G. Bidder is aware of general nature of work to be performed by Owner and others at the site that relates to work as indicated in bidding documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that bidder has discovered in bidding documents, and written resolution thereof by Engineer is acceptable to bidder.

1. Bidding documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of work for which this bid is submitted.

ARTICLE 4 - BIDDER'S CERTIFICATION

4.1 Bidder certifies that:

A. This bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other bidder to submit a false or sham bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this paragraph:

1. "Corrupt practice" means offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in bidding process;

2. "Fraudulent practice" means an intentional misrepresentation of facts made (a) to influence bidding process to detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of benefits of free and open competition;

3. "Collusive practice" means a scheme or arrangement between two or more bidders, with or without knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "Coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect execution of Contract.

ARTICLE 5 - BASIS OF BID

5.01 Bidder will complete work in accordance with contract documents for the following price(s):

UNIT PRICE BID

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Price
1	6” PVC WATER MAIN	LF	173	$	$
4	8” PVC WATER MAIN	LF	3169	$	$
5	6” HYDRANT	EA	6	$	$
6	6” GATE VALVE & BOX	EA	6	$	$
7	8” GATE VALVE & BOX	EA	5	$	$
8	1” WATER SERVICE	LF	703	$	$
9	1.5” WATER SERVICE	LF	646	$	$
10	1” CURB STOP & BOX	EA	61	$	$
11	1” WATER SERVICE CONNECTION	EA	16	$	$
12	1.5” WATER SERVICE CONNECTION	EA	24	$	$
13	48” ECCENTRIC MANHOLE	EA	12	$	$
14	8” PVC SANITARY MAIN	LF	3118	$	$
15	6” PVC SANITARY LATERAL	LF	31	$	$
16	4” PVC SANITARY LATERAL	LF	2062	$	$
17	8” X 4” PVC WYE	EA	56	$	$
18	4” PVC WYE AT MANHOLE	EA	2	$	$
			TOTAL	$	

Unit Prices have been computed in accordance with Paragraph 11.3.B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of the comparison of bids. Final payment for all unit price bid items will be based on actual quantities, determined as provided in contract documents.

ARTICLE 6 - TIME OF COMPLETION

6.1 Bidder agrees that the work will be completed and ready for final payment in accordance with Paragraph 14.7 of the General Conditions on or before ____, 2015.

6.2 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.1 The following documents are submitted with and made a condition of this bid:

A. Copy of contractor's license or certificate of renewal (in separate envelope)

ARTICLE 8 - DEFINED TERMS

8.1 Terms used in this bid have the meanings stated in the Instructions to Bidders, General Conditions, and Supplementary Conditions.

ARTICLE 9 - BID SUBMITTAL

9.1 This bid is submitted by:

1) An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

2) A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

3) A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability):

By: _____
(Signature - attach evidence of authority to sign)

Name (typed or printed):

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in _____ is __/__/____.
(State of Project Location)

4) A Joint Venture

Name of Joint Venture: _____

First Joint Venture Partner Name: _____(SEAL)

By: _____
(Signature of first partner - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venture Partner Name: _____(SEAL)

By: _____
(Signature of second partner - attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venture partner must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____
_____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20___.

State Contractor License No. _____.

LAKEWOOD 8TH ADDITION
WATER & SANITARY SEWER IMPROVEMENT PROJECT NO. 2015-12
MITZEL BUILDERS, INC.
MANDAN, NORTH DAKOTA

TECHNICAL SPECIFICATIONS

Work shall be performed in accordance with Current Edition of the City of Mandan Construction Contract Specifications and Standard Construction Details as supplemented or modified herein.

The City of Mandan Construction Contract Specifications can be found online at:

http://www.cityofmandan.com

The City of Mandan Standard Construction Details can be found online at:

http://www.cityofmandan.com

SECTION 100

GENERAL PROVISIONS

SECTION 101 - FORM OF PROPOSAL AND SIGNATURE

The proposal must be made on forms provided for that purpose, or forms provided by the bidder which follow the same format, enclosed in a sealed envelope, and marked and addressed as required in the Advertisement. It must state the unit prices and the sum of money for which the bidder proposes to supply the materials and perform the work called for in the Proposal and Schedule of Work. Bidders shall submit a bid on a unit price basis for each item of work so listed in the proposal. The total of all estimated prices will be determined as the sum of the products of the estimated quantity of each item and the unit price bid for the item. If the bid is made by an individual, it must be signed with the full name of the bidder whose address must be given. If it is made by a firm, it must be signed in the co-partnership name by a member of the firm, and the name and address of each member of the firm must be given. If it is made by a corporation, it must be signed by an officer of the corporation in the corporate name and the corporate seal must be attached to such signature.

SECTION 102 - PROPOSALS

No bids received after the time set for the receipt of the proposals will be considered. The right is reserved to hold all bids for a period of thirty (30) days and to reject any or all bids. Bidders are invited to be present at the opening of proposals.

SECTION 103 - BIDDER'S BOND

Regardless of the amount of the project, each bid shall be accompanied by a bidder's bond in the amount of five percent (5%) of the amount of the bid meeting the requirements of Section 48-01.1-05 of the North Dakota Century Code as amended.

SECTION 104 - AWARDS AND CONTRACT SECURITY

The bidder to whom the award is made will be required to enter into a written contract with the CITY OF MANDAN as required by Section 48-01.1-05 of the North Dakota Century Code. Pursuant to NDCC Section 48-02-06.2, simultaneously with the CONTRACTOR's delivery of the executed contract, the CONTRACTOR shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the total contract amount as security for the faithful performance of the contract and also a payment bond in an amount not less than one hundred percent (100%) of the total contract amount as security for the payment of all persons performing labor on the project under the contract and furnishing materials in connection with the contract.

After the proposals are opened and read, the products of the quantities and the respective unit prices bid and the summation of said products in each proposal will be

verified or corrected. In case of discrepancy, the bidder's apparent intent indicated shall govern. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words. However, if the bidder's intent is not apparent, the proposal will be rejected. The verified or corrected totals of the proposals considered will be compared and the results of such comparison made public. Until the award of the contract, however, the right will be reserved to reject any and all proposals and to waive technicalities as may be deemed best for the interests of the CITY.

The award of the contract, if made, will be to the lowest responsible bidder whose proposal complies with all the requirements specified. The award, if made, will be made within the time specified in the Advertisement for Bids unless an extension of this limit is agreed to in writing by both parties. In the case of participation in the project by federal and/or state government, or any agency, subdivision, or other participating party, or if concurrence of the aforementioned parties is required by law, any award made by the Board of City Commissioners shall be deemed subject to concurrence of the participating and/or regulatory parties.

Within seven (7) days after the opening of the bids, the successful (or apparent low) bidder shall submit to the CITY ENGINEER a schedule of proposed progress showing the proposed starting and completion dates and with curves showing the percentage of the major features of the work scheduled for completion at any date together with a composite curve showing the percentage of the entire contract which will be completed at any date. See Standard Form Number 05-01 for a typical "Contract Progress Schedule." The CONTRACTOR may elect to use an approved substantially similar form.

The proposed progress schedule shall show the starting date and the number of working days deemed necessary by the CONTRACTOR to complete the work on or before the completion date shown in the proposal.

The number of working days shown on the progress schedule shall not exceed the number of calendar days, excluding Sundays and holidays, between the proposed starting date and the completion date shown in the proposal.

After the proposed progress schedule has been submitted to the CITY ENGINEER, it will be reviewed and submitted to the Board of City Commissioners with a recommendation on the award of the contract. By entering into a contract, the CONTRACTOR represents that it has carefully reviewed the plans, specifications, and general and special provisions and has inspected the site conditions and that it has the capability to complete a good and workmanlike project in conformance with the plans, specifications, and general and special provisions.

As provided by the North Dakota statutes, no contract will be awarded to any CONTRACTOR who is not the holder of a current license in the class within which the

value of the project falls. A foreign corporation must have a certificate of authority to do business in North Dakota before a contract can be awarded to said corporation.

The CITY OF MANDAN reserves the right to cancel the award of any contract at any time before the execution of said contract by all parties without any liability against the CITY.

All bidder's bonds, except in case of defaults, will be returned upon request within a reasonable time and as provided by law.

SECTION 105 - ENGINEER

Where the word "ENGINEER" is used in the specifications or in the contract, it shall be and is mutually understood to refer to the CITY ENGINEER or an authorized representative of the CITY. The ENGINEER will give the grades and locations for all work, and no work depending upon such grades or locations shall be commenced until after the same have been established. Upon all questions concerning the interpretations of these specifications or the plans, the decision of the ENGINEER shall be binding upon both parties. Detailed plans of all work not completely shown on the plans now on file will be furnished by the ENGINEER from time to time, and the work shall be executed in accordance with such detailed plans.

SECTION 106 - CONTRACTOR

Where the word "CONTRACTOR" is used in the specifications or in the contract, it shall be and is mutually understood to refer to the party, firm, or corporation with whom the contract for the execution of the work is made, the agent of this party, or its legal representative. The Foreman of the CONTRACTOR in charge of the work will be held to represent the CONTRACTOR during the absence of the latter or CONTRACTOR's legal representative. Instructions given to the CONTRACTOR's Foreman on the work by the ENGINEER will be held as having been given to the CONTRACTOR.

SECTION 107 - CHARACTER OF WORKMEN

The CONTRACTOR shall remove from the project, when required to do so by the ENGINEER, any disorderly, dangerous, insubordinate, or incompetent person employed on the project. This person shall not return to the project without the written consent of the ENGINEER.

SECTION 108 - LOCAL CONDITIONS

Bidders shall satisfy themselves as to the nature of the material to be handled and the local site conditions affecting the work, and if conditions are found to be different than anticipated by the CONTRACTOR subsequent to the signing of the contract, it shall not in any way relieve the CONTRACTOR from its obligation or any risks from the fulfillment of all the work and terms of the contract.

SECTION 109 - METHODS AND APPLIANCES

The methods and appliances adopted by the CONTRACTOR shall be such as will enable the CONTRACTOR to secure a satisfactory quality of work and will enable the CONTRACTOR to complete the work within the time specified. The choice of methods and appliances to complete the work in compliance with the plans and specifications is solely the CONTRACTOR's. It is the responsibility and obligation to produce a complete project that fully complies with the plans and specifications and is of satisfactory quality. The ENGINEER may at any time inform the CONTRACTOR of apparent deficiencies in the work and the CONTRACTOR will make whatever adjustments are, in the CONTRACTOR's judgment, necessary to bring the work back into conformance. Failure of the ENGINEER to so advise the CONTRACTOR shall not in any way relieve the CONTRACTOR from its obligations which shall remain in full force and effect until the discharge of the contract. The Board of City Commissioners of the CITY OF MANDAN reserves the right, in case of improper construction, to suspend the work at any time and to relet the work or to order the reconstruction of any part or all of the work improperly done.

SECTION 110 - DELAYS

The CONTRACTOR will not be entitled to any compensation for causes resulting in delays or hindrances to the work. Extensions of time will be granted for unavoidable delays, which in the opinion of the ENGINEER are clearly beyond the control of the CONTRACTOR including, but not restricted to, acts of God or of the public enemy, acts of the Owner, acts of another CONTRACTOR in the performance of a contract with the Owner, fires, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather. The ENGINEER must receive a written request for time extension from the CONTRACTOR not more than twenty (20) days after commencement of delay before any time extension will be considered. Requests made beyond the twenty (20) day limit will be cause for denial. Any extension of time will not relieve the CONTRACTOR or its sureties from their obligations which shall remain in full force and effect until the satisfactory discharge of the contract.

SECTION 111 - DAMAGES

The CONTRACTOR will be held responsible and be required to make good, at CONTRACTOR's own expense, any and all damages to personal property caused by carelessness, neglect, or want of due precaution on the part of the CONTRACTOR, its agents, employees, or workmen.

SECTION 112 - UTILITIES

It shall be the responsibility of the CONTRACTOR to be familiar with the location of the existing sewer and water mains and service lines, oil pipelines, gas mains and service lines, telephone and communication lines, power, light and telephone poles and guys, steam lines, valve boxes and stop boxes, mail boxes, and all appurtenances pertaining to utility and public services. The CONTRACTOR shall notify all underground facility

operators at least forty-eight (48) hours in advance excluding Saturdays, Sunday, holidays and in accordance with N.D. Century Code Chapter 49-23 of any construction and consult with personnel of said utility companies regarding any changes or conflicts.

SECTION 113 - CHANGES

The Board of City Commissioners reserves the right to make any changes in the alignment, grade, or design as may be deemed advisable, and should any changes so made put the CONTRACTOR to extra expense or operate to decrease CONTRACTOR's expense, the ENGINEER shall make due allowance, which action shall be binding upon both parties. The CONTRACTOR with whom the contract for the execution of the work is made will be required to make any extension which the Board of City Commissioners may require. The extensions shall be constructed at the same unit price for the same class of work as bid upon for this work, provided that should the prices of materials be increased or diminished over the prices of the same materials at the present time for the same class of work, the ENGINEER shall make due allowance. The action shall be binding upon both parties and provided further that such extensions shall be ordered prior to the completion of this contract.

SECTION 114 - QUANTITIES

The quantities shown on the plan sheet or supplemental specifications entitled "Approximate Quantities" are estimated quantities based on information available at the time of design. It is mutually understood that these quantities may change at the time of construction due to unforeseen conditions which may be encountered during construction. The Board of City Commissioners reserves the right to designate the order in which the work shall be done as well as the location and the amount of work to be completed. Payment shall be made for the final amount of work completed at unit prices specified in the contract.

SECTION 115 - SUBCONTRACTING

All work performed under this contract shall be by the company or firm to which the contract is awarded and no portion of the work shall be awarded to a subcontractor unless authorized in writing by the ENGINEER acting on the approval of the Board of City Commissioners. The CONTRACTOR shall be responsible for the coordination and control of the subcontractor(s).

SECTION 116 - MONUMENTS, BENCH MARKS, WITNESS AND GRADE STAKES

All monuments, bench marks, witness and grade stakes are the property of the CITY, and in the event of the destruction or removal by the CONTRACTOR or any of CONTRACTOR's employees, such stakes shall be replaced by the ENGINEER at the CONTRACTOR's expense. Any interruption of work and/or costs incurred by the CONTRACTOR due to any delays caused during the replacement of destroyed monuments, bench marks, witness and grade stakes shall be borne by the

CONTRACTOR. The CONTRACTOR shall be responsible for notifying the project observer a minimum of 72 hours prior to the expected survey.

SECTION 117 - PATENTS

The CONTRACTOR will be held responsible and be required to make good at CONTRACTOR's own expense any and all damages and suits for damages caused by infringements of the patent rights on devices or equipment for the requirements of this contract and is to indemnify and bear harmless the CITY OF MANDAN from all claims, damages, or expenses by the use thereof. All fees and royalties covering the same are to be included in the price bid by the CONTRACTOR for the work to be done under the specifications.

SECTIION 118 - ESTIMATES AND PAYMENTS

The ENGINEER shall make a monthly approximate measurement of the work done to date and an estimate of the value of the same at the prices agreed upon in the contract. When directed by the ENGINEER, the CONTRACTOR shall measure the work completed and submit to the ENGINEER in duplicate copy form an estimate of the work completed to date and value of same at the prices agreed upon in the contract.

The ENGINEER shall retain ten percent (10%) of the amount of each payment until fifty percent (50%) of all work in the Contract Documents has been completed and accepted by the ENGINEER. No further amount of retainage shall be withheld from payments after fifty percent (50%) of the contract has been completed unless the ENGINEER has on file any valid claims against the CONTRACTOR by the CITY OF MANDAN or Others. The ENGINEER may reduce the amount retained upon completion of ninety-five percent (95%) of all work in the Contract Documents and accepted by the ENGINEER. On completion and acceptance of a part of the work on which the price is stated separately in the Contract Documents, payment in full may be made, including retained percentages less authorized deductions.

Payment for materials in storage may be added to any monthly estimate. The CONTRACTOR must submit the materials invoices, and the materials must be stored on CITY lands or right-of-way, at the site, or as directed by the ENGINEER to be eligible for payment. All materials not in storage as directed by the CITY shall be deducted from the material invoice. No retainage will be deducted for materials stored as directed by the CITY.

SECTION 119 -TIME OF BEGINNING AND COMPLETION OF WORK

The work on this contract shall be started on a date to be specified in the Advertisement for Bids or in a written order from the Board of City Commissioners and shall be completed on the date specified in the Advertisement for Bids. Work shall continue without interruption until the contract is completed except for weather conditions or at the discretion of the ENGINEER. The Board of City Commissioners reserves the right to

determine in what order the work shall be done, and the work shall be executed in accordance with such directions.

SECTION 120 - CONTRACTOR'S RESPONSIBILITIES

Unless otherwise specified, the CONTRACTOR shall furnish all labor, materials, and equipment necessary for the completion of the Schedule of Work in accordance with the plans and specifications. The CONTRACTOR shall do all necessary hauling and perform all labor, incidental thereto, for which no express provisions have been made. The CONTRACTOR shall assume all risks or damages to persons or property prior to the final acceptance of the work. The CONTRACTOR shall so conduct its operation as not to interfere with the work of other contractors in the vicinity. The CONTRACTOR shall maintain at all times an efficiently sized crew headed by a competent construction foreman and the necessary skilled labor to efficiently complete the work.

The CONTRACTOR shall be responsible for maintenance and operation of all constructed facilities until final acceptance unless otherwise noted in specifications, notes, or special provisions. This includes locating of CONTRACTOR constructed underground facilities.

SECTION 121 - FINISHING AND CLEANUP

From time to time or as may be ordered by the ENGINEER and immediately after completion of the work, the CONTRACTOR shall at its own expense clean up and remove all refuse and unused materials of any kind resulting from the work. Upon failure to do so within twenty-four (24) hours after request by the ENGINEER, the work may be done by the Owner and the cost thereof charged to the CONTRACTOR and deducted from CONTRACTOR's final estimate. All excavated areas along trails, sidewalks, curbs, and other structures shall be backfilled with earth, and the cost of such work shall be incidental to the item of construction.

SECTION 122 - WARRANTY

The CONTRACTOR shall guarantee all work and materials and guarantee the performance of the finished project free from material defect or failure for a period of one (1) year from the date of final payment, and the performance bond shall remain in full force and effect for the period. The CONTRACTOR shall provide this warranty regardless of whether the cause of a failure is known or attributable to the CONTRACTOR except for damage caused by a third party by no fault of the CONTRACTOR.

SECTION 123 - LIQUIDATED DAMAGES

OWNER and CONTRACTOR recognize that time is of the essence of the Agreement. They further recognize that not only will OWNER suffer financial loss if the work is not completed within the times specified in the contract, plus any extensions thereof allowed pursuant to the terms of the contract, but also the public of the City of Mandan will

suffer damages extremely difficult to estimate. Thus the parties recognize the delays, expense, and difficulties involved in proving the actual loss and damages suffered by the OWNER and by the public of the City of Mandan if any of the work is not completed on time. The parties further recognize the OWNER has made a reasonable endeavor to estimate the actual loss and damages which might be occasioned upon OWNER and the public of the City of Mandan in the event of delay of completion of any of the work and that CONTRACTOR was allowed input on this amount within five (5) days prior to the bid opening. Thus, both parties agree that the amounts of liquidated damages set forth herein to be assessed in the event of a delay in completion of any of the work are both reasonable in amount and reasonably related to the actual damages which the parties, through their reasonable endeavors, have estimated could occur upon delay in completion of any of the work. Accordingly, instead of requiring any actual proof of damages in the event that CONTRACTOR shall neglect, refuse, or fail to complete any work within the time specified in this contract, OWNER and CONTRACTOR agree that as liquidated damages for delay (and not as a penalty) CONTRACTOR shall pay OWNER the amount required in the schedule set forth in the project proposal, advertisement for bids, or special provisions for each day that expires after the time specified in the contract that any of the work is not complete unless extensions are allowed pursuant to the terms of the contract. Finally, OWNER and CONTRACTOR specifically recognize that the recitals in this paragraph are conclusive presumptions, pursuant to section 31-11-02 of the North Dakota Century Code. The decision of the ENGINEER for the non-completion of the work shall be binding upon both parties.

SECTION 124 - TRAFFIC CONTROL DEVICES

The CONTRACTOR is assumed to be familiar with all federal, state, and local laws, codes, ordinances, and regulations which in any manner effect those engaged in the work or the materials or equipment used in or upon the site, or in any way affect the conduct of the work. No pleas of misunderstanding or ignorance on the part of the CONTRACTOR will, in any way serve to modify the provisions of the contract. The CONTRACTOR shall provide and maintain on a twenty-four (24) hour basis all necessary safeguards and traffic control devices at its own expense.

The CITY OF MANDAN has adopted the U.S. Department of Transportation Manual on Uniform Traffic Control Devices, Part 6, 2003 Edition, or latest revision, for all traffic control devices and their placement For all materials and equipment used for traffic control on all construction projects in the CITY OF MANDAN, the CONTRACTOR shall comply with Section 704 of the Standard Specifications for Road and Bridge Construction and the Design Standard Drawings of the North Dakota Department of Transportation. The documents referred to above are available at the CITY ENGINEERING Department.

