

STANDARD SPECIFICATIONS FOR AML RECLAMATION PROJECTS



**AML DIVISION
NORTH DAKOTA PUBLIC SERVICE COMMISSION
BISMARCK, ND**

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**STANDARD SPECIFICATIONS
FOR
AML RECLAMATION PROJECTS**

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SECTION 100
GENERAL PROVISIONS

Section 101. ABBREVIATIONS:

Where the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.R. - Association of American Railroads
A.A.S.H.T.O. - American Association of State Highway and Transportation Officials
A.G.C. - Associated General Contractors of America
A.N.S.I. - American National Standards Institute, Inc.
A.S.C.E. - American Society of Civil Engineers
A.S.L.A. - American Society of Landscape Architects
A.S.T.M. - American Society for Testing and Materials
F.S.S. - Federal Specifications and Standards, General Services Administration
P.S.C. - North Dakota Public Service Commission
N.D.D.O.T. - North Dakota Department of Transportation

Section 102. DEFINITIONS:

102.1 Advertisement. The public announcement inviting bids or requesting proposals for work to be performed or materials to be furnished.

102.2 Award.

102.2.1 In competitive sealed bidding, "award" means the decision of the owner to accept the bid of the lowest responsible bidder for the work, subject to execution and approval of a satisfactory contract, bonds and such other conditions as may be required.

102.2.2 In competitive negotiation, "award" means the decision of the owner to accept the proposal of the responsible offeror whose proposal is determined by the commission to be the most advantageous to the State taking into consideration price and the evaluation factors set forth in the request for proposals.

102.3 Bidder (Proposer). An individual, partnership, firm, limited liability corporation, or any other acceptable business organization, submitting a bid (proposal).

102.4 Bid Security. The security furnished to guarantee that the bidder will enter into the contract if his bid is accepted.

102.5 Calendar Day. Every day shown on the calendar, Sundays and holidays included.

102.6 Change Order. A written order to the contractor, ordering changes in the work or materials from that originally shown in the plans or specifications.

102.6.1 A bilateral change order is a written change order signed by the engineer and the contractor. Both parties agree on the cost of the change and that the change is within the general scope of work. Bilateral change orders are not subject to contractor claims.

102.6.2 A unilateral change order is a written change order signed by the engineer. It is generally issued only if a bilateral change order is not possible. In addition to directing the contractor to proceed with changed work the unilateral change order will state an equitable adjustment. A unilateral change order does not prohibit the contractor from filing a claim for an equitable adjustment. However such a claim must be filed according to applicable contract provisions.

102.7 Contract. The written agreement between the owner and the contractor setting forth the obligations of the parties thereunder, including, but not limited to, the performance of the work, the furnishings of labor and materials, and the basis of payment.

102.8 Contract Amendment. A written agreement signed by the contractor and the owner covering work necessary or incidental to the project but not included within the general scope of work stated in the original contract.

102.9 Contract Documents. The contract documents include: the request for proposal or invitation for bidders, the proposal or completed bid form, contract form and contract bonds, standard specifications, special provisions, general and detailed plans, working drawings approved to complete the construction of the work in an acceptable manner, change orders, authorized extensions of time, and contract amendments.

102.10 Contractor. The individual, partnership, firm, limited liability corporation, or any acceptable combination thereof, or joint venture contracting owner for performance of prescribed work.

102.11 Contract Bonds. The approved bonds, executed by the contractor and the surety, guaranteeing the acceptable performance of the contract and the payment of all obligations incurred by the contractor pertaining to the work.

102.12 Contract Item (Pay Item). An item of work specifically described and for which a price, either unit or lump sum, is provided in the contract. It includes the performance of all work and the furnishing of all labor, equipment, and materials, described in the text of a specification item included in the contract or special provisions of the contract.

102.13 Contract Time. The number of work days or calendar days allowed for completion of the contract, including authorized time extensions.

In case a calendar date of completion is shown in the proposal, in lieu of the number of working or calendar days, such work contemplated shall be completed by that date.

102.14 Employee. Any person working on the project covered by the contract, and who is under the direction or control of, or receives compensation from the contractor or subcontractor.

102.15 Engineer. The engineer acting directly or through duly authorized representatives, who is responsible for engineering supervision of the construction for the owner. The term "engineer" shall be synonymous with the term "project manager".

102.16 Force Account. Payment for prescribed work which is based on actual costs and appropriate additives.

102.17 Incidental Compaction. Compaction achieved by placement of fill in lifts as directed by the engineer and not by use of special compaction equipment.

102.18 Inspector. The engineer's authorized representative assigned to make detailed inspections of contract performance but not otherwise authorized to act for the engineer.

102.19 Invitation For Bids (IFB). The advertisement and bid documents for work or materials on which bids are required. The IFB will indicate with reasonable accuracy the quantity and location of the work to be done or the character and quantity of the material to be furnished and the time and place of the opening of bids.

102.20 Notice to Proceed. Written notice to the contractor to proceed with the contract work including, when applicable, the date of beginning of contract time.

102.21 North Dakota Public Service Commission. Also known as the "commission" or "owner". See "owner".

102.22 Owner. Unless specifically noted otherwise, refers to the North Dakota Public Service Commission.

102.23 Plans. The contract drawings which show the location, character, and dimensions of the prescribed work, including layouts, profiles, cross sections and other details.

102.25 Procurement Officer. The procurement officer is that individual within the commission charged with the responsibility of directing the procurement and contract administration process.

102.25 Project. The specific improvement together with all appurtenances and construction to be performed thereon under the contract.

102.26 Project Manager. See "engineer".

- 102.27 Proposal (Bid).** The offer to perform the work and to furnish the labor and materials at the prices quoted at the time and in the manner specified.
- 102.28 Proposal (Bid) Form.** The prescribed form on which the owner requires proposals (bids) to be prepared and submitted for the work.
- 102.29 Reasonably Close Conformity.** Reasonably close conformity means compliance with reasonable and customary manufacturing and construction tolerances where working tolerances are not specified. Where working tolerances are specified, reasonably close conformity means compliance with such tolerances.
- 102.30 Request for Proposals.** A solicitation for work on which proposals are required. Among other things, the request for proposal will indicate the nature of work required, specifications, if any, the date, time and place of proposal closing, and evaluation factors to be utilized.
- 102.31 Right-of-Entry.** A general term denoting construction easement acquired for the accommodation of the project.
- 102.32 Special Provisions.** Additions and revisions to the standard specifications covering conditions peculiar to an individual project.
- 102.33 Specifications.** The compilation of provisions and requirements for the performance of the work.
- 102.34 Specified Completion Date.** The date on which the contract work is specified to be completed.
- 102.35 Standard Details.** An approved set of drawings showing standard details of construction and materials.
- 102.36 Subcontractor.** An individual partnership, firm, limited liability corporation, or any acceptable combination thereof, or joint venture, to which the contractor sublets part of the contract.
- 102.37 Superintendent.** The contractor's authorized representative in responsible charge of the work.
- 102.38 Surety.** The corporate body which is bound with and for the contractor, for the acceptable performance of the contract, and for the payment of all obligations pertaining to the work.
- 102.39 Titles (Or Headings).** The titles or headings of the sections and subsections herein are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.
- 102.40 Work.** Work shall mean furnishing of all services, labor, materials, equipment and other incidentals necessary or convenient to the successful completion of the project and carrying out of all duties and obligations imposed by the contract. The limits of the work shall be all areas covered by the contract wherein the contractor's operations have begun in performance of the contract.

102.41 Working Day. A calendar day, exclusive of Saturdays, Sundays and State recognized legal holidays, on which weather and other conditions not under the control of the contractor will permit construction operations to proceed for five hours with the normal working force engaged in performing the controlling item or items of work which would be in progress at that time.

102.42 Working Drawings. Supplemental design sheets or similar data which the contractor is required to furnish such as shop drawings, erection plans, false work plans, framework plans, and cofferdam plans.

102.43 Written Permission of the Engineer. A letter signed by the engineer or an authorized representative of the engineer, granting specific permission and outlining the limitations of the permission.

In order to avoid cumbersome and confusing repetition of expressions in these specifications, it is provided that whenever anything is, or is to be done, if, as, or, when, or where, "contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, accepted, satisfactory, unsatisfactory, sufficient, insufficient, rejected, or condemned," it shall be understood as if the expressions were followed by the words "by the engineer" or "to the engineer".

Section 103. BID AND PROPOSAL REQUIREMENTS

103.1 Contractor's License. No contract will be executed with any contractor unless said contractor is the holder of a current North Dakota license in the class within which the value of the project falls.

103.2 Contents of Bid Forms. Upon request, the owner will furnish the prospective bidder with a bid form. This form will state the location and description of the contemplated construction and will show the approximate estimate of the various quantities and kinds of work to be performed or materials to be furnished, and will have a schedule of items for which unit bid prices are invited. The bid form will state the time in which work must be completed, and the date, time and place of the opening of bids. The form will also include any special provisions or requirements which vary from or are not contained in the standard specifications.

All papers bound with or attached to the bid form are considered a part thereof and must not be detached or altered when the proposal is submitted.

The plans, specifications, and other documents designated in the bid form, will be considered a part of the bid whether attached or not.

The prospective bidder will be required to pay to the owner the sum stated in the Notice to Contractors for each copy of the bid form and each set of plans.

103.3 Issuance of Bid Forms. The owner reserves the right to disqualify or refuse to issue bid forms if a bidder is in default or for any of the following reasons:

- a. Lack of competency and adequate machinery, plant, and other equipment.
- b. Uncompleted work which, in the judgment of the Owner might hinder or prevent the prompt completion of additional work if awarded.
- c. Failure to pay promptly, or satisfactorily settle, all claims for labor and material on any contract.
- d. Default under previous contracts.
- e. Unsatisfactory performance on previous work.

103.4 Interpretation of Quantities in Bid Schedule. The quantities appearing in the bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for the actual quantities of work performed and accepted or materials furnished in accordance with the contract. The scheduled quantities of work to be done and materials, to be furnished may each be increased, decreased, or omitted as hereinafter provided.

103.5 Examination of Plans, Specifications, Special Provision, and Site of Work. The bidder is expected to examine carefully the site of the proposed work, the bid form, plans, specifications, special provisions, and contract forms before submitting a bid. The submission of a bid shall be considered prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of all contract documents.

Boring logs and other records of subsurface investigations may be available for inspection by bidders. It is understood that such information was obtained and is intended for design and estimating purposes only. It is made available to bidders that they may have access to identical subsurface information available to the engineer, and is not intended as a substitute for personal investigation, interpretations and judgment of the bidders.

103.6 Preparation of Bids. The bidder shall submit bids on the forms furnished by the owner. Bidders shall enter their unit price bid in both words and figures and make and enter the extensions or amount bid based on the unit price and the quantity for each item; also total amount bid for all items. When an item in the bid form contains a choice to be made by the bidder, the bidder shall indicate a choice in accordance with the specifications for that particular item.

If the bid is made by an individual, it shall be signed by said individual. If made by a partnership, it shall be signed by a partner. If made by a limited liability corporation, it shall be signed by an officer of the corporation with such officer's title. If the bid is a joint venture, it shall be signed by a legally qualified representative of each of the parties to the joint venture. A bid

may be executed for an individual, a partnership, a limited liability corporation, or a joint venture by anyone having a power of attorney but a copy thereof shall be attached, or previously filed with the owner.

103.7 Combination or Conditioned Bids. If the owner so elects, bid forms may be issued for projects in combination and/or separately, so that bids may be submitted either on the combination or on separate units of the combination. The owner reserves the right to make awards on combination bids or separate bids to the best advantage of the owner. No combination bids, other than those specifically set up in the bids by the owner, will be considered. Separate contracts will be written for each individual project included in the combination.

Conditional bids will be considered when so stated in the special provisions.

103.8 Irregular Bids. Bids will be considered irregular and may be rejected for the following reasons:

- a. If the bids is on a form other than that furnished by the owner; or if the form is altered or any part thereof is detached.
- b. If there are unauthorized additions, conditions, or alternate bids, or irregularities of any kind which may tend to make the bid incomplete, indefinite, or ambiguous as to its meaning.
- c. If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.
- d. If the bid does not contain a unit price for each pay item listed except in the case of authorized alternate pay items.
- e. Unbalanced bids in which the prices for some items are out of proportion to the prices for other items.

103.9 Bid Guaranty. No bid will be considered unless accompanied by a bidder's bond, certified check or cashier's check in a sum equal to five(5) percent of the full amount of the bid. A bidders bond must be executed by the bidder as principal and by a surety company authorized to do business in North Dakota as surety. A certified check or a cashier's check must be drawn on the Bank of North Dakota or a federally insured, solvent bank. If, within ten days after notice of an award, the successful bidder should fail to execute a contract with the owner, then the surety will pay unto the owner for the use and benefit of the owner five(5) percent of the bid or bids on the contract on which there is a default or the certified check or cashier's check of the bidder will be forfeited to the owner.

103.10 Delivery of Bids (Proposals). Bids (proposals) shall be placed in a sealed envelope which if mailed to the owner shall be plainly marked to indicate its contents. Bids (proposals) received after the time for opening of bids (after the closing date for proposals) will be returned to the bidder (proposer) unopened.

103.11 Withdrawal or Revision of Bids. A bidder may withdraw or revise a bid after it has been deposited with the owner, provided the request for such withdrawal or revision is received by the owner, in writing or by telegram, before the time set for opening bids.

103.12 Public Opening of Bids. Bids will be opened and read publicly at the time and place indicated in the Notice to Contractors. Bidders, their authorized agents, and other interested parties are invited to be present.

103.13 Disqualification of Bidders. The following reasons may be considered as being sufficient for the disqualification of a bidder and the rejection of a bid or bids:

- a. More than one bid for the same work from an individual, firm, or corporation under the same or different name.
- b. Evidence of collusion among bidders. Participants in such collusion will receive no recognition as bidders for any future work of the owner until reinstated as a qualified bidder.
- c. Failure to repay moneys due the owner resulting from overpayments.
- d. Lack of competency and adequate machinery, plant, and other equipment as revealed in the prequalification questionnaires or as otherwise determined by the Commission.
- e. Uncompleted work which the Commission determines might hinder or prevent prompt completion of additional work.
- f. Failure to promptly pay or satisfactorily settle all claims for labor and material on any Contract, including those Contracts where the Contractor is a party to a joint venture that has failed to settle such claims.
- g. Failure to comply with any prequalification regulations.
- h. Default under previous Contracts.
- i. Unsatisfactory performance on previous work or current Contract(s), consisting of, but not limited to, repeated:
 1. Noncompliance with Contract requirements, or Project Manager's directives.
 2. Failure to complete work on time.
 3. Instances of substantial corrective work prior to acceptance.
 4. Instances of completed work that requires acceptance at reduced pay.
 5. Production of nonspecification work or materials.

- j. Questionable moral integrity as determined by the Attorney General of the State.
- k. Disbarment from performing work on Federal Contracts.

103.14 Material Guarantee. The successful bidder may be required to furnish a complete statement of the origin, composition, and manufacture of any or all materials to be used in the construction of the work together with samples. Samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

Section 104. AWARD AND EXECUTION OF CONTRACT:

104.1 Consideration of Bids (Competitive Sealed Bidding). After the bids are opened and read, the products of the quantities and the respective unit prices bid, and the summation of said products, in each bid will be verified or corrected. In case of discrepancy, the bidder's apparent intent as indicated by either the written words or the figures shall govern. However, if the bidder's intent is not apparent and the bid is otherwise acceptable, then the written words shall govern. The verified or corrected totals of the bids considered will be compared and the results of such comparison immediately made public. Until the award of the contract, however, the right will be reserved to reject any and all bids and to waive technicalities, as may be deemed best for the interests of the owner.

104.2 Consideration of Proposals (Competitive Negotiation). Proposals shall be opened so as to avoid disclosure of contents to competing offerors during the process of negotiation. A register of proposals shall be prepared and shall be open for public inspection after contract award. Discussions may be conducted with responsible offerors who submit proposals determined to be reasonably susceptible of being selected for award for the purpose of clarification to assure full understanding of, and responsiveness to, the solicitation requirements. Offerors shall be accorded fair and equal treatment with respect to any opportunity for discussion and revision of proposals, and such revisions may be permitted after submissions and prior to award for the purpose of obtaining best and final offers. In conducting discussions, there shall be no disclosure of any information derived from proposals submitted by competing offerors. 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 owner.

104.3 Award of Contract (Competitive Sealed Bidding). The award of the contract, if it be made, will be to the lowest responsible bidder whose bid complies with all the requirements specified. The award, if made, will usually be made within thirty (30) days after the opening of the bids unless an extension of this limit is agreed to in writing by both parties.

104.4 Award of Contract (Competitive Negotiation). Upon recommendation by the procurement officer, award shall be made to the responsible offeror whose proposal is determined by the commission to be the most advantageous to the State taking into consideration price and the evaluation factors set forth in the request for proposal. No other factors or criteria shall be used in the evaluation. The award, if made, will usually be

made within thirty (30) days after the closing date for proposals unless an extension of this limit is agreed to in writing by both parties.

104.5 Contract Security. The offeror, i.e., bidder or proposer to whom the award is made, will be required to enter into a written contract with the owner and to 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. The surety shall be authorized to underwrite bonds in North Dakota and to protect the federal interest as outlined in Treasury Circular 570.

104.6 Cancellation of Award. The owner 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 owner.

104.7 Return of Bid Guaranty. All certified checks, cashier's checks or bidder's bonds, except in cases of defaults and those of the bidders submitting the 3 lowest bids, will be returned upon request within a reasonable time to bidders after bids have been compared. The check of the bidder submitting the lowest bid may be negotiated and the money retained by the owner or the bid bond held until the contract has been awarded and properly executed. The checks or bonds of the remaining 2 bidders will be returned to the bidders when the owner has determined to whom the contract is to be awarded.

