

CITY OF LINCOLN, NEBRASKA, STANDARD SPECIFICATIONS

CHAPTER 20

CONSTRUCTION FOR UTILITIES AND STRUCTURES

ARTICLE	TITLE	
20.00	GENERAL	2002
20.01	MATERIALS	2002
	A. SMOOTH STEEL PIPE CASING	2002
	B. CORRUGATED METAL PIPE	2002
	C. FOUNDATION	2002
	D. BEDDING	2002
	E. GROUT	2003
	F. FLOWABLE FILL	2003
20.02	EARTHWORK	2003
	A. CLEARING AND GRUBBING	2003
	B. TREE REMOVAL	2003
	C. EXCAVATION	2003
	D. BACKFILL	2004
	E. BASIS OF PAYMENT	2005
	F. MAINTENANCE AND PROTECTION OF EXCAVATIONS	2005
	G. DISPOSAL OF SURPLUS MATERIAL	2006
	H. SOIL EROSION CONTROL	2006
20.03	UTILITY ALIGNMENT AND GRADE	2006
20.04	GROUND WATER	2007
20.05	FOUNDATION AND BEDDING	2008
	A. GENERAL	2008
	B. BASIS OF PAYMENT	2008
20.06	HORIZONTAL DIRECTIONAL DRILLING	2009
	A. GENERAL	2009
	B. SUBMITTALS	2009
	C. MATERIALS	2010
	D. INSTALLATION	2011
	E. REJECTION	2012
	F. TOLERANCES	2012
	G. CLEAN UP AND DISPOSAL OF MATERIALS	2013
	H. BASIS OF PAYMENT	2013

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CONSTRUCTION FOR UTILITIES AND STRUCTURES

ARTICLE	TITLE	
20.07	CONCRETE AND REINFORCING STEEL FOR STORM DRAINAGE	2014
	A. GENERAL	2014
	B. BASIS OF PAYMENT	2014
20.08	CONCRETE AND REINFORCING STEEL FOR SANITARY SEWER	2014
	A. GENERAL	2014
	B. BASIS OF PAYMENT	2014
20.09	CONCRETE AND REINFORCING STEEL FOR WATER MAIN	2015
	A. GENERAL	2015
	B. BASIS OF PAYMENT	2015
20.10	PAVEMENT CONSTRUCTION AND RECONSTRUCTION	2015
20.11	FINAL CLEANUP	2016
	A. GRAVEL OR ROCK ROADWAY SURFACE	2016
	B. FINAL CLEANUP AND PARKING SPACE FINISH	2016
	C. SODDING AND SEEDING	2016
20.12	COLD WEATHER CONSTRUCTION	2016
	A. LIMITS OF CONSTRUCTION	2016
	B. SUSPENSION OF WORK	2017
20.13	SUBSTANTIAL COMPLETION	2017
20.14	FINAL ACCEPTANCE	2017
20.15	GUARANTEE	2017

CHAPTER 20

CONSTRUCTION FOR UTILITIES AND STRUCTURES

20.00 GENERAL

Construction for utilities and structures shall include the excavation and backfill of all materials necessary to complete the Work in conformance with the plans and these Standard Specifications; all necessary sheeting, shoring and bracing; and any pumping that may be necessary to keep the trench free from water. Construction for utilities and structures shall also include the removal and replacement of pavement, driveways and sidewalks; disposal of surplus materials, borrow, maintenance and protection of excavation, and the restoration of all surfaces to a satisfactory condition.

These Standard Specifications shall apply to all utility and structure work regardless of the type of Work being performed.

20.01 MATERIALS

The following materials are approved for use in the City of Lincoln pursuant to the Standard Specifications described herein. Alternate materials maybe requested in writing to the Director of Public Works and Utilities.

A. SMOOTH STEEL PIPE CASING

Smooth steel pipe used for encasement shall be of the diameter, length, and wall thickness shown on the Plans. The encasement shall be new welded steel pipe conforming to ASTM Designation A 139, Grade B. All joints shall be welded.

B. CORRUGATED METAL PIPE

Corrugated metal pipe used for encasement shall be copper steel galvanized and shall conform to the requirements of AASHTO “Standard Specifications for Corrugated Metal Culvert Pipe”, Designation M-36, and shall be of the diameter, length and gauge as shown on the Plans.

C. FOUNDATION

Foundation material shall conform to the requirements of ASTM “Standard Specifications for Concrete Aggregates”, Designation C-33. The gradation for foundation material shall be size Number 357 (2" to #4).