When detours for roadway closures are not incorporated within the plans or are required because of an emergency situation, water main break, sewer collapse, etc., the CONTRACTOR shall submit a traffic control plan to the ENGINEER for review and approval.

SECTION 125 - TRANSPORTATION OF MATERIALS

The CONTRACTOR is authorized to ship all construction materials which are to be incorporated into the project to the CITY OF MANDAN in care of the CONTRACTOR. Such materials are exempt from the Federal Tax on transportation of said materials. The exemption of Federal Tax does not apply to shipments of fuel, lubricants, spare parts, and items of construction equipment belonging to the CONTRACTOR and which will not be incorporated in the construction project and which will not become the property of the CITY OF MANDAN. This authorization is granted with the distinct understanding that the CITY OF MANDAN will receive all benefits from the exemption from payment of the tax. The tax is not included in the CONTRACTOR's bid and also all transportation charges shall be paid by the CONTRACTOR.

SECTION 126 - EXTRA WORK

The CONTRACTOR shall perform extra work for which there is no price in the contract whenever it is deemed necessary or desirable in order to complete fully the work as contemplated. If the CONTRACTOR contends that additional compensation is due for work or material not clearly covered in the contract, the CONTRACTOR shall promptly notify the ENGINEER in writing of the intention to file a claim and the basis for additional compensation before beginning or continuing construction on the affected work. If the basis for the claim does not become apparent until after proceeding with the work and it is not feasible to stop the work, the CONTRACTOR shall immediately notify the ENGINEER that work is continuing and that written notification of the intent to file a claim will be submitted within ten (10) calendar days. The failure to give the required notification or to provide the ENGINEER proper facilities and assistance in keeping strict account of actual costs will constitute a waiver of the claim for additional compensation in connection with the work already performed. Notification of a claim, and the fact that the ENGINEER has kept account of the costs involved, shall not be construed as proving or substantiating the claim's validity. Such work shall be performed in accordance with the specifications. Work contained in the plans and specifications shall not be considered extra work and shall not be paid for by the CITY unless specifically agreed to in writing.

When work not shown on the plans is to be performed by the CONTRACTOR, the ENGINEER may order the work done on a force account basis when the measurement and payment becomes too cumbersome to be practicable, or when it is considered to be to the best interest of the CITY OF MANDAN. Extra work will be paid for at the unit price or lump sum stipulated in the order authorizing the work, or the CITY OF MANDAN may require the CONTRACTOR to do such work on a force account basis, to be compensated in the following manner:

(a) Labor. For all laborers (skilled & unskilled) and foremen in direct charge of the specific operations, the CONTRACTOR shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said laborer and foreman are actually engaged in such work.

The wages of any foreman who is employed partly on the force account work and partly on other work will be prorated according to the number of workers in the two classes of work as shown by the payrolls.

The CONTRACTOR shall receive the actual costs paid to, or in behalf of, workmen by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits, when such amounts are required by a collective bargaining agreement or other employment contracts generally applicable to the classes of labor employed on the work, but excepting any amounts which are already included in the wage rates paid. Any subsistence or travel allowance paid to the workmen shall be prorated according to the number of hours employed on the force account and other classes of work.

An amount equal to twenty percent (20%) of the sum of the above items will also be paid the CONTRACTOR.

(b) Bond, Insurance, and Tax. For premiums paid on additional bond, property damage, liability, and workmen's compensation insurance contributions, and social security taxes on the force account work, the CONTRACTOR shall receive the actual cost; to which cost six percent (6%) will be added. The CONTRACTOR shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance, and tax.

(c) Materials. For materials accepted by the ENGINEER and used, the CONTRACTOR shall receive the actual costs of such materials delivered on the work including transportation charges paid by the CONTRACTOR (exclusive of machinery rentals as hereinafter set forth), to which cost fifteen percent (15%) will be added plus any sales tax paid by the CONTRACTOR. For all materials used in connection with but not entering permanently into the work, reasonable depreciation will be allowed.

(d) Equipment. For the use of authorized equipment and additional traffic control devices required by the Force Account work, the CONTRACTOR will receive rental rates determined in accordance with the then current issue of the North Dakota Department of Transportation (N.D.D.O.T.) publication entitled EQUIPMENT RENTAL RATES FOR FORCE ACCOUNT WORK, which manual shall constitute a part of this specification. No percentage shall be added to these rates. No allowance will be allowed for equipment replacement or replacement escalators, cost of facilities capital, interest, small tools, or any other additives not listed. All equipment hours will be paid for as straight time. The only equipment payments that will be made are as follows:

> **(1) Owned Equipment.** Payment for the actual hours of CONTRACTOR-owned equipment will be determined using the procedures outlined in the then current edition of the N.D.D.O.T. manual entitled "Rental Rates for Equipment and Traffic Control Devices."

The computed hourly equipment cost times the number of hours claimed shall not exceed the CONTRACTOR's actual purchase price for the piece of equipment being claimed.

Subcontractor-owned equipment will be paid for in the same manner as CONTRACTOR-owned equipment unless such equipment has been rented, leased, or hired by the CONTRACTOR, as provided for in (2) below.

(2) Leased, Rented, or Hired Equipment. Payment for leased, rented, or hired equipment shall be the actual invoice payment plus sales tax as verified by paid invoices signed by the lessor, or by checks issued by the CONTRACTOR. If the lease rental is weekly, the weekly rate shall be divided by 40 to get an hourly equipment cost for the claim. If the lease or rental is monthly, the monthly rate shall be divided by 176 to get an hourly equipment cost for the claim.

The computed hourly equipment cost, for each individual piece of equipment, times the number of hours claimed shall not exceed the CONTRACTOR's actual lease or rental cost for the time frame claimed.

(3) Idle Time. The number of hours of equipment use to be paid for will only be the hours that the equipment is operating on the claim item. No payment will be made for equipment on standby unless the standby is directed in writing by the ENGINEER, or the standby is proven to be as the direct result of the CITY's actions or inactions. Standby will be paid at 50 percent of the hourly bare rate calculated by dividing the monthly rate by 176. The listed weekly, daily, or hourly rates will not be used. Operating costs will not be paid for hours of idle time.

Payment for standby time will not be made on any day the equipment operates for 8 or more hours. For equipment accumulating less than 8 hours operating time on any normal work day, standby payment will be limited to only that number of hours which, when added to the operating time for that day equals 8 hours. Standby payment will not be made in any case on days not normally a workday.

The above rental rates to be paid on equipment will be on the size normally used to operate the equipment, subject to approval of the ENGINEER. The above rental rates include gas, oil, repairs, and any other incidentals necessary for the operation of the equipment but do not include the operators. No work will be paid for until unit prices, rental rates, and wages have been agreed upon in writing.

Procedures governing rented or owner-operated equipment, attachments and accessories, types and quantity of equipment, measurement of equipment time, use of equipment in excess of fifty (50) hours per week, standby time, and equipment transportation charges will be as set forth in the N.D.D.O.T. rental rate publication.

(e) Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(f) Subcontracting. For any force account work performed by a subcontractor with the written authorization of the ENGINEER, the CONTRACTOR will receive an additional allowance for administrative and overhead expense. The additional allowance will be a percentage of the total force account invoice equal to ten percent (10%) of the first $3,000 plus three percent (3%) of the balance in excess of $3,000.

(g) Authority of Engineer. The ENGINEER has authority to require alterations in the equipment and labor force assigned to force account work, to limit authorization of overtime work to that normally used on the project for work of similar nature, or to require overtime when an emergency exists, and to require the cessation of force account work when adverse conditions severely limit productivity.

(h) Daily Records. The CONTRACTOR's representative and the ENGINEER shall compare records of the cost of work done as ordered on a force account basis at the end of each day for the purpose of resolving differences.

(i) Statements. No payment will be made for work performed on a force account basis until the CONTRACTOR has furnished the ENGINEER with duplicate itemized statements of the cost of such force account work detailed as follows:

1. Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman.

2. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

3. Quantities of materials, prices, and extensions.

4. Transportation of materials.

5. Cost of property damage, liability and Workmen's Compensation Insurance premiums, Unemployment Insurance contributions, and Social Security Tax.

Statements shall be accompanied by receipted invoices for materials used including transportation charges paid by the CONTRACTOR. The statements shall be adjusted, when applicable, to reflect any discounts offered by the supplier. When materials used in the force account work are not specifically purchased for that work but are taken from the CONTRACTOR's stock, the CONTRACTOR shall furnish an affidavit certifying that such materials were taken from stock, that the quantity claimed was actually used, and that the price and transportation costs claimed are the CONTRACTOR's actual costs.

On or before the tenth (10th) day succeeding the completion of the extra work authorized by a "Work Order," the CONTRACTOR shall present to the ENGINEER the original "Work Order" together with a full and complete itemized statement of such extra work, with date of completion of the work mentioned therein. Upon certification by the ENGINEER or his authorized representatives as to the correctness of such items with

regard to the amount and character of labor performed and materials furnished under such "Work Order," the ENGINEER shall enter the same as part of the estimate of the amount due the CONTRACTOR. The CONTRACTOR shall not be entitled to receive payment for any extra work in which he fails to present the "Work Order" within the time and in the manner hereinbefore mentioned.

The additional payment based on the percentages specified above shall constitute full compensation for all items of expense not specifically provided for the force account work. The total payment made as provided above shall constitute full compensation for such work.

SECTION 127 - FINAL PAYMENT

After the work has been completed, the ENGINEER will prepare a final statement showing the quantities of each and every item of work performed by the CONTRACTOR. All estimates upon which previous payments have been based are partial estimates and are subject to correction in the final statement. The final statement showing the entire quantity and value of each and every item of work performed will be submitted to the CONTRACTOR for its approval before being processed by the CITY for payment.

(a) Overpayment. If the final statement shows that the total of all partial payments made exceeds the total amount due to the CONTRACTOR, the CONTRACTOR shall promptly refund to the CITY the amount of such overpayment. If such refund is not made, the CITY shall have the right to deduct the amount thereof from any moneys due to the same CONTRACTOR under any other contract, either present or future.

SECTION 128 -CONTRACTOR'S INSURANCE

The CONTRACTOR shall not commence work under this contract until a "Certificate of Insurance" has been obtained and submitted to the CITY for all insurance required under this paragraph and proof of such insurance has been delivered to the CITY nor shall the CONTRACTOR allow any subcontractor to commence on any subcontract until all similar insurance required of the subcontractor has been obtained and proof has been delivered to the CITY.

(a) Compensation Insurance. The CONTRACTOR shall take out and maintain during the life of this contract Workers Compensation Insurance for all of CONTRACTOR's employees employed at the site of the project. In case any work is sublet, the CONTRACTOR shall require the subcontractor similarly to provide Workers Compensation Insurance for all of the latter's employed unless such employees are covered by the protection afforded by the CONTRACTOR. In the case of employees engaged in hazardous work under this contract, at the site of the project, who are not protected under the Workers Compensation Statute, the CONTRACTOR shall provide and shall cause each subcontractor to provide Employer's Liability Insurance for the protection of its employees not otherwise protected.

(b) Public Liability and Property Damage Insurance. The CONTRACTOR shall take out and maintain during the life of the Contract such Public Liability and Property Damage Insurance as shall protect him, the CITY, and any subcontractor performing work covered by this contract, for claims and damages for personal injury including accidental death and including the coverage for "Assault and Battery" as well as from claims for property damage (including damage to CITY's Property), which may arise from operations under this contract, whether such operations by himself or any subcontractor or by anyone directly employed by either of them to, from, or on the site and the amounts of such insurance shall be as follows:

Public Liability Insurance in an amount not less than $1,000,000.00 for personal injuries, etc., including accidental death to any person, in an amount not less than $2,000,000.00 on account of one accident and Property Damage Insurance not less than $1,000,000.00. Where excavation, trenching, or tunneling is involved, the Property Damage Liability Coverage under the Comprehensive General Liability Policy shall specifically provide coverage for damage to underground property. The CITY OF MANDAN shall be named as an additional insured on all the policies required under this section.

(c) Satisfactory Coverage. In the event that the form of any policy or certificates or the amount of the insurance or the companies writing same are not satisfactory to the CITY, the CONTRACTOR shall obtain new policies or certificates in compliance with these specifications. The CONTRACTOR shall not cause any policies to be canceled or to permit them to lapse, and all insurance policies shall include a clause to the effect that the policy shall not be canceled or changed until thirty (30) days after the CITY has received written notice as evidenced by the return receipt of the registered letter.

(d) Proof of Insurance. "Certificates of Insurance" shall contain true transcripts from the policy, authenticated by the proper officer of the insurer, evidencing in particular those insured, the extent of the insurance, the locations and operations to which the insurance applies, the effective date and expiration date and the notice of cancellation clause mentioned herein above.

(e) Builder's Risk Insurance. The CONTRACTOR will maintain Builder's Risk Insurance or like insurance coverage (fire and extended coverage) on a one-hundred percent (100%) completed value basis on the insurable portion of the project for the benefit of the CITY, the CONTRACTOR, and all subcontractors, as their interest may appear.

SECTION 129 - OBSERVATION AND TESTING

All materials and equipment used in the construction of the Project shall be subject to adequate observation and testing in accordance with generally accepted standards.

The CONTRACTOR shall provide at its expense the necessary testing and inspection services required by the plans and specifications unless otherwise provided.

If the Plans and Specifications, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing, or approval.

Neither observations by the ENGINEER nor inspections, tests, or approvals by persons other than the CONTRACTOR shall relieve the CONTRACTOR from its obligations to perform the work in accordance with the requirements of the Plans and Specifications.

The ENGINEER and the representative of ENGINEER will at all times have access to the work. In addition, authorized representatives and agents of any participating federal or state agency shall be permitted to inspect or observe all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide facilities for such access and observation of the work and also for any inspection or testing thereof.

If any work is covered contrary to the request of the ENGINEER, it must at the ENGINEER's request, be uncovered for ENGINEER's observation and replaced at the CONTRACTOR's expense.

If any work has been covered which the ENGINEER has not specifically requested to observe prior to its being covered, or if the ENGINEER considers it necessary or advisable that covered work be inspected or tested by others, the CONTRACTOR at the ENGINEER's request will uncover, expose, or otherwise make available for observation, inspection, or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction. If, however, such work is not found to be defective, the work will be under Section 126, extra work or an extension of the Contract Time or both directly attribute to such uncovering, exposure, observation, inspection, testing, and reconstruction and an appropriate work order shall be issued.

SECTION 130 - INDEMNITY AGREEMENT FOR CONTRACTORS

The CONTRACTOR agrees to indemnify and save harmless the CITY OF MANDAN, its appointed and elective officers and employees, from and against any and all loss or expense, including attorney's fees and costs by reason of liability imposed by law upon the CITY, its elected or appointed officials or employees for damages because of bodily injury including death at any time resulting therefrom sustained by any person or persons and on account of damage to property including loss of use thereof, arising out of or in consequence of the performance of this work, whether such injuries to persons or damage to property is due to the negligence of the CONTRACTOR, its agents or employees, its subcontractors, their employees, CITY OF MANDAN, its appointed or elected officers, employees, or their agents, except only such injury or damage as shall have been occasioned by the sole negligence of the CITY, its appointed or elected officials or employees.

SECTION 131 - CONFORMITY WITH PLANS & SPECIFICATIONS

Unless specific tolerances are specified, all work performed and all materials furnished shall be in reasonably close conformity with the lines, grades, cross sections, dimensions, and material requirements, shown on the plans or indicated in the specifications.

Plan dimensions and contract specification values are to be considered as the target value to be strived for as the design value from which any deviations are allowed. It is the intent of the specifications that the materials and workmanship shall be uniform in character and shall conform as nearly as realistically possible to the prescribed target value or to the middle portion of the tolerance range. The purpose of the tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons. When a maximum or minimum value is specified, the production and processing of the material and the performance of the work shall be so controlled that the material or work will not be preponderantly of borderline quality or dimension.

In the event the ENGINEER finds the materials or the finished product in which the materials are used are not within reasonably close conformity with the plans and specifications but that reasonably acceptable work has been produced, the ENGINEER will then make a determination if the work will be accepted and remain in place. In this event, the ENGINEER will document the basis of acceptance by contract modification which will provide for an appropriate adjustment in the contract price for such work or materials as the ENGINEER deems necessary to conform to a determination based upon engineering judgment.

In the event the ENGINEER finds the materials or the finished product in which the materials are used or the work performed are not in reasonably close conformity with the plans and specifications and have resulted in an inferior or unsatisfactory product, the work or materials shall be removed and replaced or otherwise corrected by and at the expense of the CONTRACTOR.

SECTION 132 - SEVERAL CONTRACTS ON SAME SITE

When different types of construction work on the same section of public right-of-way or site are let under separate contracts, the several CONTRACTORS shall cooperate to the fullest extent with each other so that the prosecution of the work under each contract will be carried out for the best interests of the CITY. The CITY assumes no liability for any delay caused by any CONTRACTOR, its subcontractor(s) or supplier(s) to any other CONTRACTOR, its subcontractor(s) or supplier(s).

SECTION 133 - PROTECTION OF TREES

A CONTRACTOR working on public rights-of-ways or properties shall be responsible for the prevention of damage to trees, shrubs, bushes, hedges, or other woody plants located within or infringing on the public rights-of-ways and properties, including parks, and shall notify the City Forestry Department prior to beginning any construction near said trees.

The CONTRACTOR shall construct a fence or frame, not less than four (4) feet high, around the tree canopy (drip line) capable of preventing soil, building material, or debris from accumulating about the base of the plant which shall also be capable of serving as a barrier to all construction or public traffic. Materials or debris shall not be stored above the root zone of any tree which may impede the free passage of air, water, or nutrients except by written permission of the City Forester.

The CONTRACTOR shall exercise care in driving or working on the root zone area of trees to prevent excessive compaction of the soil. Gaseous, liquid, or solid substances which are harmful to plantings shall not come into contact with any plantings. Nails, bolts, or other fastening materials shall not be imbedded into the trunk or limbs of a tree. Ropes, wires, or other hanging materials shall not be attached to a plant in such a manner that the bark may be damaged or cause undue stress to the plant structure.

Any overhanging branches or underlying roots which may be crushed, scarred, broken, or damaged in any way due to unavoidable construction activity shall be reported to the City Forester so that preventive action may be taken to minimize damage to plants. Any trees damaged without prior notification of City Forester shall be the responsibility of the CONTRACTOR to repair or replace using a licensed tree service, upon determination by the City Forester.

If it is determined by the City Forester that ditches, tunnels, trenches, or other earthmoving operations for underground utilities construction will cause damage to the health, vigor, and stability of plants, the City Forester may require that power drive soil augers or the power push method be used wherever possible. Where this is not possible, the City Forester must be notified to assist in determining alternate methods. If trees must be pruned, fertilized, or removed prior to construction, as determined by the City Forester, all costs using prescribed methods shall be the responsibility of the CONTRACTOR.

Prior to backfilling any trench or ditch, the City Forester shall be notified to inspect any repairs made to damaged roots. All exposed roots shall be pruned or trimmed using a hand pruner or hand saw. Axe cuts will not be allowed.

Upon completion of construction, the CONTRACTOR shall notify the City Forester for a final inspection of the trees whether or not any damage occurred. Any damage found to have been the construction activity of the CONTRACTOR shall be the remedial responsibility of the CONTRACTOR to be corrected by a licensed tree service.

SECTION 134 - DEBARMENT CERTIFICATION

As required by Mandan City Ordinance, all suppliers, contractors, and service providers doing business with the city must certify that they are in compliance with all federal, state, and local laws, regulations, and orders including, but not limited to, those regarding non-discrimination, wages and hours, workers compensation, and immigration. Failure of compliance may result in the cancellation of any City contract and exclusion from consideration for future contracts.

By submission of a bid or proposal, the bidder or proposer certifies, to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not, within a three (3) year period preceding this certification, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense including, but not limited to, a violation of federal or state antitrust statutes, or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, immigration violations, or receiving stolen property in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) contract;

(c) Are not presently indicted for or otherwise criminally or civilly charge by a governmental entity (federal, state, or local) with commission of any of the offenses listed in subparagraph (b) of this certification; and

(d) Have not within a three-year period preceding this certification had one or more public contracts (federal, state, or local) terminated for cause or default.

The bidder or proposer also certifies that, if it later becomes aware of any information contradicting the statements above, it will provide that information to the city.

If the bidder or proposer is unable to certify to all statements in this certification, it shall indicate so in its bid or proposal, or in a transmittal letter or message accompanying its bid or proposal and provide a written explanation to the CITY.

SECTION 135 - SHOP DRAWINGS

Before any of the materials are delivered to the job, the CONTRACTOR shall submit to the CITY ENGINEER complete Shop Drawings.

The Shop Drawings shall include catalog numbers, performance data, dimensions, and other descriptive information.