104.8 Execution and Approval of Contract. The contract shall be signed by the successful bidder or proposer and returned, together with a satisfactory contract bond within ten (10) calendar days after date of notice that the contract has been awarded. No contract shall be considered binding upon the owner until executed by all parties to the contract.

104.9 Failure to Execute Contract. Failure on the part of the successful bidder or proposer to execute a contract and file a satisfactory contract bond as provided herein, may be considered cause for the annulment of the award and forfeiture of the bid security, if any, to the owner, not as a penalty but in liquidation of damages sustained. Award may then be made to the next responsible bidder or proposer, or the work may be readvertised and constructed under contract, or otherwise as the owner may decide.

Section 105. SCOPE OF WORK:

105.1 Intent of Contract. The intent of the contract is to provide for the construction and completion in every detail of the work described. The contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the plans, specifications and other terms of the contract.

105.2 Changes.

- a. The commission or engineer may, at any time, without notice to the sureties, if any, by written order designated or indicated to be a change order, make any changes in the work within the general scope of the contract, including but not limited to changes:
 - 1) In the specifications (including drawings and designs);
 - 2) In the method or manner of performance of the work;
 - 3) In the commission furnished facilities, equipment, materials, services or site; or
 - 4) Directing acceleration in the performance of the work.
- b. Any other written order or an oral order (which in terms as used in this paragraph "b" shall include direction, instruction, interpretation or determination) from the commission which causes any such change, shall be treated as a change order under this clause, provided that the contractor gives the commission written notice stating the date, circumstances and source of the order and that the contractor regards the order as a change order.
- c. Except as herein provided, no order, statement or conduct of the commission shall be treated as a change under this clause or entitle the contractor to an equitable adjustment hereunder.
- d. If any change under this clause causes an increase or decrease in the contractor's cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any order, an equitable adjustment shall be made and the contract modified in writing accordingly; provided, however, that except for claims based on defective specifications, no claim for any change under paragraph "b" above shall be allowed for any costs incurred more than 20 days before the contractor gives written notice as therein required; and provided further that in the case of defective specifications for which the commission is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the contractor in attempting to comply with such defective specifications.
- e. If the contractor intends to assert a claim for an equitable adjustment under this clause, he must, within 30 days after receipt of a written change order under paragraph "a" above, or the furnishing of a written notice under paragraph "b" above, submit to the commission a written statement setting forth the general nature and monetary extent of such claim, unless this period is extended by the commission. The statement of claim hereunder may be included in the notice under paragraph "b" above.
- f. No claim by the contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

105.3 Suspension of Work.

- a. The commission or engineer may order the contractor in writing to suspend, delay or interrupt all or any part of the work for such period as determined to be appropriate for the convenience of the commission.
- b. If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed or interrupted by an act of the commission in administration of this contract, or by its failure to act within the time specified in this contract (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by such unreasonable suspension, delay or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay or interruption to the extent---
 - 1) That performance would have been so suspended, delayed or interrupted by any other cause, including the fault or negligence of the contractor; or
 - 2) For which an equitable adjustment is provided for or excluded under any other provision of this contract.
- c. No claim under this clause shall be allowed---
 - 1) For any costs incurred more than 20 days before the contractor shall have notified the commission in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and
 - 2) Unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay or interruption, but not later than the date of final payment under the contract.

105.4 Differing Site Conditions.

- a. The contractor shall promptly, and before such conditions are disturbed, notify the engineer in writing of:
 - 1) Subsurface or latent physical conditions at the site differing materially from those indicated in this contract; or
 - 2) Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this contract. The engineer shall promptly investigate the conditions; and if he finds that such conditions do materially so differ and cause an increase or decrease in the contractor's cost of or the time required for performance of any part of the work under this contract, whether or not changed as a result of such conditions, an

equitable adjustment shall be made and the contract modified in writing accordingly.

- b. No claim of the contractor under this clause shall be allowed unless the contractor has given the notice required in paragraph "a" above; provided, however, the time prescribed therefor may be extended by the commission.
- c. No claim by the contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

105.5 Equitable Adjustments. Equitable adjustments shall be measured by the cost impact on the contractor. The cost must be allowable, i.e., reasonable, allocable, in accordance with generally accepted accounting principles and cost accounting standards if applicable, and not limited or excluded by contract or procurement provisions.

The basic pricing formula for an equitable adjustment is the difference between the reasonable cost of performing without the change or deletion and the reasonable cost of performing with the change or deletion. The equitable adjustment may not properly be used as an occasion for reducing or increasing the contractor's profit or loss, or for converting a loss to a profit or vice versa, for reasons unrelated to a change. A contractor who has underestimated his bid or encountered unanticipated expense or inefficiencies may not properly use a change order as an excuse to reform the contract or to shift his own risks or losses to the commission. Similarly the commission cannot use an equitable adjustment to avoid the impact of a contractor's unbalanced bid.

When the commission issues a written change order and it is determined by the engineer to be in the owner's best interest, the contractor may be paid by force account as provided in **Section 110.6 Force Account**.

105.6 Increased or Decreased Quantities. Unless otherwise provided in the Specifications, Proposal Form, IFB, or Plans, adjustments in unit prices for increased or decreased quantities will be governed by the following:

- 1. If the quantity of any major item of work required to complete the Project varies from the original estimate by 25% or less, payment will be made at the Contract Unit Price.
- 2. Should the quantity of one or more major items of work be increased or decreased by more than 25%, either party to the Contract may demand that a supplemental agreement be negotiated with an adjustment of unit prices satisfactory to both parties.

Where the quantity of a major item is increased, the adjusted unit price will apply only to that portion of the item which is in excess of 125% of the original Contract quantity. The adjusted unit price for the quantity of the item which is in excess of 125% of the original quantity will be negotiated on the basis of the actual cost of the entire item as completed, plus a reasonable allowance for profit and applicable overhead.

In the case of a major item decreased by more than 25% from the original Contract quantity, the adjusted unit price will apply to the measured quantity. The adjustment of the unit price for the quantity of an item which is less than 75% of the original quantity will be considered, at the request of the Contractor, insofar as it justifies an increase in the pro rata share of the fixed expense chargeable to such item because of the decreased quantity of the item. However, total payment for the item shall not exceed that amount which would be made for 75% of the original Contract item at the Contract Unit Price.

3. If neither party demands an adjustment of unit price or prices, then the Contract Unit Prices shall govern.
4. No unit price adjustment for any major work item, as provided here, will be made if the total amount of the adjustment is less than \$1,000.
5. If the aggregate production equipment has been moved off the Project and there is an increase in quantity of aggregate, the owner will pay for remobilization. If the equipment is still on the Project and the owner has notified the Contractor of the increase in writing, no payment will be made.
6. A minor item will be paid for at the Contract Unit Price for the quantity required to complete the work except when the quantity is increased to the extent that the minor item becomes a major item. Unit price adjustment will then be according to the Specifications for adjustment of major items as described herein.
7. If a satisfactory adjustment in price cannot be agreed upon, the Contractor shall proceed with the work on a Force Account basis according to the provisions of **Section 110.6**. The Engineer, however, reserves the right, if it is in the owner's best interest, to terminate the Contract as it applies to the items in questions, and make the necessary arrangements to complete the work.
8. **Fuel Adjustment Clause.** If estimated quantities of motor fuels(diesel and gasoline) to be used on-site are 20,000 gallons(75,708 liters) or more, the following provisions will apply:
 - a. Fuel will be bid as a line item.
 - b. Fuel usage will be determined through metering or receipts.
 - c. The base wholesale price of fuel at the time of the bid opening will be determined using the daily averages of the high and low prices quoted for No. 2 fuel oil(diesel) FOB North Dakota terminals in the "Oil Daily" publication.
 - d. If the wholesale price of fuels increases or decreases by more than twenty percent(20%) between quarters during which the project is prosecuted the unit cost may be adjusted upward or downward by the commission.

105.7 Maintenance of Traffic. When the contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the contractor's performance of work that is otherwise provided for in the contract, plans and specifications, the contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The contractor shall furnish, erect, and maintain barricades, warning signs, flagmen, and other traffic control devices in reasonable conformity with the manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office), unless otherwise specified in the plans or directed by the engineer. The contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the contractor will not be required to furnish snow removal for such existing road, street, or highway.

105.8 Unused Materials, Finishing, and Clean-Up. Immediately upon completion of the work all unused materials left on site will become the property of the contractor. From time to time or as may be ordered by the engineer and immediately after completion of the work, the contractor shall clean up and remove all refuse and unused materials of any kind resulting from the work. Upon failure to do so within a reasonable time as requested by the engineer, the work may be done by the owner and the cost thereof charged to the contractor and deducted from his final estimate. All excavated areas along trenches, walks, curbs and other structures shall be backfilled with earth and the cost of such work shall be incidental to the item of construction.

105.9 Warranty. The contractor shall guarantee all work against faulty materials and workmanship for a period of one year from the date of final acceptance and the performance bond shall remain in full force and effect for the period. This warranty shall not apply to an alteration of the site due to mine collapse unless that portion of the mine which collapsed had been specifically reclaimed by the contractor.

105.10 Buy American Act. The contractor agrees to comply with sections 2 through 4 of the Act of March 3, 1933(41U.S.C.10a - 10c, popularly known as the "Buy American Act"). This applies to all subcontractors and suppliers of the contractor. The contractor will include this clause in all agreements and contracts.

Section 106. CONTROL OF WORK:

106.1 Authority of the Engineer. The engineer will decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the rate of progress of the work; all questions which may arise as to the interpretation of the plans and specifications; all questions as to the acceptable fulfillment of the contract on the part of the contractor. The engineer will have the authority to suspend the work wholly or in part due to the failure of the contractor to correct conditions unsafe for the workers or the general public; for failure to carry out provisions of the contract; for failure to carry out orders; for such periods as the engineer may deem necessary due to unsuitable weather; for conditions considered

unsuitable for the prosecution of the work or for any other condition or reason deemed to be in the public interest or for other reasons that may be mutually agreed on by the parties to the contract.

106.2 Plans and Working Drawings. Plans will show details of all structures, lines, grades, typical sections, location of structures and a summary of items appearing in the proposal. The contractor shall keep one set of plans available on site at all times.

The plans will be supplemented by such working drawings as are necessary to adequately control the work.

The contract price will include the cost of furnishing all working drawings.

106.3 Conformity With Plans and 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.

In the event the engineer finds the materials or the finished product in which the materials are used are not within reasonable 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 specification 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.

106.4 Coordination of Plans, Specifications, and Special Provisions. These specifications, the plans, special provisions, and all supplementary documents are essential though occurring in all documents. They are intended to be complimentary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scale dimensions; plans will govern over standard specifications; special provisions will govern over standard specifications.

The contractor shall take no advantage of any apparent error or omission in the plans or specifications. In the event the contractor discovers such an error or omission, the contractor shall immediately notify the engineer. The engineer will then make such corrections and interpretations as may be necessary for fulfilling the intent of the plans and specifications.

106.5 Cooperation by Contractor. The contractor will be supplied with a minimum of two sets of approved plans and contract assemblies including special provisions, one set of which the contractor shall keep available on the work at all times.

The contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the engineer, inspectors, and other contractors in every way possible.

The contractor shall have on the work at all times, as an agent, a competent superintendent capable of reading and thoroughly understanding the plans and specifications and thoroughly experienced in the type of work being performed, who shall receive instructions from the engineer or authorized representative. The superintendent shall have full authority to execute orders or directions of the engineer without delay, and to promptly supply such materials, equipment, tools, labor and incidentals as may be required. Such superintendence shall be furnished irrespective of the amount of work sublet. It shall be assumed that in the absence of the superintendent the person doing the work acts as agent for the superintendent.

106.6 Cooperation With Utilities. The contractor will notify all utility companies, all pipeline owners, or other parties affected, and endeavor to have all necessary adjustments of the public or private utility fixtures, pipelines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners except as otherwise provided for in the special provisions or as noted on the plans.

It is understood and agreed that the contractor has considered in the bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience or damage sustained due to any interference from the said utility appurtenances or the operation of moving them. In general, the contract will indicate various utility items, certain of which are to be relocated or adjusted by the utility owner and others which are to be relocated or adjusted by the contractor.

106.7 Cooperation Between Contractors. The owner reserves the right at any time to contract for and perform other or additional work on or near the work covered by the contract.

When separate contracts are let within the limits of any one project, each contractor shall conduct the work so as not to interfere with or hinder the progress or completion of the work being performed by other contractors. Contractors working on the same project shall cooperate with each other as directed.

Each contractor involved shall assume all liability, financial or otherwise, in connection with the contract and shall protect and save harmless the owner from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced because of the presence and operations of other contractors working within the limits of the same project.

The contractor shall arrange the work and shall place and dispose of the materials being used so as not to interfere with the operations of the other contractors within the limits of the same project. The contractor shall join the work with that of the others in an acceptable manner and shall perform it in proper sequence to that of others.

In case of unavoidable interference, the engineer will determine the priorities.

106.8 Construction Stakes, Lines and Grades. The contractor will provide all construction stakes for each phase of the project. The engineer shall be notified at least 48 hours in advance of each phase. For earthwork the contractor will provide horizontal control reference points. After placement of stakes, the contractor shall carefully preserve these stakes, and, in case of their destruction or loss, the contractor shall be responsible for replacement and also shall be responsible for any damage resulting therefrom and for any mistakes that may be caused by the loss or disturbance of these stakes.

106.9 Duties of the Inspector. Inspectors employed by the owner or the engineer will be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used. The inspector will not be authorized to alter or waive the provisions of these specifications. The inspector will not be authorized to issue instructions contrary to the plans and specifications, or to act as foreman for the contractor.

106.10 Inspection of Work. All materials and each part or detail of the work shall be subject to inspection by the engineer. The engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the contractor as is required to make a complete and detailed inspection.

Inspection of the work means visual observation of materials, equipment or construction work on an intermittent basis, to determine that the work is in substantial conformance with the contract documents and the design intent. Such inspection does not constitute acceptance of the work nor shall it be construed to relieve the contractor in any way his responsibility for the means and methods of construction or for safety on the construction site.

If the engineer requests it, the contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the contractor shall restore said portions of the finished work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of parts removed, will be at the contractor's expense.

Any work done or materials used without supervision or inspection by an authorized owner representative may be ordered removed and replaced at the contractor's expense unless the owner representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

When any unit of government, political subdivision, utility, or any railroad corporation is to pay a portion of the cost of the work covered by this contract, its respective representatives shall have the right to inspect the work. Such inspection shall in no sense make any unit of government, political subdivision, utility, or any railroad corporation a party to this contract, and shall in no way interfere with the rights of either party hereunder.

Whenever in the plans or specifications, the word or phrase "uniform" "uniformly", "in a uniform manner", or its equivalent is used to describe a required result or procedure, and if no test is used to establish the degree of such uniformity, the degree of the uniformity required shall be that which can normally be obtained for the work involved through good quality of work and the use of approved equipment in good operating condition and shall be to the satisfaction of the engineer.

106.11 Removal of Unacceptable and Unauthorized Work.

Except as set forth in Section 106.3, all work which does not conform to the requirements of the contract will be considered as unacceptable work.

Unacceptable work, whether the result of poor quality of, use of defective materials, damage through carelessness or any other cause, found to exist prior to the final acceptance of the work, shall be removed and replaced or corrected in an acceptable manner.

Work done contrary to the instructions of the engineer, work done beyond the lines shown on the plans, or as given, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the contractor's expense.

Upon failure on the part of the contractor to comply forthwith with any order of the engineer, made under the provisions of this section, the engineer will have the authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs from any moneys due or to become due the contractor.

106.12 Load Restrictions. The contractor shall comply with all legal load restrictions in the hauling of materials on public roads.

The operation of equipment of such weight or so loaded as to cause damage to structures or the roadway or to any other type of construction will not be permitted. The contractor shall be responsible for all damage caused by his hauling equipment.

106.13 Maintenance During Construction. The contractor shall maintain the work during construction and until the project is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end

that the various items of construction are kept in satisfactory condition at all times.

All cost of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various pay items and the contractor will not be paid an additional amount for such work.

106.14 Failure to Maintain the Work. If the contractor, at any time, fails to comply with the provisions of Section 106.13 the engineer will immediately notify the contractor of such noncompliance. If the contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the engineer may immediately proceed to maintain the project, and the entire cost of this maintenance will be deducted from moneys due to or to become due the contractor on the contract.

106.15 Partial Acceptance. If at any time during the prosecution of the project the contractor substantially completes a unit or portion of the project, the contractor may request the engineer to make final inspection of that unit. If the engineer finds upon inspection that the unit has been substantially completed in accordance with the contract, the engineer may recommend acceptance of that unit as being completed and upon commission approval the contractor may be relieved of further responsibility for that unit. Such partial acceptance shall in no way void or alter any of the terms of the contract.

106.16 Final Acceptance. Upon due notice from the contractor of presumptive completion of the entire project, the engineer will make an inspection and if all construction contemplated by the contract is found completed satisfactorily, that inspection shall constitute the final inspection and the engineer will recommend final acceptance to the commission and notify the contractor in writing of this recommendation as of the date of the final inspection. The commission shall finally accept the work.

Section 107. CONTROL OF MATERIALS:

107.1 Source of Supply and Quality Requirements. The materials used on the work shall conform to the requirements of the contract, plans, and specifications.

At the engineer's option, materials may be approved at the source of supply before delivery is started. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the contractor shall furnish materials from other sources.

107.2 Samples, Tests, and Cited Specifications. All materials used in the work shall be inspected, tested, and approved by the engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the engineer shall be performed at the contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the engineer, shall be removed at the contractor's expense. Unless otherwise designated, tests and standards shall be in accordance with the cited standard methods which are current on the date of advertisement for bids. Samples will be taken by a qualified representative of the owner. All materials being used are subject to inspection, test or rejection at any time prior to or during

incorporation into the work. Copies of all tests will be furnished to the contractor's representative at his request.