D. BEDDING

For Lincoln Water System and Lincoln Wastewater System projects, bedding material shall be a well graded “crusher run” crushed rock with a percent passing gradation range of 1" - 100, #4 - 20 to 60, #10 - 0 to 30 and #200 - 0 to 10, unless otherwise designated on the plans or Special Provisions or approved by the City’s Project Manager.

For Lincoln Watershed Management projects, limestone rock and crushed concrete will also be permitted, provided that the gradation range requirements listed above are satisfied.

20.01 MATERIALS (Continued)

E. GROUT

The grout shall be mixed in the volumetric proportions of 2 parts Portland cement, 1 part fly ash, and not to exceed 6 parts sand. Enough water shall be used to produce a pumpable grout.

F. FLOWABLE FILL

Flowable fill material shall meet the requirements of Chapter 3 of these Standard Specifications.

20.02 EARTHWORK

A. CLEARING AND GRUBBING

Clearing and grubbing shall be accomplished as provided in Chapter 2 of these Standard Specifications.

B. TREE REMOVAL

The removal of trees and stumps shall be accomplished as provided in Chapter 2 of these Standard Specifications.

C. EXCAVATION

In general, all excavation shall be made by open cut from the surface of the ground and at the width and to the depth necessary for the proper construction of the utility and its appurtenances, according to the plans and these Standard Specifications. The Work shall be performed in conformance with Occupational Safety and Health requirements. Nothing contained in these Standard Specifications or Contract Documents shall relieve the Contractor from complying with any Local, State, or Federal safety requirements. The Work shall be performed within the limits of construction as shown on the plans. All necessary precautions must be made to prevent slides and cave-ins. Bracing or sheeting, shall be provided to maintain the sides and bottom of the trench in unstable material.

The excavated material shall be handled in such a manner as to cause a minimum of inconvenience to public travel and to permit safe and convenient access to public and private property along the line of Work. If a utility excavation is to remain open overnight in the built environment, all material (spoil) excavated, shall be properly covered and protected. If the excavation is to remain open for more than five (5) business days, all excavated material shall be removed from the job site. If excavating and backfilling on the same day, all unsuitable material (spoil) shall not be used for backfill. It shall be the Contractor's responsibility to secure the necessary permission and make all necessary arrangements for all required storage, borrow, and disposal sites.

Access shall be provided at all times to fire hydrants and water valves in the vicinity of the Work and firefighting equipment shall have access to any structure at all times. Trenches shall not be opened more than 100' in advance of the installed utility or as directed by the City's Project Manager. All trenches shall be backfilled as soon as practical after the pipe is in place, or as ordered by the City's Project Manager. Unless otherwise specified or authorized by the City's Project Manager, all excavated material shall be placed on the street side of the trench.

20.02 EARTHWORK (Continued)

C. EXCAVATION (Continued)

Holes for pipe bells shall be provided at each joint, but shall be no larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the trench bottom. Other than the bell holes, the trench bottom shall be true and even in order to provide support for the full length of the pipe barrel.

Excavation below subgrade with subsequent refilling with loose earth will not be permitted. Should the Contractor inadvertently excavate below subgrade, such over excavation shall be filled and brought up to grade with compacted soil, crushed rock, or sand or gravel as approved by the City's Project Manager.

The width of the utility trench at the top of the pipe shall be no greater than the width specified in the standard bedding details. Excessive trench width may be cause for providing a higher class bedding at no cost to the City. The width of excavation for utility lines 6" or greater in diameter shall be a minimum of 3'. In no case shall the excavation be less than 2' greater than the outside diameter of the pipe or the outside dimensions of the structure to be built. The bottom of all excavations shall be finished to the true profile grade, of full width, and cleared of any rocks, clods, roots, or other material that may interfere with properly placing the pipe or structure.

No measurement or direct payment will be made for any excavation required as part of the Work. The costs of excavation will be considered subsidiary to other items for which direct payment is made.

D. BACKFILL

Backfilling and compaction of excavations shall follow as closely after the construction as possible. All excavations shall be backfilled with approved material up to the original surface of the ground unless otherwise indicated on the plan. No backfill shall be made with material containing stone, large clods, frozen earth or debris of any kind. The backfill shall be placed in loose lifts not to exceed the thickness required to attain 12" thick compacted layers or as noted in a geotechnical report signed and sealed by an Engineer registered in the State of Nebraska.

Backfilling shall not be done in freezing weather, except by permission of the City's Project Manager, nor shall any fill be made where the material already in the trench is frozen. If construction proceeds at any time when frozen material is encountered and frozen material is placed in the trench line, all such trenches shall be re-compacted in the spring after frost conditions are no longer present in the ground. This re-compaction of the trench shall include the removal of all material to a depth of 12" below the depth of the frozen material and the replacement and re-compaction of the trench to the proper grade with suitable material.