The Shop Drawings may be in the form of printed catalog sheets showing all necessary information and shall be BOUND TOGETHER, NEATLY INDEXED AND TABBED.

Each Shop Drawing folder or set of drawings shall be STAMPED, INITIALED, AND DATED by CONTRACTOR to indicate they have thoroughly reviewed them.

The CITY review of Shop Drawings is for general compliance with contract documents. The CITY review does not relieve the CONTRACTOR from responsibility for errors, omissions, or deviations from contractor requirements.

Shop Drawings not in conformance with the Specifications may be returned to CONTRACTOR without review.

The CITY ENGINEER will retain two copies after review, and the balance will be returned to CONTRACTOR.

SECTION 200

EARTHWORK

SECTION 201 -CLEARING AND GRUBBING

201-1 DESCRIPTION

This item shall consist of clearing or clearing and grubbing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the ENGINEER.

Clearing shall consist of the cutting and removal of all trees, stumps, brush, and hedges, as well as the removal of fences and other loose or projecting material from the designated areas. The grubbing of stumps and roots will not be required under clearing. Clearing, when so designated, shall consist of the cutting and removal of isolated single trees or isolated groups of trees. The cutting of all the trees of this classification shall be in accordance with the requirements for the particular area being cleared or as shown on the plans or as directed by the ENGINEER.

Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or weeds, fences, structures, debris, rubbish of any nature, natural obstructions, or such material which in the opinion of the ENGINEER is unsuitable for the foundation of pavements or other required structures. This shall also include the grubbing of stumps, roots, and foundations and the disposal from the project of all spoil materials resulting from clearing and grubbing.

201-2 CONSTRUCTION REQUIREMENTS

201-2.1 GENERAL. The areas denoted on the plans to be cleared and grubbed under this item shall be staked on the ground by the ENGINEER. The clearing and grubbing shall be done at a satisfactory distance in advance of the grading operations.

All spoil materials removed by the clearing or by clearing and grubbing shall be disposed at an approved disposal area.

As far as practicable waste concrete and masonry shall be placed on slopes of embankments or channels. When embankments are constructed of such material, this material shall be placed in accordance with requirements for formation of embankments. Any broken concrete or masonry which cannot be used in construction, and all other materials not considered suitable for use elsewhere, shall be disposed of by the CONTRACTOR. In no case shall any discarded materials be left in windrows or piles adjacent to or within the work or project limits. The manner and location of disposal of materials shall be subject to the approval of the ENGINEER and shall not create an unsightly or objectionable view.

Any blasting necessary shall be done at the CONTRACTOR's responsibility. The utmost care shall be taken not to endanger life or property.

The removal of existing structures and utilities required to permit orderly progress of work shall be accomplished by local agencies, unless otherwise shown on the plans. Whenever a utility pole, pipeline, conduit, cable, sewer, roadway, or other utility is encountered and must be removed or relocated, the CONTRACTOR shall advise the ENGINEER who will notify the proper authority or Owner and attempt to secure prompt action.

201-2.2 CLEARING. The CONTRACTOR shall clear the staked or indicated area of all objectionable materials. Trees unavoidably falling outside the specified limits must be cut up, removed, and disposed of in a satisfactory manner. In order to minimize damage to trees that are to be left standing, trees shall be felled toward the center of the area being cleared. The CONTRACTOR shall preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut to a height of not more than 12 inches above the ground. The grubbing of stumps and roots will not be required.

Fences shall be removed and disposed of or salvaged as directed by the ENGINEER.

All tree removal shall be done utilizing a contractor licensed with the City of Mandan's Forestry Department.

201-2.3 CLEARING AND GRUBBING. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass, and other unsatisfactory materials shall be removed except where embankments exceeding 3 1/2 feet in depth are to be made outside of paved areas. In cases where such depths of embankments are to be made, all unsatisfactory materials shall be removed, but sound trees, stumps, and brush can be cut off within 6 inches above the ground and allowed to remain. Roots and other projections over 1 1/2 inches in diameter shall be grubbed out to a depth of at least 18 inches below the finished subgrade or slope elevation.

When isolated trees are designated for clearing, the trees shall be classed in accordance with the diameter size as measured at point 54 inches above the ground level or at a designated height specified in the proposal.

Any buildings and miscellaneous structures that are shown on the plans to be removed shall be demolished or removed, and all materials therefrom shall be removed from the site. The remaining foundations, wells, cesspools, and all like structures shall be destroyed by breaking out or breaking down the materials of which the foundations, wells, cesspools, etc., are built and removing the footing and walls or as specified on the plans. Any broken concrete, blocks, or other objectionable material which cannot be used in backfill shall be removed and disposed of by the CONTRACTOR. The holes or openings shall be backfilled with acceptable material and properly compacted.

All holes remaining after the grubbing operation in embankment areas shall have the sides broken down to flatten out the slopes and shall be filled with acceptable material, dried or moistened, and properly compacted in layers to the density required in Subsection 202-3.7. The same construction procedure shall be applied to all holes remaining after grubbing in excavation areas where the depth of holes exceeds the depth of the proposed excavation.

All tree removal done within clearing and grubbing shall be done utilizing a contractor licensed with the City of Mandan.

201-2.4 TREE ROOT CUTTING. The CONTRACTOR shall be responsible for the prevention of damage to trees, shrubs, bushes, and hedges.

When tree roots are found larger than 3 inches in diameter during construction, the CONTRACTOR must contact the City of Mandan's Forestry Department to determine if such roots shall be cut and/or if the tree shall be removed before continuing any further construction.

When the City Forester determines that the roots may be cut, all roots shall be cut cleanly to avoid jagged rough ends.A visual inspection of tree root cuts shall be made by the City Forester.

All roots greater than 3 inches in diameter shall be cut using a hand pruner, hand saw, power saw, or stump grinder.

201-3 MEASUREMENT AND PAYMENT

201-3.1 CLEARING. Clearing shall be measured by the square yard (SY) or considered a lump sum and shall be paid for at the unit price bid for "Clearing" completed and approved by the ENGINEER.

201-3.2 CLEARING AND GRUBBING. Clearing and Grubbing shall be measured by the square yard (SY) or considered a lump sum and shall be paid for at the unit price bid for "Clearing and Grubbing" completed and approved by the ENGINEER.

201-3.3 TREE REMOVAL. When the proposal indicates measurement by individual unit basis, the accepted quantities of "Tree Removal" shall be measured and paid for at the unit price bid for the following item:

Pay Item	Unit
Trees (0" to 2")	Incidental to other items
Trees (2" to 6")	Each
Trees (7" to 12")	Each
Trees (13" to 24")	Each
Trees (over 24")	Each

Tree sizes shall be determined by measuring the diameter at a point 54 inches above the ground.

201-3.4 TREE ROOT CUTTING. Tree root cutting shall be measured on an individual basis for each root cut (Ea.) and accepted by the ENGINEER. There shall be no payment of tree root cuttings less than 3 inches in diameter. Tree root cutting shall be paid for at the unit price for "Tree Root Cutting" completed and approved by the City Forester.

SECTION 202- EXCAVATION AND EMBANKMENT

202-1 DESCRIPTION

This item shall consist of excavating, removing, and satisfactorily disposing of all materials within the limits of the work in accordance with these specifications and in conformity with the dimensions and typical sections shown on the plans and with the lines and grades established by the ENGINEER.

"Unstable," "Suitable," "Unsuitable," and "Unsatisfactory" soil or aggregate items shall be defined as follows:

a. UNSTABLE SOILS

Unstable soils are those soils which in their natural or existing condition require manipulation, aeration, or wetting and recompaction to obtain the required density for a suitable subgrade foundation. This condition is usually caused by too high a moisture content for cohesive soils and too loose and/or dry for granular soils.

In the case of cohesive soils where in their natural state the moisture content exceeds optimum moisture, they begin to behave as plastic rather than solid. Scarifying or windrowing to a depth of 9 to 12 inches and recompacting the soil in 6-inch lifts to prescribed density requirements will usually correct this condition. The other alternative is to subcut to prescribed depth and replace the cohesive material in accordance with specifications.

In the case of granular soils that are too loose, usually subcutting those and replacing them in 6-inch lifts to prescribed density soil will correct this condition.

In either case, it is not that these soils have to be replaced with more desirable soil, it is merely that in their natural state they are unstable but not unsuitable for subgrade foundation.

b. UNSUITABLE SOILS

Unsuitable soils are those soils which in their natural state are unsuitable for subgrade foundation due to a high organic content such as vegetation, matted roots, peat, or muck. Soils of these types are very susceptible to consolidation due to the decaying of this organic matter. Other unsuitable soils are those which contain decomposable debris and ashes.

The frozen condition of any soil or material shall not constitute a basis for a change of classification. Although frozen material shall not be allowed in the trench unless otherwise indicated, it shall be recompacted after it has thawed as directed by the ENGINEER.

c. SUITABLE MATERIALS

Suitable materials are those materials which have been determined to be satisfactory for subgrade foundations and includes all stable or unstable soils and any other materials deemed satisfactory by the ENGINEER for use in subgrades or embankments.

d. UNSATISFACTORY MATERIALS

Unsatisfactory materials are those materials which have been determined to be unsuitable for subgrade foundations and includes all unsuitable soils, rock, shale hardpan, loose rock, boulders, concrete chunks or slabs, debris, and any other materials deemed unsatisfactory by the ENGINEER for use in subgrades or embankments.

All suitable material taken from excavation shall be used in the formation of embankment, subgrade, and for backfilling as indicated on the plans or as directed by the ENGINEER.

When the volume of the excavation exceeds that required to construct the embankments to the grades indicated, the excess shall be used to grade the areas of ultimate development or wasted as directed. When the volume of excavation is not sufficient for constructing the fill to the grades indicated by the ENGINEER at locations designated on the plans, or the Special Provisions, the additional material required shall be identified by the ENGINEER and paid as "Borrow Excavation."

202-2 CLASSIFICATION

All material excavated shall be defined as "Unclassified Excavation" unless, in the proposal form, prices are asked and bids are taken for "Rock Excavation" and "Borrow Excavation."

"Unclassified Excavation" shall include all excavation performed under this item regardless of the material encountered.

"Rock Excavation," when provided in the proposal, shall include all solid rock in ledges, in bedded deposits, in unstratified masses, and conglomerate deposits which are so firmly cemented they present all the characteristics of solid rock and which cannot be removed without drilling and blasting. All rock not allowed to be placed in the backfill or embankment, as directed by the ENGINEER, shall be considered "Rock Excavation."

"Borrow Excavation" shall consist of approved material required for the construction of embankments or for other portion of the work and shall be obtained from approved sources. Unless otherwise designated in the contract, the CONTRACTOR shall pay all costs involved.

The CONTRACTOR shall notify the ENGINEER in advance of opening any borrow areas so that the borrow material can be tested before being used. Sufficient time for testing the borrow shall be allowed.

202-3 CONSTRUCTION REQUIREMENTS

202-3.1 GENERAL. The rough excavation shall be carried to the necessary depth to obtain the specific depth of subgrade compaction shown on the plans. Likewise, on embankments the depth of subgrade compaction shall be as shown on the plans. Should the CONTRACTOR through negligence or other fault excavate below the designated lines, the excavation shall be replaced with approved materials in an approved manner and condition at the CONTRACTOR's own expense.

The ENGINEER shall have complete control over the excavation, moving, placing, and disposition of all material and shall determine the suitability of material to be placed in embankments. All material determined unsuitable shall be disposed of in waste areas or as directed. Topsoil shall not be used in fills or in subgrades but shall be handled and placed as directed.

The CONTRACTOR shall inform and satisfy himself as to the character, quantity, and distribution of all materials to be excavated. No payment will be made for any excavated material which is used for purposes other than those designated. All spoil areas shall be leveled to a uniform line and section and shall present a neat appearance before project acceptance. The surface elevation of spoil areas shall not extend above the surface elevation of adjacent or contiguous usable areas unless approved by the ENGINEER.

The ENGINEER shall provide centerline stakes to prepare the grading. The CONTRACTOR shall be responsible for staking all other grades necessary to complete grading as per plans or specifications.

The ENGINEER shall verify that finished grading for roadway is within one (1) inch of the final subgrade elevation specified. If grading does not meet tolerance, the CONTRACTOR shall be responsible for regrading to meet tolerance.

Those areas outside of the pavement areas in which the top layer of soil material becomes compacted due to hauling or to any other activity of the CONTRACTOR, shall be scarified and disked to a depth of 4 inches, as directed, to loosen and pulverize the soil.

If it is necessary to interrupt existing surface drainage, sewers, or underdrainage, conduits, utilities, or similar underground structures, or parts thereof, the CONTRACTOR shall be responsible for and shall take all necessary precautions to protect and preserve or provide temporary services. When such facilities are encountered, the CONTRACTOR shall notify the ENGINEER, who shall arrange for their removal, if necessary. The CONTRACTOR shall assume all costs to repair all damage to such facilities or structures which may result from operations of the CONTRACTOR during the period of the contract.

The CONTRACTOR shall engage an independent soils testing laboratory approved by the ENGINEER to determine the soil proctors and perform the required compaction testing to be determined by the ENGINEER.

The compaction control tests for this section are based on one individual compaction test per 200 cubic yards of fill and 750 square yards of area. The CONTRACTOR shall be responsible for all retesting of failed tests and a proctor determined to represent each soil condition to be encountered on the project. The time, locations, depths, and frequency of compaction testing shall be at the discretion of the ENGINEER during construction. Should it become necessary to conduct an additional number of initial compaction tests, over and above the number specified for bidding purposes, the CITY OF MANDAN shall be responsible for all costs associated with additional testing performed by an independent soils testing laboratory. The CONTRACTOR, however, will be required to assume the cost of all retesting of failed tests, regardless of the total number required during construction.

Compaction testing to determine densities may be accomplished with a nuclear density testing apparatus and/or the sand cone method. Should disputes arise concerning test results, they will be resolved by using only the sand cone method of testing.

Written reports of all test results shall be supplied to the ENGINEER and the CONTRACTOR by the testing laboratory as soon as possible. To expedite construction progress it is necessary that the CONTRACTOR and ENGINEER be furnished with the results of all tests as soon as testing is completed. The availability of the independent testing laboratory when needed and speed of testing and reporting are to be considered the responsibility of the CONTRACTOR.

Compaction Control Test as stated above shall be incidental to the price bid for 202-4.1 Unclassified Excavation and/or 202-4.3 Borrow Excavation.

202-3.2 EXCAVATION. Excavation shall be performed as indicated on the contract plans to the lines, grades, and elevation shown or as directed by the ENGINEER, and shall be made so that the requirements for formation of embankments can be followed. No excavation or stripping shall be started until the ENGINEER has taken cross-sectional elevations and measurements of the existing ground surface and has staked out the proposed work. All material encountered within the limits indicated shall be removed and disposed of as directed. During the process of excavation, the grade shall be maintained so that it will be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the work.

If, at the time of excavation, it is not possible to place any material in its proper section of the permanent construction, it shall be stockpiled in approved areas for later use.

Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for subgrades, streets, roads, shoulders, intermediate areas, or any areas intended for turfing shall be excavated to a minimum depth of 12 inches, or to the depth specified by the ENGINEER, below the contemplated surface of the subgrade or the designated grades. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified to provide a satisfactory foundation. Unsatisfactory materials shall be disposed of at locations designated by the ENGINEER. All material so excavated shall be paid for at the contract unit price per cubic yard for "Unclassified Excavation" or for "Rock Excavation," as the case may be, when the classification for the last two items is provided in the proposal. The portion so excavated shall be refilled with suitable selected material as specified, obtained from the grading operations or borrow area and thoroughly compacted by rolling. The necessary refilling will constitute a part of the embankment. Where rock cuts are made and refilled with selected material or where trenching out is done to provide for a course of pavement, the depths thus created shall be ditched at frequent intervals to provide drainage.

The CONTRACTOR shall make the distribution as indicated on the plans. Widening or narrowing of the section and raising or lowering of the grade to avoid haul will not be permitted. The ENGINEER reserves the right to make minor adjustments or revisions in lines or grades, if found necessary, as the work progresses due to discrepancies in the plans or to obtain satisfactory construction.

Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the ENGINEER. The ENGINEER, whose decision shall be final, shall determine if the displacement of such material was unavoidable. All overbreak shall be removed by the CONTRACTOR and disposed of as directed; however, payment will not be made for the removal and disposal of overbreak which the ENGINEER determines as avoidable. Unavoidable overbreak will be classified as "Unclassified Excavation."

The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by local agencies unless otherwise shown on the plans. All existing foundations or footings shall be excavated by the CONTRACTOR and the material disposed of as directed. All foundations thus removed shall be backfilled with suitable material and compacted.

In cut areas the subgrade under areas to be paved shall be compacted to the depths and to the densities at optimum moisture as shown on the plans or as specified in the specifications or when not otherwise shown or specified, to a minimum depth of 6 inches and to a density of not less than 90% of the maximum dry density at optimum moisture as determined by the compaction control tests specified in ASTM D1557. Any unsuitable materials encountered shall be removed and paid for as specified.

No payment or measurement for payment will be made for suitable materials removed, manipulated, and replaced in order to obtain density. Any removal, manipulation, aeration, replacement, and recompaction of suitable materials necessary to obtain the required density shall be considered as incidental to the excavation and embankment operations and shall be performed by the CONTRACTOR at no additional cost to the project.

Stones or rock fragments larger than 2 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade. The finished grading operations conforming to the typical cross section shall be completed and maintained at least one block ahead of the paving operations.

In cut areas all loose or protruding rocks on the back slopes shall be barred loose or otherwise removed to line or finished grade of slope. All cut-and-fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown on the plans or as directed by the ENGINEER.

Blasting, when necessary, will be permitted only when proper precautions are taken for the protection and safety of all persons, the work, and the surrounding property. All damage done to the work or property shall be repaired at the CONTRACTOR's expense. All operations of the CONTRACTOR in connection with the transportation, storage, and use of explosives shall be approved by the City of Mandan Fire Department. Any approval given will not relieve the CONTRACTOR of responsibility in blasting operations.

202-3.3 BORROW EXCAVATION. When provided for in the proposal, borrow excavation shall consist of excavation made from borrow areas outside the normal grading limits. Borrow excavation shall be made only at the designated locations and within the horizontal and vertical limits as staked or as directed. Upon completion of borrow operations, the borrow area shall be finished to a neat and uniform grade acceptable to the ENGINEER.

The borrow excavation shall be handled and placed as specified in these specifications for excavation and embankment.

202-3.8 EQUIPMENT. The CONTRACTOR may use any type of earth-moving, compaction, and watering equipment, provided the equipment is in a satisfactory condition and is of such capacity that the construction schedule can be maintained as planned by the CONTRACTOR and as approved by the ENGINEER in accordance with the total days or working days bid for the construction. The CONTRACTOR shall furnish, operate, and maintain such equipment as is necessary to control uniform density, layers, section, and smoothness of grade.

202-3.9 PREPARATION AND PROTECTION OF THE TOP OF THE SUBGRADE. On areas to be paved, the specified depth in cut areas and the top of embankment shall be compacted to the density specified. The typical section for areas to be paved shall be graded such that the roadway is graded to 6 inches below the elevation of the future top of curb. The remaining area behind the curb and gutter to property line shall be graded to the elevation of the future top of curb. When completed the surface shall be true to the lines, grades, and cross section shown on the plans or as directed by the ENGINEER. After all drains, structures, ducts, and other underground appurtenances along the edges or under the pavement have been completed, the subgrade shall be compacted to the depth specified at not less than 90% of the maximum dry density, at optimum moisture, as determined by ASTM Compaction Control Test Designation D1557. Any irregularities or depressions that develop during rolling shall be corrected by loosening the material at these places and adding, removing, or replacing material until the surface is smooth and uniform. Any portion of the area which is not accessible to a roller shall be compacted in lifts not to exceed 6 inches to the required density by approved mechanical tampers. The material shall be sprinkled with water during rolling or tamping, when directed by the ENGINEER.

All soft and yielding material and material which will not compact readily when rolled or tamped shall be removed as directed by the ENGINEER and replaced with suitable material. After grading operations are complete, all loose stones larger than 2 inches in their greatest dimension shall be removed from the surface of all proposed graded paving areas and disposed of as directed by the ENGINEER.

At all times the top of the subgrade shall be kept in such condition that it will drain readily and effectively. In handling materials, tools, and equipment, the CONTRACTOR shall protect the subgrade from damage by laying planks when directed and shall be reshaped and recompacted to required density. Storage or stockpiling of materials on the top of the subgrade will not be permitted. Until the subgrade has been checked and approved, no subbase, surface course, or pavement shall be laid thereon.

202-3.10 HAUL. No payment will be made separately or directly for haul on any part of the work. All hauling will be considered a necessary and incidental part of the work, and its cost shall be considered by the CONTRACTOR and included in the contract unit price for the pay items of work involved.

202.3.11 TOLERANCES. In those areas upon which a subbase or base course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a 16-foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2 inch, or shall not be more than 0.05 of a foot from true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials, reshaping and recompacting to required density by sprinkling and rolling.