The contractor shall provide and pay for the necessary testing and inspection services required by the plans and specifications unless otherwise provided.

The owner shall provide and pay for all other inspection and testing services not required by the plans and specifications.

107.3 Storage of Materials. The contractor shall coordinate the storage of all materials with the engineer. Unless otherwise shown on the plans, the storage of materials and the location of the contractor's plant and parked equipment or vehicles shall be as directed by the engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee of such property. The contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the contractor shall furnish the engineer a copy of the property owner's permission.

All storage sites on private or public property shall be restored to their original condition by and at the expense of the contractor, except as otherwise agreed to (in writing) by the owner or lessee of the property.

Section 108. LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC:

108.1 Laws to be Observed. The contractor shall keep fully informed of all Federal and State laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work or which in any way affect the conduct of the work. The contractor shall at all times observe and comply with all such laws, ordinances, regulations and orders, and decrees; and shall protect and indemnify the State and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the contractor or the contractor's employees.

108.2 Permits, Licenses and Taxes. The contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

108.3 Patented Devices, Materials and Processes. If the contractor employs any design, device, material or process covered by letters of patent or copyright, the contractor shall provide for such use by suitable legal agreement with the patentee or owner. The contractor and the surety shall indemnify and save harmless the owner, any affected third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process or any trademark or copyright, and shall indemnify the owner for any costs, expenses, and damages which it may be obliged to pay by reason of any infringement, at any time during the prosecution or after the completion of the work.

108.4 Restoration of Surfaces Opened by Permit. The right to construct or reconstruct any utility service in a highway or street or to grant permits for same, at any time, is hereby expressly reserved by the owner for the proper authorities of the municipality in which the work is done and the contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

108.5 Federal Provisions. The United States Government pays all portions of the cost of this project. The Federal laws and the rules and regulations made pursuant to such laws must be observed by the contractor, and the work shall be subject to the inspection of the appropriate Federal agency.

108.5.1 Labor Standards. The contractor agrees that "construction" work (as defined by the U.S. Secretary of Labor) shall be subject to the following labor standards to the extent applicable:

- a. In any construction contract and subcontract, the contractor or subcontractor shall agree to comply with the Copeland "Anti-Kickback" Act (18 USC 874) as supplemented in the U.S. Department of Labor regulations (29 CFR Part 3). This Act provides that each contractor or subcontractor shall be prohibited from inducing by any means any person employed in the construction, completion or repair of public work, to give up any part of the compensation to which he is otherwise entitled.
- b. Provisions of the Fair Labor Standards Act of 1938 as amended apply.

108.5.2 Equal Employment Opportunity. In any contract awarded in excess of \$10,000 by the commission and in any subcontract awarded in excess of \$10,000, the contractor and their subcontractors agree to comply with Executive Order 11246 entitled "Equal Employment Opportunity", as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60).

No qualified individual with a disability, as defined in Americans with Disabilities Act of 1990(PL 101-336), shall be excluded from participation in, denied the benefits of, subjected to discrimination under, or denied employment in the administration of or in connection with any contract because of race, color, disability, or political affiliation or belief.

The contractor will take affirmative action to ensure that applicants are employed and that employees are not discriminated against during employment with regard to their race, color, religion, national origin, disability, age, sex, political affiliation or belief, or citizenship.

108.5.2.1 Nondiscrimination

This contract and any subcontract hereunder is subject to the Age Discrimination Act of 1975, Section 504 of the Rehabilitation Act, Title VI of the Civil Rights Act of 1964 and the Americans with Disabilities Act of 1990.

108.5.3 Audit; Access to Records.

- a. The contractor shall maintain books, records, documents and other evidence directly pertinent to performance of work under this contract in accordance with generally accepted accounting principles and practices consistently applied. The Federal grantor agency, the Comptroller General of the United States, the United States Department of Labor, and the commission or any of their duly authorized representatives shall have access to such books, records, documents and other evidence for the purpose of inspection, audit and copying. The contractor will provide reasonable facilities and assistance for such access and inspection.
- b. If this contract is a formally advertised, competitively awarded, fixed price contract, the contractor agrees to make paragraphs "a" through "f" of this clause applicable to all negotiated change orders and contract amendments affecting the contract price. In the case of all other types of prime contracts, the contractor agrees to include paragraphs "a" through "f" of this clause in all his contracts in excess of \$10,000 and all tier subcontracts in excess of \$10,000 and to make paragraphs "a" through "f" of this clause applicable to all change orders thereto directly related to project performance.
- c. Audits conducted pursuant to this provision shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing or auditing agency(ies).
- d. The contractor agrees to the disclosure of all information and reports resulting from access to records pursuant to paragraphs "a" and "b" above, to any of the agencies referred to in paragraph "a" above, provided that the contractor is afforded the opportunity to comment and submit any supporting documentation on the pertinent portions of the draft audit report and that the final Federal grantor agency or commission audit report will include written comments of reasonable length, if any, of the contractor.
- e. Records under paragraphs "a" and "b" above shall be maintained and made available during performance on work under this contract and until three years from the date of final payment for the project. In addition, those records which relate to any dispute appeal under Federal grant agreement, or litigation, or the settlement of claims arising out of such performance, or costs or items to which an audit exception has been taken, shall be maintained and made available until three years after the date of resolution of such appeal, litigation, claim or exception.
- f. The right of access conferred by this clause will generally be exercised (with respect to financial records) under the following:
 - 1) Negotiated prime contracts,
 - 2) Negotiated change orders or contract amendments in excess of \$10,000 affecting the price of any formally advertised, competitively awarded, fixed price contract, and

- 3) Subcontracts or purchase orders under any contract other than a formally advertised, competitively awarded, fixed price contract. However, this right of access will generally not be exercised with respect to a prime contract, subcontract, or purchase order awarded after effective price competition. In any event, such right of access may be exercised under any type of contract or subcontract---
 - a) With respect to records pertaining directly to contract performance, excluding any financial records of the contractor;
 - b) If there is any indication that fraud, gross abuse, or corrupt practices may be involved; or
 - c) If the contract is terminated for default or for convenience.

108.5.4 Covenant Against Contingent Fees. The contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee excepting bona fide employees or bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business. For breach or violation of this warranty, the commission shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage or contingent fee.

108.5.5 Copyrights and Rights in Data. The contractor agrees that any plans, drawings, designs, specifications, computer programs (which are substantially paid for with Federal grant or State funds), technical reports, operation manuals and other work submitted with a proposal or grant application or which are developed or produced and paid for under this contract (referred to in this clause as "subject data") are subject to the rights in the United States for North Dakota, in effect on the date of execution of this contract, including the right to use, duplicate and disclose such subject data, in whole or in part, in any manner for any purpose whatsoever, and have others do so. If the material is copyrightable, the contractor may copyright such, subject to the rights in the government but the commission and the Federal government reserve a royalty-free, non-exclusive and irrevocable license to reproduce, publish and use such materials, in whole or in part, and to authorize others to do so. The contractor shall include provisions appropriate to effectuate the purposes of this condition in all subcontracts expected to produce copyrightable "subject data".

108.5.6 Prohibition Against Listed Violating Facilities. (Applicable only to contracts and subcontracts in excess of \$100,000) The contractor agrees to comply with all applicable standards, orders or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857 (h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738 and Environmental Protection Agency regulations (40 CFR Part 15), which prohibit the use under non-exempt Federal contracts,

grants or loans of facilities included on the EPA list of Violating Facilities. This provision requires reporting of violations to the Federal grantor agency and to the U.S.E.P.A. Assistant Administrator for Enforcement (EN-329).

108.5.7 Policies Relating to Energy Efficiency. The contractor agrees to follow mandatory standards and policies related to energy efficiency contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94--163).

108.6 Sanitary Provisions. The contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of employees as may be necessary to comply with the requirements of the State and local Board of Health, or of other bodies or tribunals having jurisdiction.

108.7 Public Convenience and Safety. The contractor shall control all operations whether performed by subcontractors or suppliers, to assure the least inconvenience to the public. Under all circumstances, safety shall be the most important consideration. If the engineer determines that dust caused by the contractor's operations is a hazard to traffic or a nuisance to the public, the contractor shall sprinkle with suitable water in such amounts as the engineer directs. The water so used shall be considered part of the water provided in the contract for mixing or compaction and shall be paid for as specified in the contract covering the item of work. Where no water is provided in the contract, water will be paid for at the established rate used in contracts.

108.8 Barricades, Warning Signs, and Hazard Markings. The contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work as directed by the engineer. When used during periods of darkness, such barricades, warning signs and hazard markings shall be suitably illuminated.

For vehicular and pedestrian traffic, the contractor shall furnish, erect and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways.

The contractor shall furnish and erect all barricades, warning signs and markings for hazards prior to commencing work which requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their dismantling is directed by the engineer.

108.9 Use of Explosives. When the use of explosives is necessary for the prosecution of the work, the contractor shall exercise the utmost care not to endanger life or property, including new work. The contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws, ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the engineer and in general, not closer than 1,000 feet from the work or from any building, road, or other place of human occupancy.

The contractor shall notify the engineer as well as each property owner and public utility company having structures or facilities in proximity to the site of his work of his intention to use explosives. Such notice shall be given sufficiently in advance to enable each property owner and utility to take such steps as they may deem necessary to protect their property from injury.

108.10 Protection and Restoration of Property and Landscape.

The contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property marks until the engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

108.11 Responsibility for Damage Claims. The contractor shall indemnify and save harmless the engineer and the owner and their officers, and employees from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act", or any other law, ordinance, order, or decree. Money due the contractor under and by virtue of his contract as may be considered necessary by the owner for such purpose may be retained for the use of the owner or, in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the owner, except that money due the contractor will not be withheld when the contractor produces satisfactory evidence that he is adequately protected by public liability and property damage insurance.

108.12 Third Party Beneficiary Clause. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create the public or any member thereof a third party beneficiary or to authorize anyone not a party

to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

108.13 Opening Sections of Project for Use. At the option of the engineer, certain sections of the work may be opened for use. Such openings shall not constitute acceptance of the work, or any part thereof, or a waiver of any provisions of the contract, provided, however, that on such portions of the project as are accepted for use, the contractor shall not be required to assume any expense entailed in maintaining the opened portion of the work. Such expense shall be borne by the owner. No portion of the work may be opened by the contractor for public use until ordered by the engineer in writing. Should it become necessary to open a portion of the work to public use on a temporary or intermittent basis, such openings shall be made when, in the opinion of the engineer, such portion of the work is in an acceptable condition for use. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to use which is permitted by the owner shall be repaired by and at the contractor's expense.

108.14 Contractors Responsibility for Work. Until final written acceptance of the project by the owner, the contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements, or from any other cause, whether arising from the execution or from the non-execution of the work. The contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work done due to unforeseeable causes beyond the control of and without the fault or negligence of the contractor, including but not restricted to acts of nature, of the public enemy or governmental authorities.

In case of suspension of work from any cause whatever, the contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the project, provide for normal drainage and to erect any necessary temporary structures, signs, or other facilities at the contractor's expense. During such period of suspension of work, the contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and sod, furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

108.15 Contractor's Responsibility for Utility Property and Services. At points where the contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

The contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner and that

duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted. In the event of interruption to water utility services as a result of accidental breakage, or as a result of being exposed or unsupported, the contractor shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of service. If water service is interrupted repair work shall be continuous until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

108.16 Damage to Underground Utilities. The contractor shall use special care to prevent damage to all pipes, cables, and other underground utilities. Repairs to damaged underground utilities caused by acts or omissions on the part of the contractor, or resulting from incorrect location information of the underground utilities shall be repaired at no cost to the owner regardless of whether or not the type or location of such facilities is shown on the plans. The damaged facilities shall be restored to a condition similar to or equal to that existing before such damage was done. If it is determined by the engineer that adjustment or relocation of such underground facilities is necessary to accommodate construction, the contractor will make the necessary arrangements with the utility owner, if such work is not otherwise provided for in the project plans or proposal.

108.17 Adjustment of Municipally-Owned Underground Utilities. If it is determined by the engineer that adjustment of underground facilities owned by the municipality is necessary to accommodate construction, and said adjustment work is not otherwise provided for in the project plans or proposal, the contractor will be paid for such work on a force account basis, or on an agreed unit price basis.

108.18 Underground Utilities Within Municipal Corporate Limits. The contractor shall notify the local utility companies in writing of plans to start work on the project and that the utility company is requested to locate exactly any underground facility that may be affected.

108.19 Location of Underground Facilities. The contractor shall comply with provisions of the North Dakota Century Code Sections, 11-18-16 through 11-18-20.

108.20 Personal Liability of Public Officials. In carrying out any of the provisions of these specifications, or in exercising any power or authority granted to them by or within the scope of the contract, there shall be no liability upon the owner, engineer, or their authorized representatives, either personally or as officials of the owner, it being understood that in all such matters they act solely as agents and representatives of the owner.

108.21 No Waiver of Legal Rights. Upon completion of the work, the owner shall expeditiously make final inspection and notify the contractor of acceptance. Such final acceptance, however, shall not preclude or stop the owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the owner be precluded or stopped from recovering from the contractor or his surety, or both, such overpayment as it may sustain, or by failure on the part of the contractor to fulfill his obligations under the contract. A waiver on the part

of the owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach. The contractor, without prejudice to the terms of the contract, shall be liable to the owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the owner's rights under any warranty or guarantee.

108.22 Environmental Protection. The contractor shall comply with all Federal, State and local laws and regulations controlling pollution of the environment. The contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

108.23 Archaeological and Historical Findings. Unless otherwise specified in this subsection, the contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of the Interior.

The contractor shall immediately cease operations if any building, part of a building, structure, or object of potential archaeological or historical significance should be encountered in that location and notify the engineer. The engineer will immediately investigate the contractor's findings and will direct the contractor to either resume his operations or to suspend operations as directed pursuant to **Section 105.3 Suspensions of Work.**

108.24 Right of Entry. The commission shall obtain for the contractor and his appropriate subcontractors any right of entry necessary for performance of the contract. In such cases, the contractor and subcontractors shall not enter without right of entry. When exercising the right of entry, the contractor and subcontractors shall take reasonable steps to explain their presence to landowners and land occupiers.

108.25 Insurance and Indemnity. The contractor and subcontractors shall obtain and keep in force sufficient insurance coverage to protect the State, local political subdivision, all officers, agents and employees of same, and all landowners in the project area. The contractor and subcontractor agree to hold the commission harmless from and against loss, damage, injury or liability arising directly or indirectly from the negligent acts or omissions of the contractor, contractor's employees, agents, subcontractors, and their employees and agents. However, the procurement officer may require any offeror, contractor or subcontractor to carry various types of insurance in amounts as specified in the invitation for bids or request for proposals. If a suit is initiated or judgment entered against the commission, the contractor and subcontractors shall indemnify the commission for any settlements made or judgment satisfied.

108.26 Personnel.

- a. The contractor represents that he has, or will secure at his own expense, all personnel required in performing the services under this contract. Such personnel shall not be employees of the commission.

- b. All of the services required under the contract shall be performed by the contractor or under his supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under State and local law to perform such services.

108.27 Officials Not To Benefit. No members of or delegates to the Congress of the United States of America or Federal, State and local officials or employees shall be admitted to any share or part thereof or to any benefit to arise herefrom.

108.28 Interest Of Contractor. The contractor covenants that he presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. The contractor further covenants that in the performance of this contract, no person having any such interest shall be employed.

108.29 Contractor Reports. For the duration of the contract period, the contractor shall file periodic reports with the owner as required by the engineer. Unless otherwise requested by the engineer, the report shall be no longer than two typewritten letter-size pages and shall describe work progress, problems encountered and other pertinent information.

Section 109. PROSECUTION AND PROGRESS:

109.1 Subletting and Assignment of Contract Interests. The contractor may not subcontract more than fifty (50) percent of the value of the contract unless specifically approved by the commission. The contractor shall not sublet, sell, transfer, assign, or otherwise dispose of the contract or contracts or any portion thereof, or the contractor's right, title, or interest therein, without written consent of the engineer. Requests for permission to sublet, assign, or otherwise dispose of any portion of the contract shall be in writing and accompanied by a showing that the organization which will perform the work is particularly experienced and equipped for such work. The contractor shall give assurance that the minimum wage for labor as stated in this proposal shall apply to labor performed on all work sublet, assigned, or otherwise disposed of in any way. No subcontracts, or transfer of contract, shall in any case release the contractor of liability under the contract and bonds.

109.2 Notice to Proceed. The "Notice to Proceed" will be issued within thirty (30) days after contract execution. The notice will stipulate a date, not to exceed ten (10) days from date of issuance, on which it is expected the contractor will begin the construction and from which date contract time will be charged. Commencement of work by the contractor may be deemed and taken as a waiver of this notice.

109.3 Prosecution and Progress. Unless otherwise specified, the contractor shall submit his progress schedule for the engineer's approval within 10 days after the effective date of the "Notice to Proceed". The contractor's progress schedule, when approved by the engineer, may be used to establish major construction operations and to check on the progress of the work. The contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in

accordance with the plans and specifications within the time set forth in the proposal.

If the contractor falls significantly behind the submitted schedule, the contractor shall, upon the engineer's request, submit a revised schedule for completion of the work within the contract time and modify his operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the prosecution of the work be discontinued for any reason, the contractor shall notify the engineer at least 24 hours in advance of resuming operations.

109.4 Limitation of Operations. The contractor shall not open up work to the prejudice or detriment of work already started, and the engineer may require the contractor to finish a section on which work is in progress before work is started on any additional sections if the opening of such section is essential to public convenience.

No work on Saturdays, Sundays or legal holidays will be permitted unless written permission is obtained from the engineer.

109.5 Character of Workmen, Methods and Equipment. The contractor shall at all times employ sufficient labor and equipment for prosecuting the several classes of work to full completion in the manner and time required by these specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.