Care shall be exercised in backfilling so as not to damage any finished Work. The backfill shall be brought up evenly on both sides of the utility or structure.

Backfilling against any concrete structure shall not be started until test specimens of the concrete develop a compressive strength of at least 2000psi.

Unless otherwise directed by the City's Project Manager, compaction of backfill within 3' of all structures and utility appurtenances, including but not limited to, valves, hydrants, manholes, and inlets, shall be accomplished by mechanical compaction using hand operated tampers, rammers, or other approved devices for the soil type(s) encountered.

20.02 EARTHWORK (Continued)

D. BACKFILL (Continued)

Jetting or hydro-flushing of the backfill shall not be permitted. Care shall be taken to ensure that the utility is properly bedded with material of an approved density or in conformance with these Standard Specifications. The initial 12" of backfill above the top of the pipe shall be carefully placed to protect the pipe bedding from further backfilling operations.

Backfill shall be mechanically compacted to a minimum density of 96% of the maximum dry density of the material as determined by AASHTO Method T-99. The moisture content of the soils shall be between 2% below and 4% above the optimum moisture content as determined by the above test.

When the moisture content of the material is too low to obtain specified density, sufficient water shall be added to the material and/or lift thickness shall be decreased before compaction.

After backfilling, the Work area shall be kept maintained in a smooth and well drained condition.

E. BASIS OF PAYMENT

No measurement or direct payment will be made for any backfilling or compaction required as a part of this Work. The costs of backfilling and compaction will be considered subsidiary to other items for which direct payment is made. When directed by the City's Project Manager, additional water shall be mixed in with backfill materials to allow compaction to be completed. Such water quantities shall be paid as an "EXTRA WORK" item. Lincoln Water System hydrant meter readings immediately before/after the addition of water shall establish the volume of water used.

F. MAINTENANCE AND PROTECTION OF EXCAVATIONS

Temporary support, adequate protection and maintenance of all underground and surface utilities, structures, drains, sewers, and other obstructions encountered in the progress of the Work shall be furnished by the Contractor at Contractor's own expense. Contractor shall take all reasonable precautions to prevent movement of the sides of such excavations. The Contractor shall protect all excavations from surface water by the construction of adequate dikes. The Contractor shall furnish and put in place such sheeting and bracing as may be required to support the sides of the excavations and the Contractor shall remove such sheeting and bracing as the trenches or excavations are filled. The City's Project Manager may order the sheeting be left in place if, in the City's Project Manager's opinion, the utility or structure might be damaged by its being removed.

In lieu of sheeting and bracing, the Contractor may use a trench box of adequate design during the construction of the utility to protect the utility and all personnel.

The Contractor shall satisfy the City's Project Manager that the proposed methods of bedding and foundation material placement is in compliance with the requirements of the Standard Drawings for pipe bedding details when the trench box is moved. The Contractor shall protect the integrity of the pipe embedment zone when utilizing or moving the trench box.

20.02 EARTHWORK (Continued)

F. MAINTENANCE AND PROTECTION OF EXCAVATIONS (Continued)

No measurement or direct payment shall be made for maintenance and protection of excavations, except for sheeting left in place as required above. Payment for sheeting left in place shall be made as an “EXTRA WORK” item. Such payment shall be the value of the sheeting minus the cost of removal. The cost of maintaining and protecting excavations shall be considered subsidiary to the other items for which direct payment is made.

G. DISPOSAL OF SURPLUS MATERIAL

The Contractor shall dispose of all surplus excavated material not needed for fills or other designated purposes. All material deemed unsuitable by the City’s Project Manager shall be disposed of properly and replaced with approved material.

No measurement or direct payment shall be made for disposal or stock piling surplus materials. The costs of disposal or stock piling surplus materials shall be considered subsidiary to the other items for which direct payment is made.

All material deemed unsuitable by the City’s Project Manager and required to be removed from the job site, as well as approved replacement material not readily available at the job site, shall be measured and paid for as an “EXTRA WORK” item.

H. SOIL EROSION CONTROL

Soil Erosion Control shall be accomplished as provided in Chapter 32 of these Standard Specifications.

20.03 UTILITY ALIGNMENT AND GRADE

Prior to excavation, investigation shall be made to the extent necessary to determine the location of underground structures and utilities. Care shall be exercised by the Contractor during excavation to avoid damage to existing structures or utilities. Where shown on the plans, or as requested by the City’s Project Manager, the Contractor shall make such excavation as may be necessary to ascertain the vertical and horizontal location of existing utilities.