On areas to be turfed under the project or in the future, outside the sidewalk, curb and gutter and pavement limits the surface shall be of such smoothness that it will not vary more that 0.10 of a foot from true grade as established by grade hubs. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

202-4 MEASUREMENT AND PAYMENT

202-4.1 UNCLASSIFIED EXCAVATION. Unclassified Excavation shall be measured by the cubic yard (CY) in its original position by the method of average end areas of materials acceptably excavated and stripped as specified. Measurements shall not include the yardage of material excavated without authorization beyond normal slope lines, or the yardage of material used for purposes other than those directed. The plans shall state an assumed shrinkage factor to be used to compute embankment volume placed using "Unclassified Excavation."

Payment shall be made at the unit price bid per cubic yard (CY) for "Unclassified Excavation."

202-4.2 ROCK EXCAVATION. All rock found in the excavation and not allowed to be placed in the backfill or embankment shall be classified as Rock Excavation, measured by the cubic yard (CY) and disposed of by the CONTRACTOR or as directed by the ENGINEER.

The CONTRACTOR shall place all rocks not allowed to be placed in the backfill or embankment and less than 1 cubic yard in a pile to be measured by the ENGINEER. The total volume of the stockpile shall be reduced by 25% to account for voids in the rock stockpile.

All rock greater than 1 cubic yard shall be individually measured by the ENGINEER.

Payment shall be made at the unit price bid per cubic yard (CY) for "Rock Excavation."

202-4.3 BORROW EXCAVATION. Borrow Excavation shall be measured by the cubic yard (CY) in its original position. Borrow Excavation in its original position shall include an assumed shrinkage factor to be used to compute embankment volume placed Borrow excavation in a stockpile shall not include an allowance for shrinkage. Payment shall be made at the unit price bid per cubic yard (CY) for "Borrow Excavation."

SECTION 203 -WATERING

203-1 DESCRIPTION

This item shall consist of applying CITY OF MANDAN furnished water required in the compaction of embankments, subgrades, subbases, base courses, and for other purposes in accordance with the requirements of these specifications or as directed by the ENGINEER.

203-2 CONSTRUCTION REQUIREMENTS

Water, when required, shall be applied at the locations, in the amounts, and during the hours, including nights, as approved by the ENGINEER. An adequate water supply shall be provided by the CITY OF MANDAN. The equipment furnished and used by the CONTRACTOR for watering shall be of ample capacity and of such design as to assure uniform application of water in the amounts directed by the ENGINEER.

The CONTRACTOR shall furnish all fittings, hoses, and equipment used in the loading of CITY furnished water. If a water hydrant is used for furnishing water, the CONTRACTOR shall furnish a gate type control valve, approved by the ENGINEER, to control water flow. The hydrant valve shall be fully opened and under no circumstances will the hydrant valve be used for water flow control. The CONTRACTOR shall apply for a hydrant meter supplied and installed by the City of Mandan Public Works Department and shall pay all installation and usage fees unless waived by the contract documents.

203-3 MEASUREMENT AND PAYMENT

203-3.1 WATERING. Watering shall be measured in the vehicle at the point of delivery by 1,000 gallon ("M" Gal.) units or by a meter supplied by the City of Mandan and paid for at the unit price bid for "Watering."

SECTION 204- SUBGRADE PREPARATION

204-1 DESCRIPTION

This work shall consist of shaping and compaction of the subgrade prior to construction of a subbase, base, or surface course and shall include excavation and/or shifting of materials resulting from rough grading, trenching or other prior construction activities. Subgrade preparation shall include all work to the depths specified on the plans or in the Special Provisions. When Subgrade Preparation depths are not specified, the depth shall be assumed to be a minimum of 6 inches below the surface of the finished subgrade.

Prior to subgrade preparation, the ENGINEER shall verify that the grading is within tolerance specified in Subsection 202-3.1. Work shall not begin on the subgrade preparation until the ENGINEER has approved that the grading has met the tolerances.

The CONTRACTOR responsible for subgrade preparation shall be required to grade a 4-foot minimum wide strip centered at the future face of curb to the elevation 0.1 foot above the bottom of curb section. Payment for curb and gutter grading shall be measured by the cubic yard and paid for at the unit price for "Unclassified Excavation" completed and accepted by the ENGINEER.

"Unstable," "Suitable," "Unsuitable," and "Unsatisfactory" soil or aggregate items are referred to in Section 202-1.

204-2 CONSTRUCTION REQUIREMENTS

204-2.1 GENERAL. In all areas, prior to placing any of the base course specified under Section 300, the entire subgrade surface shall be scarified to a specified depth of not less than 6 inches and dried or uniformly moistened to obtain required compaction. Excess suitable excavated material shall be stockpiled and reused whenever possible in the project. Stockpiled material which is reused shall be measured in its final section and paid for as Unclassified Excavation.

Excavation of material for curb and gutter installation shall be measured by the cubic yard (CY) and paid for at the unit price for "Unclassified Excavation" completed and accepted by the ENGINEER.

Excavation and hauling of material from one point to another point on the roadbed to adjust the grade line and stockpiling excess material, if any, adjacent to the project shall be considered incidental to the "Subgrade Preparation" bid items.

All rocks larger than 2 inches in size and other unsuitable material shall be removed and replaced with approved backfill material. Any portions of the subgrade not easily accessible to machine operations, such as valley gutters, shall be brought to the proper elevation and compacted by methods approved by the ENGINEER.

During the course of preparing the subgrade and until the curb and gutter and pavement courses have been constructed, it shall be the CONTRACTOR's responsibility to protect the subgrade against and repair any damage caused by adverse weather, public traffic, and the CONTRACTOR's own operations. The subgrade shall at all times be completed for a sufficient distance ahead of hauling and spreading base or surface material to allow adequate opportunity for inspection. No materials shall be placed on the subgrade until it has been checked and approved by the ENGINEER.

204-2.2 COMPACTION. The subgrade shall be compacted by approved compaction equipment. Approved compaction equipment shall include sheepsfoot rollers, pneumatic packers, mechanical packers, mechanical rammers, vibratory equipment, trucks, tractors, scrapers, motor graders, and all other types of equipment used in excavating, transporting, and placing the subgrade. Subgrade preparation depths specified on the plans or special provisions or the minimum 6 inches required below the surface of the finished subgrade shall be compacted to 90 percent of Maximum Dry Density as determined by ASTM Compaction Control Test Designation D1557 with a moisture content falling within plus or minus 4 percent of the Optimum Moisture Content as determined by said testing method. The surface after compaction shall be true to line, grade, and cross section.

The CONTRACTOR shall engage an independent soils testing laboratory, approved by the ENGINEER, to determine the soil proctors and perform the required compaction testing to be determined by the ENGINEER.

The compaction control tests for this section are based on one individual compaction test per 750 square yards of area. The CONTRACTOR shall be responsible for all retesting of failing tests and a proctor determination to represent each soil condition to be encountered on the project. The locations and depths of compaction testing shall be at the discretion of the ENGINEER during construction. Should it become necessary to require an additional number of initial compaction tests, over and above the number specified for bidding purposes, the City of Mandan shall be responsible for all costs associated with additional testing performed by an independent testing laboratory. The CONTRACTOR, however, will be required to assume the cost of all retesting of failed tests regardless of the total number required during construction.

Compaction testing to determine densities may be accomplished with a nuclear density testing apparatus and/or the sand cone method. Should disputes arise concerning test results they will be resolved by using the sand cone method of testing.

Written reports of all test results shall be supplied to the ENGINEER and the CONTRACTOR by the testing laboratory as soon as possible. To expedite construction progress it is necessary that the CONTRACTOR and ENGINEER be furnished with the results of all tests as soon as testing is completed.

The availability of the independent testing laboratory when needed and speed of testing and reporting are to be considered the responsibility of the CONTRACTOR.

Compaction control tests as stated above shall be incidental to the price bid for 204-3.1 Subgrade Preparation.

No payment or measurement for payment will be made for suitable materials removed, manipulated, and replaced to obtain density in the specified depth of subgrade preparation. The moisture content of the subgrade materials shall fall within the range of plus or minus four (4) percent of the Optimum Moisture Content before any attempt is made to obtain the specified density. Any removal, manipulation, aeration, replacement, watering and recompaction of suitable materials necessary to obtain the required density shall be considered as incidental to the subgrade preparation operation and shall be performed by the CONTRACTOR at no additional cost to the project.

If the desired compaction cannot be obtained by manipulation, wetting or drying of the specified depth of the subgrade because the material is found to be "Unsuitable" or "Unsatisfactory," as defined in Section 202-1, or when the ENGINEER directs manipulation and wetting or drying below the specified subgrade preparation depth or when materials below the specified subgrade preparation depth must be removed because they are found to be "Unsuitable", or "Unsatisfactory", thus hampering subgrade operations, this work will be paid for in accordance with Section 126, "Extra Work" of said Construction Specifications unless a "Subcut Excavation" item is included as a bid item on the proposal for the particular unit of the project.

If the instability of suitable materials below the specified subgrade preparation depth is a result of excessive moisture from rains, surface runoff or frost action, the ENGINEER reserves the right to suspend the work to allow the materials to recover strength without any liability for the costs that may be claimed by the CONTRACTOR due to the suspension of work. Extension of time, however, will be granted in this case.

204-2.3 TOLERANCES. In those areas upon which a subbase, base, or surface course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a 16-foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2 inch, or shall not be more than 0.05 of a foot from true grade established by grade hubs or pins.

The CONTRACTOR shall perform all surveying required to prepare the subgrade, to the tolerances specified, incidental to other bid items. The CONTRACTOR shall place a survey stake at the crown line on 50-foot intervals on all streets at the elevation approved by the ENGINEER. Additional staking may be required on sharp vertical and horizontal curves and at intersections and valley gutters as determined by the ENGINEER.

Staking shall not be the responsibility of the CONTRACTOR for curb and gutter construction.

204-3 MEASUREMENT AND PAYMENT

204-3.1 SUBGRADE PREPARATION. Subgrade Preparation shall be measured by the square yard (SY) and paid for at the unit price for "Subgrade Preparation" complete and accepted by the ENGINEER.

204-3.1A SUBGRADE PREPARATION (1 FOOT DEEP). Subgrade Preparation shall be measured by the square yard (SY) and paid for at the unit price for "Subgrade Preparation (1 Foot Deep)" complete and accepted by the ENGINEER.

204-3.1B SUBGRADE PREPARATION (1.5 FEET DEEP). Subgrade Preparation shall be measured by the square yard (SY) and paid for at the unit price for "Subgrade Preparation (1.5 Feet Deep)" complete and accepted by the ENGINEER.

SECTION 205 - EROSION AND SEDIMENT CONTROL

205-1 DESCRIPTION

The CONTRACTOR shall be responsible for installing and maintaining all of the erosion and sediment control measures shown on the plans or as deemed necessary by the ENGINEER to effectively control pollution of waterways and sedimentation onto adjacent properties or into any downstream drainage facilities. Installation shall be done in accordance with the North Dakota Department of Health, Division of Water Quality "Guide to Temporary Erosion Control Measures" or plan details.

Erosion control measures shall be sufficient to contain sediments within the construction limits. If any excavation or embankment material does flow onto adjacent properties or downstream, the CONTRACTOR shall immediately rectify the problem and repair any damages.

Any failure of the erosion and sedimentation control measures shall be repaired within 48 hours of the runoff event along with any erosion damages at the CONTRACTOR's expense. The CONTRACTOR shall be required to maintain erosion and sediment control installations until such time as the project is accepted as complete by the ENGINEER.

If directed by the ENGINEER, the CONTRACTOR shall remove and dispose of the silt fence or weighted fiber roll installed before the end of the warranty period. Cleanup shall be according to Section 121 Finishing and Cleanup. All removal and cleanup items shall be considered incidental to other bid items.

205-1.1 PROTECTION OF WATER RESOURCES. The CONTRACTOR shall dispose of all fuels, lubricants, and other organic or inorganic wastes at locations approved by regulatory agencies. Fueling, lubricating, and overhauling of all equipment shall be accomplished at locations and in such a manner that contaminants can be controlled and disposed of without polluting surface or subsurface waters.

Surface drainage from cuts and fills within the project limits, whether or not complete, and from borrow and waste disposal areas, shall be held in suitable sedimentation ponds or shall be graded to control erosion within acceptable limits. Temporary erosion and sediment control measures such as berms, dikes, drains, silt fences, bales, and sedimentation basins, if required to meet the above standards, shall be provided and maintained until permanent drainage and erosion control facilities are complete and operative.

The CONTRACTOR will be required to maintain all excavating, embankments, stockpiles, haul roads, plant sites, waste areas, borrow areas, and all other work areas free from dust which would cause a hazard or nuisance to others. The CONTRACTOR must have sufficient, competent equipment on the job to control dust. Dust control will be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

The CONTRACTOR shall maintain all facilities constructed for pollution control for as long as the operations creating the particular pollutant are being carried out or until the materials of concern become stabilized to the extent that pollution is no longer being created.

All other erosion and sediment control measures other than 205-3.1 "Silt Fence" and 205-3.2 "Silt Fence with Wire Backing" necessary to meet the requirements of Section 205 shall be considered incidental to other bid items.

205-2 MATERIALS

205-2.1 FILTER FABRIC. Silt fence fabric shall conform to AASHTO M 288 silt fence specification. Filter fabric shall be composed of fibers consisting of long chain synthetic polymers composed of at least 95% by weight of polyolefins, polyesters, or polyomides. The fibers shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other. The filter fabric shall be free of any treatment or coating which might adversely alter its physical properties after installation. The fabric shall be free of defects or flaws that significantly affect its physical and/or filtering properties. The fabric shall have a minimum width of 36 inches. The filter fabric shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Installation shall be done in accordance with the North Dakota Department of Health, Division of Water Quality "Guide to Temporary Erosion Control Measures" or plan detail.

205-2.2 POSTS. Either wood or steel posts may be used. Wood posts shall be treated (Penta or Green Treated) and shall be a minimum of 5 feet long with minimum dimensions of 2 inches diameter for round posts or 1% inches by 1% inches for rectangular posts. Steel posts shall be a minimum of 5 feet long, weigh a minimum of 1.3 lbs/ft and have projections to aid in fastening the wire or fabric. Steel posts should also have a metal plate welded near the bottom such that when the post is driven to the proper depth, the plate will be below the ground level for added stability. Installation shall be done in accordance with the North Dakota Department of Health, Division of Water Quality "Guide to Temporary Erosion Control Measures" or plan detail.

205-2.3 WOVEN WIRE. When backing for a filter fabric silt fence is required, a steel wire fence fabric shall be used. A woven wire fence shall conform to ASTM A 116, Class 1 zinc coating for wire. The woven wire support fence shall be at least 32 inches high and a maximum opening size of 6 inches by 6 inches. The wire shall be a minimum of 14 gauge grade 60. Installation shall be done in accordance with the North Dakota Department of Health, Division of Water Quality "Guide to Temporary Erosion Control Measures" or plan detail.

205-2.4 WEIGHTED FIBER ROLL. Weighted fiber roll shall be a photodegradable, extruded netting tube filled with wood curled excelsior and a weighted inner core. The roll diameter shall be six inches and the lengths shall be as required. The weight shall be a minimum of eight and one-third pounds per foot. An adequate number of weighted fiber rolls shall be placed around an inlet to provide complete protection. Approximately

3 to 6 inches shall be left between the weighted fiber rolls and the inlet. The ends shall overlap 12 inches. When silt is one-third the height of the roll, the CONTRACTOR shall remove and dispose of the silt and debris to allow the device to function properly. The CONTRACTOR shall check the operation and maintenance of the weighted fiber roll after rainfall events until final acceptance of the contract, incidental to the price bid for "Weighted Fiber Roll."

205-3 MEASUREMENT AND PAYMENT

205-3.1 SILT FENCE. Payment for the installation and maintenance of silt fence shall be per linear foot (LF) based on a one-time installation (i.e., repair and maintenance is incidental) as measured in the field by the ENGINEER. The reuse of silt fence materials without prior approval by the ENGINEER will not be allowed.

205-3.2 SILT FENCE WITH WIRE BACKING. Payment for the installation and maintenance of silt fence with wire backing shall be per linear foot (LF) based on a one-time installation (i.e., repair and maintenance is incidental) as measured in the field by the ENGINEER. The reuse of silt fence materials with wire backing without prior approval by the ENGINEER will not be allowed.

205-3 .3 WEIGHTED FIBER ROLL. Weighted Fiber Roll shall be measured by the linear foot (LF) and paid for at the unit price for "Weighted Fiber Roll" complete and accepted by the ENGINEER.

SECTION 800

SEWERS

SECTION 801 -SANITARY SEWERS

801-1 DESCRIPTION

This item shall consist of pipe of the types, classes, sizes, and dimensions required on the plans, furnished and installed at the places designated on the plans and profiles or by the ENGINEER in accordance with these specifications and with the lines and grades given.

The bid price per linear foot of pipe in place shall include the cost of excavation and backfill, the cost of furnishing and installing all trench bracing, all fittings required to complete the sewer pipe, as shown on the plans, and the material for and the making of all joints, including all connections to existing sewer pipe and manholes.

"Unstable," "Suitable," "Unsuitable," and "Unsatisfactory" soil or aggregate items shall be defined as stated in Section 202.1.

801-2 MATERIALS

801-2.1 GENERAL. The pipe shall be of the type selected by the CONTRACTOR and shall be in accordance with the following appropriate requirements unless otherwise specified.

801-2.3 POLYVINYL CHLORIDE SANITARY SEWER PIPE. Polyvinyl chloride sanitary sewer (PVC) pipe 15 inches or smaller shall conform to the requirements of ASTM 03034 for type PSM, PVC sewer pipe and fittings and shall have an SDR of 35, all of which shall be stamped on the pipe. Polyvinyl chloride sewer pipe 18" or larger shall conform to the requirements of ASTM F679-PS46. PVC sewer main line pipe and PVC sewer service pipe shall have the elastomeric gasket type joint providing a watertight seal. A solvent cement type joint will not be allowed. PVC Wye branches shall be of the "factory assembled type."

801-2.5 MORTAR. Mortar for connections to manholes shall be composed of one (1) part, by volume, of Portland Cement and two (2) parts of mortar sand. The Portland Cement shall conform to the requirements of subsection 501-2.2. The sand shall conform to the requirements of subsection 501-2.5. Hydrated lime may be added to the mixture of sand and cement in an amount equal to 15% of the weight of cement used. The hydrated lime shall meet the requirements of ASTM C6.

801-2.6 PVC SEWER PIPE JOINT CEMENT. Use of PVC sewer pipe joint cement must be approved by the ENGINEER prior to construction. The polyvinyl chloride sewer pipe joint cement shall consist of a viscous brushable solution of polyvinyl chloride in suitable active solvents. The cement shall be purchased from the pipe manufacturer and used in accordance with the manufacturer's instructions. It shall produce a joint of sufficient strength to permit normal installation handling within 5 minutes after jointing when exercising reasonable care.

801-2.7 RUBBER GASKET JOINT FOR PVC SEWER PIPE. Rubber gaskets for PVC sewer pipe joints shall be of the elastomeric type providing a watertight seal and shall conform to ASTM D3212.

801-2.8 CONCRETE. Concrete for pipe cradles and saddles shall conform to the requirements of Section 501.

801-2.9 BEDDING MATERIAL. The bedding material shall consist of granular material in accordance with the requirements for gradation shown in the following table:

Square Mesh Sieve Size	Percent By Weight Passing
2"	100%
1"	90-100%
3/4"	80-100%
No. 4	30-90%
No. 30	10-60%
No. 100	0-15%

One gradation test shall be made for each source and change in material provided for each 500 tons of screened and/or blended material and for each 200 tons of non-screened or "bank run" material. Gradation testing shall be incidental to the pipe or other bid items.

The CONTRACTOR may provide a controlled density fill in lieu of the bedding material bed for underground pipe if approved by the ENGINEER prior to installation. The controlled density fill shall conform to Section 503.

If the controlled density fill is placed in the trench in a plastic state, the remaining backfill may not be completed for 48 hours. One compression test shall be made for each 60 C.Y. of control density fill or a minimum of 1 per day. A testing firm normally engaged in materials testing shall make the test at the expense of the CONTRACTOR. The CONTRACTOR shall remove and replace any material not meeting the requirements at CONTRACTOR's own expense. All controlled density fill shall be designed for easy removability should it become necessary to repair or remove the pipe in the future. The pipe shall be protected from floating to maintain line and grade.

Controlled density fill shall be paid as bedding material unless otherwise specified. Controlled density fill utilized on the remainder of the trench may be provided incidental if approved by the ENGINEER.

Bedding quantities are based on trench width in Section 801-3.2 Excavation and Preparation of Trench. Any additional bedding material due to a wider ditch shall be the responsibility of the CONTRACTOR.