Any person employed by the contractor or by any subcontractor who does not perform the work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the engineer, be removed forthwith by the contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without the approval of the engineer.

Should the contractor fail to remove such person or persons required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the engineer may suspend the work by written notice until such orders are complied with.

All equipment which is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent property, or other highways will result from its use.

When the methods and equipment to be used by the contractor in accomplishing the construction are not prescribed in the contract, the contractor is free to use any methods or equipment demonstrated to the satisfaction of the engineer that will accomplish contract work in conformity with the requirements of the contract.

When the contract specifies that the construction be performed by the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the engineer. If the contractor desires to use a method or type of equipment other than those specified in the contract, the contractor may request authority from the engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed to be used and an explanation of the reasons for desiring to make the change. If approval is given, it will be on the condition that the contractor will be fully responsible for producing construction work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the engineer determines that the work produced does not meet the contract requirements, the contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining construction with the specified methods and equipment. The contractor shall remove the deficient work and replace it with work of specified quality, or take such corrective actions as the engineer may direct. No change will be made in basis of payment for the construction items involved nor in contract time as a result of authorizing a change in methods or equipment under these provisions.

109.6 Determination and Extension of Contract Time. The number of days allowed for the completion of the work included in the contract will be stated in the proposal and contract, and will be known as "contract time".

When the contract time is on a working day basis the engineer will furnish the contractor a weekly statement showing the number of days charged to the contract for the preceding week, and the number of days specified for completion of the contract. The contractor will be allowed one week in which to file a written protest setting forth in what respect said weekly statement is incorrect, otherwise the statement shall be deemed to have been accepted by the contractor as being correct. All working days elapsing between the effective dates of any orders of the engineer to suspend work and to resume work for suspensions not the fault of the contractor shall be excluded.

When the contract time is on a calendar basis it shall consist of the number of calendar days stated in the contract counting from the effective date of the engineer's order to commence work, including all Sundays, holidays and non-work days. All calendar days elapsing between the effective dates of any orders of the engineer to suspend work and to resume work for suspensions not the fault of the contractor shall be excluded.

When the contract completion time is a fixed calendar date it shall be the date on which all work on the project shall be substantially completed.

When the proposal shows an approximate completion date and a maximum number of working days, the contractor shall begin the work on or before the starting date as shown on the progress schedule. The engineer reserves the right to designate the place or places where the work will be started and the sequence in which it shall be prosecuted. If the engineer exercises this right it shall be by a written notice to the contractor.

Time will be counted from the starting date shown on the progress schedule or, if the contractor commences work before this starting date,

time will be counted from the date the contractor commences work. The time shall be counted without interruption until the contract has been completed, except as provided.

Should the contractor discontinue the prosecution of the work for any reason, the contractor shall notify the engineer at least 24 hours in advance of resuming operations. When due to circumstances beyond the control of the contractor, the contractor is unable to proceed with the work on the controlling item or items of the contract, the contractor may proceed to work on other items of the contract which are not affected by the controlling time or items and no working days will be charged. The engineer will be the judge of what are controlling items.

No working days will be charged for work done on subsidiary items of work before the contractor can proceed with the major or controlling items in the contract when such progress is beyond the contractor's control.

Saturdays, Sundays and legal holidays will not be counted as working days. The number of days for performance allowed in the contract as awarded is based on the original quantities. If satisfactory fulfillment of the contract requires performance of work in greater quantities than those set forth in the proposal, the contract time allowed for performance shall be increased on a basis commensurate with the amount and difficulty of the added work.

If the contractor finds it impossible for reasons beyond the contractor's control to complete the work within the contract time as specified or as extended in accordance with the provisions of this subsection, the contractor may, at any time prior to the expiration of the contract time as extended, make a written request to the engineer for an extension of time setting forth therein the reasons which the contractor believes will justify the granting of this request. The contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the engineer finds that the work was delayed because of conditions beyond the control and without the fault of the contractor, the time may be extended for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect the same as though it were the original time for completion.

When final acceptance has been duly made by the owner, the daily overtime charge will cease.

When delays in delivery of critical materials occur, the engineer may on proper documentation, extend the contract time to allow for such delays. Supported time credits shall be made concurrently with the delay. The amount of extension to be granted will be determined immediately following receipt of the materials.

Documentation shall include proof of the date materials were ordered and a certificate from the supplier stating that the materials were not immediately available and stating the length of time the shipment was delayed and the reason for the delay.

109.7 Failure to Complete on Time. For each calendar day or work day, as specified, that any work shall remain uncompleted after the

contract time specified for the completion of the work provided for in the contract, the sum per calendar day, or working day given in the schedule shown in this section, unless otherwise specified in the contract shall be deducted from any money due the contractor not as a penalty but as liquidated damages; provided that due account shall be taken of any adjustment of the contract time for completion of the work granted under the provisions of **Section 109.6.**

109.8 Schedule of Liquidated Damages for Each Day of Delay.

Original Contract Amount		Liquidated Damages	
From More Than	To and Including	Calendar Day	Working Day
\$ 0	\$ 25,000	\$ 50.00	\$ 75.00
25,000	50,000	100.00	150.00
50,000	100,000	150.00	200.00
100,000	500,000	225.00	300.00
500,000	1,000,000	300.00	400.00
1,000,000	2,000,000	400.00	500.00
2,000,000	Up	500.00	700.00

When the contract time is on the calendar day basis or a definite date for completion has been specified the schedule for calendar days shall be used and liquidated damages shall be charged for each calendar day. When the contract time is on a working day basis the schedule for working days shall be used and liquidated damages shall be charged for each working day until the work is completed.

Permitting the contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the owner or any of its rights under the contract.

The owner may waive such portions of the liquidated damages as may accrue after the work is substantially complete and in condition for safe and convenient use by the public.

109.9 Termination For Default; Damages For Delay; Time Extensions.

- a. If the contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will ensure its completion within the time specified in the contract, or any extension thereof, or fails to complete said work within such time, the commission may, by written notice to the contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event, the commission may take over the work and prosecute the same to completion, by contract or otherwise, and may take possession of and utilize in completing the work such materials, appliances and plant as may be on the site of the work and necessary therefore. Whether or not the contractor's right to proceed with the work is terminated, he and his sureties, if

any, shall be liable for any damage to the commission resulting from his refusal or failure to complete the work within the specified time.

- b. If fixed and agreed liquidated damages are provided in the contract and if the commission so terminates the contractor's right to proceed, the resulting damage will consist of the liquidated damages. The resulting damages shall be the liquidated damages for the reasonable time required for final completion of the work together with any increased costs occasioned the commission in completing the work.
- c. If fixed and agreed liquidated damages are provided in the contract and if the commission does not so terminate the contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.
- d. The contractor's right to proceed shall not be so terminated nor the contractor charged with resulting damage if:
 - 1) The delay in the completion of the work arises from the causes other than normal weather beyond the control and without the fault or negligence of the contractor, including but not restricted to, acts of nature, acts of a public enemy, acts of the commission in either its sovereign or contractual capacity, acts of another contractor in the performance of a contract with the commission, fires, floods epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from causes other than normal weather beyond the control and without the fault or negligence of both the contractor and such subcontractors or supplies, and
 - 2) The contractor, within 10 days from the beginning of any such delay (unless the commission grants a further period of time before the date of final payment under the contract), shall notify the commission in writing of the causes of delay. The commission shall ascertain the facts and the extent of the delay and extend the time for completing the work when in its judgment, the findings of fact justify such an extension, and its findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in the "Remedies" clause of this contract.
- e. If, after notice of termination of the contractor's right to proceed under the provisions of this clause, it is determined for any reason that the contractor was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall, if the contract contains a clause providing for termination for convenience of the commission, be the same as if the notice of termination had been issued pursuant to such clause. If, in the foregoing circumstances, this contract does not contain a clause providing for termination for convenience of the commission, the contract shall be equitably adjusted to compensate for such termination and the contract modified accordingly; failure to agree to any such adjustment shall be subject to the "Remedies" clause of this contract.

- f. The rights and remedies of the commission provided in this clause are in addition to any other rights and remedies provided by law or under this contract.
- g. As used in paragraph "d", subparagraph "1)" of this clause, the term "subcontractors or supplies" means subcontractors or suppliers at any tier.

109.10 Termination For Convenience.

- a. The performance of work under this contract may be terminated by the commission in accordance with this clause in whole, or in part, whenever the commission shall determine that such termination is in the best interest of the State. Any such termination shall be effected by delivery to the contractor of a notice of termination specifying the extent to which performance of work under this contract is terminated, and the date upon which such termination becomes effective.
- b. After receipt of a notice of termination, and except as otherwise directed by the commission, the contractor shall:
 - 1) Stop work under the contract on the date and to the extent specified in the notice of termination;
 - 2) Place no further orders or subcontracts for materials, services or facilities except as may be necessary for completion of such portion of the work under the contract as is not terminated;
 - 3) Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the notice of termination.
 - 4) Assign to the commission, in the manner, at the times, and to the extent directed by the commission, all of the rights, title and interest of the contractor under the orders and subcontracts so terminated, in which case the commission shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;
 - 5) Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the commission to the extent it may require, which approval or ratification shall be final for all the purposes of this clause;
 - 6) Transfer title to the commission, and deliver in the manner, at the times, and to the extent, if any, directed by the commission---
 - a) The fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a part of, or acquired in connection with the performance of, the work terminated by the notice of termination; and
 - b) The completed or partially completed plans, drawings, information and other property which, if the contract had

been completed, would have been required to be furnished to the commission.

7) Use his best efforts to sell, in the manner, at the time, to the extent and at the price or prices directed or authorized by the commission, any property of the types referred to in subparagraph "6" above provided, however, that the contractor:

a) Shall not be required to extend credit to any purchaser; and

b) May acquire any such property under the conditions prescribed and at a price or prices approved by the commission; and provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the commission to the contractor under this contract or shall otherwise be credited to the price or cost of the work covered by this contract or paid in such manner as the commission may direct;

8) Complete performance of such part of the work as shall not have been terminated by the notice of termination; and

9) Take such action as may be necessary, or as the commission may direct, for the protection and preservation of the property related to this contract which is in the possession of the contractor and in which the commission has or may acquire an interest.

c. After receipt of a notice of termination, the contractor shall submit to the commission his termination claim, in the form and with the certification prescribed by the commission. Such claim shall be submitted promptly but in no event later than one year from the effective date of termination, unless one or more extensions in writing are granted by the commission upon request of the contractor made in writing within such one-year period or authorized extension thereof. However, if the commission determines that the facts justify such action, it may receive and act upon any such termination claim at any time after such one-year period or extension thereof. Upon failure of the contractor to submit his termination claim within the time allowed, the commission may determine, on the basis of information available to it, the amount, if any, due to the contractor by reason of the termination and shall thereupon pay to the contractor the amount so determined.

d. Subject to the provisions of paragraph "c" of this clause, the contractor and the commission may agree upon the whole or any part of the amount or amounts to be paid to the contractor by reason of the total or partial termination of work pursuant to this clause, which amount or amounts may include a reasonable allowance for profit on work done; provided that such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. The contract shall be amended accordingly, and the contractor shall be paid the agreed amount. Nothing in paragraph "e" of this clause, prescribing

the amount to be paid to the contractor in the event of the failure of the contractor and the commission to agree upon the whole amount to be paid to the contractor by reason of the termination of work pursuant to this clause, shall be deemed to limit, restrict or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the contractor pursuant to this paragraph, i.e., paragraph "d".

- e. In the event of the failure of the contractor and the commission to agree as provided in paragraph "d" upon the whole amount to be paid to the contractor by reason of the termination of work pursuant to this clause, the commission shall determine, on the basis of information available to it, the amount, if any, due to the contractor by reason of the termination and shall pay to the contractor the amounts determined as follows:

1) With respect to all contract work performed prior to the effective date of the notice of termination, the total (without duplication of any items) of---

a) The cost of such work;

b) The cost of settling and paying claims arising out of the termination of work under subcontracts or orders as provided in paragraph "b", subparagraph "5" of this clause, exclusive of the amounts paid or payable on account of supplies or materials delivered or services furnished by the subcontractor prior to the effective date of the notice of termination of work under this contract, which amounts shall be included in the cost on account of which payment is made under this subparagraph, part "a" above; and

c) A sum, as profit on part "a" above, determined by the commission to be fair and reasonable; provided, however, that if it appears that the contractor would have sustained a loss on the entire contract had it been completed, no profit shall be included or allowed under this part "c" and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

2) The reasonable cost of the preservation and protection of property incurred pursuant to paragraph "b", subparagraph "9" and any other reasonable cost incidental to termination of work under this contract, including expense incidental to the determination of the amount due to the contractor as the result of the termination of work under this contract.

The total sum to be paid to the contractor under subparagraph "1" above shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. Except for normal spoilage, and except to the extent that the commission shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the contractor under subparagraph "1" above, the fair value, as determined by the commission of property which is destroyed, lost, stolen or damaged so as to become undeliverable to

the commission or to a buyer pursuant to paragraph "b", subparagraph "7".

- f. The contractor shall have the right to dispute under the "Remedies" clause of this contract any determination made by the commission under paragraph "c" or "e" above, except that, if the contractor has failed to submit his claim within the time provided in paragraph "c" above and has failed to request extension of such time, he shall have no such right of appeal. In any case where the commission has made a determination of the amount due under paragraph "c" or "e" above, the commission shall pay to the contractor the following:
 - 1) If there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the commission; or
 - 2) If a "Remedies" proceeding is initiated, the amount finally determined in such "Remedies" proceeding.
- g. In arriving at the amount due the contractor under this clause, there shall be deducted:
 - 1) All unliquidated advance or other payments on account thereto made to the contractor, applicable to the terminated portion of this contract;
 - 2) Any claim which the commission may have against the contractor in connection with this contract, and
 - 3) The agreed price for, or the proceeds of sale of, any materials, supply or other things kept by the contractor or sold, pursuant to the provisions of this clause, and not otherwise recovered by or credited to the commission.
- h. If the termination hereunder be partial, prior to the settlement of the terminated portion of this contract, the contractor may file with the commission a request in writing for an equitable adjustment of the price or prices specified in the contract relating to the continued portion of the contract (the portion not terminated by the notice of termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices; however, nothing contained herein shall limit the right of the commission and the contractor to agree upon the amount or amounts to be paid to the contractor for the completion of the continued portion of the contract when said contract does not contain an established contract price for such continued portion.

109.11 Termination for Lack of Funding or Authority. The Commission may terminate this contract effective upon delivery of written notice to the contractor, or on any later date stated in the notice, under any of the following conditions:

- a. If funding from federal, state, or other sources is not obtained and continued at levels sufficient to allow for purchase of the services or supplies in the indicated quantities or term. The contract may be modified by agreement of the parties in writing to accommodate a reduction in funds.

- b. If federal or state laws or rules are modified or interpreted in such a way that the services are no longer allowable or appropriate for purchase under this contract or are no longer eligible for the funding proposed for payments authorized by this contract.
- c. If any license, permit or certificate required by law or rule, or by the terms of this contract, is for any reason denied, revoked, suspended or not renewed.

Any termination of this contract under this subsection shall be without prejudice to any obligations or liabilities of either party already accrued prior to termination.

109.12 Unsatisfactory Progress. If during construction the contractor is not making satisfactory progress in accordance with the proposed progress schedule submitted, the engineer may arrange a meeting of the contractor, the contractor's surety and authorized representative of the owner to discuss the work, devise and arrange certain steps and procedures to be followed to restore the progress of the work to a satisfactory status in conformance with the previously submitted schedule.

Section 110. MEASUREMENT AND PAYMENT:

110.1 Measurement of Quantities. All work completed under the contract will be measured by the engineer according to United States standard measure. The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the engineer.

Miscellaneous items which are placed on slopes and are measured by the square yard will be measured on the slope.

All items which are measured by the linear foot will be measured parallel to the base or foundation upon which such items are placed, unless otherwise shown on the plans.

In computing volumes of excavation the average end area method or other acceptable methods will be used.

The term "ton" will mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are measured or proportioned by weight shall be weighed on accurate, approved scales by competent qualified personnel at locations designated by the engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty at such times as

the engineer directs, and each truck shall bear a plainly legible identification mark.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity and all loads shall be leveled when the vehicles arrive at the point of delivery.

When requested by the contractor and approved by the engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Cement will be measured by the ton or hundredweight. The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

110.2 Scales.

- a. **General.** Each scale used to determine pay quantities shall be subject to approval by the Department of Weights and Measures of the North Dakota Public Service Commission before it may be used.

Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the contractor, or be certified permanently installed commercial scales.

- b. **Accuracy.** The scale shall be maintained accurate within a tolerance of ± 1 percent of the correct weight of the applied load.
- c. **Alterations.** The scale shall not be altered from the manufacturer's original design unless such alterations are approved by the Department of Weights and Measures, and specifically shall not be altered to weigh loads in excess of the rated capacity of the scale.
- d. **Testing.** Prior to using the scale at each setup, the contractor shall arrange to have the scale tested by the Department of Weights and Measures, except that the engineer may, in writing, waive this requirement if the scale has been certified by that agency within the previous 6 months and if the scale is within the required accuracy when tested by the engineer. The contractor shall provide at least 1000 pounds of test weights to test the scale to its maximum capacity in increments. Such weights shall be made of metal not easily altered in size or weight, that have been certified as to weight

of each test weight by the Department of Weights and Measures, and stamped or permanently marked with its certified weight.

The contractor shall, when directed by the engineer, make weight comparisons with other permanently located scales that have been certified by the Department of Weights and Measures. These weight comparisons shall be for the purpose of providing information on the performance of the contractor's scale and shall not be used as a basis for adjusting his scale.

The contractor shall bear any expense and fees for having the scales tested and certified by the Department of Weights and Measures and for making weight comparisons on other scales.