The utilities and structures shall be constructed and maintained to the lines and grades established by the plans and Standard Specifications. When crossing existing utilities or other structures, alignment and grade may be adjusted by the City’s Project Manager to provide clearance as required or deemed necessary to maintain minimum clearance, or to prevent future damage or contamination of either utilities or structures.

20.04 GROUND WATER

The Contractor is required to follow proper dewatering (e.g. includes sediment bags or use of sediment basins) to avoid eroding the soil on the construction site. Best management practices must be followed when water is being pumped to lakes, wetlands or directly to storm sewer inlets. When selecting discharge areas from a dewatering process, the Contractor shall not permit the water to be pumped directly into slopes, if available, dewatering activities should be directed to a vegetated area such as a well-established grassed area.

The Contractor shall discontinue dewatering if the area being discharged to shows signs of instability or erosion. If utilizing channels, the Contractor must ensure they are stable and protected with grass or vegetation. The Contractor shall avoid dewatering during heavy rain conditions. The Contractor shall never discharge water that has been contaminated with oil, grease, or chemical products, as these would need to be collected and disposed of properly and legally.

The Contractor shall provide and maintain adequate equipment to remove and dispose of ground water entering the excavations, trenches, or other parts of the Work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation or other cause will result.

All excavations for concrete structures or trenches which extend down to or below ground water shall be dewatered by lowering and keeping the ground water below the bottom of the pipe or as required to maintain a stable foundation.

The Contractor will be held responsible for the condition of any existing storm sewer system which may be used for drainage purposes on this contract, and all storm sewers shall be left clean and free of sediment. The Contractor shall not pump or drain any ground water or surface runoff into any part of the sanitary sewer system.

No measurement or direct payment shall be made for removal and disposal of ground water unless otherwise provided in the proposal or Special Provisions. The costs of removal and disposal of ground water shall be considered subsidiary to the other items of Work for which direct payment is made.

20.05 FOUNDATION AND BEDDING

A. GENERAL

Foundation and bedding materials shall meet the requirements of these Standard Specifications.

Foundation materials generally will be required where unstable soil conditions exist at the bottom of the trench. Foundation material shall be placed to the satisfaction of the City's Project Manager.

Bedding material shall be placed and compacted as called for on the plans. After the pipe has been properly placed to grade and line on the initial bedding course, additional bedding material shall be placed in 6" lifts and thoroughly settled by mechanical compaction in order to fill all voids below, around and above the top of the pipe as shown on the Standard Plans details for pipe bedding.

B. BASIS OF PAYMENT

Foundation material when placed in conformance with these Standard Specifications as directed by the City's Project Manager shall be paid as an "EXTRA WORK" item. Weight tickets for material installed shall be submitted prior to any payment for this "EXTRA WORK" item. This "EXTRA WORK" payment shall be full compensation for furnishing all materials, installation, labor, equipment, tools and incidentals necessary to create a stable foundation.

No measurement or direct payment shall be made for bedding material, except that all weight tickets for bedding material shall be submitted prior to any payment for pipe being installed. The cost of bedding materials, in the appropriate classes for the type of pipe material utilized, as shown on the drawings or for the structures constructed, shall be considered subsidiary to the other items of Work for which direct payment is made.

20.06 HORIZONTAL DIRECTIONAL DRILLING

A. GENERAL

Horizontal directional drilling (HDD) is a trenchless excavation method which is accomplished in three phases. The first phase consists of drilling a small diameter pilot hole along a designed directional path. The second phase consists of enlarging the pilot hole to a diameter suitable for installation of the pipe. The third phase consists of pulling the pipe into the enlarged hole. The Contractor shall furnish all labor, materials, tools, equipment, drilling fluids, and other items as necessary for a complete and functional installation as required, to the lines and grades shown on the Plans and as specified.

B. SUBMITTALS

1. Shop drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe, fittings and drilling fluids. Include manufacturer's recommendation for handling, storage, and repair of pipe and fittings damaged.
2. The proposed phasing and schedule of the Work including location of launching and receiving pits, services affected, length of pipe effected during each phase, and proposed traffic disruptions. The phasing and schedule of the Work must be approved by the City's Project Manager prior to Work starting.
3. The proposed methods for monitoring, prevention, containment, and clean-up of drilling fluid surface returns at unauthorized locations.
4. The tabulation of pilot hole survey coordinates.
5. Written record of the installation pullback loads on the utility during the installation process.
6. Plan and profile drawings of the documented as-built location of the installed utility.