801-2.10 SUBCUT GRAVEL. The subcut gravel shall consist of granular material in accordance with the requirements of gradation shown in the following table:

Square Mesh Sieve Size	Percent By Weight Passing
2"	100%
No.4	0-10%

801-2.11 MARKING TAPE. The CONTRACTOR will be required to furnish and install marking tape located 2 feet above the top of all sanitary sewer mains installed under this contract. The tape shall be of the non-detectable type and shall have a minimum width of 5 inches. The tape shall be green in color with the words "CAUTION SEWER LINE BELOW' imprinted on the tape in black capital letters. The marking tape shall be equal to that manufactured by Griffolyn Company, Inc.

Cost of marking tape and installation shall be considered incidental to other items.

801-3 CONSTRUCTION REQUIREMENTS

801-3.1 EQUIPMENT. All equipment necessary and required for the proper construction of sanitary sewers shall be on the project in first-class working condition and approved by the ENGINEER before construction is permitted to start.

The CONTRACTOR shall handle the pipe while unloading and placing it in its final position without damage to the pipe.

The CONTRACTOR shall provide methods and mean to obtain the required compaction of the pipe bed and the backfill as specified.

The CONTRACTOR shall provide a sufficient number of watertight sewer plugs to prevent infiltration of water and any other foreign material from entering the existing sewer system and the newly constructed sewer lines.

801-3.2 EXCAVATION AND PREPARATION OF TRENCH. The trench shall be dug to the alignment and depth required and only so far in advance of pipe laying as the ENGINEER may permit. The discharge from pumps shall be led to natural drainage channels, drains, or storm sewer.

The trench width may vary depending upon the depth of the trench and the nature of the excavated material, but in any case shall be of ample width to permit the pipe to be laid and joined properly and the backfill to be placed and compacted to the required density. The maximum width of trench for calculating bedding material quantities shall not be more than 48 inches, and for pipe 15 inches or larger no more than 36 inches greater than the outside diameter of the pipe barrel.

The trench shall be excavated below the required grade so that the pipe may be laid on 4 inches of bedding material.

Where the bottom of the trench uncovered at subgrade is unsuitable and in the opinion of the ENGINEER cannot support the pipe, further depth and/or width shall be excavated and refilled to the pipe foundation grade with subcut gravel thoroughly compacted. In this instance, subcut gravel shall be considered a pay item.

If other approved means shall be adopted to assure a firm foundation for the pipe, the CONTRACTOR will be allowed extra compensation. Extra compensation shall not be allowed for extra excavation and gravel used for seepage and ground water control.

If ordered in writing by the ENGINEER, the CONTRACTOR will be paid for any sheathing that the ENGINEER orders left in the trench in order to protect existing utilities or other items. The price to be paid for such sheathing material will be the current invoice price of said materials or such lesser price as the CONTRACTOR and the ENGINEER may agree that the material is worth at the time it is left in the trench.

All broken pavement or sidewalks shall be removed from the site of the work and deposited at a place selected by the ENGINEER. It shall be the responsibility of the CONTRACTOR to remove and replace at its own expense all sidewalk, curb, and gutter necessary for the installation of the pipe and manholes as shown on the plans and as directed by the ENGINEER, unless items are noted on plans. The removal shall be complete to the nearest joint in order that the replacement might be made in a workmanlike manner. No additional compensation will be allowed for this work and shall be included in the price bid for pipe or manhole installation.

All excavated material shall be piled in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Gutters shall be kept clean or otherwise satisfactory provisions made for street drainage.

The use of trench digging machinery will be permitted except in places where operation of same will cause damage to trees, building or existing structures above or below ground, in which case hand methods shall be employed.

The CONTRACTOR is assumed to be familiar with all federal, state and local laws, codes, ordinances, and regulations which in any manner affect those engaged or employed in the work, the material, or equipment used in or upon the site, or in any way affect the conduct of the work. No pleas of misunderstanding or ignorance on the part of the CONTRACTOR will, in any way, serve to modify the provisions of the contract. The CONTRACTOR shall provide and maintain on a 24-hour basis all necessary safeguards such as watchmen, traffic control devices, and night lights at CONTRACTOR's own expense in accordance with subsection 124.

Excavation for pipe laying operations shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, the CONTRACTOR shall provide suitable bridges at street intersections and driveways. Hydrants under pressure, valve boxes, curb stop boxes, and other utility controls shall be left unobstructed and accessible during the construction period.

Adequate provisions shall be made for the flow of sewers, drains, and water courses encountered during construction, and the structures which may have been disturbed shall be satisfactorily restored upon completion of the work.

Prior to making any connections to the existing sewer system, the CONTRACTOR shall furnish and install watertight plugs in such a manner as to prevent infiltration and foreign material from entering the existing sewer system. The plugs shall be installed so as to not disrupt existing sewage flow and shall remain in place until the construction has been accepted by the ENGINEER.

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the ENGINEER, and any property damages shall be satisfactorily restored by the CONTRACTOR. The cost of removal shall be included in the price bid per linear foot of sewer pipe in place unless listed separately in the proposal. Tree removal and root cutting shall be in conformance with Section 201.

801-3.3 ROCK EXCAVATION. All rock found in the trench area shall be classified as solid rock and measured for payment if each individual rock, boulder, or continuous slab of ledge rock is 1 cubic foot or more in content. Solid rock shall be measured for payment on the basis of and limited to the maximum trench width allowed under subsection 801-3.2, "Excavation and Preparation of Trench." If solid rock extends below the necessary depth of excavation, it shall be measured for payment to a horizontal plane 6 inches below the bottom of the pipe. All rocks smaller in volume than 1 cubic foot shall not be classified as solid rock, but may be used in backfilling as directed by the ENGINEER.

Blasting for excavation will be permitted only after securing the approval of the ENGINEER, and only when proper precautions are taken for the protection of person and property. The hours of blasting will be fixed by the ENGINEER, and any damage caused by blasting shall be repaired by the CONTRACTOR at its own expense. The CONTRACTOR's methods of procedure relative to blasting shall conform to local and state laws and municipal ordinances.

Whenever ledge rock is encountered, the CONTRACTOR shall strip from the same all overlying earth and he shall then notify the ENGINEER that the rock is ready for measurement. The ENGINEER may then take levels upon the rock or he may at his discretion defer measurement until after the excavation is completed. In any event, the CONTRACTOR shall not refill any trench where rock is encountered until notified by the ENGINEER that measurement has been made. Payment will not be allowed for any rock unless the same shall have been measured as herein provided. The rock shall be excavated to a depth of 6 inches below the bottom of the pipe, and the trench shall be refilled to the proper grade with bedding material.

All rock found in the trench having greater volume of 1 cubic foot shall not be used as backfill but shall be disposed of as directed by the ENGINEER.

801-3.4 PIPE LAYING. All water main and sanitary sewer crossings shall conform to the following policy:

1. Where both water and sewer are of new construction:

    a. No additional protections needed if water main crosses at least 5 feet above the sewer.

    b. If the water main crosses within 3 to 5 feet above the sewer, a full length of water main shall be centered over the sewer.

    c. If the water main crosses within 3 feet above the sewer, a full length of water main shall be centered over the sewer and the sewer joints located within 10 feet of the crossing shall be able to withstand 25 psi internal pressure.

2. Where water main crosses over an existing sewer:

    a. No additional protection needed if water main is at least 3 feet above the sewer. The intervening dirt must be left undisturbed.

    b. If crossing is within 3 feet above sewer, a full length of water main must be centered over the sewer main.

3. Where water main crosses under the sewer:

    a. In all cases, additional protection shall be provided by centering a full length of water main under the sewer main. All sewer joints located within 10 feet of the crossing shall be able to withstand 25 psi internal pressure.

Proper implements, tools, and equipment satisfactory to the ENGINEER shall be provided and used by the CONTRACTOR for the safe and convenient prosecution of

the work. All pipe and fittings shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment in such a manner as to prevent damage to the pipe. Under no circumstance shall pipe be dropped or dumped into the trench.

After the trench has been excavated to the proper grade, the first pipe at the outlet end of the sewer shall be bedded to the proper line and grade with the bell end upstream. All pipe shall be laid to line and grade. The pipe shall be held in place by backfilling along the bottom and sides of the pipe section with bedding material thoroughly tamped up to the centerline of the pipe and protected from movement.

During the pipe laying operation, the CONTRACTOR shall have a watertight plug available to install in the last pipe laid at the end of each work day or to install during the work day, to prevent water or other foreign material from entering the newly installed pipe.

The CONTRACTOR shall exercise due care, so as to prevent water and other foreign matter from entering the newly constructed sewer mains at new manhole locations.

All joints shall be installed in accordance with the pipe manufacturer's instructions.

Where polyvinyl chloride sewer pipe is installed in a vitrified clay sewer line, V.C. to P.V.C., adaptors shall be used at each junction. Adapters shall be equal to those manufactured by Fernco Joint Sealer Company or approved equal.

The cost of adapters shall be considered incidental to the unit price bid for polyvinyl chloride sewer pipe.

The interior of the pipe shall be cleaned as the work progresses. The manholes and sewer pipe shall be flushed with clean water after completion and prior to acceptance by the ENGINEER.

801-3.5 BACKFILLING OF PIPE TRENCH. After the pipe has been laid to line and grade, the trench shall be backfilled under and along the sides of the pipe up to the centerline of the pipe by thoroughly compacting bedding material into place so as to form a uniform bed for the pipe. The compaction may be obtained by any approved method or equipment which will produce a uniform density meeting the requirement to obtain not less than 85 percent maximum dry density at optimum moisture made in accordance with ASTM D1557. Care shall be exercised not to displace the pipe or injure the pipe during the compaction operations. If the material in the trench is sand or gravel and acceptable to the ENGINEER, it will not be necessary to furnish any other material than that found within the trench to backfill up to the centerline of the pipe. If sand or gravel is not found within the trench, the CONTRACTOR will be required to furnish bedding material. It will be required to keep the bedding completed within 3 lengths of the last pipe being laid and shall all be completed at the end of each day's work.After bedding operations, the trench shall be backfilled to a point two (2) feet above the top of the pipe by any approved method or equipment which will produce a

uniform density meeting the requirements to obtain not less than 80 percent of the maximum dry density at optimum moisture as determined by ASTM Compaction Control Test Designation D1557. The use of drop pile hammers, loaded or unloaded clam shells or backhoe buckets, or other similar equipment will not be permitted to obtain the required density below a point two (2) feet above the top of the pipe. The CONTRACTOR shall use specialized equipment or hand tamping around appurtenances such as manholes to insure proper density. The remaining trench shall be backfilled in accordance with the specifications for the class of backfill as set forth in subsection 801-3.6. The areas for each class of backfill specified shall be designated on the plans.

The CONTRACTOR shall engage an independent soils testing laboratory, approved by the ENGINEER, to determine the soil moisture density relationships and perform the required compaction testing to be determined by the ENGINEER.

The compaction control tests for this section are based on one individual compaction test per 300 feet of trench per 30 inches of backfill and a minimum of one (1) test per service line, 2 feet below finish grades or where directed. The CONTRACTOR shall be responsible for all retesting of failing tests and a proctor determination to represent each soil condition to be encountered on the project. The time, locations, depths, and frequency of compaction testing shall be at the discretion of the ENGINEER during construction. Should it become necessary to require an additional number of initial compaction tests, over and above the number specified for bidding purposes, the CITY OF MANDAN will assume the responsibility to perform said additional testing. The CONTRACTOR, however, will be required to assume the cost of all retesting of failing tests regardless of the total number required during construction.

Compaction testing to determine densities may be accomplished with a nuclear density testing apparatus and/or the sand cone method. Should disputes arise concerning test results, they will be resolved by using the sand cone.

Written reports of all test results shall be supplied to the ENGINEER and the CONTRACTOR by the testing laboratory as soon as possible. To expedite construction progress, it is necessary that the CONTRACTOR and ENGINEER be furnished with the results of all tests as soon as testing is completed.

The availability of the independent testing laboratory when needed and speed of testing and reporting are to be considered the responsibility of the CONTRACTOR.

Compaction control tests as stated above shall be incidental to the price bid for 801-4 Sanitary Sewer Pipe.

All excess dirt and rock must be removed from the streets and disposed of at such places as the ENGINEER may direct.

The CONTRACTOR shall restore all shrubbery, fences, sod, or other surfaces disturbed to a condition equal to that before the work began, furnishing all labor and material

incidental thereto. If the area cannot be restored to the original line and cross section without the aid of grade stakes, they will be furnished by the ENGINEER at the CONTRACTOR'S expense.

Following the certification of completion by the ENGINEER, the CONTRACTOR shall maintain the surface of unpaved trenches, adjacent curbs and gutters, sidewalks, driveways, shrubbery, fences, sod, or other surfaces disturbed for a period of three months thereafter. All material and labor required for maintenance of the trenches and adjacent structures shall be supplied by the CONTRACTOR and the work done in a manner satisfactory to the ENGINEER. The cost of backfilling and cleanup shall be included in the price per linear foot of sewer pipe in place.

801-3.6 BACKFILL CLASSIFICATIONS. Moisture requirements for the top 4 feet of the trench (below final grade) for classifications AA, A, 8, and C at the time of compaction shall not be less than 4 percentage points below the optimum moisture content and not more than that which will permit compaction to the required density. If the soil is unstable, as defined in section 801-1, when compacted to the required density, the soil shall be dried to obtain adequate stability. This may require drying below optimum moisture. The cost of such drying shall be incidental to the bid items.

(a) Class AA Backfill. Class AA backfill shall be used in areas where the trenches fall beneath special improved areas and under special conditions and these areas shall be indicated as class AA backfill and shown on the plans. Under class AA backfill all the excavated material shall be transported to another site and wasted in a workmanlike manner and selected material meeting bedding material specifications shall be imported to the site for backfill material.

After the pipe has been inspected and bedded with bedding material, and upon completion and approval for the initial backfill requirements specified under subsection 801-3.5, the remaining trench shall be backfilled in layers and compacted by any approved method or equipment which will produce a uniform density meeting the requirements to obtain not less than 95 percent maximum dry density at optimum moisture in accordance with ASTM D1557.

(b) Class A Backfill. Class A backfill shall be used in areas where trenches fall beneath improved areas or areas to be improved, and these areas shall be indicated as class A backfill and shown on the plans.

After the pipe has been inspected and bedded with bedding material, and upon completion and approval of the initial backfill requirements specified under subsection 801-3.5, the remaining trench shall be backfilled in layers and compacted by any approved method or equipment which will produce a uniform density meeting the requirement to obtain not less than 85 percent maximum dry density at optimum moisture made in accordance with ASTM D1557, except for the top 4 feet of the trench which shall meet the requirement to obtain not less than 90 percent at maximum dry density at optimum moisture made in accordance with ASTM D1557.

(c) Class B Backfill. Class B backfill shall be used in areas where the trenches fall beneath improved areas or areas to be improved, and these areas shall be indicated as class B backfill and shown on the plans.

After the pipe has been inspected and bedded with bedding material, and upon completion and approval of the initial backfill requirements specified under subsection 801-3.5, the remaining trench shall be backfilled in layers and compacted by any approved method or equipment which will produce a uniform density meeting the requirement to obtain not less than 80 percent of maximum dry density at optimum moisture made in accordance with ASTM D1557 except for the top 4 feet of trench which shall meet the requirement to obtain not less than 85 percent of maximum dry density at an optimum moisture in accordance with ASTM D1557.

(d) Class C Backfill. Class C backfill shall be used in areas where the trenches fall beneath improved areas or areas to be improved, and these areas shall be indicated as class C backfill and shown on the plans.

After the pipe has been inspected and bedded with bedding material, and upon completion and approval of the initial backfill requirements specified under subsection 801-3.5, the remaining trench shall be backfilled in layers and compacted by any approved method or equipment which will produce a uniform density equal to the adjacent undisturbed soil but not to exceed 85 percent of maximum dry density at optimum moisture made in accordance with ASTM D1557.

(e) Class D Backfill. Class D backfill shall be used in unimproved areas. These areas shall be indicated as class 0 backfill and shown on the plans. After the pipe has been inspected and bedded with bedding material and upon completion and approval of the initial backfill requirements specified under subsection 801-3.5, the remaining trench shall be backfilled in 24-inch to 36-inch layers compacted by any approved method or equipment which will obtain a uniform density.

801-3.7 Protecting Underground and Surface Structures. Temporary support, adequate protection and maintenance of all underground and surface structures, drains, sewers, watermains, service connections for both sewer and water, and other obstructions encountered in the progress of the work shall be furnished by the CONTRACTOR all at their own expense as approved by the ENGINEER.

(a) Deviations Occasioned by Other Utility Structures. Wherever existing utility structures or branch connections leading to main sewer or water mains or other conduits, ducts, pipes, or structures form obstructions to the grade and alignment of the sewer to be laid, they shall be permanently supported, removed, relocated, or reconstructed by the CONTRACTOR through cooperation with the Owner of the utility, structure, or obstruction involved. In those instances where their relocation or reconstruction is impracticable, a deviation from the line and grade will be ordered by the ENGINEER, and the change shall be made in the manner directed by the ENGINEER.

Wherever possible, all existing utility structures or branch connections leading therefrom will be located in advance of the excavation of the trench and properly marked. The CONTRACTOR shall not cut any existing utility lines unless it is determined by the ENGINEER that it is necessary in order to install the new sewer pipes. All utility lines that are cut by the CONTRACTOR with the approval of the ENGINEER shall be repaired or replaced by the CONTRACTOR as Extra Work. All utility lines that are damaged by the CONTRACTOR shall be repaired or replaced by the CONTRACTOR at the CONTRACTOR's expense.

Wherever the ENGINEER shall determine it is necessary to remove or relocate any existing utility in order to properly install the new sewer pipe, the change shall be made in a manner directed by the ENGINEER and for which extra compensation will be allowed the CONTRACTOR.

(b) DEVIATION WITHOUT ENGINEER'S CONSENT. No deviation shall be made from the required line and grade established by the ENGINEER without the consent of the ENGINEER.

(c) SUBSURFACE EXPLORATIONS. Whenever necessary to determine the location of existing pipes, valves, or other underground structures, the CONTRACTOR, after examination of available records and upon written order from the ENGINEER, shall make all exploration and excavations for such purpose for which the ENGINEER may allow extra compensation.

801-3.8 CIRCULAR DEFLECTION TEST. All fittings and plastic or HDPE pipe of 18 inches in diameter or larger shall be tested by the CONTRACTOR to ensure that circular deflections do not exceed the maximum allowable deflection. Maximum allowable deflections shall be governed by the mandrel requirements stated herein and shall nominally be 5 percent.

The maximum average inside diameter shall be equal to the average outside diameter per applicable ASTM Standards minus two minimum wall thicknesses per applicable ASTM Standards. Manufacturing and other tolerances shall not be considered for determining maximum allowable deflections.

Deflection tests shall be performed not sooner than 30 days after completion of the placement and compaction of the backfill. The pipe shall be clean and inspected for offsets and obstructions prior to testing.

The mandrel shall be pulled through the pipe by hand to ensure that maximum allowable deflections have not been exceeded. Prior to use, the mandrel shall be certified by the ENGINEER. If the mandrel fails to pass through the pipe, it will be deemed to be overdeflected.

Unless otherwise permitted by the ENGINEER, any overdeflected pipe shall be uncovered and, if not damaged, removed and reinstalled. Damaged pipe shall be removed from the work site and replaced with new pipe.

The mandrel shall be a rigid, nonadjustable, 9 leg minimum mandrel having an effective length not less than its nominal diameter. It shall have a minimum diameter, at any point along the full length, as specified by the ENGINEER. The mandrel shall be fabricated of steel and shall have pull rings at either end. The mandrel shall be stamped or engraved indicating the pipe material specification, nominal size and mandrel outside diameter. The maximum average inside diameter of the pipe shall be measured and calculated by the ENGINEER in the field prior to installation.

All costs incurred by the CONTRACTOR attributable to mandrel and deflection testing, including any delays and reinstallation of deflected pipe, shall be considered incidental to other bid items.

801-3.9 TELEVISE SEWER MAIN. When specified as a bid item or as incidental, after flushing the sewer main, under subsection 801-3.4, the CONTRACTOR shall have the sewer main televised and recorded by a firm normally engaged in such type of work. The CONTRACTOR shall provide high quality ½-inch VHS videotapes or discs along with a typed report for each section of sewer main televised. The recording shall be clearly marked as to the project number and recording number. The recording shall have an audio describing locations and conditions of the sewer and shall have a visual footage counter showing the distance of the camera from the manhole. After the CONTRACTOR has submitted the recordings and typed report, they will be viewed by the ENGINEER for acceptance.

801-4 MEASUREMENT AND PAYMENT

801-4.1 thru 4.15 (SIZE) INCH SANITARY SEWER PIPE.

Sanitary sewer pipe shall meet the requirements of Section 801-2.2 and 801-2.3. Sanitary sewer pipe shall be measured by the linear foot (LF) from the centerline of manhole to centerline of manhole and shall be paid for at the unit price bid for "(Size) Inch Sanitary Sewer Pipe" complete in place and accepted by the ENGINEER.