110.3 Equipment Rental. Rental of equipment will be measured by hours of actual working time and necessary traveling time of equipment within the limits of the work. Rental of special equipment ordered by the engineer in connection with changed work will be measured as stated in the change order or contract amendment authorizing such changed work or as provided in Section 110.6 **Force Account.**

110.4 Scope of Payment. The contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials and for performing all work under the contract in a complete and acceptable manner and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of Section 108.21.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions. If calculated final quantities are less than estimated quantities for which payment has been made, the contractor shall reimburse the owner the over payment in full within five(5) days from receipt of notice of the amount due. Failure to reimburse the owner in full within the time specified herein may result in the imposition of interest charges, penalties and other actions or remedies provided under the laws of the State.

If the "Basis of Payment" clause in the specifications relating to any unit price in the bid schedule requires that the said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the specifications.

110.5 Compensation for Altered Quantities. When the accepted quantities of work vary from the quantities on the bid schedule, the contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract unit prices for the accepted quantities of work done. No allowance except as provided in **Sections 105.2, 105.3, 105.4, 105.5, and 105.6** will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits

suffered or claimed by the contractor resulting either directly from such alterations or indirectly from unbalanced allocation amount, the contract items, or from any other cause.

110.6 Force Account. Increased work performed pursuant to written change order will be compensated at the contract prices or agreed prices specified in the change order. If agreement cannot be reached to pay for the increased work, the commission may require the contractor to perform the work on a force account basis. Force account payment shall be calculated as follows:

- a. **Labor.** For all laborers and foremen in direct charge of the specific operations, the contractor will receive the actual rate of wage paid for each hour that the laborers and foremen are actually engaged in the force account work, but not to exceed any rate of wage agreed to prior to beginning the 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 will be paid an amount equal to 20 percent of the sum of the above items.

- b. **Bond, Insurance, and Taxes.** For premiums paid on additional bond, property damage, liability, workmen's compensation and unemployment insurance, and for social security taxes on the force account wages, the contractor will receive the actual cost, to which sum six (6) percent will be added. The contractor shall furnish satisfactory evidence of the premium rates.
- c. **Materials.** For all materials accepted by the engineer and permanently installed into the work, the contractor will receive the actual cost (including transportation charges paid by the contractor) of the material delivered, to which a sum equal to 15 percent will be added. For materials used in connection with (but not entered permanently into) the work, a reasonable depreciation will be allowed.
- d. **Equipment.** For the use of authorized equipment and additional 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 publication entitled RENTAL RATES FOR EQUIPMENT AND TRAFFIC CONTROL DEVICES. No percentage will be added to these rates. 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 50 hours per week, standby time, and equipment transportation charges will be as set forth in the Department of Transportation's rental rate publication.
- e. **Miscellaneous.** No additional allowance will be made for general superintendence, the use of small tools not listed in the rental rate schedule, or other costs for which no specific allowance has been 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 of the first \$5,000 plus three percent of the balance in excess of \$5,000.
- g. **Authority of Engineer.** The engineer has authority to require alterations in the equipment and labor 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, each day, compare and reconcile the records of labor, materials, and equipment used in the force account work.
- i. **Statements.** The contractor shall furnish the engineer with duplicate itemized statements of the cost for the force account work, detailed as follows:
 - 1) Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman.
 - 2) Designation, date, daily hours, total hours, rental rate, and extension for each unit of equipment.
 - 3) Quantities of materials, prices, extensions, and transportation costs paid by the contractor.

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. After receipt of the statements and invoices, the engineer will prepare a summary statement of the force account work which will be submitted to the contractor for verification and signature. The value of the force account work covered by approved statements will be included in progress estimates.

- j. When specified by written change order the compensation provided by the foregoing provisions of Section 110.6 shall be accepted by the contractor as payment in full for work performed on a force account basis.

110.7 Invoices and Payment. Partial payments will be made at least once each month as the work progresses. Payments may be made

twice a month if in the judgment of the engineer the amount of work performed is sufficient to warrant such payment. Said payments will be based on estimates prepared by the project manager engineer and reviewed by the contractor of the value of the work performed and materials complete in place in accordance with the contract and for materials delivered in accordance with **Section 110.8**.

Unless otherwise specified by the procurement officer or project manager, an estimate of project completion shall be calculated monthly in a reasonable and detailed form. Based on this monthly estimate of project completion, payment shall be made to the contractor for services rendered, work done or material furnished as follows. At least once each calendar month during the continuance of a project, the project manager and procurement officer shall meet and consider the estimate of project completion calculated by the project manager. Payment shall be made based on the amount of estimated value of the services, labor and material furnished under the contract, and the material upon the site, if any, for use in construction, subject to retentions as follows: ten (10) percent of each estimate until the project is fifty (50) percent completed, with no further retainage on estimates during the continuance of the contract.

However, unless reasonably excusable, any deliverable items shall be provided prior to payment for the period during which the item is deliverable. The procurement officer and project manager shall pay the amount retained in such amounts and at such times as are approved by the commission, with final payment immediately following completion, close-out and acceptance of the project. It is understood and agreed that the contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or contract amendments, except when such excess quantities have been determined by the engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind the owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in **Section 110.9, Acceptance and Final Payment**.

110.8 Payment for Materials on Hand. Partial payments may be made to the extent of the delivered costs of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the project or at other sites in the vicinity that are acceptable to the owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the engineer at or on an approved site.
- b. The contractor has furnished the engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The contractor has furnished the engineer with satisfactory evidence that the material and transportation costs have been paid.

- d. The contractor has furnished the owner with legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.
- e. The contractor has furnished the owner evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at anytime prior to use in the work.

It is understood and agreed that the transfer of title and the owner's payment for such stored or stockpiled materials shall in no way relieve the contractor of his responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

110.9 Acceptance and Final Payment. When the contract work has been accepted in accordance with the requirements of **Section 106.16 Final Acceptance**, the engineer will prepare the final estimate of the items of work actually performed. The contractor shall approve the engineer's final estimate or advise the engineer of his objection to the final estimate which is based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or contract amendment. The contractor and engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the contractor's receipt of the engineer's final estimate. If, after such 30-day period, a dispute still exists, the contractor may approve the engineer's estimate under protest of the quantities in dispute and such disputed quantities may be considered by the owner as a claim.

After the contractor has approved, or approved under protest, the engineer's final estimate, final payment will be recommended to the owner based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

Section 111. REMEDIES:

111.1 Arbitration and North Dakota Courts. Except as otherwise provided in this contract, all claims, counter-claims, disputes and other matters in question between the commission and the contractor arising out of or relating to this agreement or the breach thereof will be decided by arbitration if the parties hereto mutually agree, or in a court of competent jurisdiction within North Dakota.

Section 112. VALUE ENGINEERING INCENTIVE:

112.1 Value engineering incentive applies to those cost reduction proposals initiated and developed by the contractor for changing the drawings, designs, specifications or other requirements of the contract. It does not apply to any such proposal unless it is identified by the contractor at the time of submission to the commission as a value engineering incentive proposal.

The cost reduction proposals contemplated are those that:

- a. Would require a written change order to this contract; and
- b. Would result in savings to the commission by providing less costly items or methods than those specified in the contract without impairing any of their essential functions and characteristics such as service life, reliability, economy of operation, ease of maintenance and necessary standardized features.

112.2 Cost reduction proposals shall be processed in the same manner as prescribed for any proposal which would require a written change order. As a minimum the following written information shall be submitted by the contractor with each proposal.

- a. A statement that this proposal is submitted as a value engineering proposal.
- b. A description of the proposal.
- c. An itemization of the requirements of the contract which would require a change and a recommendation of how to make each change.
- d. An estimate of the reduction in performance costs that will result from adoption of the proposal.
- e. A prediction of any effects the proposed change would have on other costs to the commission.
- f. A statement of the time by which the change order must be issued to obtain the maximum cost reduction during the remainder of the contract and the reason for this time schedule.
- g. The dates of any previous submissions of the proposals, including contract numbers and the actions of the commission.
- h. A statement as to the effect the proposal would have on the time for completion of the project.

112.3 Neither the commission nor the engineer shall be liable for any delay in acting upon any proposal submitted. Upon recommendation by the engineer, the commission shall determine whether to accept or reject, in whole or in part, any cost reduction proposal. The decision of the commission as to the acceptance of any such proposal shall be final. The

commission may accept, in whole or in part, any cost reduction proposal submitted by issuing a written change order.

112.4 If a cost reduction proposal is accepted, an equitable price adjustment in the contract price and in any other affected provisions of this contract shall be made in accordance with this specification or other applicable provisions in this contract. The equitable adjustment shall be established by determining the effect of the proposal on the contractor's cost of performance. When the cost of performance of this contract is decreased as the result of the change, the contract price shall be reduced by the following amount: the total estimated decrease in the contractor's cost of performance less 70 percent of the difference between the amount of such total estimated decrease and any net increase of application of the cost reduction proposal to this contract. If the change order results in an increase in the cost of performing the contract, this specification shall not apply and the increase shall be determined in accordance with Section 105.

112.5 The substitution of one bid item for another bid item, resulting in a decrease in the contract amount, will not be considered as a saving under value engineering incentive. When any change involves the increase of one bid item and the decrease of another bid item, the change order will be made in conformance with the applicable clauses of **Section 105**.

112.6 The contractor may restrict the commission's right to use or disclose the information submitted with a value engineering proposal for any other purpose. Such restriction must be in writing and be submitted with the proposal.

112.7 If the proposal is accepted, this restriction shall be void and the commission may use, duplicate, or disclose in whole or in part any data necessary to utilize such proposal.

112.8 Before final acceptance, the project site, borrow pits, and all areas occupied by the contractor in connection with the work shall be cleaned of all rubbish, excess materials, temporary structures, and equipment; and all parts of the work shall be left in an acceptable condition.

Section 200

EARTHWORK

Section 201. CLEARING, GRUBBING AND TOPSOIL SALVAGE:

201.1 Scope. This work shall consist of clearing, grubbing, removing and disposing of all vegetation and debris within the areas shown on the project plans or as designated by the engineer, except such objects as are designated to remain or are to be removed in accordance with other sections of these specifications. This work shall also include the preservation from injury or defacement of all vegetation and objects designated to remain. This work shall also include the removal, salvaging, stockpiling and spreading of all available topsoil. Haulroad and access road corridors may be required to be stripped of topsoil as directed by the engineer. The depth of topsoil removal shall be as directed by the engineer in the field.

201.2 Construction Requirements. The engineer will establish project boundaries and designate all trees, shrubs, plants and other things to remain. The contractor shall preserve all things designated to remain. Paint required for cut or scarred surfaces of trees or shrubs selected for retention shall be an approved asphaltum base paint prepared especially for tree surgery.

The engineer will establish in the field the boundaries of areas to be stripped of topsoil. When the area to be stripped of topsoil encompasses property of different surface ownership, topsoil shall be stripped, stockpiled and respread separately according to surface ownership. The locations and dimensions of topsoil stockpiles shall be designated by the engineer.

Prior to beginning the respreading of topsoil the contractor shall receive from the engineer final grading approval and express permission to begin topsoil respreading. Prior to the beginning of respreading of topsoil, the contractor shall establish a grid of stakes spaced 100 feet apart to direct equipment operators in the uniform redistribution of topsoil. These grid stakes shall indicate the thickness of topsoil to be respread. Topsoil respread thickness shall be determined by the engineer.

All surface objects and all trees, shrubs, brush, stumps, roots, and all other woody or vegetative growth and

perishable items, not designated to remain, shall be removed as directed by the engineer. When authorized, the contractor may leave non-perishable solid objects provided they do not extend more than six inches above the ground line.

If perishable material is burned, it shall be burned under the constant care of competent watchmen at such times and in such manner that the surrounding vegetation, other adjacent property, or anything designated to remain within the project boundaries will not be jeopardized. Burning shall be done in accordance with applicable laws and ordinances.

Perishable materials and debris which cannot be burned or buried on the project site, must be removed from the construction area and disposed by the contractor in a manner approved by the project engineer. It shall be the contractor's responsibility to secure written permission from the owner of the selected disposal site, and the cost involved shall be considered incidental to other contract items. The contractor shall provide the engineer with a copy of written permission given by the owner.

201.3 Measurement and Payment.

201.3.1 Measurement of Clearing and Grubbing. Measurement and payment for cleaning and grubbing will be done by one of the following alternate methods:

- a. **Area Basis.** The work to be paid for will be the number of acres and fractions thereof acceptably cleared and/or grubbed within the limits shown on the plans or staked for clearing and grubbing by the engineer. The quantities determined will be paid for at the contract unit price bid per acre.
- b. **Lump Sum Basis.** When the bid schedule contains a clearing and grubbing lump sum item, no measurement of area will be made. The lump sum price so bid will be paid and shall be full compensation for the clearing and grubbing within the limits described or shown on the contract. Any change from established limits when directed by the engineer will be adjusted for total compensation on a pro rata basis consistent with areas that have been added or deleted.

201.3.2 Measurement for Topsoil. Measurement for topsoil salvage, stockpile and respreading shall be accomplished by field measurement of topsoil stockpile volumes in cubic yards. Payment shall be based on measured stockpile volumes and the contract unit price per cubic yard.

201.4 Exclusions. When the bid schedule does not contain an estimated quantity or a lump sum item for clearing and grubbing, the work will not be paid for directly but will be considered as a subsidiary obligation of the contractor under the contract items.

Section 202. EARTHFILL:

202.1 Scope. This work shall consist of constructing required embankments, including preparation of the areas upon which they are to be placed; the construction of dikes and levees within or outside the project area; the placing and compacting of approved material within areas where unsuitable material has been removed; and the placing and compacting of material in holes, pits and other depressions within the construction area.

202.2 Definitions.

Embankment. The earth and/or rock fill portion of the permanent work such as an earth dam, dike or levee.

Backfill. The refill of excavated areas. Backfill may or may not be around or adjacent to a structure which cannot be placed until the structure is completed or until a specified time has elapsed after concrete has been placed.

Foundation. The prepared or natural surface upon which the embankment or earthfill is to be placed.

Compaction. A mechanical process whereby the density of the soil is increased.

Optimum Moisture Content. The moisture content at which a specified amount of compaction effort will produce the maximum density of the soil.

Maximum Dry Density. The dry density of a soil obtained by a specified amount of compaction effort at the optimum moisture content.

202.3 General Provisions.

202.3.1 Lines and Grades. All classes of fills shall be constructed to the lines, grades and cross sections indicated on the contract drawings unless otherwise directed by the engineer. All finished surfaces shall be generally smooth and pleasing in appearance.

202.3.2 Conduct of Work. The contractor shall maintain and protect all fill in a satisfactory condition at all times until final completion of all work under the contract. Any approved fill material which is rendered unsuitable after being placed in the fill, and before final acceptance of the work, shall be replaced by the contractor in a satisfactory manner and no additional payment will be made therefore. The contractor may be required to remove, at his own expense, any fill material placed outside of the prescribed lines.

Access and haul roads shall be located and constructed as approved by the engineer. They shall be constructed to be free draining and shall be maintained in good condition throughout the contract period, unless otherwise directed by the engineer. Material obtained from designated borrow areas to construct access and haulroads must be reloaded and placed within the permanent works. No additional payment will be made for such reloading and placement.

202.4 Classification.

202.4.1 General. All authorized earthfill will be classified as:
Compacted Fill
Semi-Compacted Fill
Uncompacted Fill
Backfill

Classification will be shown on the drawings and/or specified in the bid schedule or ordered in writing by the engineer under one of the classifications.

202.4.2 Compacted Fill. Compacted fill shall consist of and include all fill except backfill, deposited in layers and compacted by rolling and tamping.

202.4.3 Semi-Compacted Fill. Semi-compacted fill shall consist of and include all fill deposited in layers and compacted by one or a combination of the following methods:

- a. Controlled movement of the hauling and spreading equipment over the area so that the entire surface area of each lift will be traversed by not less than one tread tract of the loaded earthmoving equipment traveling in a direction parallel to the axis of the fill.
- b. Each lift shall be compacted not less than two (2) complete passes of sheepsfoot tamping roller exerting minimum pressure of one hundred (100) pounds per square inch.

202.4.4 Uncompacted Fill. Uncompacted fill shall consist and include all fill, except backfill, deposited in gullies, depressions, and similar locations, without regard to selection of material, or spreading, or compaction, so long as the final grade of the filled area is left in a reasonable smooth condition.

202.4.5 Backfill. Backfill shall consist of and include the refilling of excavated areas around and/or adjacent to conduits and/or other structures and compacting such fill to the required density.

202.5 Foundation Preparation.

202.5.1 Compacted Fill. After completion of all required clearing and grubbing operations, removal of topsoil and unsuitable foundation material, the foundation area shall be loosened thoroughly by scarifying or plowing to a minimum depth of six (6) inches, except in areas where this requirement is waived by the engineer. After removal of roots or other debris turned up in the process of loosening, the entire surface area of such section of embankment foundation shall be compacted to the same density as hereinafter specified for the type of fill to be placed immediately above the foundation.

No separate payment will be made for preparing the foundation area, the entire cost thereof to be included in the contract price for the specified fill.

202.5.2 Semi-Compacted Fill. After completion of all required clearing and grubbing operations, the entire area to be occupied by the fill shall be stripped to a sufficient depth to remove all materials not suitable for the foundation, and this area roughened by plowing or scarifying. Such material will include grass, weeds, underbrush, and other matter that would be objectionable in the foundation for the fill. No separate payment will be made for foundation preparation under this classification, the entire cost thereof to be included in the contract price for the specified fill.

202.5.3 Uncompacted Fill. Existing trees, brush, down timber and other obstructions to placing the fill shall be removed or knocked down and spread in these areas as approved by the engineer. All foundation

preparation work shall be considered as subsidiary work to the placement of the fill.