20.06 HORIZONTAL DIRECTIONAL DRILLING (Continued)

C. MATERIALS

1. Water main installed by HDD shall use Certa-Lok C900 RJ, Class 200 DR 14 pipe as manufactured by Certainteed, or approved equal. Pipe material other than Certa-Lok must be approved prior to ordering. Restrained joint pipe shall also meet all performance requirements of AWWA C900.
2. The Contractor shall at all times provide and maintain instrumentation which will accurately locate the pilot hole, measure drill string axial and torsional loads, and measure drilling fluid discharge rate and pressure. The City's Project Manager shall have access to these instruments and their readings at all times. A log of all recorded readings shall be maintained by the Contractor and will become a part of the Project Record Documents supplied by Contractor. Instrumentation systems shall be calibrated immediately prior to beginning the work.
3. The Drilling Fluid System shall be capable of mixing and delivering the drilling fluid to the drill head or the reamer in the volumes and pressures required. Contractor shall maximize recirculation of drilling fluid surface returns. Contractor shall provide solids control and fluid cleaning equipment of a configuration and capacity that can process surface returns and produce drilling fluid suitable for reuse.
4. The Drilling Fluid shall be used as required during the installation of the pilot hole, enlarging of the pilot hole, and installation of the water pipe. No drilling fluid will be accepted or utilized that does not comply with permit requirements and environmental regulations.
5. Drill Pipe (drill stem) shall be of sufficient size and strength to resist all installation loadings including tensile, compressive, bending, and torsional loads. An appropriate safety factor shall be used by the Contractor in sizing the drill pipe.
6. Drill Head configuration shall be as selected by Contractor and compatible with requirements for location system.
7. Reamer and Swivels shall be as selected by Contractor. Reamer and swivel assembly shall be capable of enlarging borehole while preventing damage due to rotation of the pipe during its pullback into its final position.

20.06 HORIZONTAL DIRECTIONAL DRILLING (Continued)

D. INSTALLATION

1. BORING OF THE PILOT HOLE

Install pilot hole using steerable drilling head. Pilot hole shall be drilled along the path shown on the Drawings to the tolerances listed herein. Listing of tolerances shall not relieve Contractor from responsibility for safe operations or damage to adjacent utilities and structures.

Monitor location of drill head as required to install pilot hole to indicated lines and grades, but in no instance shall the interval between locating the drilling head exceed 15' in length along the alignment.

Use drilling fluids as required to lubricate and support the pilot hole excavation.

Pilot hole shall be free from abrupt changes in line or grade that could result in unacceptably high loadings on the drill pipe or the water pipe during installation.

After completion of pilot hole drilling, Contractor shall provide a tabulation of coordinates, referenced to the drilled entry point, which accurately describe the location of the pilot hole. This tabulation shall be in addition to the log of recorded readings required.

2. PRE-REAMING OF THE PILOT HOLE

Subsequent to the City's Project Manager's acceptance of pilot hole, Contractor may, at his option, pre-ream the pilot hole as necessary for installation of the water pipe.

Pre-reaming operations shall be conducted at the discretion of the Contractor. Contractor shall insure that a hole sufficient to accommodate the pull section of water pipe has been produced. Any damage to the water pipe resulting from inadequate pre-reaming shall be the responsibility of the Contractor. All provisions of this Specification relating to simultaneous reaming and pulling back operations shall also pertain to pre-reaming operations.

Use drilling fluids as required to lubricate and to support the reamed pilot hole.

Use of pre-reaming shall be at the option of the Contractor; however, lack of pre-reaming shall not result in excessive installation loads on the water pipe.

3. REAMING AND PULLBACK OF THE MAIN

Contractor shall utilize a reamer to enlarge the pilot hole to sufficient size for installation of the main without imposing excessive installation loadings on the water pipe.

Grippers used on the water pipe shall not damage adjacent sections of the pipe. Sections of the pipe utilized by the grippers shall be removed from the pipe after installation.

Contractor shall handle and support the pull section of water pipe so as to prevent damage and minimize pullback forces. Pull section of water pipe shall be supported as it proceeds during pull back so that it moves freely and the pipe is not damaged.

20.06 HORIZONTAL DIRECTIONAL DRILLING (Continued)

D. INSTALLATION (Continued)

Contractor shall use drilling fluids as required to lubricate and support the reamed pilot hole, lubricate installation of the water pipe, and completely fill all overcut of the reamed pilot hole.