801-4.50 thru 4.59 (SIZE) INCH WYE BRANCH. Wye branches shall be of the same material as the sewer pipe marked with a 2" x 2" x 4' stake placed perpendicular to the mainline sewer at the end of the Wye and measured on an individual unit basis (Ea.) and paid for at the unit price bid for "(Size) Inch Wye Branch" complete in place and accepted by the ENGINEER.

801-4.60 BEDDING MATERIAL. Bedding material gravel shall be measured by the ton and paid for at the unit price bid for "bedding material" complete in place and accepted by the ENGINEER.

801-4.61 SUBCUT GRAVEL. Subcut gravel shall be measured by the ton and paid for at the unit price for "subcut gravel" complete in place and accepted by the ENGINEER.

801-4.62 ROCK EXCAVATION. All rock found in the trench area greater than 1 cubic foot shall be classified as Rock Excavation, measured by the cubic yard (CY), and disposed of by the CONTRACTOR or as directed by the ENGINEER.

The CONTRACTOR shall place all rocks greater than 1 cubic foot and less than 1 cubic yard in a pile to be measured by the ENGINEER. The total volume of the stockpile shall be reduced by 25% to account for void in the rock stockpile.

All rocks greater than 1 cubic yard shall be individually measured by the ENGINEER.

Payment shall be made at the unit price bid per cubic yard (CY) for "Rock Excavation."

801-4.63 CONCRETE MANHOLES. Concrete manholes shall be measured and paid for under subsection 1205-4.1.

801-4.64 TELEVISE SEWER MAIN. Televise Sewer main shall be measured by the linear foot (LF) from centerline of the manhole to centerline of the manhole or an end point and shall be paid for at the unit price bid for "Televise Sewer main" complete and accepted by the ENGINEER.

SECTION 900

WATER DISTRIBUTION

SECTION 901 - WATER MAINS

901-1 DESCRIPTION

This item shall consist of water main pipe and related items of the types, classes, sizes, and dimensions required on the plans, furnished and installed at the places designated on the plans and profiles, or by the ENGINEER in accordance with these specifications and with the lines and grades given.

The bid price per linear foot of pipe in place shall include the cost of excavation and backfill, the cost of furnishing and installing all trench bracing, concrete bases, and concrete thrust blocking, and the material for and the making of all joints, including all connections to existing water mains.

"Unstable," "Suitable," "Unsuitable," and "Unsatisfactory" soil or aggregate items shall be defined as stated in Section 202-1.

901-2 MATERIALS

901-2.1 GENERAL. All materials that may come into contact with water intended for use in a public water system shall meet the American National Standards Institute (ANSI)/National Sanitary Foundation International (NSF) Standard 61. A product will be considered as meeting this standard if so certified by NSF, the Underwriters Laboratories, or other organization accredited by ANSI to test and certify such products. The materials shall be of the type selected by the CONTRACTOR and in accordance with the following appropriate requirements unless otherwise specified.

901-2.2 POLYVINYL CHLORIDE PIPE. Polyvinyl Chloride Pipe or Molecularly Oriented PVC (PVCO) shall meet the requirements of AWWA C900 or C905 or C909 or the latest revision thereof and shall be furnished in Cast Iron Pipe equivalent outside diameters with elastomeric joints. The pressure class of PVC pipe shall be PC150 with a DR 18 for pipe smaller than 16 inches and PC235 with a DR of 18 for pipe 16 inches or larger and for 12 inches or smaller PVCO pipe the pressure class shall be PC150 (AWWA C900 DR18 equivalent). 8-inch PVC or smaller pipe in accordance with ASTM, D2241, Class 200, DR21 may be bid as an equal if specified.

901-2.4 CAST IRON AND DUCTILE IRON FITTINGS. Cast Iron fittings shall be manufactured in accordance with AWWA/ANSI C110/A21.10 and shall be furnished with either Standardized Mechanical Joints or Push-On Joints in accordance with AWWA/ANSI C111/A21.11. Cast Iron Fittings for sizes up to and including 12 inches shall have a working pressure of 250 pounds per square inch and fittings larger than 12 inches shall have a working pressure of 150 pounds per square inch conforming with AWWA/ANSI C110/A21.10. Ductile Iron fittings shall be manufactured in accordance with AWWA/ANSI C153/A21.53 or AWWA/ANSI C110/A21.10. Ductile Iron fittings shall have a working pressure of 350 pounds per square inch conforming with AWWA/ANSI C153/A21.53 or AWWA/ANSI C110/A21.10. All Cast Iron and Ductile Iron fittings shall be cement mortar lined and contain an exterior bituminous

seal conforming with AWWA/ANSI C104/A21.4. All Cast Iron and Ductile Iron fittings shall be considered incidental to the price bid for water main.

901-2.5 GATE VALVE. The gate valve furnished shall be of a quality equal to that manufactured by American Flow Control under the minimum requirements in design, material, and workmanship conforming to the latest AWWA Standard C515. The metals used shall be in accordance with AWWA and ASTM Standards. Unless otherwise designated, all gate valves shall have a non-rising stem, O-ring stem seals, 2-inch operating nuts, and open counterclockwise. If a stem extension is specified, it shall be fastened to the operating nut with a SS set screw. The operating nut shall be drilled or otherwise indented to accept the set screw and provide a secure connection that will prevent an extension from coming loose during operation. The gate valve shall have a resilient synthetic rubber coating seat attached to the wedge, manufactured and designed in accordance with the latest AWWA Standard C515. Resilient-Seated Gate Valve body and bonnet shall be coated, inside and out, with a fusion bonded epoxy in accordance with AWWA C550. The waterway shall have a full unobstructed flow without recesses in the bottom. All bonnet bolts shall be stainless steel.

901-2.7 VALVE BOXES. The valve boxes furnished shall be of a quality equal to that manufactured by Tyler Pipe Model 6860 or Star Pipe Products Cast Iron Heavy Duty Model "G" with bases and dimensions of each section to be as follows:

No. 6 round base for 24-inch and smaller gate valves.
No. 160 oval base for 30-inch or larger.
No. 6 round base for all butterfly valves.
Covers marked "Water."
Top Section 25 1/2 inches long.
Extension pieces as required.

All valve boxes shall be capable of a minimum 6-inch top adjustment in either direction, up or down, to or from, the finished curb grades shown in the plans. All valve boxes shall have extension rods in place (not fastened) and be within 18" of the finished, adjusted grade of the box. A mud plug is required also. Rods and plugs shall be considered incidental to the valve box,

If any valve box extension pieces are required to make the above-mentioned adjustment, they shall be considered incidental to the price bid for either Butterfly Valve and Box and/or Gate Valve and Box.

901-2.8 HYDRANTS. Hydrants shall be manufactured in accordance with the requirements of AWWA C502. The hydrants shall be equipped with break-a-way type traffic flanges and two (2) 2½-inch hose connections with National Standard Threads and one (1) 4 1/2-inch pumper connection with National Standard Threads. All 6-inch and 8-inch hydrants shall be 5 ¼ -inch Waterous Pacer Model WB-67-250 as manufactured by American Flow Control or 5 ¼ -inch American Darling Model B-62-B as manufactured by American Flow Control or an approved equal. All hydrants shall be furnished with an 8'-6" bury depth from the bottom of the inlet pipe to the top of the ground. All bolts and nuts connecting the barrel to the foot elbow shall be stainless steel. The hydrants shall be surrounded by 1/2 cubic yards of subcut gravel so placed that it will readily take up all water from the drip valves. The

hydrants shall be set on a concrete pad 6 inches thick and 18 inches square. All hydrants shall have brass or stainless ports in the shoe. All hydrants shall be buried to the manufacturer's design depth. A hydrant marker shall be placed on all new hydrants installed during any project. The marker shall be approved for use by the Engineer and its cost will be incidental to the cost of the hydrant.

901-2.9 RESET HYDRANT. Hydrants to be reset shall be either furnished from the CITY OF MANDAN stores or an existing hydrant salvaged during construction. Hydrants shall be set at the location shown on the plans. Care shall be taken by the CONTRACTOR not to damage existing water mains, connections, or valves while removing existing hydrants. Care shall also be taken not to damage the hydrant to be reset during transportation or storage by the CONTRACTOR.

The depth of earth cover over the connecting pipe shall be no less than 8 feet. The hydrants shall be surrounded by 1/2 cubic yards of 3/4 crushed rock so placed that it will readily take up all water from the drip valves. The hydrants shall be set on a concrete pad 6 inches thick and 18 inches square.

901-2.10 TAPPING SLEEVE WITH TAPPING VALVE. For pipe sizes of 6 inches to 24 inches, the tapping sleeve shall be stainless steel with a stainless steel flange and bolts and shall conform to the "Smith Blair" Type 663 or "Romac" Type SST or an approved equal. For pipe sizes of 24 inches or larger, the tapping sleeve shall be epoxy lined and coated with stainless steel bolts and shall conform to the "Smith Blair" Type 622 Split Sleeve with O-Ring Seal. All taps must be 18" from any pipe joint or other tap location.

Tapping saddles with valves shall be hydrostatically pressure tested on the main prior to requesting a tap. The test shall be 125 pounds per square inch for a duration of 30 minutes.

The City of Mandan Utility Department will tap the water main at a charge to the CONTRACTOR. The CONTRACTOR shall be responsible for all other work connected with installation of the tapping sleeve and valve including the necessary space around the water main required for the tapping machine and assisting the Utility Department in positioning the tapping machine.

901-2.11 CONCRETE. Concrete for pipe cradles, anchors, and thrust blocking shall conform to the requirements of Section 501.

901-2.12 BEDDING MATERIAL. The bedding material shall be defined as stated in Section 801-2.9.

901-2.13 SUBCUT GRAVEL. The subcut gravel shall be as defined in Section 801-2.10.

901-2.14 SALVAGE MATERIAL. All existing pipe, gate valves, fittings, etc. removed during construction, when requested by the ENGINEER, shall be salvaged and delivered to the Utility Department as directed. No extra compensation will be allowed for this work.

901-2.15 MARKING TAPE. The CONTRACTOR will be required to furnish and install marking tape located 2 feet above the top of all water mains installed under this contract. The tape shall be of the non-detectable type and shall have a minimum width of 5 inches. The tape shall be blue in color with the words "CAUTION WATER LINE BELOW' imprinted on the tape in black capital letters. The marking tape shall be equal to that manufactured by Griffolyn Company, Inc.

Cost of marking tape and installation shall be considered incidental to other items.

901-2.16 POLYETHYLENE ENCASEMENTS. All ductile iron and cast iron pipe, valves, fittings, and hydrants shall be encased with 8-mil linear low-density (LLD) polyethylene film in accordance with ANSI/AWWA C105/A21.5. All encasements shall be considered incidental.

901-2.17 MECHANICAL JOINT BOLT REQUIREMENTS. Bolts for mechanical joint fittings, valves, and hydrants shall be alternated with one-half stainless steel and one-half low alloy steel. Low alloy steel bolts shall contain a maximum content of carbon at 0.2 percent, manganese at 1.25 percent, sulphur at 0.5 percent, minimum content of nickel at 0.25 percent, and a combined content of nickel, copper, and chromium at 1.25 percent. Stainless steel bolts shall be Grade 304.

901-2.18 INSULATION BOARDS. The insulation shall have a thermal conductivity of not more than 0.28 BTU per hour per square foot per degree Fahrenheit per inch of thickness as tested in accordance with ASTM C177. The insulation shall not absorb moisture to an extent greater than 2.5 percent by volume as tested in accordance with ASTM 02127. The compression strength of the insulation shall be greater than 20 psi as tested in accordance with ASTM D-1621. The density of the insulation shall be between 0.9 and 1.3 pounds per cubic feet as tested in accordance with ASTM D-1622. The insulation shall be specifically designed for protection of underground utilities

901-3 CONSTRUCTION REQUIREMENTS

901-3.1 EQUIPMENT. All equipment necessary and required for the proper construction of water mains shall be on the project, in first-class working condition and approved by the ENGINEER before construction is permitted to start.

The CONTRACTOR shall provide appropriate hoisting equipment to handle the pipe while unloading and placing it in its final position without damage to the pipe.

The CONTRACTOR shall provide methods and means to obtain the required compaction of the pipe bed and the backfill, as specified.

901-3.2 EXCAVATION AND PREPARATION OF TRENCH. The trench shall be dug to the alignment and depth required and only so far in advance of pipe laying as the ENGINEER will permit. It is essential that the discharge from pumps be led to natural drainage channels, drains, or storm sewer.

The trench width may vary depending upon the depth of the trench and the nature of the excavated material, but in any case shall be of ample width to permit the pipe to be laid and joined properly and the backfill to be placed and compacted to the required density. The maximum width of trench for calculating bedding material quantities shall not be more than 48 inches and for pipe 15 inches or larger not more than 36 inches greater than the outside diameter of the pipe barrel.

The trench shall be excavated below the required grade so that the pipe may be laid on 4 inches of bedding material.

Where the bottom of the trench uncovered at subgrade is unsuitable and in the opinion of the ENGINEER cannot support the pipe, further depth and/or width shall be excavated and refilled to the pipe foundation grade with subcut gravel thoroughly compacted. In this instance, subcut gravel shall be considered a pay item.

If other approved means are adopted to assume a firm foundation for the pipe, the CONTRACTOR will be allowed extra compensation. Extra compensation shall not be allowed for extra excavation and gravel used for seepage and ground water control.

Whenever necessary, to prevent caving, excavations in sand, gravel, sandy soil, or other unstable material shall be adequately sheathed and braced. Where sheathing and bracing are used, the trench width shall be increased accordingly. Trench sheathing will be required on all ditches where necessary to prevent damage to utilities above or below ground. Trench sheathing shall remain in place until the pipe has been laid and the joint properly constructed and the backfill material thoroughly compacted to a depth over the pipe sufficient to protect any utility structures or adjacent paving, curb and gutter, sidewalks, or trees which might be damaged by caving of the trench walls. If ordered in writing by the ENGINEER, the CONTRACTOR will be paid for any sheathing that the ENGINEER orders left in the trench in order to protect the existing utilities. The price to be paid for such sheathing material will be the current invoice price of said materials or such lesser price as the CONTRACTOR and the ENGINEER may agree that the material is worth at the time it is left in the trench.

All broken pavement or sidewalks shall be removed from the site of the work and deposited at a place selected by the ENGINEER.

It shall be the responsibility of the CONTRACTOR to remove and replace at its own expense, unless otherwise specified, all sidewalk, driveway, curb, and gutter necessary for the installation of the pipe and manholes as shown on the plans and as directed by the ENGINEER. The removal shall be complete to the nearest joint in order that the replacement might be made in a workmanlike manner. No additional compensation will be allowed for this work and shall be included in the price bid for pipe installation.

Bell holes of ample dimension shall be dug in earth trenches at each joint to permit the joints to be made properly.

All excavated material shall be piled in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Gutters shall be kept clean or otherwise satisfactory provisions made for street drainage.

The use of trench digging machinery will be permitted except in places where operation of same will cause damage to trees, buildings, or existing structures above or below ground, in which case hand methods shall be employed.

The CONTRACTOR is assumed to be familiar with all federal, state and local laws, codes, ordinances, and regulations which, in any manner affect those engaged or employed in the work the material or equipment used in or upon the site, of in any way affect the conduct of the work. No pleas of misunderstanding or ignorance on the part of the CONTRACTOR will, in any way, serve to modify the provisions of the contract. The CONTRACTOR shall provide and maintain on a 24-hour basis all necessary safeguards such as watchmen, and traffic control devices at CONTRACTOR's own expense in accordance with subsection 124.

Excavation for pipe laying operations shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, the CONTRACTOR shall provide suitable bridges at street intersections and driveways. Hydrants under pressure, valve boxes, curb stop boxes, and other utility controls shall be left unobstructed and accessible during the construction period.

Adequate provisions shall be made for the flow of sewers, drains, and water courses encountered during construction, and the structures which may have been disturbed shall be satisfactorily restored upon completion of the work.

Trees, fences, poles, and all other property shall be protected unless their removal is authorized by the ENGINEER, and any property damages shall be satisfactorily restored by the CONTRACTOR. The cost of removal shall be included in the price bid per linear foot of water main in place unless listed separately in the proposal. Tree removal and root cutting shall be in conformance with Section 201.

901-3.3 ROCK EXCAVATION. The rock excavation shall be as defined in Section 801-3.3.

901-3.4 PIPE LAYING. All water main and sanitary sewer crossings shall conform to the following policy:

1. Where both water and sewer are of new construction:

    a. No additional protections needed if water main crosses at least 5 feet above the sewer.

    b. If the water main crosses within 3 to 5 feet above the sewer, a full length of water main shall be centered over the sewer.

    c. If the water main crosses within 3 feet above the sewer, a full length of water main shall be centered over the sewer and the sewer joints located within 10 feet of the crossing shall be able to withstand 25 psi internal pressure.

2. Where water main crosses over an existing sewer:

    a. No additional protection needed if water main is at least 3 feet above the sewer. The intervening dirt must be left undisturbed.

    b. If crossing is within 3 feet above sewer, a full length of water main must be centered over the sewer main.

3. Where water main crosses under the sewer:

    a. In all cases, additional protection shall be provided by centering a full length of water main under the sewer main. All sewer joints located within 10 feet of the crossing shall be able to withstand 25 psi internal pressure.

Before lowering and while suspended, cast iron pipe shall be inspected for defects. Any defective, damaged, or unsound pipe shall be rejected. All foreign matter or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying. Care shall be taken to prevent dirt from entering the joint space. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by approved means and no trench water shall be permitted to enter the pipe.

Cutting pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe. Unless otherwise directed, pipe shall be laid with the bell ends facing the direction of laying. For lines on an appreciable slope, bells shall face upgrade, if directed by the ENGINEER. Whenever necessary to deflect the pipe from straight line, whether in the vertical or horizontal plane to avoid obstructions, to plumb stems, or other reasons, the degree of deflection shall be approved by the ENGINEER. When any railroad is crossed all precautionary construction measures required by the railroad officials shall be followed. No pipe shall be laid in water or when the trench condition or the weather is unsuitable for such work except by permission of the

ENGINEER.

The CONTRACTOR shall place a 16"x16" or a larger concrete block, as directed by the ENGINEER, under all valves. A larger block will be required for larger valves. The block shall be considered incidental to the price bid for the valve.

The CONTRACTOR shall furnish and install temporary watertight plugs in any opening left in the main line or lead off the main line, during construction, that would allow water or other debris to enter the newly constructed pipe or any existing pipe.

901-3.5 TESTS. Inspection and tests must be made by the manufacturer on all pipe and component parts before shipment. Such tests shall be made by a testing laboratory satisfactory to the ENGINEER, and such tests shall be made in accordance with the requirements of the American Society for Testing Materials. Documentary evidence that the materials have been passed such inspection and tests must be furnished to the ENGINEER before the delivery of the materials on the job. Any materials which do not prove satisfactory after being placed, must be removed from the premises and replaced with satisfactory material. The cost of foundry inspection shall be paid for by the CONTRACTOR. After the pipe has been laid, all new pipe or any valve section thereof shall be subject to hydrostatic pressure test under the supervision of the ENGINEER. The test section shall be filled with water and the pressure shall be gradually increased. If defects are found, the CONTRACTOR shall immediately make the necessary repairs at its own expense. The final pressure test shall be 150 pounds per square inch and shall be held at least one hour. The CONTRACTOR shall furnish all tools, equipment, and material necessary to make the pressure test. The CITY OF MANDAN will provide the water for filling the pipe.

901-3.6 DISINFECTION AND BACTERIOLOGICAL TESTING. After the new mains, replacement mains, and valved extensions have been tested, they shall be flushed until all foreign material has been removed. Chlorination applications shall be made under 'supervision of the ENGINEER in accordance with AWWA C651. Water shall be fed into the new line with chlorine applied in amounts to maintain a chlorine residual of 50 milligrams per liter for 24 hours or chlorine residual of 200 milligrams per liter for three (3) hours. All valves and hydrants in the section treated shall be operated during this time in order to disinfect the appurtenance. Heavily chlorinated water should not remain in prolonged contact (maximum of 48 hours) with the water main pipe. The chlorine shall be flushed from the main through hydrants and taps until all excess chlorine has been removed. The CONTRACTOR shall be responsible for repairing all grass, new or existing, damaged by the chlorination and flushing process. No chlorination water will be permitted in the water main trench. The CONTRACTOR shall furnish all tools, equipment, materials, and chlorine to complete the chlorination process, incidental to other bid items. Prior to discharging chlorinated water into any drainage way, the CONTRACTOR shall obtain the permission of the ENGINEER. Taps are to be provided so at least one set of samples may be collected from every 1,200 feet of the new water main, with one set from the end of the line and at least one set from each branch exceeding 50 feet in length.