202.6 Materials.

202.6.1 General. The suitability of materials and their disposition in the fill will at all times be subject to approval by the engineer. Mixing of materials during the excavation process at the borrow source may be required. Pockets of material of uniform particle size, such as sand, when encountered, shall be proportionally mixed with other material to obtain an acceptable fill material or shall be wasted when so directed by the engineer.

All fill materials shall be obtained from required excavations, designated borrow areas or other approved borrow sources.

202.6.2 Compacted Fill. Soil materials for compacted fill shall be free of sod, brush, roots and other perishable materials and stones having a maximum dimension of more than six (6) inches. Should any of the above undesirable material be hauled onto the fill, it shall be removed prior to compaction operations.

202.6.3 Semi-Compacted Fill. The materials for semi-compacted fill shall meet the same requirements as for compacted fill.

202.6.4 Uncompacted Fill. Soil materials for uncompacted fill may contain roots, brush, stones and other types of material. The amount and placement location of such material shall at all times be subject to approval by the engineer.

202.6.5 Backfill. Backfill material shall be of the type and quality conforming to that specified for the adjoining fill material.

202.7 Placement and Spreading.

202.7.1 General. No fill material shall be placed until the foundation, subgrade, and/or cutoff trench areas have been inspected and approved by the engineer. The contractor shall keep the foundation, subgrade, and/or cutoff trench free from water or unacceptable materials after filling operations have started. During construction, the top surface of all earthfills, shall be kept crowned with grades of not less than two (2) percent in order for the fill will drain freely towards the slopes.

202.7.2 Compacted Fill. The distribution of materials throughout a fill shall be such that there will be no lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from the surrounding material in the fill. After placement, the fill materials will be spread by motor grader or other approved equipment. The thickness of the layers before compaction with rollers shall not be more than eight (8) inches. No material placed in the fill by dumping in piles or windrow shall be incorporated in a layer in that position, but shall be moved and spread by blading or similar approved methods. Compacted fill shall not be placed against a slope steeper than two (2) horizontal to one (1) vertical unless otherwise shown on the plans or approved by the engineer.

202.7.3 Semi-Compacted Fill. The distribution of materials throughout a fill shall be such that there will be no lenses, pockets, streaks, or layers of material differing substantially in texture and gradation from the surrounding material in the fill. The fill material will be placed and spread over the fill in layers not over twelve (12) inches thick.

202.7.4 Uncompacted Fill. Uncompacted fill material may be placed in any conventional manner. All roots, brush, stumps, stones and similar materials shall be so placed that they will not cause voids in the fill and shall be placed a minimum of two (2) feet below the elevation of the finished grade. The final grade of the filled area shall be reasonably smooth and blend as nearly as practicable with the surrounding topography.

202.8 Moisture Control.

202.8.1 Compacted Fill. During the compaction operations the abutments at the level of the fill surface, the surface of the fill and the materials being placed shall be maintained within the moisture content range required to permit proper compaction to the specified density with the equipment used.

202.8.2 Semi-Compacted Fill. Semi-compacted fill material shall have a moisture content such that when kneaded in the hand it will form a ball which does not readily separate when struck sharply with a pencil or which refuses to separate when pressed between the hands. The contractor may be required to wet or dry the material to obtain the above specified moisture content.

202.8.3 Uncompacted Fill. No limit will be placed on the moisture content of uncompacted fill materials except in the event the water content causes deformation of the fill.

202.9 Compaction.

202.9.1 Equipment. The contractor shall furnish and operate the necessary types and kinds of equipment to perform the operations required to obtain the compactions specified herein for the classes of fill included in the contract. The equipment shall be in good working order and shall be of the capacity, weight and power necessary to perform the required operations in a workman-like manner and produce satisfactory progress in construction.

202.9.2 Compacted Fill. After each layer of fill material has been placed, spread and contains the required moisture content specified in **202.8.1**, it shall be compacted to obtain the density specified by the engineer.

202.9.3 Semi-Compacted Fill. No density requirement is specified for this type of fill.

202.9.4 Uncompacted Fill. No compaction is required other than that obtained by placing, spreading, and dressing the surface area.

202.10 Measurement and Payment. Unless otherwise specified, earthfill material shall be measured in its original position by cross-sectioning the required excavations and borrow areas and authorized excavation of rock, muck, or other unsuitable material. Volumes will be computed from the cross-section measurements by the average end area method, except in small isolated areas where other measurements will be permitted. Payment will be made at the contract unit price for the designated class of excavation.

202.11 Exclusions. When the bid proposal does not contain an estimated quantity and unit price for embankment, the work will not be paid for directly but will be included in the contract prices for the various classification of excavation; or if there is also no estimated quantity and unit price for excavating the work will be considered as a subsidiary obligation of the contractor for the performance of the various contract items.

Section 203. EXCAVATION:

203.1 Scope. This specification covers the required excavation, removal and proper utilization or disposal of all excavated materials, and the shaping and finishing of all excavation work to the required lines, grades and cross-sections.

203.2 Classification.

203.2.1 General. All excavation to be paid for will be shown on the drawings under one of the following classifications:

- Excavation --- Common
- Excavation --- Rock

When, in the opinion of the contractor, materials encountered are other than as shown on the drawings, he shall notify the engineer in writing. He shall not remove any such material until the engineer has examined and classified such excavation. Objections, on the part of the contractor, to the engineer's classification shall be filed, in writing, within 30 calendar days of receipt of notice in writing from the engineer of his classification of such excavation. Failure on the part of the contractor to file such objections will be considered his concurrence with the engineer's classification.

203.2.2 Excavation: Common. Common excavation shall consist and include all grass, sod, earth, clay, sand, silt, gravel, and other materials that can be removed by hand, or common earthmoving equipment.

203.2.3 Excavation: Rock. Rock excavation shall consist of and include all excavation which, in the opinion of the engineer, cannot be removed by the methods described herein before for common excavation, and shall also include all boulders and detached rock one (1) cubic yard or greater in volume. In areas where blasting is not permitted, materials of rock character which require the use of power operated drills for removal will be classified as rock excavation.

203.3 Types of Excavation.

203.3.1 General. The types of excavation herein specified indicate the general character and location of the excavation work to be performed.

The types of excavation covered herein are:

Cutoff Trench Excavation
Stream Channel Clean-out Excavation
Channel Excavation
Borrow Excavation

All excavations shall be completed to the lines and grades shown on the drawing or as directed by the engineer. Unauthorized excavation beyond such limits and the backfill required to replace unauthorized excavation will not be paid for and the cost shall be borne by the contractor.

No backfill shall be placed in an excavated area until the excavation has been approved by the engineer.

The types of excavation that are considered subsidiaries of other items shall be so specified herein.

203.3.2 Cutoff Trench. Cutoff trench excavation shall consist of and include the removal of all materials encountered or involved in such excavation at the location shown on the drawing or as directed by the engineer. The final depths and extent of the trench will be determined by the nature of the material revealed in the trench and by borings and/or surroundings. The contractor shall not be entitled to an increase in the unit price for cutoff trench excavation because of changes in depth or extent of excavation.

203.3.3 Stream Channel Cleanout. Stream channel cleanout excavation shall consist of the required excavation for the removal from the stream channel and banks within the embankment area, all unsuitable materials and sloping the channel banks to a slope not steeper than two (2) horizontal to one (1) vertical. The unsuitable materials to be removed include sand, silt, muck, gravel, stones, boulders, roots, stumps, logs, debris, vegetable matter and all other materials that would interfere with the desired compaction or bonding of materials in the backfill.

203.3.4 Channel. Channel excavation shall consist of the required excavation for all channels and constructing, shaping and finishing all earthwork involved for channels outside the embankment limits.

Overcutting will be allowed six (6) inches below grade, but no payment will be made for the yardage resulting from overcutting.

203.3.5 Borrow. Borrow excavation shall consist of and include the required excavation and proper utilization of approved materials obtained from areas such as cutoff trench, and designated borrow areas.

The control of excavation in any borrow area and the selection of materials therefrom shall at all times be as directed by the engineer. On completion

of excavation, all borrow pits shall be left in a neat and sightly condition. Unless otherwise approved by the engineer, all borrow pits shall be so graded and dressed that water will readily drain therefrom, and away from all embankments, berms and structures. When shown on the drawings, terraces, or diversions shall be constructed to protect the slopes of the borrow areas from erosion and shall be considered a subsidiary of this specification.

203.4 Construction Methods.

203.4.1 Utilization of Excavated Material. All suitable material removed from the excavations shall be used insofar as practicable, in constructing the permanent works and at such other places as directed. The contractor shall not waste materials removed from excavations and suitable for use in the construction of the permanent works, without a written application to do so and a written approval from the engineer.

203.4.2 Disposal of Surplus and/or Waste Material. All surplus excavated material and/or all waste material shall be disposed of by widening embankments, fills, levees, or dikes, or by flattening slopes, or by depositing the material in other areas as designated or directed by the engineer.

Waste material shall be placed in designated waste areas to the approximate elevations established by the engineer, and the surfaces thereof shall be left in a neat and sightly condition and sloped to provide positive drainage. Compaction of the waste materials will not be required. The cost of disposal of all materials, unless otherwise specified, and all costs of placing and spreading the materials in the waste areas and dressing of the surfaces thereof shall be included in the respective contract unit prices for excavation, regardless of the source of materials, and no additional payment will be made therefore.

203.4.3 Rock for Slope Protection. Where so required, suitable rock encountered in the excavation shall be conserved and used as shown on the drawings for constructing the sides of embankments, fills, levees, or dikes or used where such materials may serve as protection against slope or channel erosion. Where placed within the neat lines of embankments, earthfills, levees, or dikes, as shown on the drawings, or as established by the engineer, the volume of rock so placed shall be included in the volume of embankment earthfill, levees, or dikes, as the case may be, and shall be paid for at the unit bid price for that particular earthfill item.

Where placed outside of the neat lines of embankments, earthfills, levees or dikes, as slope protection and/or disposal of excavated materials, this work shall not be measured for direct payment and performance thereof is to be considered as subsidiary to work pertaining to the various contract items and the costs thereof shall be included in the unit prices bid for these items.

203.4.4 Sheeting and Bracing. Sheeting and bracing as may be required to safely support the sides of excavations shall comply with the safety precautions as outlined in current and accepted safety manuals such as "Associated General Contractors Manual of Accident Prevention in Construction." Where sheeting and bracing are necessary to prevent

caving of the walls of excavations and to safeguard the workmen, the excavations shall be dug to such widths that proper allowance is made for the space occupied by the sheeting and bracing. The contractor shall perform the additional excavation required and furnish and put in place the necessary sheeting and bracing and shall remove the same as the excavation is filled, at his own expense.

203.4.5 Removal of Water. The contractor shall construct and maintain all necessary cofferdams, channels, flumes, and/or other temporary diversion and protective works; shall furnish all materials required therefore; and shall furnish, install, maintain, and operate all pumping and other equipment for dewatering the various parts of the work, and for maintaining the foundations, cutoff trenches, and other parts of the work free from water as required for constructing each part of the work. After having served their purpose, all cofferdams and other temporary protective works shall be removed, or leveled, to give a slightly appearance and so as not to interfere in any way with the operation, usefulness or stability of the work. No separate payment will be made for construction of temporary diversion or protective works, furnishing and operating pumping equipment, or other dewatering costs, since performance of this work is to be considered as subsidiary to work pertaining to the various contract items.

203.5 Measurement and Payment. The volume of the classes and types of excavation to be paid for will be measured by cross-section surveys before and after the excavation operations. The volumes of the classes of excavation to be paid for will be computed to the nearest cubic yard by the method of average cross-sectional end areas.

Common excavation will be paid for at the contract unit price for "Excavation; Common." Rock Excavation will be paid for at the contract unit price for "Excavation; Rock." Such payment shall be considered full compensation for furnishing all labor, materials, equipment, and incidentals necessary to complete the work as specified herein.

Section 204. WATER:

204.1 Description. This item shall consist of the application of water to the materials being incorporated into the construction as directed by the engineer.

204.1.1 The provisions of the specification shall not apply to any water used in the production or curing of Portland Cement concrete, or water used for sprinkling seeded or sodded areas, or for the planting of trees, plants, or shrubs.

204.2 Materials. The water shall be furnished by the contractor and shall be reasonably clean and free from injurious matter.

204.3 Equipment.

204.3.1 Vehicles used to haul water shall be pneumatic tired.

204.3.2 When used to distribute water, the vehicle shall have sufficient power to distribute the desired amount of water. The tank shall

be equipped with a suitable spraying device which can be controlled while the vehicle is in motion and which shall be capable of reasonably even distribution of the water over the designated area.

204.3.3 Pre-Mixing. Water added to the material before delivery or placement of the mixed material, shall be mixed uniformly into the material. The water shall be fed into the mixer unit through a meter system which accurately records the volume of water being added. The amount of water added shall be carefully controlled to conform to the requirements of the particular item of work.

204.4 Measurement and Payment.

204.4.1 Method 1. Water will not be measured and paid for directly, but will be considered as a subsidiary obligation of the contractor under other contract items.

204.4.2 Method 2. Water will be measured in units of 1000 gallons.

Section 205. SEEDING:

205.1 Description. This work shall consist of seeding those areas as shown on the plans or as designated by the engineer.

205.2 Materials. Materials shall conform to the requirements of the following code:

205.2.1 Seed and seeding mixtures shall be free of all prohibitive noxious weed seed and shall not contain more than five-tenths (0.5) percent by weight of restructured noxious weed seeds. Prohibitive and restructured noxious weeds shall be those as classified by the State Seed Department.

205.2.2 All seed containers must be sealed and labeled to comply with existing North Dakota Seed Laws and Regulations or in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act, if shipped in Interstate Commerce.

205.2.3 Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.

205.2.4 Unless otherwise specified, the following mixture and rate of seeding shall be used for seeding reclamation areas, borrow areas and other designated areas according to the schedule in paragraph 205.3.1:

Pure Live Seed Lbs. Per Acre	Variety	Species
5	Rodan or Rosanna	Western Wheatgrass
4	Lodorm	Green needlegrass
2	Killdeer or Pierre	Sideoats gramma
2	Campen	Little bluestem
4	NDG-965-98	Switchgrass
4	Primar or Revenue	Slender wheatgrass

205.2.5 Unless otherwise specified, if seeding is performed between June 1 and September 1, forty (40) pounds of oats seed per acre shall be seeded as a cover crop. The native grass mixture specified in paragraph 205.2.4 would be seeded in the fall as directed by the engineer.

205.2.6 Native hay mulch shall be applied and crimped onto seeded areas as directed by the engineer. A mulching rate of two (2) tons per acre shall be required over all areas having a post-reclamation slope of ten (10) percent or greater.

205.3 Construction Requirements.

205.3.1 Seeding shall be done at such time of the year when the climatic condition of temperature and moisture are most adaptable for growth and work of this nature. It is preferred that seeding shall be accomplished before June 1st and after September 1st of each year.

205.3.1.1 The area to be seeded shall be as shown on the plans or as designated by the engineer.

205.3.1.2 The areas to be seeded shall be cleared of all debris, rank vegetation and other material that is detrimental to the preparation of a seed bed. The area thus cleared shall be shaped or bladed by approved equipment to the plan cross section, or to such cross section that best fits the existing conditions. The areas thus prepared shall be disced, harrowed, raked, or worked by some other approved method, into a reasonably smooth, even seed bed. The surface of the prepared seed bed shall be firm enough to take and hold the seed without undue loss from high winds or ordinary rainfall. If rolling is necessary to secure this, it shall be done prior to the seeding and with an approved roller, the weight of which shall be dependent upon the particular soil conditions.

205.3.1.3 Seed shall be sown by means of a force feed drill with a grass seed attachment, except that on slopes steeper than three to one or on areas too small to be seeded with a force feed drill, seed may be sown by power spraying, blowers or other approved methods. Seed shall be sown in rows that are parallel to the topographic contours of the post-reclamation surface. All equipment shall be in good working order and shall be approved by the engineer.

205.3.1.4 No seed shall be sown during winds that are strong enough to prevent it from being properly imbedded into the surface.

205.3.2 Fertilizer. When fertilizer is specified it shall be applied to the areas being seeded. Unless otherwise specified, the fertilizer shall be ammonium nitrate (33.5% nitrogen) applied at the rate of thirty (30) pounds per acre. Fertilizer may be applied prior to seeding by suitable mechanical spreaders, blowers, or hydraulic equipment. Dry fertilizer shall not be mixed with dry seed, but if applied simultaneously with the seed, a fertilizer attachment on the drill shall be used.

205.3.3 Temporary Care. The contractor shall make any repairs necessary prior to final acceptance as directed by the engineer. Damage from wind or water erosion which can be repaired with equipment normally

used for seeding work will be at the contractor's expense. Repairs requiring equipment other than that normally used for seeding work shall be considered extra work and paid for in accordance with Section 110. The contractor shall at his expense repair all areas damaged by traffic or his own operations.

205.4 Measurement and Payment. Seeding or any authorized reseeded will be measured by the acre complete in place. Payment will be made at the contract unit price for seeding.

Section 206. SODDING:

206.1 Scope. This work shall consist of the furnishing and laying of live sod, on slopes, in ditches or canals, in emergency spillways, or other locations as designated on the plans or in the field by the engineer.

206.2 Materials. The sod shall consist of a dense, well-rooted growth of permanent and desirable grasses, native to the general locality where it is to be used, and shall be practically free from weeds or undesirable grasses. At the time the sod is cut, the grass shall have a length of approximately two inches. If the grass is longer than two inches, it shall be cut before the sod is removed. The area shall be raked to remove all grass clippings and debris.

206.3 Construction Requirements.

206.3.1 Preparation of Earth Bed. The area to be sodded shall have been previously constructed to the required cross section and contour.

206.3.1.1 The area to be sodded shall be free of stones larger than two inches in any dimension, sticks, roots, and other debris which may interfere with the proper laying or subsequent growth of the sod.