The pull section of water pipe shall be installed in the reamed hole in such a manner that external pressures are minimized and an appropriate counter-balancing internal pressure is maintained. Any damage to the pipe resulting from external pressure during installation shall be the responsibility of Contractor. The pipe shall be filled with water as it enters the ground to ensure that adequate internal pressure is maintained at all points to counter balance external collapse pressures. Contractor shall submit pipe filling procedure proposed for use to the City's Project Manager for review and acceptance.

Contractor shall continuously monitor the pulling loads imposed upon the water pipe. The maximum allowable tensile load imposed on the water pipe shall not exceed the recommendations of the pipe manufacturer. Contractor shall take all required measures necessary to prevent installation loads on the water pipe from exceeding those recommended by the pipe manufacturer. If necessary, Contractor shall at his own expense, stop the pullback of the water pipe, remove the section of pipe installed within the enlarged pilot hole, and pre-ream the pilot hole as required to allow installation of the water pipe without exceeding the allowable pullback forces.

After the installation, Contractor shall determine and log the installed location and depth of the water pipe. Contractor shall submit to the City's Project Manager a drawing detailing the installed location of the water pipe in both plan and profile view.

E. REJECTION

1. If the pilot hole is rejected by the City's Project Manager, the Contractor shall, at his own expense, backfill the rejected pilot hole with bentonite, and install a pilot hole acceptable to the City's Project Manager.
2. Monitoring records indicate that pullback loads exerted on pipe exceeded the loadings recommended by pipe manufacturer.
3. Installation outside of the allowable tolerances.

F. TOLERANCES

Tolerances for the pilot hole and the installed water pipe shall be as listed below.

1. For vertical tolerance, the water pipe shall be installed at the grade indicated on the plans. Minor deviations from the grade indicated on the plans may be allowed, provided that:
 - a. The soil cover above the top of the water pipe shall not be less than shown on the drawings.
 - b. Except at crossings under water courses, the water pipe shall maintain downward slope towards all blowoff points to provide for positive drainage of the water pipe.
 - c. The water pipe shall maintain upward slope towards all venting points to provide for positive venting and air release from the water pipe.

20.06 HORIZONTAL DIRECTIONAL DRILLING (Continued)

F. TOLERANCES (Continued)

2. For horizontal tolerance, the water pipe shall be installed at the locations indicated on the plans. Minor deviations from the locations indicated on the plans may be allowed, provided that:
 - a. The horizontal deviation of the water pipe from the location required on the drawings shall not exceed one (1) foot at any location along the water pipe without prior authorization of the City's Project Manager.
 - b. The horizontal deviation shall not cause the water pipe to interfere with existing structures, utilities, or result in any part of the finished work being installed outside of the permanent easements.

G. CLEAN UP AND DISPOSAL OF MATERIALS

1. Contractor shall remove all construction debris and spoil material and dispose of it at an acceptable location.
2. Drilling fluid shall be removed from pits and then the pits backfilled as required.
3. Disposal of excess drilling fluids shall be the responsibility of the Contractor and shall be conducted in compliance with all environmental regulations, right-of-way and workspace agreements, and permit requirements. Disposal of drilling fluids shall not be allowed on the project site.
4. Contractor shall employ his best efforts to maintain full annular circulation of drilling fluids. Drilling fluid returns at location other than the entry and exit points shall be minimized. In the event that annular circulation is lost, Contractor shall take steps to restore circulation. If inadvertent surface returns of drilling fluids occur, they shall be immediately contained as required and collected. If the amount of the surface return is not great enough to allow practical collection, the affected area shall be diluted with fresh water and the fluid will be allowed to dry and dissipate naturally. If the amount of the surface return exceeds that which can be contained and collected using practical methods, drilling operations shall be suspended until surface return volumes can be brought under control.

H. BASIS OF PAYMENT

Directional Drilling for carrier pipes completed in conformance with these Specifications and accepted by the City's Project Manager shall be measured and paid for at the contract unit price bid per linear foot for DIRECTIONAL DRILLING FOR ___" WATER MAIN, for each size and type called for in the Contract Documents. Such payment shall be full compensation for all materials, equipment, tools, labor and incidentals necessary to produce the directional drill and install the carrier pipe as required in the Contract Documents.

20.07 CONCRETE AND REINFORCING STEEL FOR STORM DRAINAGE

A. GENERAL

When called for on the plans, the Contractor shall construct reinforced concrete collars, elbows, plugs and headwalls for storm drainage at the locations indicated. The collars, elbows, plugs and headwalls shall conform to the details shown in the Lincoln Standard Plans.