After final flushing each 1,200-foot segment and branches greater than 50 L.F., and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, per 1,200-foot main or 50-foot branch, taken at least 24 hours apart, shall be collected from the new main. The CONTRACTOR or testing laboratory, in the presence of the ENGINEER, shall perform the sampling. The CONTRACTOR shall record the locations the samples were taken. Sampling shall be performed with due care to prevent contamination using sterile bottles provided by the testing laboratory. It is not recommended that samples be collected from hoses or fire hydrants. The testing of the samples shall be performed by a State of North Dakota certified testing laboratory selected by the CONTRACTOR. All samples shall be tested for bacteriological quality and shall show the absence of coliform organisms.

If trench water has entered the new main during construction or; if in the opinion of the ENGINEER, excessive quantities of dirt or debris have entered the new main, bacteriological samples shall be taken at intervals of approximately 200 feet and shall be identified by location. Samples shall be taken of water that has stood in the new main for at least 16 hours after final flushing has been completed.

The testing laboratory shall test for coliforms and e-coli using the "Colilert" or other ENGINEER approved equivalent test. The "Colilert" test is a pass/fail test that does not quantify the amount of bacteria. Any presence of coliforms ore-coli shall qualify as a failed test.

If the initial disinfection fails to produce satisfactory bacteriological results, the new main may be reflushed and shall be resampled. If check samples also fail to produce acceptable results, the main shall be rechlorinated by the continuous-feed or slug method of chlorination until satisfactory results are obtained.

Bacteriological samples shall be taken after repairs or short connection pieces are completed to provide a record for determining the procedure's effectiveness. If the direction of flow is unknown, the samples shall be taken on each side of the repair or connection. If positive bacteriological samples are recorded, then the situation shall be evaluated to determine corrective action, and daily sampling shall be continued until two (2) consecutive negative samples are recorded.

All disinfection and bacteriological testing shall be incidental to other items.

901-3.7 HANDLING PIPE AND ACCESSORIES. Pipe, fittings, valves, hydrants, and other accessories shall, unless otherwise directed, be unloaded at the point of delivery, hauled to and distributed at the site of the project by the CONTRACTOR. They shall at all times be handled with care to avoid damage. In loading and unloading, they shall be lifted by hoists or slid or rolled on skidways in such a manner as to avoid shock. Under no circumstances shall they be dropped. Pipe handled on skidways must not be skidded or rolled against pipe already on the ground. In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench. Pipe shall be handled in such a manner that a minimum of damage to the coating will result. Damaged coating shall be repaired in a manner satisfactory to the ENGINEER. Pipe shall be placed on the site of work parallel with the

trench alignment and with bell ends facing the direction in which the work will proceed unless otherwise directed. The interior of all pipe fittings and other accessories shall be kept free from dirt and foreign matter at all times. Valves and hydrants before installation, shall be drained and stored in a manner that will protect them from damage by freezing.

901-3.8 BACKFILLING OF PIPE TRENCH. After the pipe has been laid to line and grade, the trench shall be backfilled under and along the sides of the pipe up to 2 inches over the top of the pipe by thoroughly compacting bedding material into place so as to form a uniform bed for the pipe. This compaction may be obtained by any approved method or equipment which will produce a uniform density meeting the requirements to obtain less than 85% maximum dry density at optimum moisture made in accordance with ASTM D1557. Care shall be exercised to not displace the pipe or injure the pipe during the compaction operations. If the material in the trench is sand or gravel and acceptable to the ENGINEER, it will not be necessary to furnish any other material than that found within the trench to provide the proper bedding. If sand or gravel is not found within the trench, the CONTRACTOR will be required to furnish bedding material.

The trench shall be backfilled to a point 2 feet above the top of the pipe (except when Class D Backfill is specified) by any approved method or equipment which will produce a uniform density meeting the requirements to obtain not less than 80% of the maximum dry density at optimum moisture as determined by ASTM Compaction Control Test Designation D1557. The use of drop pile hammers, loaded or unloaded clam shells or backhoe buckets, or other similar equipment will not be permitted to obtain the required density below a point 2 feet above the top of the pipe. The CONTRACTOR shall use specialized equipment or hand tamping around all appurtenances such as manholes, valve boxes, hydrants, and curb stops to insure proper density. The remaining trench shall be backfilled in accordance with the specification for the class of backfill as set forth in these specifications. The area for each class of backfill specified shall be designated on the plans.

The CONTRACTOR shall engage an independent soils testing laboratory, approved by the ENGINEER, to determine the soil moisture density relationships and perform the required compaction testing to be determined by the ENGINEER.

The compaction control tests for this section are based on one individual compaction test per 300 feet of trench per 30 inches of backfill and a minimum of one (1) test per service line, between 2 feet above pipe to 1 foot below finish grades or where directed. The CONTRACTOR shall be responsible for all retesting of failing tests and a proctor determination to represent each soil condition to be encountered on the project. The time, locations, depths, and frequency of compaction testing shall be at the discretion of the ENGINEER during construction. Should it become necessary to require an additional number of initial compaction tests, over and above the number specified for bidding purposes, the CITY OF MANDAN will assume the responsibility to perform said additional testing. The CONTRACTOR, however, will be required to assume the cost of all retesting of failing tests regardless of the total number required during construction.

Compaction testing to determine densities may be accomplished with a nuclear density testing apparatus and/or the sand cone method. Should disputes arise concerning test results, they will be resolved by using the sand cone method of testing.

Written reports of all test results shall be supplied to the ENGINEER and the CONTRACTOR by the testing laboratory as soon as possible. To expedite construction progress, it is necessary that the CONTRACTOR and ENGINEER be furnished with the results of all tests as soon as testing is completed.

Compaction control tests as stated above shall be incidental to the price bid for water mains.

The availability of the independent testing laboratory when needed and speed of testing and reporting are to be considered the responsibility of the CONTRACTOR.

The Contractor shall restore all shrubbery, fences, sod, or other surfaces disturbed to a condition equal to that before the work began, furnishing all labor and material incidental thereto. These requirements will not be waived. If the area cannot be restored to the original line and cross section without the aid of grade stakes, they will be furnished by the ENGINEER at the CONTRACTOR'S expense.

Following the certification of completion by the ENGINEER, the CONTRACTOR shall maintain the surfaces of unpaved trenches, adjacent curbs and gutters, sidewalks, driveways, shrubbery, fences, sod, or other surfaces disturbed for a period of 3 months thereafter. All material and labor required for maintenance of the trenches and adjacent structures shall be supplied by the CONTRACTOR and the work done in a manner satisfactory to the ENGINEER. The cost of backfilling and cleanup shall be included in the price per linear foot of water main in place.

901-3.9 BACKFILL CLASSIFICATIONS. The backfill classifications shall be as defined in Section 801-3.6.

901-3.10 PROTECTING UNDERGROUND AND SURFACE STRUCTURES.
Temporary support, adequate protection, and maintenance of all underground and surface structures, drains, sewers, water mains, service connections for both sewer and water, and other obstructions encountered in the progress of the work shall be furnished by the CONTRACTOR all at their own expense as approved by the ENGINEER.

(a) Deviations Occasioned by Other Utility Structures. Wherever existing utility structures or branch connections leading to main sewer or water mains or other conduits, ducts, pipes, or structures form obstructions to the grade and alignment of the water main to be laid, they shall be permanently supported, removed, relocated, or reconstructed by the CONTRACTOR through cooperation with the owner of the utility, structure, or obstruction involved. In those instances, a deviation from the line and grade will be ordered by the ENGINEER, and the change shall be made in the manner directed by the ENGINEER.

Wherever possible, all existing utility structures or branch connections leading therefrom

will be located in advance of the excavation of the trench and properly marked. The CONTRACTOR shall not cut any existing utility lines unless it is determined by the ENGINEER that it is necessary in order to install the new water mains. All utility lines that are cut by the CONTRACTOR with the approval of the ENGINEER shall be repaired or replaced by the CONTRACTOR as Extra Work. All utility lines that are damaged by the CONTRACTOR shall be repaired or replaced by the CONTRACTOR at the CONTRACTOR's expense.

Wherever the ENGINEER shall determine it is necessary to remove or relocate any existing utility in order to properly install the new water main, the change shall be made in a manner directed by the ENGINEER and for which extra compensation will be allowed the CONTRACTOR.

(b) Deviation Without ENGINEER'S Consent. No deviation shall be made from the required line and grade established by the ENGINEER without the consent of the ENGINEER.

(c) Subsurface Explorations. Whenever necessary to determine the location of existing pipes, valves, or other underground structures, the CONTRACTOR, after an examination of available records and upon written order from the ENGINEER, shall make all exploration and excavations for such purpose for which the ENGINEER may allow extra compensation.

901-3.11 BLOCKING HYDRANTS AND FITTINGS. All hydrants, tees, and bends 22% degrees and more shall be provided with suitable reaction blocking of concrete blocks of adequate size to prevent movement of fittings and hydrants when the pipe is under pressure. The blocks shall be placed in a manner acceptable to the ENGINEER and shall allow pipe and fitting joints to be accessible for repair. The concrete blocks may be poured in place if sufficient time is allowed for curing.

901-3.12 MARKING VALVE BOX LOCATIONS. The CONTRACTOR will be required to furnish and install a steel fence post by each valve box unless directed not to by the ENGINEER. Steel fence posts to be used for valve locations shall be a "Tee" or "U" post having a minimum length of 5% feet. The post shall be located 2 feet from the valve box in a direction toward the street.

The cost of the steel fence post and the installation shall be considered incidental to other bid items.

901-3.13 INSULATE WATER MAIN. The CONTRACTOR shall furnish and install the insulation required to insulate the water main as shown on the plans. The insulation shall be at least 4 inches thick by 8 feet wide centered on the water main. The material between the top of the water main bedding and the insulation shall consist of a concrete sand.

901-4 MEASUREMENT AND PAYMENT

901-4.10 thru 4.25 (SIZE) INCH WATER MAIN. Water main pipe shall conform to section 901-2.2 and 901-2.3. The water main pipe shall be measured by the linear foot (LF) through fittings and from centerline of pipe to centerline of pipe as shown in Standard Detail Number 1325 and shall be paid for at the unit price bid for "(Size) Inch Water main" complete in place and accepted by the ENGINEER.

901-4.50 thru 4.69 "(SIZE) INCH GATE VALVE AND BOX". Gate Valves and Boxes shall be measured on an individual unit basis (Ea.) and shall be paid for at the unit price bid for "(Size) Inch Gate Valve and Box" complete in place and accepted by the ENGINEER.

901-4.70 6-Inch HYDRANT. 6-inch Hydrants shall be measured on an individual basis (Ea.) and paid for at the unit price bid for "6-inch Hydrant" complete in place and accepted by the ENGINEER.

901-4.72 CAST IRON AND DUCTILE IRON FITTINGS. Cast Iron and Ductile Iron Fittings shall be considered incidental to the price bid for (size) inch water main.

901-4.73 AIR RELEASE VALVE AND MANHOLES. Air Release Valve Manholes shall be measured and paid for under subsection 1205-4.4.

901-4.74 BEDDING MATERIAL. Bedding Material shall be measured and paid for under subsection 801-4.60.

901-4.75 SUBCUT GRAVEL. Subcut Gravel shall be measured and paid for under subsection 801-4.61.

901-4.76 ROCK EXCAVATION. Rock Excavation shall be measured and paid for under subsection 801-4.62.

901-4.77 RESET HYDRANT. Reset hydrants shall be measured on an individual basis (Ea.) and paid for at the unit price bid for "Reset Hydrant" complete in place and accepted by the ENGINEER.

901-4.78 INSULATE WATER MAIN. Insulate water main shall be measured by the linear foot of water main to be insulated (LF) and paid for at the unit price bid for "Insulate Water Main" complete in place and accepted by the ENGINEER.

901-4.80 thru 4.99 (SIZE) TAPPING SLEEVE WITH (SIZE) TAPPING VALVE AND BOX. Tapping sleeve and tapping valve and box shall be measured on an individual basis (Ea.) and paid for at the unit bid price for (Size) tapping sleeve with (Size) tapping valve and box complete in place and accepted by the ENGINEER.

SECTION 1205

MANHOLES AND INLETS

1205-1 DESCRIPTION

These items shall consist of the construction or installation of manholes and inlets, in accordance with these specifications, at the specified locations and Standard Details and conforming to the lines, grades, and dimensions shown on the plans or required by the ENGINEER.

1205-2 MATERIALS

1205-2.1 CONCRETE. Plain and reinforced concrete used in this work shall conform to the requirements of Section 501, "Portland Cement Concrete Pavement."

1205-2.2 MORTAR. Mortar shall be a compound of one (1) part Portland Cement to two (2) parts of sand by volume to which lime may be added not to exceed 10 percent of the cement by weight.

1205-2.3 PRECAST REINFORCED CONCRETE PIPE MANHOLE. Precast reinforced concrete manhole risers and top sections shall conform to ASTM C478.

All barrel-to-barrel joints shall be sealed using a Cretex P2 gasketed joint for 48-inch manholes, a Cretex CX-4 joint for all other sizes of manholes, or an exterior seal by Press-Seal Gasket Corporation EZ Wrap and EZ Stik No. 4 primer, Cretex Specialty Products "Mac Wrap" for all sizes of manholes, or an approved equal. The height of the manhole shall be shown on the plans and the diameter shall be 48 inches minimum or larger if recommended by the manhole fabricator and approved by the ENGINEER.

Steps shall not be placed in sanitary sewer, storm sewer, or air release manholes or inlets unless specified. If specified, the manhole steps to be furnished and installed shall be rubber coated over steel reinforcing of the type manufactured by the Delta Products (Delta-Surefoot Company) or approved equal.

1205-2.4 PRECAST REINFORCED CONCRETE PIPE MANHOLE WITH MONOLITHIC BASE. Precast reinforced concrete risers and top sections shall conform to ASTM C478. Manhole bases shall extend a minimum of 6 inches past the exterior manhole wall, except bases below M.S.L. elevation 1626 (NGVD29), which shall extend 12 inches past the exterior manhole wall. The base and the bottom section shall be cast monolithically with precast flow lines. The pipe connections to the manhole shall be Press-Seal Gasket Corporation model Press-Boot or an approved equal. All barrel to barrel joints shall be sealed using a Cretex P2 gasketed joint for 48-inch manholes, a Cretex CX-4 joint for all other sizes of manholes, an exterior seal by Press-Seal Gasket Corporation EZ Wrap and EZ Stik No. 4 primer, Cretex Specialty Products "Mac Wrap" for all sizes of manholes, or an approved equal. If specified, the barrel to casting joint shall be sealed using Cretex Specialty Products "Internal Chimney Seal" or an approval equal. All barrel sections below M.S.L. elevation 1628 (NGVD29) shall be restrained using three outside Cretex pipe joint ties equally spaced or an approved equal. The height of the manhole shall be

shown on the plans and the diameter shall be 48 inches minimum or larger if recommended by the manhole fabricator and approved by the ENGINEER.
Steps shall not be placed in sanitary sewer, storm sewer, or air release manholes or inlets unless specified. If specified, the manhole steps to be furnished and installed shall be rubber coated over steel reinforcing of the type manufactured by the Delta Products (Delta-Surefoot Company) or approved equal.

1205-2.5 MANHOLE CASTINGS.

(a) Sanitary Sewer, Storm Sewer, and Water Main Manhole Castings. Manhole frames and covers shall be of the type manufactured by the Neenah Foundry Company Number R-1733, East Jordan Iron Works Number 1205 or Municipal Castings, Inc. Number 301 with concealed pick holes and self-sealing Platen lid or approval equal.
All manhole castings shall be installed so they shall be centered over the flow line.

(b) Sanitary Sewer, Storm Sewer, and Water Main Floating Manhole Castings.
Floating manhole frames and covers shall be of the type manufactured by Neenah Foundry Company Number R-1955-1 with concealed pick holes and self-sealing Platen lid or approved equal.
All manhole castings shall be installed so they shall be centered over the flow line.

1205-2.8 REINFORCING STEEL. Reinforcing steel used in this work shall conform to Subsection 501-2.10.

1205-2.9 AIR RELEASE VALVE. All air release valve taps, made into all sizes and classes of PVC and ductile iron water mains, shall be reinforced with a tapping saddle. Tapping saddles shall be a minimum of 2-bolt stainless steel skirted or complete gasket type. An O-ring single bolt stainless steel saddle is not acceptable. The automatic air release valve shall be a 1-inch APCO No. 200 or Valmatic Model 38 for water and APCO No. 400 or Valmatic Model 48 for sewer or an approved equal. The corporation stop shall be a Mueller No. H-15000 for copper water pipe or an approved equal.

1205-2.10 PRECAST REINFORCED CONCRETE MANHOLE BASES. Precast reinforced concrete manhole bases shall conform to ASTM C478. The bases shall extend a minimum of 6 inches past the exterior manhole wall, except bases below M.S.L. elevation 1626, which shall extend 12 inches past the exterior manhole wall. Base thickness shall be as follows: Manholes with inside diameters up to and including 48"- 6" thick, 54" thru 102"- 8" thick, 1 0 8 " and 120" - 12" thick. Precast Air Release Manhole bases shall be 2 inches thicker than the base thicknesses listed above.

1205-2.11 PRECAST REINFORCED CONCRETE MANHOLE COVERS. Precast Reinforced Concrete Manhole Covers shall conform to ASTM C478. Cover thickness shall be as follows: Manholes with inside diameters up to and including 48"- 6" thick, 54" thru 102"- 8" thick, and 108" and 120"- 12" thick.

1205-3 CONSTRUCTION REQUIREMENTS.

1205-3.1 EXCAVATION. Excavation for catch basins, manholes, inlets, and pipe junctions shall be done in a manner to provide adequate room for the construction of the

item according to details shown on the plans. When necessary the excavation shall be adequately shored or sheeted to insure safe and satisfactory construction and backfilling.

1205-3.2 PRECAST REINFORCED CONCRETE PIPE MANHOLES AND INLETS. Unless otherwise specified, standard reinforced concrete sewer pipe shall be used for this purpose. When this type of construction is used, the bottom precast section shall be set in a full mortar bed and the joints between sections and around pipes shall be filled with mortar.

1205-3.3 CONCRETE CONSTRUCTION (CAST IN PLACE). The composition, consistency, placing, form work, curing and protection of the concrete shall conform to the requirements of Section 701. No finishing of the concrete will be required except the filling of honeycombed areas.

1205-3.4 CONCRETE BASE. The bottoms of all manholes and inlets shall be of concrete. The thickness and other dimensions of the base shall be as specified on the plans. The invert channel shall be the true shape of the lower half of the pipe or sewer.

Pipe or tile placed in concrete for inlet or outlet connections shall extend through the walls a sufficient distance to allow for connections, and the concrete shall be carefully constructed around them so as to prevent leakage along their outer surface. The inside ends shall be flush with the inside walls, and the pipe shall be of the same size and kinds as those with which they connect on the outside.

1205-3.5 CASTINGS. All manhole, inlet, and catch basin castings shall be placed with a minimum of 1/2 inch of grout between the manhole inlet or catch basin, but not adjusted to grade unless specified on the plans. Total allowance for adjustment shall be from 0 to 6 inches. Castings requiring adjustment to grade shall be paid for under Section 1206 "Castings and Adjustment."

1205-3.7 BACKFILL. Backfill shall be deposited in horizontal layers not over 6 inches in depth (loose) and each layer compacted, this process being repeated to the elevation of the finished grade as designated on the plans. Compaction shall be secured by watering each layer if dry (the water content of the material used shall not exceed the optimum moisture content) and tamping with approved mechanical rammers. The backfill shall be compacted to a density equal to the requirements specified for the pipe trench common to the manhole or inlet.

1205-3.8 CLEANING. All manholes and inlets shall be thoroughly cleaned of any accumulation of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of the final inspection.

1205-3.9 MARKING MANHOLES AND INLETS. The CONTRACTOR will be required to furnish and install a "Tee" or "U" steel fence post having a minimum length of 5% feet located 1 foot from the edge of the casting in line with the steps of the manhole or in line with the face of the curb of an inlet.

The cost of the steel fence post and installation shall be considered incidental to other bid items.

1205-3.10 POLYVINYL CHLORIDE PIPE TO MANHOLE ADAPTERS. The CONTRACTOR shall install a PVC to MH adapter in the wall of any manhole connected to PVC sewer pipe. The PVC Manhole Adaptors shall be equal to the product and manufactured by GPK Products, Inc. or an approved equal.

The cost of the PVC Manhole Adaptor and the installation shall be considered incidental to the bid item for "Concrete Manhole."

1205-4 MEASUREMENT AND PAYMENT

1205-4.1 CONCRETE MANHOLE. Concrete manholes including casting shall be measured on an individual unit basis (EA) and paid for at the unit price bid for "Concrete Manhole" complete in place and accepted by the ENGINEER.

1205-4.2 CONCRETE MANHOLE WITH MONOLITHIC BASE. Concrete manholes with monolithic base including casting shall be measured on an individual basis (EA) and paid for at the unit price bid for "Concrete Manhole With Monolithic Base" complete in place and accepted by the ENGINEER.

1205-4.3 CONCRETE DROP MANHOLE. Concrete Drop Manhole including casting shall be measured on an individual unit basis (EA) and paid for at the unit price bid for "Concrete Drop Manhole" complete in place and accepted by the ENGINEER.