206.3.1.2 The soil on the area to be sodded shall be loosened to a depth of not less than one inch and moistened if necessary.

206.3.2 Placing Sod. Sod shall be placed on a moist earth bed within a reasonable time after being cut.

206.3.2.1 Unless otherwise required, the sod on slopes shall be laid in horizontal strips beginning at the bottom of the slope and working upwards. When placing sod in ditches or canals, in emergency spillways, or in the construction of sod ditch checks or similar appurtenances, the long length of the strip shall be laid at right angles to the direction of flow of the water.

206.3.2.2 Sod shall be laid so that the joints caused by abutting ends of sod strips are not continuous. Each sod strip shall be so laid as to abut snugly against the strip previously laid.

206.3.2.3 As the sod is being laid, it shall be rolled or firmly but lightly tamped with suitable wooden or metal tampers, sufficient only to "set" or press the sod into the underlying soil.

206.3.2.4 At such points where water will start flowing over a sodded area, the upper edges of the sod strips shall be turned into the soil to be below the adjacent area, and a layer of earth placed over this juncture, which earth shall be thoroughly compacted to conduct the surface water over the upper edge of the sod.

206.3.2.5 At the limits of sodded areas, wherever practicable or feasible, the end strips shall be placed to effect a broken line, and ends of the strips shall be turned in and treated as above described.

206.3.2.6 Any sod that has been frozen prior to laying, or is laid upon a frozen bed, will not be accepted or paid for until it has become evident, in the following growing season, that such sod has not suffered any damage. Any sod laid under these conditions which does not establish itself during such following growing season shall be removed and replaced by the contractor at his own expense.

206.3.2.7 Generally, sodding shall be done only at such time of the year when climatic conditions of temperature and moisture are most adaptable for growth. It is preferred that sodding shall be accomplished before July 15 and after September 15 of each year. No sod shall be placed at any time when the temperature is below 32°F.

206.3.3 Staking the Sod. On all slopes steeper than one foot vertical to four feet horizontal the sod shall be staked or pegged with pieces of plasterers' lath or stakes equivalent thereto, 8 inches in length, spaced as needed by the nature of the soil and the steepness of the slope, from 18 inches to 36 inches apart along the longitudinal axis of the sod strip. Stakes shall preferably be placed near the top edge of the sod strip and shall be driven approximately plumb and almost flush with the sod surface.

206.3.4 Top Dressing. After the staking has been completed, the surface shall be cleared of loose sod, excess soil, or other foreign material. The areas shall be watered sufficiently to penetrate to the full depth of the sod root system.

206.3.4.1 When provided in the contract, fertilizer shall be applied after which the sod shall be thoroughly watered. Unless otherwise specified, the analysis of the fertilizer shall be 16-20-0 to 20-10-5 Nitrogen-Phosphate-Potash and the rate of application shall be 150 pounds per acre. The application of fertilizer and water may be varied to avoid burning of the sod.

206.3.5 Care During Construction. Each separate area on which sod is placed shall be kept in good condition and kept thoroughly moist by watering or sprinkling when rainfall is deficient in accordance with the following provisions:

Sod placed before July 15 and
after September 15 15 days
Sod placed between July 15
and September 15 30 days

206.3.5.1 No time between November 1 of any year and April 15 of the following year shall be considered to be a part of the required care

period. If, at any time prior to the expiration of the required care period, any of the sod dies or is otherwise damaged to such an extent that its replacement is required, the contractor shall, without extra compensation therefore, furnish and place new sod and care for such new sod during the care period required for an original installation.

206.4 Measurement and Payment. Sod will be measured by the square yard complete in place. The accepted measured quantities of sod will be paid for at the contract unit price bid, which payment shall be considered full compensation for the completed work in place including the care thereof as specified.

Section 300

GROUT AND SLURRY

Section 301. GENERAL DESCRIPTION:

301.1 Scope. This specification covers mixing, application and finishing of pneumatically applied mortar, designated herein as concrete which means either gunite, grout, or slurry. Gunite shall consist of premixed sand and air entrained Portland cement pneumatically transported in a dry state and hydrated at the nozzle immediately prior to expulsion from the transporting conduit. Grout shall consist of pre-laced gravel aggregate with water and Portland Cement introduced under pressure. Slurry shall consist of a gravel, sand, cement, and other partial mix as directed by the engineer which has flow characteristics and can be pumped into underground voids from the surface.

301.2 Workmen and Equipment. Only experienced foremen, nozzlemen, and gunmen shall be employed. Only approved equipment shall be used in the mixing and placement of material. The placement equipment shall be so designed and equipped as to take the mixture of dry sand, cement, aggregate, or other material and mix it and carry it to a point of discharge as directed by the engineer.

301.3 Materials. Materials used in construction shall conform to the requirements prescribed for materials for Portland Cement concrete except as hereinafter amended.

Sand shall be specified for aggregate for concrete, unless otherwise noted, and shall meet the specific requirements of each job as so directed by the engineer.

301.4 Proportions. The proportion of cement to sand will be specified per job by the engineer.

Sand may be measured either by weight or volume. However, approved means of measurement shall be provided and used to determine the proper amount of sand for each batch. Batches requiring fractional sacks of cement will not be permitted unless the contractor weighs the cement in each batch.

301.5 Mixing. Before being charged into the placement equipment, the cement and sand shall be thoroughly dry mixed in an approved power batch mixer. The cement and sand shall be mixed for at least one and one-half minutes during which time the mixer shall rotate at a peripheral speed of about 200 feet per minute.

Section 302. EQUIPMENT:

302.1 Equipment.

302.1.1 General Requirements for Batching Plants. The batching plant, including its supports and foundations, shall be designed to safely

withstand any stresses to which it may be subjected under operating conditions. The plans shall be maintained level to an accuracy necessary for proper operation of the weighing mechanism. When used during windy, or other adverse weather conditions, the weighing mechanism shall be so constructed or shielded as to provide protection and accurate operation.

302.1.2 The batching plant shall include individual bins or a bin with individual compartments for each separate aggregate component, unless other facilities or methods of charging the weigh hopper are approved by the engineer prior to use. In either case, the separate aggregate components shall not become intermixed prior to being weighed.

302.1.3 Bulk cement, when used, shall be weighed in an individual hopper and shall be kept separate from the aggregates until released for discharge. The cement hopper may be attached to a separate scale for individual weighting or may be attached to the aggregate scale for cumulative weighing. If weighed cumulatively, the cement shall be weighed before the other ingredients.

302.1.4 The hoppers for weighing any ingredients shall be freely suspended on the scales, without other contacts that may in any way affect the proper functioning of the scales.

302.1.5 The scales for any weigh hopper shall be either of the beam or springless-dial type, of standard make and design, and suitably equipped to permit quick, easy balancing at zero load. The scales shall be accurate within a tolerance of 0.5 percent throughout the range of use.

302.1.6 The scales shall be tested prior to their use at each plant setup and as often thereafter as the engineer may deem necessary for continued accuracy. Any scale used to determine pay quantities shall prior to its use at each setup, be tested and certified by the North Dakota Public Service Commission unless otherwise permitted in writing by the engineer. The contractor shall make all arrangements and bear any expense or fees incurred in having the scales tested and certified.

302.2 Small Platform Scales. Batch ingredients may be weighed on a small platform scale or scales, provided that the equipment and methods used to handle and weigh the ingredients are approved by the engineer.

302.3 Automatic Batching Equipment. When automatic batching of aggregates and bulk cement is specified, the automatic batching equipment shall conform to the general requirements of batching plants and to the additional requirements of this section.

302.3.1 The automatic scales for weighing bulk cement shall be equipped with an automatic recording device which will graphically record or print the indication of the scales for batched weights and empty weights. Graphic recording charts shall be graduated for time intervals not exceeding 15 minutes and shall have minimum weight graduations not greater than 1 percent of the nominal capacity of the scale. If printed tapes are used they shall record the consecutive batch number and the minimum weight graduation printed on the tape shall not exceed 0.1 percent of the

nominal capacity of the scale. The weight recording mechanism shall be accurate within one graduation of the chart or tape.

302.3.2 The automatic batching equipment shall be capable of conversion to manual operation if necessary. Manual operation will not be permitted beyond 24 hours for reasons of breakdown in the automatic equipment, except by written permission of the engineer.

302.4 General Requirements for Mixers. Each mixer shall be a mechanically-operated batch mixer of the revolving drum or revolving blade type. The mixer shall have attached in a prominent place a manufacturer's plate, showing the capacity of the drum in terms of volume of mixed concrete and the speed of rotation of the mixing drum or blades.

302.4.1 The total production capacity of the mixer or mixers used in the work shall be adequate, when operated at the required mixing time, to furnish concrete at a rate which will permit proper execution of the placement and finishing operations.

302.4.2 The mixer shall be cleaned at suitable intervals and checked for blade wear. Accumulations of hardened concrete shall be removed from the mixer drum.

302.4.3 Multiple compartment mixers shall be designed for synchronized operation of the charging, mixing, transfer, and discharge cycles so that successive batches will not become intermingled in the mixer.

302.4.4 A water measuring system shall be provided for each mixer except that when the mixer has a rated capacity less than 10 cubic feet, the mixing water may be measured and added by approved manual methods. The contractor shall furnish any equipment and assistance necessary to calibrate the system prior to use and whenever directed by the engineers.

302.5 Truck Mixers. The truck mixer shall conform to the general requirements of subsection 302.4 and to the additional requirements of this section.

Section 303. CONSTRUCTION METHODS:

303.1 Handling and Storing Materials.

303.1.1 General Requirements. Materials for concrete shall be handled and stored so that the required quality and condition of each material is preserved without damage.

303.1.2 Handling and Storing Cement. Cement of different types, brands, or sources, shall be separately handled and stored, and shall not be intermixed during use or used alternately in any one unit except by written permission of the engineer. Suitable storage shall be provided to protect the cement against dampness. Cement which contains caked lumps will be rejected. Cement which is salvaged from spillage occurring during the handling operations shall not be used except by authorization of the engineer, and only if the salvaging operations are conducted in a manner satisfactory to the engineer.

303.1.3 Handling and Storing Aggregates. Each separated aggregate component of different source of grading shall be separately handled and stockpiled. Changes in the source of aggregates during the progress of the work will be permitted only by authorization of the engineer. The contractor shall employ suitable equipment and methods to prevent segregation, degradation, or contamination of the aggregates. The building up of stockpiles by means of hauling units operating on the slopes of the aggregate piles will not be permitted, nor shall bulldozers be used for moving coarse aggregates in or onto stockpiles.

Aggregates which become intermixed with others of different sources or grading or which become contaminated by foreign materials will be rejected and, if directed by the engineer, shall be removed from the site of the work.

If undue segregation occurs in any aggregate component, the aggregate shall be rejected unless it is uniformly remixed to its typical gradation.

The site of each stockpile shall be cleared of vegetation and other extraneous matter, and the ground shall be smooth, firm, and well drained. Where the natural foundation is unsatisfactory, the engineer may require the stockpiles be built on suitably constructed foundations. The bottom one foot of any stockpile placed directly on the ground shall not be used, except under immediate supervision of the engineer.

When aggregates are unloaded into dump pits, the pits shall be lined with timber and or other suitable materials to prevent contamination of the aggregates. The pits shall be free of water when aggregates are being handled through them.

Aggregates shall be drained for an adequate period after being washed to ensure a stable and reasonably uniform moisture content before they are measured into the batches.

303.2 Batching of Concrete Materials.

303.2.1 General Requirements. When directed by the engineer, the contractor shall test the accuracy of batching any ingredient. The batched ingredient shall be weighed on a platform scale certified by the Department of Weights and Measures (North Dakota Public Service Commission) or the accuracy of batching shall be tested by other means approved by the engineer. The contractor shall bear all expenses and fees incurred in making the tests.

303.2.2 Batching Cement. Bulk cement shall be measured by weight with equipment conforming to the requirements of subsection 302.1. The batching of bulk cement shall be so conducted that the delivered weight for each batch will not vary from the designated weight by more than plus or minus 1 percent. Cement furnished in the original sacks as packed at the mill shall be considered to weigh 94 pounds per sack subject to check if directed by the engineer. Fractional sacks of cement shall not be used unless weighed.

303.2.3 Batching Aggregates. Except as provided below, each separate aggregate component shall be measured by weight and

equipment conforming to the requirements of subsection 302.1 Weight batching of aggregates shall be so conducted that the delivered weight will not vary from designated weight by more than plus or minus 2 percent for each aggregate component. The aggregates may be measured by loose volume when the quantity of concrete required for any pour is less than 10 cubic yards. When measured volumetrically, each aggregate component shall be measured separately into approved, calibrated containers. Measurement of aggregate by shovel count will not be permitted. The loose volume of each aggregate component required for the batch will be determined by the engineer.

303.2.4 Batching Water. The mixing water for each batch may be measured by volume or by weight with equipment conforming to the requirements of paragraph 302.4.5. The designated amount of mixing water shall be added to each batch, within a tolerance of 1 percent or 1 quart, whichever is greater.

303.3 Weather and Other Limitations. No concrete shall be mixed, placed, or finished when the natural light is insufficient, unless an adequate and approved artificial lighting system is operated.

303.3.1 Unless conditions of placement permit adequate protective measures concrete operations shall be suspended whenever the work may be damaged by rain, wind, blowing dirt, extreme temperatures, or other adverse weather.

303.3.2 When mixed all concrete shall have a temperature not less than 50°F., nor more than 90°F., except that, when concrete use is authorized at air temperatures below 35°F., the engineer may at his discretion raise the lower limiting temperature of the mixed concrete. The concrete shall be maintained within the required temperature range until placed in the work.

Except by written authorization of the engineer, concrete shall not be placed for any item of work when air temperature in the shade and away from artificial heat is below 35°F. Concrete shall not be placed on or against frozen earth unless directed by the engineer.

303.3.3 The aggregates or the mixing water, or both, may be heated if necessary. Aggregates shall not be heated to a temperature exceeding 150°F. If the aggregate or the water is heated to a temperature exceeding 100°F., the aggregate and water shall be combined before being placed in contact with the cement. Aggregates shall not be heated by direct flame. When aggregates are heated by live steam, they shall be adequately drained before being measured into the batches. Heating equipment or methods which alter or prevent the entrainment of the required amount of air in the concrete shall not be used. The equipment shall be capable of heating the materials uniformly. Materials containing frost or lumps of frozen material shall not be charged into the mixer.

303.3.4 The use of calcium chloride to accelerate the rate of hardening of the concrete may be required or permitted by the engineer. When used, the calcium chloride shall be added in accordance with the requirements of the engineer.

Section 304.

METHOD OF MEASUREMENT:

304.1 Concrete. Concrete which is designated in the contract as a pay item will be measured by the cubic yard in place. The pay quantity of concrete will be computed on the basis of the dimensions shown on the plans or other dimensions approved by change orders. No payment will be made for concrete placed beyond the neat line dimensions shown on the plans unless written permission is granted by the engineer prior to placement. Each class of concrete or high-early strength concrete designated as a pay item will be measured separately.

304.2 Cement. When separate payment is provided for Portland Cement, the cement will be measured by the barrel. A barrel of cement shall be 376 pounds in bulk form or 4 bags of 94 pounds each in sacked form. The pay quantity of cement will be the number of barrels used as authorized by the engineer, except that, cement which is lost, wasted, or used in concrete poured outside the approved dimensions will not be included in the quantity measured for payment.

Section 305. BASIS OF PAYMENT:

305.1 Concrete. When designated in the contract as a pay item, concrete or high-early strength concrete will be paid for at the contract unit price bid per cubic yard.

305.2 Cement.

305.2.1 When designated in the contract as a pay item, cement will be paid for at the contract unit price bid per barrel of cement used as authorized by the engineer, except as otherwise provided.

305.2.2 Cement not designated in the contract as a pay item will be considered as an integral part of the concrete, and no separate payment will be made for the cement except as otherwise provided.

Section 306. TESTS:

During the applications of the concrete, the contractor shall cooperate in making compressive tests required to determine the quality of material being placed in the work. Test specimens shall be made so as to represent the quality of material being placed in the work by each nozzleman. The wire molds shall consist of open end cylinders six (6) inches in diameter and twelve (12) inches high made of 1/2 inch mesh hardware cloth mounted on a board. The wire mold placed upright on a clean level surface, shall be built up and filled with material using the same air pressure, water pressure, hydration, and nozzle tip used in the work. All mortar outside the mold should be removed immediately after shooting the specimen so that the wire mesh can be removed before testing.

During the first 24 hours, the test specimens will be stored in the field and the contractor shall protect the specimens against injury or loss through his operations, after which, they shall be removed to the testing laboratory.

The wire mesh mold shall be removed from the gunite cylinder not sooner than 24 hours after its formation by carefully cutting the wires at the their circumference.

Tests will be conducted in accordance with the latest revision of the "Standard Method of Test for Compressive Strength of Molded Concrete Cylinders," ASTM Designation C39. The specimens of material at the age of seven (7) days shall develop a compressive strength not less than 2400 pounds per square inch and at the age of twenty-eight(28) days the specimens shall develop a compressive strength of not less than 3500 pound per square inch or as may be directed by the engineer.

Section 307. CLEANUP:

Debris resulting from concrete operations will not be allowed to accumulate for more than one (1) day.

Section 400

INCIDENTAL CONSTRUCTION

Section 401. ROCK RIPRAP:

401.1 Scope. This specification covers the foundation preparation for riprap and the placing of the filter blanket rock riprap.

401.2 Riprap Stone. The rock shall be sound stone and free of trash, scrap iron and deleterious material. Rock composed of erosive materials, such as sandstone, will be rejected at the loading site if a pre-inspection is requested by the contractor, otherwise, such rejection will be made at the dump site. Loading site inspections will not be made when hauling and placing of rock is in progress.

Riprap shall be reasonably well graded from the minimum size to the maximum size stone as shown on the drawings or given in the special specifications. Neither the breadth nor thickness of any piece of rock shall be 1/3 of its length.