B. BASIS OF PAYMENT

When called for in the proposal, concrete for storm water collars, elbows, plugs and headwalls placed in conformance to these Standard Specifications and accepted by the City's Project Manager shall be paid for at the contract unit price bid per cubic yard for **CONCRETE FOR COLLARS, ELBOWS, PLUGS AND HEADWALLS, IN PLACE**. The concrete shall not be measured separately for payment, but the quantities shall be established based upon the volume of concrete required for the Design Section, unless otherwise specified. Such payment shall be full compensation for all mixing, hauling, forming, placing, jointing, curing, finishing, excavation, backfill, materials, equipment, tools, labor, and incidentals necessary to complete the structure.

When called for in the proposal, payment for reinforcing steel for collars, elbows, plugs and headwalls placed in conformance with these Standard Specifications and accepted by the City's Project Manager shall be made at the contract unit price bid per pound for **REINFORCING STEEL FOR COLLARS, ELBOWS, PLUGS AND HEADWALLS, IN PLACE**. The reinforcing steel shall not be measured separately for payment, but the quantities shall be established based upon weight of steel required for the Design Section, unless otherwise specified. Such payment shall be full compensation for all placing, tying, chairs, materials, equipment, tools, labor, and incidentals necessary to place the steel in the proper locations in conformance with the plans.

20.08 CONCRETE AND REINFORCING STEEL FOR SANITARY SEWER

A. GENERAL

When called for on the plans, the Contractor shall construct reinforced concrete plugs and collars for sanitary sewer at the locations indicated. The plugs and collars shall conform to the details shown in the Lincoln Standard Plans.

B. BASIS OF PAYMENT

When called for in the proposal, concrete for sanitary sewer plugs and collars placed in conformance to these Standard Specifications and accepted by the City's Project Manager shall be paid for at the contract unit price bid per cubic yard for **CONCRETE FOR PLUGS AND COLLARS, IN PLACE**. The concrete shall not be measured separately for payment, but the quantities shall be established based upon the volume of concrete required for the Design Section, unless otherwise specified. Such payment shall be full compensation for all mixing, hauling, forming, placing, jointing, curing, finishing, excavation, backfill, materials, equipment, tools, labor, and incidentals necessary to complete the structure.

20.08 CONCRETE AND REINFORCING STEEL FOR SANITARY SEWER (Continued)

B. BASIS OF PAYMENT (Continued)

When called for in the proposal, payment for reinforcing steel for sanitary sewer plugs and collars placed in conformance with these Standard Specifications and accepted by the City's Project Manager shall be made at the contract unit price bid per pound for REINFORCING STEEL FOR PLUGS AND COLLARS, IN PLACE. The reinforcing steel shall not be measured separately for payment, but the quantities shall be established based upon weight of steel required for the Design Section, unless otherwise specified. Such payment shall be full compensation for all placing, tying, chairs, materials, equipment, tools, labor, and incidentals necessary to place the steel in the proper locations in conformance with the plans.

20.09 CONCRETE AND REINFORCING STEEL FOR WATER MAIN

A. GENERAL

When called for on the plans, the Contractor shall construct reinforced concrete thrust collars, thrust blocks, anchorages, gravity blocks, tee blocks and plug blocks for water main at the locations indicated. The thrust blocks, anchorages, tee blocks and plug blocks shall conform to the details shown in the Lincoln Standard Plans.

Concrete shall be L3500 conforming to Chapter 3 of these Standard Specifications. Reinforcing steel shall conform to "Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement" ASTM Designation A615, Grade 40 or 60, or "Standard Specification Axle-Steel Deformed and Plain Bars for Concrete Reinforcement" ASTM Designation A617, Grade 60.

B. BASIS OF PAYMENT

When called for in the proposal, concrete for water main thrust collars, thrust blocks, anchorages, gravity blocks, tee blocks and plug blocks placed in conformance to these Standard Specifications and accepted by the City's Project Manager shall be paid for at the contract unit price bid per cubic yard for CONCRETE FOR COLLARS, BLOCKS AND ANCHORAGES, IN PLACE. The concrete shall not be measured separately for payment, but the quantities shall be established based upon the volume of concrete required for the Design Section, unless otherwise specified. Such payment shall be full compensation for all mixing, hauling, forming, placing, jointing, curing, finishing, excavation, backfill, materials, equipment, tools, labor, and incidentals necessary to complete the structure.

When called for in the proposal, payment for reinforcing steel for water main thrust collars, thrust blocks, anchorages, gravity blocks, tee blocks and plug blocks placed in conformance with these Standard Specifications and accepted by the City's Project Manager shall be made at the contract unit price bid per pound for REINFORCING STEEL FOR COLLARS, BLOCKS AND ANCHORAGES, IN PLACE. The reinforcing steel shall not be measured separately for payment, but the quantities shall be established based upon weight of steel required for the Design Section, unless otherwise specified. Such payment shall be full compensation for all placing, tying, chairs, materials, equipment, tools, labor, and incidentals necessary to place the steel in the proper locations in conformance with the plans.