1205-4.4 AIR RELEASE VALVE AND MANHOLE. Air Release Valve and Manhole including castings shall be measured as a complete unit on an individual unit basis (EA) and paid for at the unit price bid for "Air Release Valve and Manhole" complete in place and accepted by the ENGINEER.

SECTION 1209

SANITARY SEWER AND WATER SERVICE CONNECTIONS

1209-1 DESCRIPTION

This item shall consist of furnishing and installing sanitary sewer and water service connections from the main lines located in public easements or rights-of-way, such as streets and alleys, to the right-of-way property line. The materials, equipment, and construction methods shall be in full compliance with the ordinances of the City of Mandan, the North Dakota State Plumbing Code, regulations set forth by the North Dakota State Health Department, and in accordance with these specifications and standard details.

1209-2 MATERIALS

1209-2.1 POLYVINYL CHLORIDE SEWER PIPE. PVC Sewer Pipe and fittings shall conform to the requirements of ASTM D3034 for type PSM, PVC sewer pipe and fittings and shall have an SDR of 35 which shall be stamped on the pipe. Gasketed type joints on PVC pipe and fittings are preferred. Use of PVC sewer pipe joint cement must be approved by the ENGINEER prior to construction. The polyvinyl chloride sewer pipe joint cement shall consist of a viscous brushable solution of polyvinyl chloride in suitable active solvents. The cement shall be purchased from the pipe manufacturer and used in accordance with the manufacturer's instructions. It shall produce a joint of sufficient strength to permit normal installation handling within five (5) minutes after jointing when exercising reasonable care.

1209-2.2 JOINT MATERIALS. Joint Materials for sewer pipe shall conform to Subsections 801-2.4 thru 801-2.7.

1209-2.3 COPPER WATER PIPE. Copper Water Pipe shall conform to ASTM 888, Type K. All new copper water service pipe shall be connected using a flared connection. New copper water service pipe being connected to existing copper water service pipe may be connected using a compression type connection if approved by the ENGINEER.

1209-2.5 CORPORATION STOP. Corporation stops shall be Mueller No. H-15000 or McDonald No. 4701 or Ford F600 or FB600 for copper water pipe or approved equal.

1209-2.6 CURB STOP. Curb Stops shall be the Mueller No. B-25154, Mueller No. H-15154, McDonald No. 6104, or a FORD B22, without drain, having a Minneapolis Pattern, or an approved equal. Curb stops shall be installed using the proper tools as recommended by the manufacturer.

1209-2.7 CURB BOX. Curb boxes shall be McDonald No. 5614 or Mueller No. H- 10300 (1¼-inch diameter upper section) with 75-inch stationary rod installed with a stainless steel or brass pin to the curb stop, Mueller No. H-88703 or McDonald No. 5660, for 1¼-inch or smaller curb stops. Curb boxes shall be Mueller No. H-10304 or McDonald No. 5615 (2-inch diameter upper section) for 1½-inch or larger curb stops, or an approved equal. Stationary rods will not be required on curb stops 1½ inches or larger. The length of the curb box extended shall be 8 feet. Curb stops shall be installed on a ½ square foot by 4-inch thick concrete or brick pad.

1209-2.8 CONCRETE. Concrete for pipe cradles and saddles shall conform to the requirements of Section 501.

1209-2.9 TAPPING SLEEVE WITH TAPPING VALVE. For pipe sizes of 6 inches to 24 inches, the tapping sleeve shall be stainless steel with a stainless steel flange and bolts and shall conform to the "Smith Blair" Type 663 or "Romac" Type SST or an approved equal. For pipe sizes of 24 inches or larger, the tapping sleeve shall be epoxy lined and coated with stainless steel bolts and shall conform to the "Smith Blair" Type 622 Split Sleeve with 0-Ring Seal. The tapping valve shall conform to City of Mandan Standard Specification 901-2.8 for Gate Valves.

The City of Mandan Utility Department will tap the watermain at a charge to the CONTRACTOR. The CONTRACTOR shall be responsible for all other work connected with installation of the tapping sleeve and valve including the necessary space around the watermain required for the tapping machine and assisting the Public Works Department in positioning the tapping machine.

All corporation taps made into all sizes and classes of asbestos cement, PVC, sandcast iron, cast iron, and ductile iron, and prestressed concrete watermains shall be reinforced with a tapping saddle. Tapping saddles used on PVC watermain shall provide full support around the circumference of the pipe and provide a bearing area of sufficient width along the axis of the pipe 2 inches minimum, ensuring that the pipe will not be distorted when a saddle is tightened. Tapping saddles for PVC, ductile iron, cast iron, and sand cast iron watermain up to 12 inches in diameter shall be one of the following: Romac Style 306, PowerSeal Model 3412, Smith Blair Series 370, or an approved equal. Tapping saddle for PVC, ductile iron, cast iron, and sand cast iron watermain over 12 inches in diameter shall be a Romac Style 305 or an approved equal. Tapping saddles for asbestos cement watermain shall be a double strap bronze with an O-ring gasket cemented in body groove as manufactured by the Mueller Company or an approved equal. Tapping saddles for prestressed concrete watermains shall be approved by the ENGINEER.

1209-3 CONSTRUCTION REQUIREMENTS

Construction requirements shall conform to Subsection 801-3 for sewer service connections and Subsection 901-3 for water service connections. All pipe and fittings shall be installed in accordance with the manufacturer's recommendations unless otherwise specified herein. All copper water service lines shall be constructed "snaked" within the trench.

For each sewer stubout a 2-inch by 2-inch wood marker shall be placed a minimum of 1 foot from the end of the sewer stubout, shall extend vertically and plumb to not less than 2 feet above the existing surrounding ground, and be painted green. No sewer service shall be hooked or located within a manhole.

For each water stubout a 2-inch by 2-inch wood marker shall be placed a maximum of 1 foot from the curb stop box and extending vertically from a minimum of 3 feet below the top of the curb box to a minimum of 2 feet above the existing surrounding ground and be painted blue.

The CONTRACTOR shall be responsible for maintaining the markers until the project has been accepted by the ENGINEER. The cost of the stubout markers shall be considered

incidental to other bid items.

Bedding Material in accordance with Section 801-2.9 shall be placed in the trench, prior to laying any type of sewer pipe, 2 inches below bottom of pipe up to 6 inches or smaller, 4 inches when pipe used is 8 inches or larger. Bedding Material shall be installed to the centerline of the pipe and the full width of the excavating trench.

1209-4 MEASUREMENT AND PAYMENT

1209-4.1 thru 4.5 (SIZE) INCH SEWER SERVICE PIPE. Sewer Service Pipe shall conform to the specifications found in Section 1209-2.1. The sewer service pipe shall be measured by the linear foot (LF) from centerline of sewermain to plugged end of service connection and shall be paid for at the unit price bid for "(Size) Inch Sewer Service Pipe" complete in place and accepted by the ENGINEER.

1209-4.6 thru 1209-4.10 (SIZE) INCH SEWER PIPE BEND. The angle of the bend shall be compatible with the type of sewer service pipe and wye branch selected to provide a 90 degree angle between the sewer mainline and sewer service line. The sewer pipe bend shall be measured on an individual unit basis (EA) and paid for at the unit price bid for "(Size) Inch Sewer Pipe Bend" complete in place and accepted by the ENGINEER.

1209-4.11 thru 1209-4.20 (SIZE) INCH WATER SERVICE LINE. Water service lines shall conform to the specifications found in Section 1209-2.3 and Section 1209-2.4. The water service pipe shall be measured on a one-line basis by the linear foot (LF) from the centerline of the watermain at the water service connection to the end of the water service pipe and shall be paid for at the unit price bid for "(Size) Inch Water Service Line" complete in place and accepted by the ENGINEER.

1209-4.40 Thru 4.49 (SIZE) INCH WATER SERVICE CONNECTION. This connection shall include one tapping sleeve, one tap to the watermain, and one corporation stop. The connection shall be measured as a combined unit on an individual unit basis (EA) and paid for at the unit price bid for "(Size) Inch Water Service Connection" complete in place and accepted by the ENGINEER.

1209-4.50 thru 4.54 (SIZE) INCH CURB STOP AND (SIZE) INCH CURB BOX. **The** curb stop and curb box shall be measured as a combined unit on an individual unit basis (EA) and paid for at the unit price bid for "(Size) Inch Curb Stop and (Size) Inch Curb Box" complete in place and accepted by the ENGINEER.

1209-4.55 DISCONNECT WATER SERVICE LINE. Disconnecting a water service line shall consist of turning off the corporation stop at the main and disconnecting the pipe after the corporation stop. Disconnect Water Service Line shall be measured on an individual unit basis (EA) and paid for at the unit price bid for "Disconnect Water Service Line" complete in place, backfilled, and accepted by the ENGINEER.

3-WAY AGREEMENT

THIS AGREEMENT (the Agreement), made on the _____ day of _____, 2015, between the City of Mandan, a municipal corporation, hereinafter called the CITY, and Mitzel Builders, Inc., hereinafter called the DEVELOPER, and _____, hereinafter called the CONTRACTOR.

WHEREAS, the DEVELOPER wishes to enter upon the public streets and Rights-of-way to construct under private contract the following improvements:

X	Water Main Imp. Proj. No. 2015-12
X	Sanitary Sewer Main Imp. Proj. No. 2015-12
	Street Improvement Proj. No.
	Storm Drain Improvement Project No.
X	Others: Water & Sewer Services

For property to be developed and offered for sale by the DEVELOPER, and

WHEREAS, the CITY wishes to safeguard the public interest in attempting to ensure that said construction work will be in accordance with plans, specifications and requirements of the CITY and will be completed in a proper and safe manner in accordance with said CITY plans and specifications for said type of work. CONTRACTOR and DEVELOPER, through CONTRACTOR, represent and agree that they shall have sole and exclusive responsibility to ensure that said work is completed in accordance with all plans and specifications and pursuant to any requirements of the CITY. CONTRACTOR warrants that the work will be conducted in a proper and safe manner, and

WHEREAS, DEVELOPER has filed a Petition to the Board of City Commissioners to permit the DEVELOPER to contract directly for said improvements;

NOW THEREFORE, it is agreed between the parties for the considerations herein named, as follows:

1 - LICENSE TO CONSTRUCT

The CITY grants to the DEVELOPER the right, privilege, and license to enter upon and construct the above improvements in the following public easements and rights of way:

Lakewood 8th Addition

34th Avenue SE	21st Avenue SE
Shoal Loop	Gale Circle

Which license shall continue so long as the DEVELOPER performs the agreements assumed by it herein.

2 - SCOPE OF WORK

DEVELOPER will, through a CONTRACTOR licensed under the laws of North Dakota, furnish all materials, equipment and labor, necessary to perform all of the work shown on the Plans and Specifications approved by the City Engineer, which are hereby referred to and made a part of this Agreement. Construction staking as required by the CITY shall be done by the DEVELOPER'S representative at the expense of the DEVELOPER. CONTRACTOR shall complete all stub-outs to the property line on utilities to be constructed under this Agreement except where noted on the plans. Compaction testing shall be performed by the CONTRACTOR incidental to the other bid items.

All costs of work incidental to the project, such as restoring grades, watermain pressure testing, taps to the watermain, chlorine and any other usual charges as determined by the City Engineer shall be borne by the CONTRACTOR. In no event shall the CITY be responsible for any costs whatsoever, including costs for additional work or costs occasioned by unforeseen or changed conditions encountered during the work.

This Agreement shall include the following documents:

1. The Agreement
2. The General Provisions and any Special Provisions
3. The Plans and Specifications
4. The Performance Bond and Payment Bond
5. The Letter of Credit or Certificate of Deposit
6. The Insurance Certificate
7. All provisions required by law to be inserted whether inserted or not

3 - TIME OF COMPLETION

CONTRACTOR shall have _____to complete the work of this Agreement after the work is commenced. In any event, all work shall be completed no later than _____.

4 - INSPECTION AND OBSERVATION OF WORK

The CITY and the City Engineering Department shall at all times have access to the work, during its preparation and progress. The Engineer of Record and his authorized representatives will establish and provide all grades and locations for the site where the work is to be performed and no work, depending upon such grades or locations, shall be commenced until the same have been established. This work to be performed (establishing and provision of grades) shall be done at DEVELOPER'S cost, as discussed in Section 16 of this agreement. All work performed by the CITY is for the benefit of the citizens of Mandan and for the protection of CITY property and not for the benefit of the DEVELOPER or CONTRACTOR.

CONTRACTOR shall supervise and direct the work, using the CONTRACTOR'S best skill and attention. CONTRACTOR shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the work under the Agreement, unless the Agreement gives specific instructions otherwise.

5 - ENGINEER OF RECORD'S DECISIONS

Engineer of Record shall have general authority to ensure that the work complies with the plans and specifications. He has authority to stop the work when such stoppage may in his opinion be necessary to ensure proper execution of the Agreement and conformance with the plans and specifications. He shall also have the authority to reject all work and materials which do not conform to the plans and specifications and to decide all questions which arise in the execution of the work as to whether or not the work complies with the plans and specifications. Engineer of Record shall not be obligated to approve or give opinions as to construction methods or means and the CONTRACTOR and its consultants shall be responsible for the choice of the means, methods, or materials that will result in a product that is in conformance with the plans and specifications.

6 - PAYMENT

DEVELOPER shall provide an irrevocable letter of credit or a certificate of deposit from a bona fide financial institution in the amount of the project cost including engineering services provided by the CITY. Irrevocable letter of credit expiration date shall be a minimum of 60 days past the time of completion or any extensions of this agreement. The project cost is estimated to be $_____ _____. Final payment will be for actual quantities used. A copy of the accepted proposal is attached to the back of and made a part of this Agreement.

DEVELOPER will be responsible to pay the CONTRACTOR for all of the Agreement work in accordance with the plans, specifications, and proposal prepared by the DEVELOPER'S representative and made a part of this Agreement. CONTRACTOR shall measure the work completed and submit to the CITY. The CITY will submit approved progress requests to the DEVELOPER. The CITY shall have no obligations, liability or responsibility for any payment due to any party under this Agreement or otherwise arising from the work under this Agreement. In no event shall the CITY be responsible for any payments whatsoever, including payments for additional work or payments for costs occasioned by unforeseen or changed conditions encountered during the work.

7 - CONTENTS OF DEVELOPER'S CONTRACTS

All contracts made by the DEVELOPER and/or the CONTRACTOR with any person, firm, or corporation in connection with or in carrying out the Agreement work shall provide: "This contract is subject to all the terms and conditions of an Agreement dated , between the DEVELOPER, the CONTRACTOR, and the CITY."

8 - OWNERSHIP OF WORK LINES

All Agreement work furnished or placed in the public streets, alleys, easements, or rights-of-way shall become the property of the CITY upon acceptance by the CITY. The CITY does not own utility stub-outs, except the CITY will be responsible for repairs to water service lines serving residential properties of four (4) living units or less. Repairs will be limited to the portions of those service lines located in the public right-of-way. The placing and furnishing of all Agreement work by the DEVELOPER, its CONTRACTOR, its subcontractors, if any, and by any person, firm or corporation, as labor or material or otherwise, shall be under the provisions of this Agreement and with the express waiver of any right to claim against the CITY, or to make any claims or lien against the Agreement works.

9 - WARRANTY

CONTRACTOR shall guarantee all work against faulty materials and workmanship for a period of one year from the date of final payment and the bond of the CONTRACTOR and its surety shall remain in full force and effect for one year following the date of final payment. The fact that the CITY has granted final acceptance shall in no way relieve the CONTRACTOR'S obligation under this warranty.

10 - VERBAL AGREEMENTS

No verbal agreements, representations, or conversation with any officer, agent, or employee of the CITY before or after the execution of this Agreement shall affect or modify any of the terms or obligations contained in the documents comprising the Agreement.

11 - PROTECTION OF PUBLIC AND WORK

CONTRACTOR shall provide and maintain all necessary watchmen, barricades, lights, and warning signs and take all necessary precautions for protection of the public, and shall further maintain at all times adequate protection of the work from damage. CONTRACTOR shall also obtain and furnish general liability insurance covering itself; and naming the CITY and the DEVELOPER as additional insureds with an insurer licensed to do business in North Dakota; with policy limits of not less than $1,000,000 for property damage; and not less than $1,000,000 for personal injuries including accidental death to any person; and not less than $2,000,000 for one accident, against and from all suits, actions, or claims of any character, name and description brought for or on account of any injuries or damages received or sustained by any person or persons or property on account of any negligent act or fault of the DEVELOPER, its CONTRACTOR, the CITY or it's officers, agents or employees in the execution of the Agreement, or on account of CONTRACTOR'S failure to provide necessary barricades, warning lights, or signs, and as will protect the CITY and the DEVELOPER from any contingent liability or any other liability under this Agreement and based on any other legal grounds. CONTRACTOR shall provide the CITY with an insurance certificate naming both the CITY and the DEVELOPER as additional insureds. In no case shall the liability insurance be less than that specified in City of Mandan's Construction Specifications for Municipal Improvements.

CONTRACTOR and DEVELOPER shall indemnify and hold harmless the CITY for all of the CONTRACTOR'S and DEVELOPER'S acts, including negligent acts or wrongful conduct.

CONTRACTOR shall also carry an insurance policy of builder's risk of at least double the Agreement amount that shall name the CITY and the DEVELOPER as additional insureds. If the work is limited to underground, sidewalk, streets or curb and gutter, the CONTRACTOR may instead provide an installation floater for the contract amount that names the CITY and DEVELOPER as additional insureds. During the performance and up to the date of final acceptance, the CONTRACTOR shall be under an absolute obligation to protect against any damage, loss, or injury and in the event of such damage, loss or injury the CONTRACTOR shall promptly repair, or replace such work, whichever the City Engineer shall deem preferable. The obligation to deliver finished work in strict accordance with the Agreement prior to final acceptance shall be absolute and shall not be affected by the City Engineer's approval or failure to prohibit the methods of construction used by the CONTRACTOR.

CONTRACTOR shall be responsible for maintenance and operation of all constructed facilities until final acceptance unless otherwise noted in specifications, notes, or special provisions. This includes locating of CONTRACTOR constructed underground facilities.

12 - UTILITIES

It shall be the responsibility of the CONTRACTOR to familiarize itself with the location of all existing sewer mains, water mains, sewer and water service lines, gas mains, gas service lines, telephone, telecommunication, cable TV, or power lines, light and telephone poles and guys, steam lines, valve boxes, and stop boxes or any and all other utilities installations that might be affected or potentially damaged in the performance of the work. The CONTRACTOR shall notify all underground facility operators at least 48 hours in advance excluding Saturdays, Sundays, holidays and in accordance with N. D. Century Code Chapter 49-23 North Dakota One Call of any construction affecting said facilities and shall resolve with said utility operators any conflicts, changes or accommodations.

13 - CHANGES

The Board of City Commissioners reserves the right to make any necessary changes in the alignment, grade, or design of the proposed work deemed advisable by them.

14 - CLEAN UP

Extra materials, tools and temporary structures shall be removed by the CONTRACTOR and all dirt, rubbish, and excess earth from excavations shall be disposed of and the construction area left clean to the satisfaction of the City Engineer. The cost for this work shall be borne by CONTRACTOR. CONTRACTOR shall maintain for a period of three months after completion of the work the surface of unpaved trenches, adjacent curbs and gutters, sidewalks, driveways, shrubbery, fences, sod or other surfaces disturbed. CONTRACTOR shall conduct its operations in such manner as to cause minimum inconvenience to adjoining property owners and the public.

Street surfacing in unpaved areas shall be restored to as good as or better than prior to construction by the CONTRACTOR. CONTRACTOR will be required to replace and/or repair paving or gravel surface removed or damaged in the construction work, to the satisfaction of and subject to the approval of the CITY.

15 - ASSURANCE OF PERFORMANCE AND PAYMENT OF BILLS

CONTRACTOR shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the total Agreement amount as security for the faithful performance of the Agreement and also a payment bond in an amount of not less than one hundred percent (100%) of the total Agreement amount as security for the payment of all persons performing labor on the project under the Agreement, and for those persons furnishing materials in connection with the Agreement.

16 - OBSERVATION AND INSPECTION CHARGES

DEVELOPER shall pay to the CITY when billed as the work progresses, a fee for the services as provided in this Agreement. Fees for these services shall be actual expenses plus 75% plus reimbursable expenses. The services rendered by the CITY under this Agreement are for the benefit of the public to guarantee a project which complies with CITY Specifications. Observation and Inspection by the CITY,

including plan review, does not in any way relieve the DEVELOPER or the CONTRACTOR of their obligation to provide a project in compliance with CITY specifications.

IN WITNESS WHEREOF, the parties have executed the within and forever contract.

CITY OF MANDAN

_____
Robert Decker, PE

_____
President
Board of City Commissioners

ATTEST:

_____
City Administrator

_____(DEVELOPER)

By _____
It's

_____(CONTRACTOR)

By _____
It's