The rock used for riprap shall be of the thickness shown on the drawings and shall be placed at the locations shown on these drawings or as directed by the engineer.

All rock shall be placed and leveled to the satisfaction of the engineer in charge. The engineer in charge shall have the right to reject inferior, deleterious, or unsuitable material and order its removal from the site at the contractor's expense.

The leveling of riprap may be accomplished by mechanical means. Contractors should not construe the word riprap to mean hand placed rock.

401.2.1 Relationship Between Landowners and Contractor. The contractor is responsible for ascertaining location or rock suitable for use as riprap. All arrangements for obtaining and purchasing rock from the landowner shall be the responsibility of the contractor. The State will have no responsibility regarding this relationship between landowners and contractor.

401.3 Construction.

401.3.1 Foundation Preparation. Earth surfaces on which the filter blanket or rock riprap is to be placed shall be trimmed and graded to conform to the lines or sections shown on the drawings. Surfaces which are below grade shall be brought to grade by filling with well compacted materials similar to the adjacent materials. Prior to placing the filter blanket or rock riprap, the prepared earth foundation will be inspected, and no materials shall be placed thereon until approved by the engineer.

401.3.2 Filter Blanket. When shown on the drawings, a filter blanket shall be placed underneath the rock riprap. The filter materials shall be spread uniformly on the prepared surface to the depth and lines indicated on the drawings or as established in the field. Compaction of the filter blanket will not be required, but it shall be finished to present a reasonably smooth surface free from mounds, dips or windrows.

401.3.3 Riprap. Dumped riprap composed of stone conforming to the requirement of this specification shall be placed by equipment on the surfaces and to the depths indicated on the drawings or as staked on the ground. The riprap shall be placed to the full course thickness at one operation and in such manner as to avoid serious displacement of the underlying materials. The riprap shall be delivered and spread so that the mass of stones in place shall be reasonably well graded, with the larger rocks uniformly distributed and the smaller rocks and spalls filling the voids between the larger rocks. The finished riprap shall be free from objectionable concentrations of large or of small stones. Placing riprap by dumping into chutes or by other means that are likely to cause degradation of the various sizes will not be permitted. The contractor shall maintain the riprap protection until it has been accepted, and any materials displaced by any cause shall be replaced at the Contractor's expense to the lines and grades shown on the drawings.

When hand-placed riprap is called for on the drawings, riprap composed of stone conforming to the requirements of the specification shall be placed by hand on the surfaces and to the depths indicated on the drawings or as staked on the ground. The riprap shall be placed in such manner that adjacent stones are in close contact and in general have the greatest dimension across the slope. Spaces between the larger stones shall be filled with the smaller stones of acceptable size. The smaller stones shall not be grouped to serve in place of the larger size stone. Flat slab rocks shall be laid on edge.

401.4 Measurement and Payment

401.4.1 Method 1. The quantities of filter material and/or rock riprap will be determined from the specified thickness shown on the drawings and the area on which acceptable placement has been made. The total quantities will be computed to the nearest cubic yard.

Payment will be made at the contract unit price per cubic yard for "Filter Material" and/or "Rock Riprap." Such payment shall be considered full compensation for all labor, materials, equipment and any incidentals required to complete the rock riprap as shown on the drawings and specified herein.

401.4.2 Method 2. The size of the box of the hauling equipment will be measured and quantities will be computed from the number of full loads applied.

401.4.3 Method 3. The quantities of filter material and/or rock riprap will be weighed on accurate, approved scales by competent, qualified personnel at locations designated by the engineer. Quantities will be computed to the nearest 1/10 ton. Payment will be made at the contract price per ton for "Filter Material" and/or "Rock Riprap."

Section 402. FENCES:

402.1 Description. This work shall consist of the construction of fence and gates in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or established by the engineer.

402.2 Materials. Materials shall meet the following requirements:

402.2.1 Barbed Wire and Staples. Barbed wire shall conform to the requirements of ASTM A121, Class 2 and shall consist of two stands of 12 1/2 gauge wire with four point barbs of 14 gauge wire spaced not more than 5 inches apart. Barbed wire shall be furnished on 80 rod spools. Brace wire and loops shall be No. 9 gauge smooth galvanized wire.

Staples shall be 1 1/2 inches long and made of No. 9 gauge galvanized wire. Woven wire shall conform to the requirements of ASTM A116, Class 1.

402.2.2 Steel Posts. All line posts shall be made of rail steel or hot-rolled carbon steel having the following mechanical properties when tested in accordance with ASTM A370.

Tensile strength, minimum	--80,000 psi
Yield strength, minimum	--50,000 psi

Rail steel is the established trade and technical term used to identify products of the industry rolled from standard tee-section steel railroad rails.

402.2.2.1 The posts and braces shall be painted with one coat of green paint consisting of 15% pigment and 85% vehicle. The pigment shall conform to the requirements of A.A.S.H.T.O. M130. The vehicle shall be especially compounded for dip painting and shall not contain asphalt, tar or water. The paint shall dry hard, with a good gloss, sufficiently fast to withstand the necessary handling without marring. The paint shall be completely dried before the posts are stacked. Any damage to the paint during construction shall be repaired by field touch-up after erection of the fence is complete. The type and color of paint designated above shall be used. Where the posts are galvanized, painting shall be omitted.

402.2.2.2 Before painting, the posts and braces shall be cleaned of all rust, dirt, grease and loose scale.

402.2.2.3 Five wire fasteners shall be furnished with each post. They shall be made of galvanized wire and shall be capable of securely fastening the wire to the post.

402.2.2.4 The length of posts shall be as indicated on the plans. A variation of more than one-half inch under the specified length will not be permitted.

402.2.3 Line Posts. Line posts shall be of "T", "Y", channel or modified channel in section. These shall be rolled in corrugations, ribs, lugs or notches so constructed as to engage the fence wires in proper

position. Posts with punch tables intended to be crimped around the wires will not be accepted.

402.2.3.1 Line posts shall have a nominal weight of 1.33 pounds per foot exclusive of anchor plates and other attachments.

402.2.4 Angle Type End, Corner and Pull Posts. Angle, type end, corner and pull posts shall have a nominal weight of 4.10 pounds per foot. Angles for braces shall have a nominal weight of 3.19 pounds per foot. A variation up to three percent under weight will be permitted.

402.2.5 Wood Posts. Wood posts shall be of Pine, Fir, Spruce, Cedar, Aspen, American Elm, Eastern Cottonwood or Ash. Posts shall be naturally round and shall be cut from alive, green growing trees.

402.2.5.1 Line posts and braces shall be not less than 3 1/2 inches in diameter at the small end and of the length shown on the plans. Corner and brace posts shall be of the length and diameter shown on the plans.

402.2.5.2 A variation in length of more than one-half inch under the specified length will not be permitted.

402.2.5.3 All posts shall have the inner bark shaved off, knots trimmed and be pointed for driving prior to treatment.

402.2.5.4 Knots that are sound, smoothly trimmed and do not impair the strength of the posts will be permitted.

402.2.5.5 No decay will be permitted.

402.2.5.6 Short kinks and reverse bends will not be permitted.

402.2.5.7 One way sweep not to exceed 1 1/2" will be permitted.

402.2.5.8 Defects of any kind which in the opinion of the engineer give the posts an unsightly appearance will not be permitted.

402.2.5.9 Preservative treatment and material shall be in accordance with the current North Dakota Standard Specifications for Road and Bridge Construction.

402.2.6 The material for wire fabric, posts and fittings for chain link fences and gates shall conform to the requirements of A.A.S.H.T.O. M181.

402.3 Construction Requirements.

402.3.1 General Requirements. The fence shall be erected as shown on the plans or directed by the engineer.

402.3.1.1 The location of the fence shall be cleared of brush and other obstructions to a minimum of two (2) feet on each side for barbed wire fence and four (4) feet on each side for chain link fence.

402.3.1.2 All posts shall be placed to the required depth, plumb, except in unusual locations where as determined by the engineer it would

be more satisfactory to place posts perpendicular to the ground, and true to line on the wire side.

402.3.1.3 In general, the bottom of the fence shall follow the contour of the ground except at grade depressions such as stream crossings, drainage ditches or other locations where it is not practical. At such locations the fence shall span the depression and the contractor shall close the space below the bottom wire with additional wire or fabric, and posts of regular or extra length as approved by the engineer.

402.3.2 Installing Line Posts. All posts shall be placed as close to the intervals shown on the plans as conditions will permit, except that at sharp changes in grade extra posts shall be placed to maintain the wire or fabric the proper distance from the ground. All posts shall be properly aligned and plumb.

402.3.2.1 Posts for chain link fence shall be set in concrete. Posts for barbed wire fence and woven wire fence shall be driven or set in holes. If soil conditions prevent the proper driving of posts, a pilot hole may be drilled which shall not be larger than the diameter of the post minus one inch.

When posts are set in holes, the holes shall be large enough to allow for proper tamping. Wood posts shall be set with the large end down. Backfill shall be placed in layers not to exceed size (6) inches in loose depth and compacted by hand tampers, machine tampers or other suitable equipment. When completed, all of the excavated earth shall be used and the backfill shall be crowned slightly to permit drainage away from the post.

402.3.2.2 When solid rock is encountered, holes shall be drilled a minimum depth of 12" into the rock or to the required depth of the post, whichever requires the lesser excavation into the rock. The post shall then be cut to provide the required height above the ground. The post shall then be grouted into the rock with a grout consisting of one part cement and three parts sand.

402.3.2.3 Damage to posts during handling or driving shall be corrected by replacement or as directed by the engineer without additional compensation.

402.3.2.4 Wood posts shall be grounded at every tenth post by a nine gauge wire the full length of the post, which shall be stapled to the post before driving and so placed that each line wire shall be stapled to it.

402.3.3 Corner and Brace Assemblies. All corner and brace assemblies shall be constructed and located in accordance with the plans. A horizontal angle in the fence having a deflection of more than 15 degrees shall be considered a corner and braced accordingly. Brace assemblies may be required at other locations, as determined by the engineer.

402.3.3.1 When wood corner and brace posts are used, they shall be driven or set in holes. If soil conditions prevent the proper driving of wood posts, a pilot hole may be drilled which shall not be larger than the diameter of the post minus one inch.

When wood posts are set in holes, the hole shall be large enough to allow for proper tamping. Posts shall be set with the large end down. Backfill shall be placed in layers not to exceed six (6) inches in loose depth and compacted by hand tampers, machine tampers or other suitable equipment. When completed, all of the excavated earth shall be used and the backfill shall be crowned slightly to permit drainage away from the post.

402.3.3.2 Steel corner and brace posts when not set in concrete shall be driven unless posts are provided with anchors and brace plates in which case they shall be set in holes and backfilled in the same manner as wood posts.

402.3.4 **Installing Fence Wire -- General.** All fence wire shall be pulled tight with hand stretchers either of the double block or lever type. The use of tractors or trucks shall not be permitted.

402.3.4.1 **Barbed Wire.** Wire shall not be stretched around corners, but shall be cut and tied securely to each corner or brace post.

402.3.4.1.1 In erecting the fence, any combination of splices, both factory and field, shall not exceed three in one spool of wire.

402.3.4.1.2 After the fence has been erected, if the wire is broken through no fault of the contractor, a maximum of two (2) field splices per strand will be permitted between brace assemblies.

402.3.4.1.3 Wires shall be placed on the side of the post away from the project area.

402.3.4.1.4 Staples shall be driven diagonally to the grain of the wood and shall be driven three-fourths of their length in to the wood leaving room for the wire to move.

402.3.4.1.5 Wire shall be fastened to steel posts with wire clamps or fasteners which pass around the post. Staples clinched through holes in the post will not be permitted.

402.3.4.2 **Chain Link Fabric.** Fabric shall be placed on the side of the post away from the project area. Fabric shall not be stretched around corner posts or past brace posts, but shall be attached to each brace, gate and corner post by stretcher bars threaded through the loops of the fabric and fastened to the posts by means of bands.

402.3.4.2.1 Splices in the fabric shall be made by weaving in a pre-bent wire of the same kind as that in the fabric.

402.3.4.3 **Gates.** Gates shall be constructed and located as shown on the plans or as directed by the engineer.

402.3.4.4 **Woven Wire.** Woven wire shall not be stretched around corners, but shall be cut and wrapped securely around each corner or brace post.

402.3.4.4.1 Woven wire shall be placed on the side of the post away from the project area except on the inside of curves where it shall be

placed on the opposite side of the post so that the wire pulls against the post.

402.3.4.4.2 Staples shall be driven diagonally to the grain of the wood and shall be driven three-fourths of their length into the wood leaving room for the wire to move.

402.3.4.4.3 Woven wire shall be fastened to steel posts with wire clamps or fasteners which pass around the post. Staples clinched through holes in the post will not be permitted.

402.4 Method of Measurement. Fence will be measured by the linear foot. Measurement will be the horizontal distance measured along the top of the fence from the outside to the outside of end posts for each continuous run of fence. Additional wire or fabric at depressions, such as washouts, will be measured as additional fence and added to the quantity to be paid for.

402.4.1 Gates will be measured as completed units of the size and type specified.

402.4.2 Corner assemblies will be measured as completed units of the size and type specified.

402.4.3 Double brace assemblies will be measured as completed units of the size and type specified.

402.5 Basis of Payment.

402.5.1 Method 1. The accepted quantities of fence will be paid for at the contract unit price per linear foot for fence and per each for gates of the types and sizes specified complete in place. Payment will be made under:

Pay Item	Pay Unit
Barbed Wire Fence	Linear Foot
Chain Link Fence	Linear Foot
Vehicle Gate	Each
Pedestrian Gate	Each
Corner Assembly	Each
Double Brace Assembly	Each

402.5.2 Method 2. The accepted quantities of fence will be paid for at the contract unit price per linear foot. Payment will constitute full compensation for furnishing, transporting, and installing all materials complete in place as shown on the plans.

Section 403. STRUCTURE REMOVAL:

403.1 Scope. This specification covers the removal of structures and the salvaging or disposal of such structures.

403.2 Definitions. For this specification, the term "structure" shall mean spillway structures, bridges, culvert, buildings, revetments, riprap,

drainage or irrigation structures, fences, concentrated debris or trash piles, and similar structures that interfere with the construction or usefulness of other specified work to be done.

403.3 General. Structures to be removed and salvaged or removed and disposed of will be so indicated on the drawings.

All structural removal shall be done in such a manner as to avoid damage to adjacent structures which are to remain in place.

Blasting will be permitted only when proper precautions are taken for the protection of all persons, the work and property, any damage resulting from blasting shall be repaired by the contractor at his expense. All blasting operations shall be subject to approval by the engineer.

All salvaged materials shall remain the property of the party or parties that held title prior to its removal. Such material shall be neatly placed in areas designated on the drawings or as directed by the engineer. The material to be salvaged shall be removed and handled in such a manner that it is not damaged.

403.4 Salvaged Structures. Structures that are to be salvaged and are capable of being dismantled, shall be dismantled and neatly piled as indicated on the plans or as directed by the engineer.

Fencing material from removed fences indicated for salvage on the drawings shall be placed outside the work area on the property from which they were removed. All wire shall be rolled into uniform rolls of convenient size. Posts shall be neatly piled.

403.5 Extent of Removal. All structures shall be completely removed to not less than one foot below the required grade for any channel lining, street, roadway, compacted fill or similar improvements or below any grade established in the plans; and to not less than two feet below the bottom of any drop structure, spillway, bridge, culvert, or similar structure; and in any case, to the extent required to perform the work. Structures which interfere with pile driving shall be completely removed.

403.6 Disposal of Unsuitable Material. Structures to be removed and not shown to be salvaged shall become the property of the contractor and shall be burned, buried or otherwise disposed of away from the site of work or in such other manner as approved by the engineer. Burning shall conform to federal, state and local regulations.

403.7 Measurement and Payment. The unit of measurement will be a lump sum quantity. Payment will be made at the contract lump sum price for "Structural Removal" and shall include full compensation for all material, labor, equipment and any incidentals necessary for structure removal and the salvage or disposal of the removed materials.

404. BLASTING

404.1 General. Blasting may be done only to the depth, amount and extent and in such locations approved by the engineer. Approval of the methods of blasting by the engineer will not relieve the contractor of his

responsibility in blasting operation, and no payment will be made for any necessary extra excavation below or outside of the limit lines indicated on the drawings, or modifications thereof, due solely to injury caused by overshooting, improper blasting, or carelessness on the part of the contractor.

404.2 Use of Explosives. The transportation, handling, storage, and use of dynamite and other explosives shall be directed and supervised by a person of proven experience and ability in blasting operations. All blasting operations shall be in accordance with applicable local, State and Federal laws. Before any explosives are brought on the job, permission to do so shall be obtained from the engineer. All blasts shall be fired electrically with an electric blasting machine. Where detonating cord is used as a detonating agent, the detonation cord shall be fired with an electric blasting cap. Delay electric detonators shall be used for all delayed blasts. Blasting machines used for firing shall be known to be in good condition and of sufficient capacity to fire all charges. Rubber-covered or other adequately insulated copper wires in good condition shall be used for firing lines and shall have solid cores of appropriate gage. Sufficient firing lines shall be provided to permit the blaster to be located at a safe distance from the blast. Single conductor lead lines shall be used. All operations involving the handling or use of explosives shall be discontinued during approach of a thunderstorm or while it is in progress. Blasting operations in the proximity of overhead power lines, communication lines, utility lines, or other structures shall not be carried on until the operator and/or owner of such lines has been notified and precautionary measures deemed necessary have been taken. All holes loaded on a shift shall be fired on the same shift. The use of black powder is prohibited. Before any drilling operations in preparations for blasting are started, the contractor shall furnish the engineer a detailed plan of operations showing the method proposed for the prevention of damage. In order to assure adequate protection such plan may be modified to meet the conditions that may develop.