20.10 PAVEMENT CONSTRUCTION AND RECONSTRUCTION

Pavement reconstruction and miscellaneous masonry reconstruction shall be accomplished in conformance as described in these Standard Specifications.

20.11 FINAL CLEANUP

A. GRAVEL OR ROCK ROADWAY SURFACE

Where the Work of the Contract crosses or is parallel to any unpaved roadway and where the roadway surface is affected in any way by operations under the contract, the Contractor shall repair and restore the same to at least its original condition. Such restoration shall include, but not be limited to, regrading ditches and roadway surface, restoration of culverts and drives, and placement of rock or gravel surfacing as directed by the City's Project Manager.

The cost of regrading ditches, roadway surfaces, and drives shall not be paid for directly but shall be considered subsidiary to other items of Work for which direct payment is made.

Culverts required to be removed and re-laid shall be measured and paid for as provided in Chapter 21 of these Standard Specifications. Crushed rock or gravel surfacing shall be measured and paid for as provided in Chapter 9 of these Standard Specifications.

B. FINAL CLEANUP AND PARKING SPACE FINISH

When all other Work has been completed, the Contractor shall thoroughly clean all pavement, parking spaces, sidewalks, rights-of-way, storage areas, access roads, and private property of all earth and other debris by use of approved equipment. All pavement, parking spaces, sod, sidewalks, storage areas, access roads and private property shall be restored to a condition at least equal to that existing prior to any operations under this Contract.

No measure or direct payment shall be made for cleanup or parking space finish. The costs of cleanup and parking space finish shall be considered subsidiary to other items for which direct payment is made.

C. SODDING AND SEEDING

Sodding and seeding shall be accomplished as provided in Chapter 30 of these Standard Specifications.

20.12 COLD WEATHER CONSTRUCTION

A. LIMITS OF CONSTRUCTION

Work to be performed in developed areas, or Work affecting the operation, capacity, and safety of arterial and collector streets, between December 1 and March 15, shall be limited by the following provisions:

1. A maximum of 650 linear feet within the limits of the project may be under construction at one time.
2. A maximum of 2 intersections may be closed at one time within project limits, even though the third intersection may not violate the 650' limit described in Paragraph 1 above.
3. "Under Construction" shall include all operations which disrupt or limit the use of public facilities, such as pavement removal, sidewalk removal, excavation, backfilling, pipe laying, material storage, equipment storage, and/or any other operation deemed by the City's Project Manager as a disruption of normal ingress and egress to the public right-of-way within project limits.

20.12 COLD WEATHER CONSTRUCTION (Continued)

A. LIMITS OF CONSTRUCTION (Continued)

4. Temporary restoration will be required to reduce long-term disruptions and inconvenience during construction. 2 weeks after beginning Work in an area, the City's Project Manager shall require temporary restoration of facilities by the Contractor. The entire cost of installation, maintenance, and removal of such temporary installations shall be the Contractor's responsibility.

B. SUSPENSION OF WORK

Suspension of Work during the winter construction period, December 1 to March 15, may be requested by the Contractor under the following conditions:

1. The request must be made in writing to the City's Project Manager and shall include the beginning date and duration. If Work is to be resumed prior to expiration of time requested, 48 hours written notice of such intent will be required.
2. The Contractor shall be required to restore all vehicular and pedestrian facilities to full use by either permanent or temporary restoration before the suspension period will become effective.
3. Calendar days included in the period that Work is actually suspended shall be counted from the effective suspension date, and the governing completion date shall be adjusted accordingly.

In no case shall a granted suspension of Work be cause for requesting or granting additional calendar days for completion of this Contract.

The City's Project Manager shall state to the Contractor, in writing, the effective suspension date and the date on which the suspension expires.

In addition, following the suspension period, the City's Project Manager shall notify the Contractor, in writing, of the new completion date of the Contract as provided above.

20.13 SUBSTANTIAL COMPLETION

Refer to Chapters 21 through 23 for a specific definition of Substantial Completion for each type of utility Work.

20.14 FINAL ACCEPTANCE

Refer to Chapters 21 through 23 for a specific definition of Final Acceptance for each type of utility Work.

20.15 GUARANTEE

Refer to Chapters 21 through 23 for a specific definition of guarantee for each type of utility Work.